Issue November 2018

European Commission

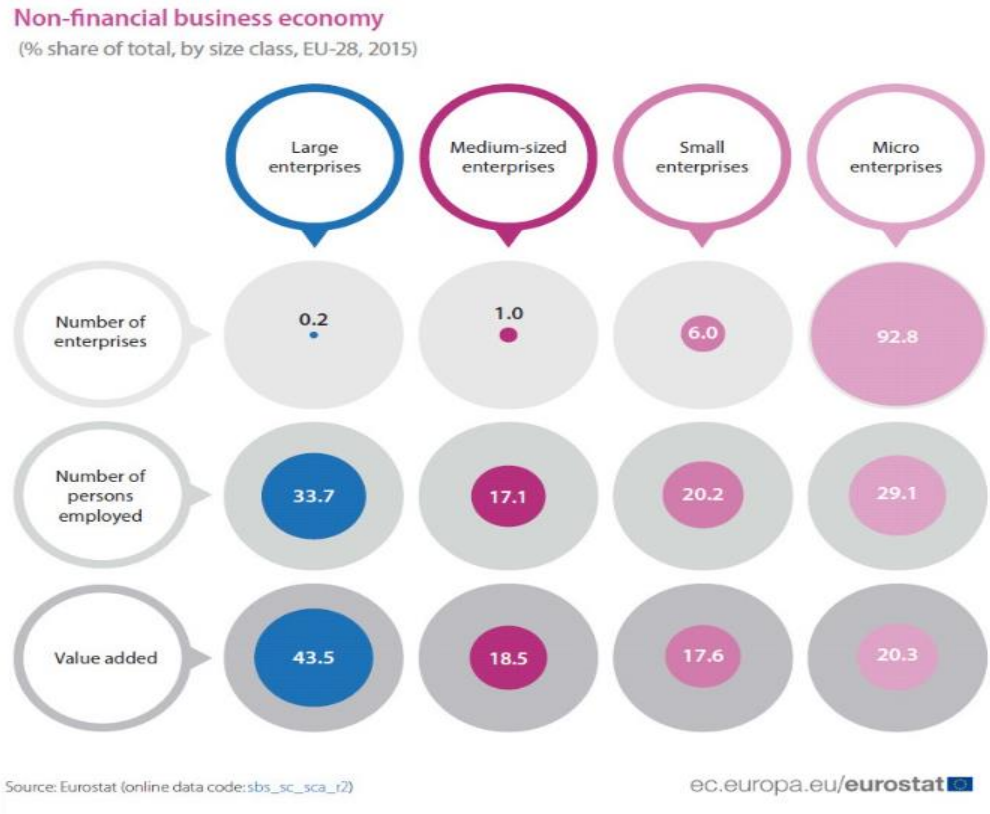
# NEWSLETTER on STI Data and Indicators

DG RTD, A4, Analysis and monitoring of national research policies

## 1. Eurostat data on enterprise size classes

On 19 November Eurostat published an info-graph showing key economic data by enterprise size class (2015 results). According to Eurostat, 0.2 % (46 000) of the 23.5 million enterprises in the non-financial business economy are large enterprises (250 and more persons employed), 1% (230 000) are medium sized enterprises (50-249 persons employed), 6% (1.4 million) small enterprises (10-49 persons employed) and 92.8% (21.8 million) are micro enterprises (less than 10 persons employed). SMEs (including micro-enterprises) hence account for 99.8 % of all enterprises. They represent 66.7 % (91 million) of the 137.4 million people employed in the non- financial business economy (in addition 74 million people are employed in agriculture, forestry and fisheries, the financial sector, the public sector, education, health and other sectors). Because value added per person employed is about 50% higher in large enterprises, the SME share in value added is at 56.5% (€ 3 900 billion) clearly lower than the share in employment.

According to Eurostat 'the economic contribution from SMEs was particularly apparent in Malta, Cyprus and Estonia, with SMEs providing more than three quarters of the total value generated in each of their non-financial business economies.




