Issue September 2017

European Commission

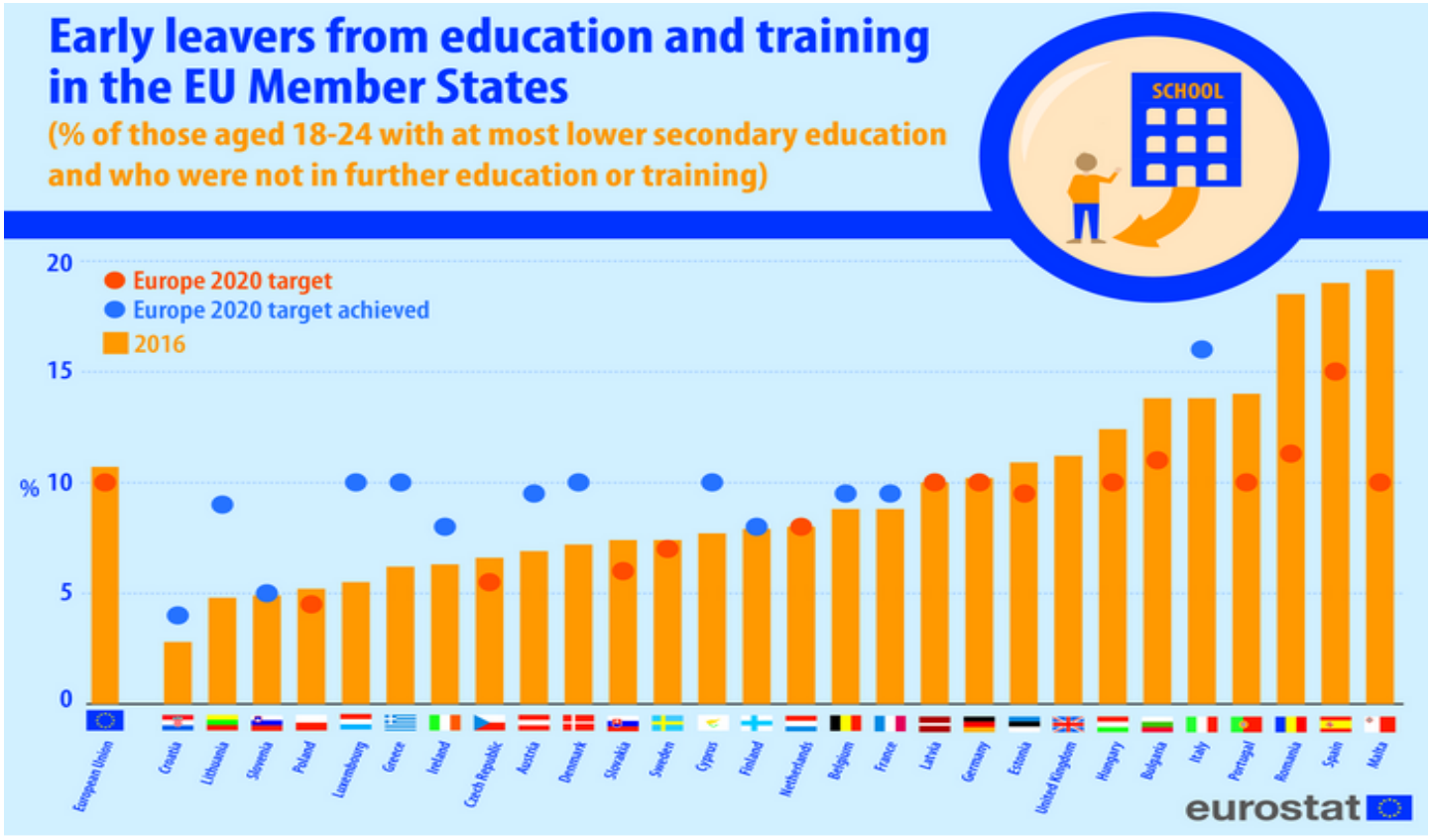
NEWSLETTER on STI Data and Indicators

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

1. Eurostat data on early leavers from education and training

On 8 September 2017 (International Literacy Day) **Eurostat** published an info-graph on the Europe 2020 headline indicator *Early leavers from education and training* (2020 target: below 10%). According to Eurostat *'The share of early leavers from education and training (aged 18-24) – colloquially referred to as 'early school leavers' – has steadily decreased in the European Union (EU) over past years, from 17.0% in 2002 to 10.7% in 2016. Fewer young women (9.2% in 2016) leave education and training early than young men (12.2%).*
In 2016, the lowest proportions of early leavers from education and training were observed in Croatia (2.8%), Lithuania (4.8%), Slovenia (4.9%), Poland (5.2%) and Luxembourg (5.5%), while the highest shares were recorded in Malta (19.6%), Spain (19.0%) and Romania, which still has a relatively high share.'

The share of early education leavers decreased in all Member States since 2006, except for the Czech Republic and Slovakia (in both countries the share is relatively low) as well as in Romania (where the share is still high). Portugal is the EU country that progressed most in the last 10 years, followed by Malta and Spain. 15 EU Member States have already met their national targets (blue dots on the graph), Sweden, the Netherlands, Latvia and Germany are very close reaching their targets. In 2016, the EU as a whole was only 0.7 percentage points away from its 10% 2020 target.



More info: http://ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20170908-1

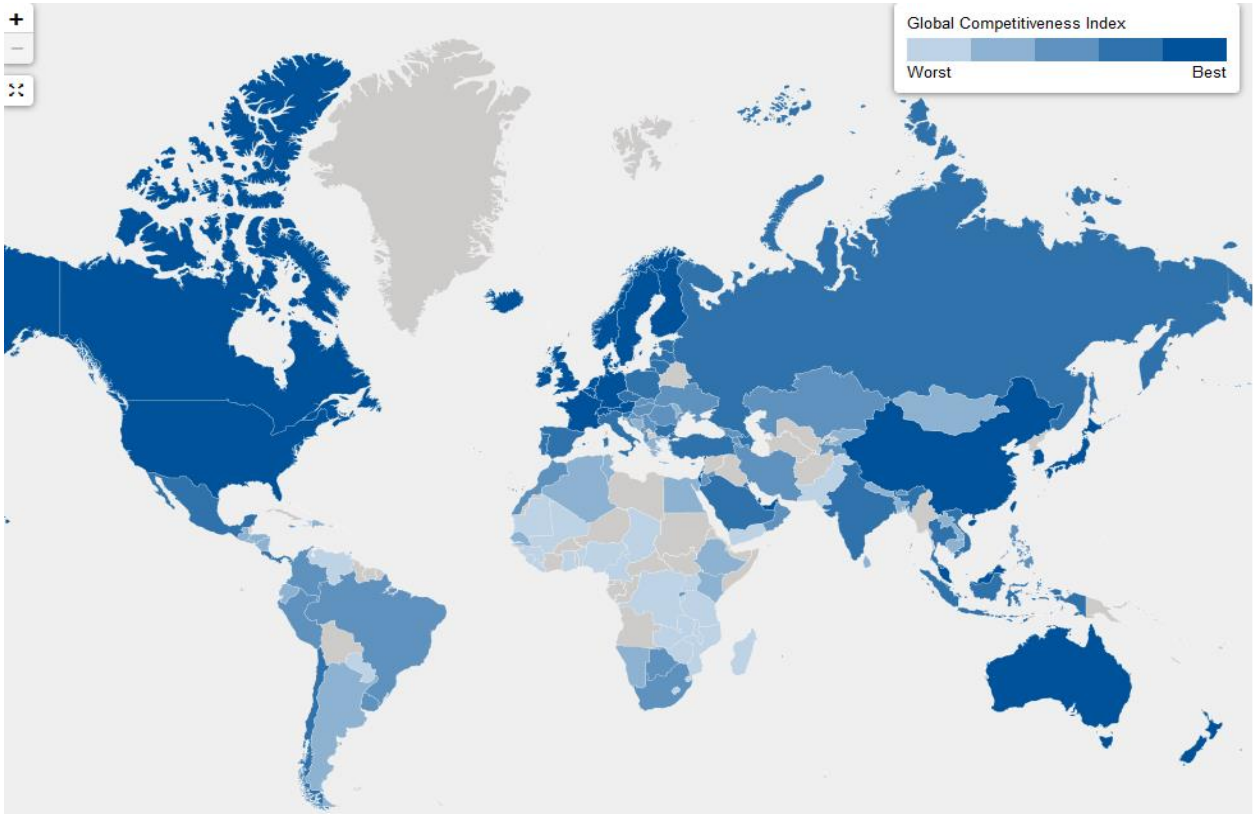
2. WEF Global Competitiveness Report 2017/18