**More info:** https://ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20181119-1?inheritRedirect=true&redirect=%2Feurostat%2F

## 2. Eurostat data on R&D expenditure in 2017

On 19 November 2018 **Eurostat** published 2017 results on R&D expenditure. According to Eurostat R&D intensity increased from 2.04% of GDP in 2016 to 2.07 % in 2017. Hungary (+0.15 pp), Greece (+0.14 pp), Czechia (+0.11 pp), Germany (+0.10 pp, and Slovakia (+0.09 pp) showed the largest percentage point increase in 2017. Countries where R&D intensity decreased in 2017 include Slovenia (- 0.15 pp), Ireland (-0.014 pp), and Denmark (-0.06pp). Sweden remains the EU country with the highest R&D intensity, followed by Austria, Denmark and Germany with R&D intensities all above 3%. Despite an increase, R&D intensity remains lowest in Romania (0.5% of GDP), with Latvia ranking second lowest.

When it comes to the sector of performance, Sweden shows the highest business R&D intensity, followed by Austria, Germany and Denmark. Business spending is lowest in Cyprus and Latvia. Public R&D intensity (government plus higher education) is highest in Denmark, followed by Sweden, Finland and Germany.

Two statistical offices have already released R&D expenditure estimates for 2018. In Austria R&D intensity is expected to increase further to 3.19% in 2018, in Finland it is forecast to fall to 2.70%.

| R&D intensity (% of GDP) | Total | | | | | Business | Gov. | Higher Ed |
|---|---|---|---|---|---|---|---|---|
| | 2010 | 2014 | 2015 | 2016 | 2017 | 2017 | 2017 | 2017 |
| European Union | **1.92** | **2.03** | **2.04** | **2.04** | **2.07** | **1.36** | **0.23** | **0.46** |
| Belgium | 2.05 | 2.39 | 2.46 | 2.55 | 2.58 | 1.76 | 0.29 | 0.54 |
| Bulgaria | 0.56 | 0.79 | 0.96 | 0.78 | 0.75 | 0.53 | 0.17 | 0.04 |
| Czechia | 1.34 | 2 | 1.93 | 1.68 | 1.79 | 1.14 | 0.31 | 0.35 |
| Denmark | 2.92 | 2.91 | 3.06 | 3.12 | 3.06 | 1.98 | 0.07 | 1.01 |
| Germany | 2.71 | 2.87 | 2.91 | 2.92 | 3.02 | 2.09 | 0.41 | 0.52 |
| Estonia | 1.58 | 1.43 | 1.47 | 1.25 | : | : | 0.15 | 0.51 |
| Ireland | 1.61 | 1.55 | 1.19 | 1.19 | 1.05 | 0.76 | 0.05 | 0.26 |
| Greece | 0.6 | 0.83 | 0.96 | 0.99 | 1.13 | 0.55 | 0.25 | 0.32 |
| Spain | 1.35 | 1.24 | 1.22 | 1.19 | : | : | : | : |
| France | 2.18 | 2.23 | 2.27 | 2.25 | : | : | : | : |
| Croatia | 0.74 | 0.78 | 0.84 | 0.84 | 0.86 | 0.43 | 0.19 | 0.24 |
| Italy | 1.22 | 1.34 | 1.34 | 1.37 | 1.35 | 0.83 | 0.17 | 0.33 |
| Cyprus | 0.45 | 0.51 | 0.48 | 0.53 | 0.56 | 0.2 | 0.06 | 0.23 |
| Latvia | 0.61 | 0.69 | 0.63 | 0.44 | 0.51 | 0.21 | 0.13 | 0.24 |
| Lithuania | 0.78 | 1.03 | 1.04 | 0.84 | 0.88 | 0.31 | 0.25 | 0.32 |
| Luxembourg | 1.5 | 1.26 | 1.28 | 1.3 | 1.26 | 0.68 | 0.33 | 0.25 |
| Hungary | 1.14 | 1.35 | 1.36 | 1.2 | 1.35 | 0.99 | 0.17 | 0.18 |
| Malta | 0.61 | 0.72 | 0.75 | 0.58 | 0.55 | 0.34 | 0.01 | 0.2 |
| Netherlands | 1.7 | 1.98 | 1.98 | 2 | 1.99 | 1.17 | 0.23 | 0.59 |
| Austria | 2.73 | 3.08 | 3.05 | 3.13 | 3.16 | 2.22 | 0.22 | 0.7 |
| Poland | 0.72 | 0.94 | 1 | 0.96 | 1.03 | 0.69 | 0.02 | 0.34 |
| Portugal | 1.53 | 1.29 | 1.24 | 1.28 | 1.32 | 0.67 | 0.07 | 0.56 |
| Romania | 0.46 | 0.38 | 0.49 | 0.48 | 0.5 | 0.31 | 0.16 | 0.05 |
| Slovenia | 2.06 | 2.37 | 2.2 | 2.01 | 1.86 | 1.39 | 0.26 | 0.21 |
| Slovakia | 0.62 | 0.88 | 1.17 | 0.79 | 0.88 | 0.49 | 0.18 | 0.22 |
| Finland | 3.73 | 3.17 | 2.9 | 2.74 | 2.76 | 1.8 | 0.24 | 0.7 |
| Sweden | 3.21 | 3.14 | 3.26 | 3.27 | 3.33 | 2.38 | 0.12 | 0.86 |
| United Kingdom | 1.66 | 1.66 | 1.67 | 1.68 | 1.67 | 1.13 | 0.11 | 0.4 |

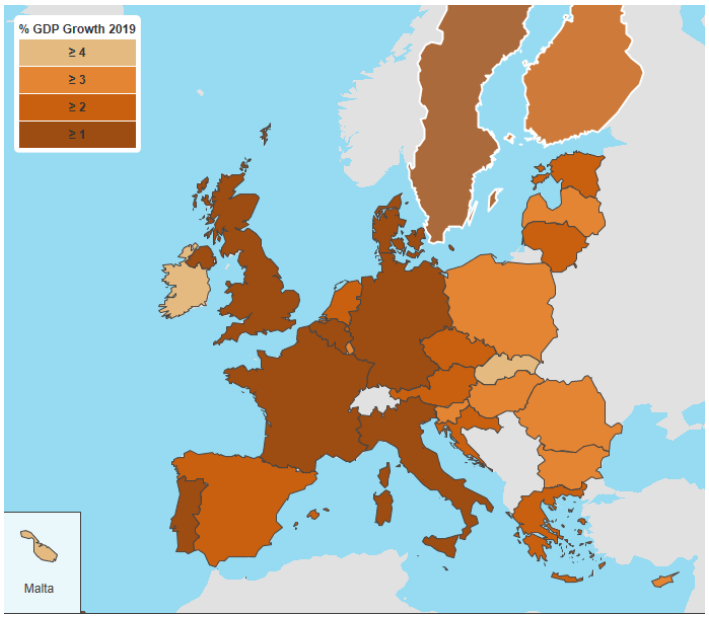
**Notes:** 2016 result: estimated for AT, BE and UK, and provisional for FR, HR, IT, SE; break in series: HR, IT, LU
2017 result: estimated for DE and provisional for BE, BG, DK, EL, HR, IT, CY, LV, LU, NL, AT, PT, SI, UK
**More info:** http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

## 3. Commission Autumn 2018 economic forecast

On 8 November 2018, the *Commission* (DG ECFIN) published the **Autumn 2018 Economic Forecast**.

GDP growth in the EU as a whole (EU 28) is expected to be slightly below earlier forecasts at 2.1% in 2018, 1.9% in 2019 and 1.8% in 2020 (same figures 2018-2019 for the Euro zone and the EU). Inflation in the EU is forecast to remain stable, at 2.0 % in 2018 and in 2019 and at 1.8% in 2020. The unemployment rate is expected to decrease from 6.9% in 2018, to 6.6% in 2019 and to 6.3% in 2020. Czechia will remain the EU country with the lowest unemployment rate (2.5% in 2019 and 2.6 % in 2020), followed by Poland (2.9%/2.8%) and Germany (3.6% in 2018 and 3.5% in 2019). Three countries are forecast to continue having a double-digit unemployment rate: Greece (18.2% in 2019 and 16.9% in 2020), Spain (14.4%/13.3%) and Italy (10.4%, 10.0%).