On 27 September the Geneva based **World Economic Forum** (WEF) published the 2017-18 edition of its *Global Competitiveness Report*. The report assesses 137 economies (including all 28 EU Member States) according to 114 indicators arranged in 12 pillars. Statistical sources include the United Nations, the World Bank and OECD but also an Executive Opinion Survey carried out by WEF. This survey provides data not available from other sources, but with a sample size of on average below 100 responses per country, has limited validity. The indicators are arranged into 12 pillars, including an innovation pillar with 7 indicators (capacity for innovation, quality of scientific research institutes, business R&D spending, university-industry collaboration in R&D, Gov't procurement of advanced technology products, availability of scientists and engineers, and PCT patents).

In 2017, as in the years before, Switzerland is the most competitive country, followed by the United States (third in 2016) and Singapore. The Netherlands (ranked 4th) is the best performing EU country, followed by Germany (5), Sweden (7), the UK (8) and Finland (10). Greece (87) is the lowest ranked EU country. Croatia (74) and Romania (68) also have low ranks. Finland is the world's top performer in the pillars 'Institutions' and 'Health and primary education', Luxembourg in 'Technological readiness'. Switzerland leads in 'Business sophistication' and 'Labour market efficiency'.

Switzerland is also the best performer in the innovation pillar, followed by the United States, Israel, Finland and Germany.

	Economy	Score[1]	Prev.[2]	Trend[3]
1	Switzerland	5.86	1	
2	United States	5.85	3	
3	Singapore	5.71	2	
4	Netherlands	5.66	4	
5	Germany	5.65	5	
6	Hong Kong SAR	5.53	9	
7	Sweden	5.52	6	
8	United Kingdom	5.51	7	
9	Japan	5.49	8	
10	Finland	5.49	10	
11	Norway	5.40	11	
12	Denmark	5.39	12	
13	New Zealand	5.37	13	
14	Canada	5.35	15	
15	Taiwan, China	5.33	14	
16	Israel	5.31	24	
17	United Arab Emirates	5.30	16	
18	Austria	5.25	19	
19	Luxembourg	5.23	20	
20	Belgium	5.23	17	



Charts: screenshots from WEF website

More info: http://reports.weforum.org/global-competitiveness-index-2017-2018/

3. Times Higher Education Ranking

On 5 September Times Higher Education (THE) published its annual *World University Ranking.*
Compared to the research output oriented Shanghai Academic Ranking of World Universities (ARWU) published in August, THE's ranking, which has been carried out since 2004, has a broader scope and ,includes additional indicators on teaching, international outlook and industry income and knowledge transfer. With regard to research it also includes subjective factors, such as reputation. Accordingly, while with regard to international performance patterns the results are broadly similar to those of ARWU, the EU comes out better than the United States in THE, implying relative strengths of EU universities in areas like teaching and internationalisation.
While ARWU shows the (private) two US universities Harvard and Stanford on top, THE shows two EU universities, Oxford and Cambridge, ranked in the top two places.
According to THE ranking Luxembourg is the best EU performer in the top 500 universities per million population. However, it has only one university which is not even ranked in the top 500 of ARWU. Luxembourg is followed by Ireland, Finland, Denmark and Sweden.
In terms of the absolute number of institutions the United Kingdom (59 in the top 500) leads in the EU, followed by Germany (43, LMU Munich as top institution), Italy (31, Scuola Superiore Sant Anna on top), France (20, PSL Paris), Netherlands (13, U of Amsterdam) Sweden (11, Karolinska), Belgium (8, KU Leuven), Spain (7, Pompeu Fabra) and Ireland (7, Trinity College). As regards universities in the top 100 the United Kingdom (12) leads in the EU, followed by Germany (10), the Netherlands (7), Sweden (3), Belgium (1) and France (1). This compares to 43 top 100 institutions in the United States, 2 in China and 2 in Japan.
The large majority of central and eastern European Member States do not have universities in the top 500 of THE, the Czech Republic (Charles University/Prague) Estonia (Tartu) and Hungary (Semmelweis/Budapest) being the only exceptions.

	Top 100 universities			Top 500 universities		
	2016	2017	2018	2016	2017	2018
EU	40	36	35	228	226	225
United States	39	41	43	122	120	125
China	2	2	2	11	12	12
Japan	2	2	2	11	12	10
South Korea	1	2	2	11	11	11

THE World University Rankings 2018: top 10

2018 rank	2017 rank	University	Country
1	1	University of Oxford	United Kingdom
2	4	University of Cambridge	United Kingdom
=3	2	California Institute of Technology	United States
=3	3	Stanford University	United States
5	5	Massachusetts Institute of Technology	United States
6	6	Harvard University	United States
7	7	Princeton University	United States
8	8	Imperial College London	United Kingdom
9	=10	University of Chicago	United States
=10	9	ETH Zurich – Swiss Federal Institute of Technology Zurich	Switzerland
=10	13	University of Pennsylvania	United States