In 2018, Ireland's GDP grew fastest (7.8%), followed by Malta (5.4%) and Poland (4.8%), while Italy (1.1%) and the UK (1.3%) had the slowest growth. In 2019, Malta is forecast to have the fastest growth (4.9%), followed by Ireland (4.5%) and Slovakia (4.1%), whilst Italy (1.2%) and the UK (1.2%) will have the slowest growth. In 2020, Malta (4.4%) and Ireland (3.8%) are expected to grow fastest, while Italy (1.3%) and the UK (1.2%) are again forecast to grow slowest.




**More info:** https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/autumn-2018-economic-forecast_en

## 4. International Digital Economy and Society Index (I-DESI) 2018

On 28 October 2018 the Commission (DG CNECT) published the 2018 edition of the International Digital Economy and Society Index (I-DESI). Using a similar methodology as for the EU DESI index it provides an overall assessment of where the EU stands, compared to non-EU economies, in its progress towards a digital society and economy. I-DESI compares the average performance of EU Member States with 17 non-EU countries. It measures performance in five dimensions or policy areas: connectivity, human capital (digital skills), use of Internet by citizens, integration of technology and digital public services. Denmark comes out as the top performer worldwide, followed by South Korea, the top performer outside the EU. Japan and the US both perform clearly above EU average performance. China's performance is still below the bottom 4 EU performers, but advancing quickly. The largest increase in performance was recorded by Serbia, which increased its score by 75 % between 2013 and 2016 and rose from last to 34th place.