More info: https://www.timeshighereducation.com/world-university-rankings

4. Reuters Top 100 - The World's most innovative universities 2017

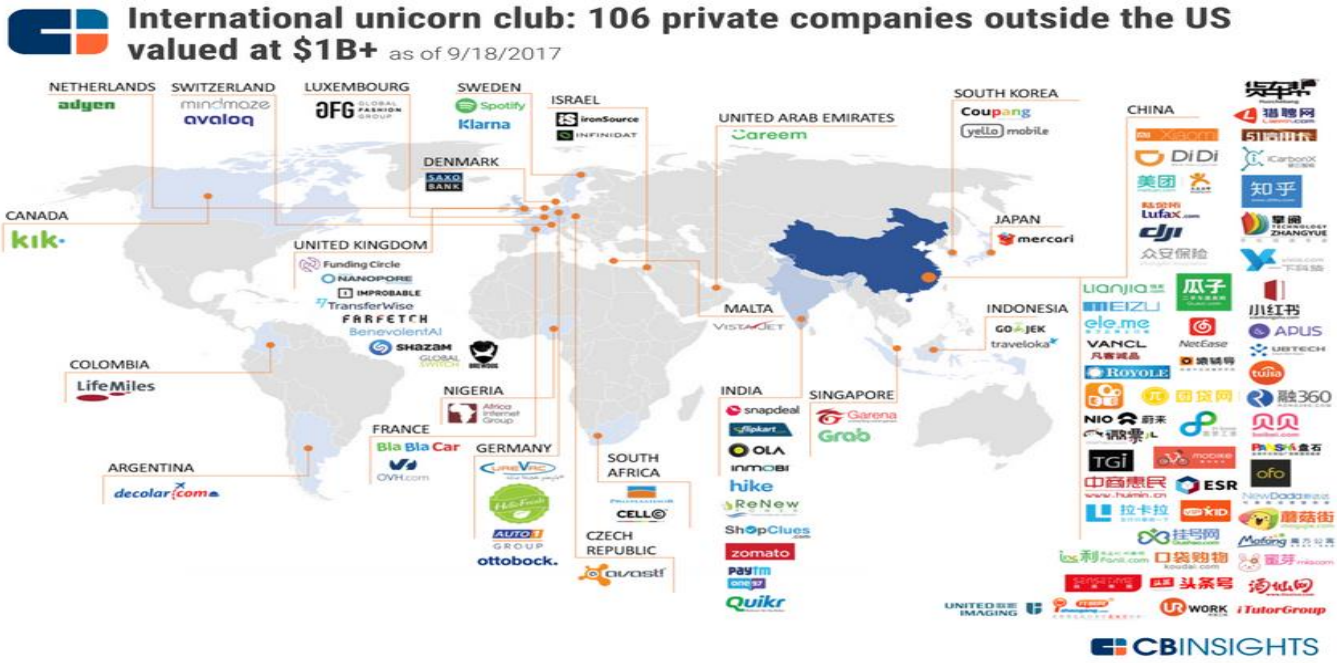
On 27 September Reuters published the 2017 edition of its Top 100: the World's most innovative universities.
The ranking is based on 10 indicators mostly related to patents, such as the number of patents filed, the patent success rate (patents granted over applications filed), the percent of international patents, patent citations and citation impact but also to publications, such as total number of journal articles published, percent of industry collaborative articles and industry article citation impact. In the 2017 ranking Stanford came out on top, followed by MIT and Harvard .
KU Leuven (BE) (rank 5) is the best ranked European university. Between 2010 and 2015 KU Leuven filed 292 patents, 37% of patents filed were granted and it had a high score on commercial impact (academic papers cited in patent filings). Reuters writes about KU Leuven:
In fiscal 2015, the university's total research spending exceeded €454 million. The school's patent portfolio includes 586 active families, according to the university. KU Leuven Research & Development (LRD), established in 1972, was one of the first tech transfer offices in Europe, and has helped the university spin off more than 100 companies across a range of industries. In 2012, Siemens acquired KU spinoff LMS International, a leading provider of test and mechatronic simulation software, in a deal worth approximately €680 million.
Of the top 100 universities 51 are based in North America (USA 49, Canada 2) 26 in Europe, 20 in Asia (S. Korea 8, Japan 8, China 3, Singapore 1) and 3 in Israel.

TOP 100 UNIVERSITIES | 2017 RANKINGS		
1	Stanford University	USA
2	Massachusetts Institute of Technology (MIT)	USA
3	Harvard University	USA
4	University of Pennsylvania	USA
5	KU Leuven	Belgium
6	KAIST	South Korea
7	University of Washington	USA
8	University of Michigan System	USA

23 EU universities are in the top 100. Germany has 7 (TU Munich, Erlangen-Nürnberg, LM Munich, Freiburg, Free University Berlin, Mainz, Dresden) the UK 5 (Imperial College London, Cambridge, Oxford, University College London, Manchester), France 5 (Pierre & Marie Curie Paris, Montpellier, Claude Bertrand Lyon, Paris Descartes, Paris Sud), the Netherlands 2 (Delft, Leiden), Belgium 2 (KU Leuven, Ghent) and Denmark 2 (Technical University of Denmark, Copenhagen University). Surprisingly no Swedish, Spanish or Italian institution is included.

More info: http://www.reuters.com/article/us-amers-reuters-ranking-innovative-univ/reuters-top-100-the-worlds-most-innovative-universities-2017-idUSKCN1C209R

5. CB Insights world unicorn map



On 18 September CB Insights published a map showing the geographic distribution of the 106 unicorn companies outside the US. More than half of non-US unicorns are based in China, one fifth in the EU and 10% in India. In 2013 70% of new unicorns were based in the US , in 2016 only 42% of new unicorns were based in the US .