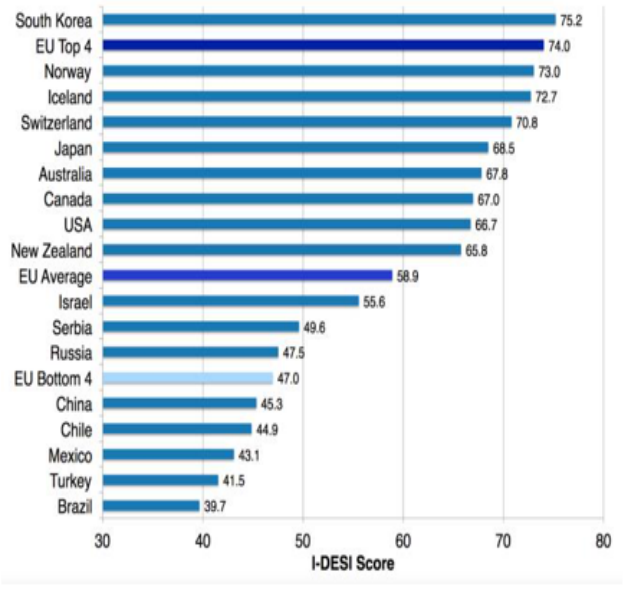


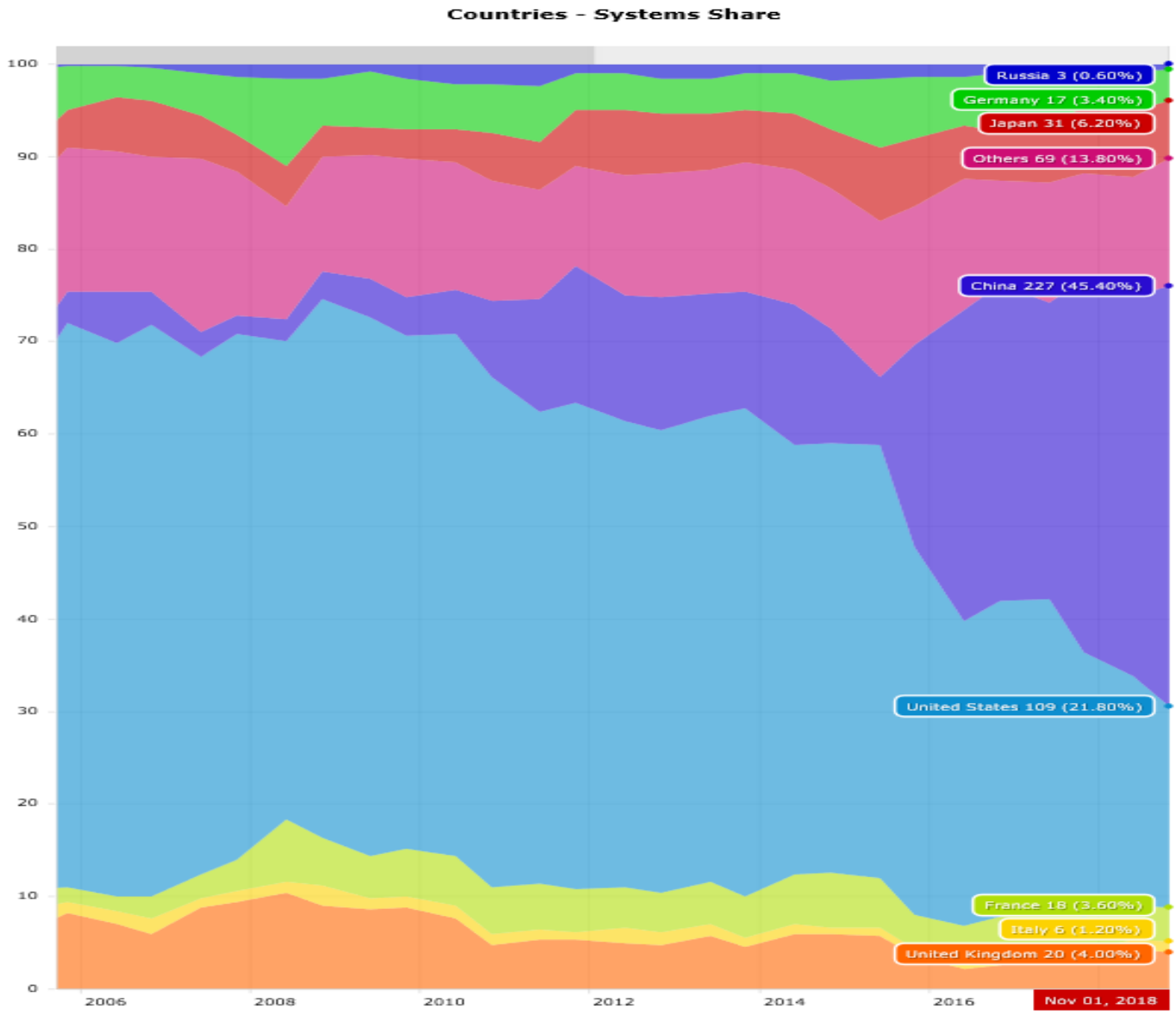

Figure 1: Average scores across all dimensions for I-DESI 2013 to 2016

**More info:**
https://ec.europa.eu/digital-single-market/en/news/how-digital-europe-compared-other-major-world-economies

## 5. Top500 Supercomputer list

On 11 November T*op500* published an update of its list of the top 500 supercomputers worldwide. Two systems at the US Department of Energy (DOE) now rank first and second, while in the previous list China had the top performing supercomputer. However, the share of TOP500 installations based in China continues to increase, with the country now claiming 227 systems (45 percent of the total). Since 2015 the share of China increased very rapidly.
The number of US based supercomputers on the other hand continues to decline, reaching in November 2018 an all-time low of 109 (22 percent of the total). Since systems in the US are, on average, more powerful, the share of aggregate system performance (US: 38 percent of world) is still higher than in China. The EU has 92 installations in the top 500, with the UK (20) in the lead, followed by France (18), Germany (17), Ireland (12), Italy and the Netherlands (6 each), Poland and Sweden (4 each), Spain (2), Czechia (1) and Finland (1). Germany has the best performing EU supercomputer installation on the list (ranked 7 worldwide, based at the Leibniz Rechenzentrum in Garching near Munich).

China is now not only leading in number of systems installed, but also in the top ten systems manufacturers (by number of systems) are Lenovo (140, China), Inspur (84, China), Sugon (57, China), Cray (49, USA), HPE (46, USA), Bull (22, France), Fujitsu (15, Japan), Huawei (14, China), Dell EMC (13, USA), and IBM (12, USA). While US companies like IBM and Cray dominated in the past, the three largest manufacturers are now based in China.




**More information:** https://www.top500.org/

# 6. Miscellaneous results from national data sources

## Slovakia: New € 1.4 bn car manufacturing plant opened

Jaguar Land Rover (JLR), part of Tata Group (India), announced on 25 October 2018 the opening of a new car manufacturing plant in Nitra/Slovakia. The plant is expected to lead to an annual production of 100 000 cars in Slovakia by 2020. JLR is currently employing 1500 people in Nitra and plans to hire 850 more.
Slovakia is already the country with the largest car production per capita worldwide (1 million cars per year for 5 million inhabitants), hence also nicknamed 'Detroit of the East'. Volkswagen (Bratislava), the French PSA (Trnava) and the South Korean manufacturer KIA (Zilina) are already producing in the country.

The opening of the new facility will boost GDP growth in 2019 in Slovakia (expected to be the 3rd fastest in the EU). The car industry in Slovakia employs 80 000 people, represents 12% of GDP, 40% of manufacturing output and 26% of exports. The new factory will further boost the share of medium-high and high tech exports in Slovakia, already one of the highest in the EU.

**More info:**
https://media.jaguarlandrover.com/news/2018/10/jaguar-land-rover-opens-manufacturing-plant-slovakia

## UK: New Fintec unicorn company

On 31 October 2018 the Fintec company Monzo, based in London, joined the list of UK based unicorn companies (startups with a market valuation of over 1 bn $). The UK now has 14 or half of EU's 28 unicorn companies (despite new entrants, the number hasn't increased in recent years because of companies going public or being bought and losing unicorn status). Germany has one fourth (7) of EU unicorns, France 2 and Estonia, Luxembourg, Malta, Portugal and Sweden 1 each. The majority (9) of the UK unicorns are based in London. 6 of the British unicorns are in the Fintech sector, three of them entering the list in 2018 (apart from Monzo, Revolut and Atom Bank).

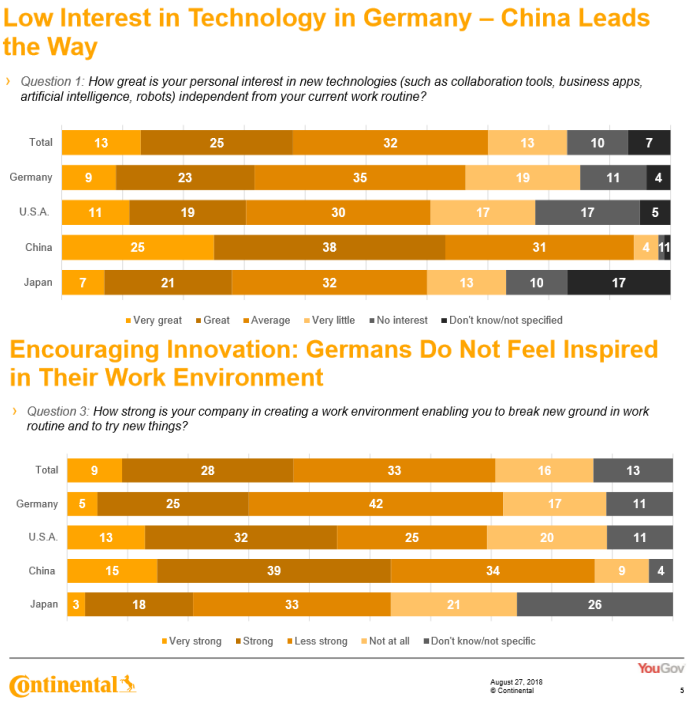
Outside Europe China was very succesful in 2018 with 26 new unicorns (total number now 83, compared to 59 in December 2017). Lately the US proves dynamic too, with 6 unicorns entering the CB Insights list in November 2018 so far (total number now 139, compared to 109 in December 2017).

**More info:**
https://www.cbinsights.com/research-unicorn-companies

## Germany: Continental study on innovation culture showing China in the lead

On 27 August 2018 the German automotive manufacturing company Continental published the results of a study on innovation culture in companies it had commissioned (contractor YouGov). For this study a representative survey of 1100 employees per country has been carried out in Germany, the US, Japan and China.
The survey results show a relatively low interest in technology among German employees. Only 9% of Germans answered the question 'How great is your personal interest in new technologies (such as collaboration tools, business apps, artificial intelligence, robots) independent from your current work routine?', with very great, compared to 11% in the US and 25% in China. As regards the question 'How strong is your company in creating a work environment enabling you to break new ground in work routine and to try new things?' only 5 % of Germans answered with 'very strong', compared to 13% in the US and 15% in China. The statement 'My company provides its employees with money and technological resources to develop ideas and innovative projects' was only confirmed by 14% of German respondents compared to 15% in the US and 45% in China.

**More info:** https://www.continental-corporation.com/resource/blob/142452/85f881154a260db1d5588b9974fad0d8/20180827-continental-survey-results-innovation-en-data.pdf



**Calendar of data releases and indicator based publications**
*Update of: 26/11/2018 (grey= already published)*

| 2018 | Eurostat data updates | Commission indicator based reports | Data and indicator based reports of other organisations |
|---|---|---|---|
| **January** | | | Bloomberg Innovation Index |
| **February** | Tertiary attainment (2017, prov.)<br>High growth enterprises data (provisional, 2016) | Winter forecast (ECFIN)<br>Science Research and Innovation Performance Report (RTD) | OECD MSTI statistics (R&D expenditure) |
| **March** | R&D expenditure data update (revision of preliminary 2016 results) | | European Patent Office , annual results<br>OICA world motor vehicle production data<br>OECD R&D Statistics |
| **April** | Education headline indicators (LFS) | | Reuters Most Innov. Institutions<br>Internet Minute (Excelacom/Allaccess) |
| **May** | High-tech trade (2017)<br>Education enrolment, graduates<br>Knowledge-int. activities (2017) | Spring Forecast (ECFIN)<br>DESI index (CNECT) | Invest Europe European Private Equity Report<br>IMD World Competitiveness Yearbook |
| **June** | Education spending<br>Employment high-tech (2017)<br>HRST education inflows (2016) | European Innovation Scoreboard (GROW/RTD) | Times Higher Ed. Reputations Ranking<br>IRF Industrial robot sales |
| **July** | | | UNESCO UIS STI stats release<br>WIPO/Cornell/INSEAD Global Innovation Index |
| **August** | | | Academic Ranking of World Universities (Shanghai) |
| **September** | Final high growth ent. data (2016)<br>Economic data on high-tech (2017) | Europe 2020 publication (ESTAT) | OECD Education at a Glance |
| **October** | GBARD (2017 preliminary) | Education Monitor (EAC) | WEF Global Competitiveness Index<br>World Bank Doing Business |
| **November** | R&D intensity (2017 preliminary, 2016 final)<br>Knowledge-int. activities (2017)<br>Employment high-tech (2017) | Autumn Forecast (ECFIN)<br>Annual Growth Survey (ECFIN)<br>Draft Joint Employment Report (EMPL) | Top500.org: Top 500 Supercomputer list<br>OECD STI Outlook (2-yearly) |
| **December** | ICT household data (2018)<br>ICT enterprise data (2018)<br>HRST stocks (2017) | Industrial R&D Investment Scoreboard (JRC) | WIPO World Intellectual Property Indicators |

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