More info: https://www.cbinsights.com/research/startup-unicorns-international-map/

6. Miscellaneous results from national data sources

Netherlands: a second Dutch unicorn since September 2017

On 28 September CB Insights included a second Dutch company, *Letgo*, in its list of unicorns (startups with a market valuation of $ 1 billion or more). Letgo is a used goods marketplace that allows users to post items for sale. Founded by Alec Oxenford, Enrique Linares and Jordi Castello in the United States, Letgo is now based in Naarden near Amsterdam. The Letgo App has so far been downloaded 75 million times.

The other Dutch unicorn is Adyen, a fintech company with 600 employees founded in 2006 (unicorn since December 2014) and based in Amsterdam.
In the EU now only the United Kingdom (10) and Germany (4) have more unicorns than the Netherlands.

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

Germany: Aachen as an emerging electric vehicle production cluster

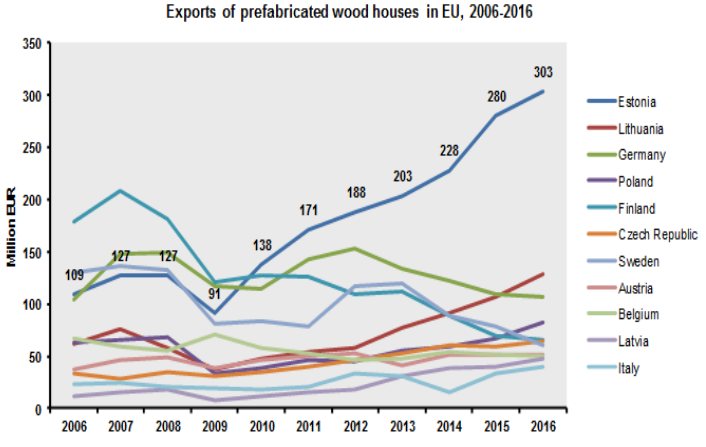
When the logistics company Deutsche Post asked large German automobile manufacturers, whether they could produce an electric delivery vehicle the incumbents showed little interest. Deutsche Post therefore bought the Aachen based electric vehicle Startup *StreetScooter*, which had been founded in 2010 by RWTH Aachen professor Günther Schuh. Production commenced at the premises of railway vehicle manufacturer Talbot (the oldest German rail vehicle manufacturer).
Production increased from 200 vehicles in 2014 to about 2000 in 2016. The goal is now to produce 10 000 vehicles per year from 2017, which would make StreetScooter the largest electric light utility manufacturer in Europe. A second production site in Düren near Aachen is currently being developed. Deutsche Post intends not only to replace its own fleet of 70 000 by electric vehicles, but to sell the StreetScooter to other companies, as demand is stronger than expected. Deutsche Post (the former national postal company) has thus somewhat unintentionally become a manufacturer of electric vehicles. After selling StreetScooter to Deutsche Post Günter Schuh, has in the meantime founded a new electric vehicle enterprise *eGo Mobile*, which aims at producing 10 000 electric cars per year.
This development is further evidence that new players can catch up more quickly in the field of electric vehicles, because electric motors are less complex and less technologically challenging than combustion engines. A combustion engine consists of ca. 2500 parts, an electric motor has only about 250 parts. The motor/powertrain thus represents a much lower share of value added. In the future, batteries are expected to represent 40% of the value added of electric vehicles.

Because of the two electric vehicle startups German media have nicknamed Aachen 'Silicon Aachen'. Some wonder whether Aachen or 'Silicon Saxony' is more important as a German cluster in the field of electric vehicles. An argument for Saxony is the fact that the car company Daimler is currently investing €500 million in a second battery factory in Kamenz in Saxony, the largest in Europe. However the battery cells from which the battery modules are assembled are imported from Asia. The last German battery cell producer went into insolvency in summer 2017, while Japan (Panasonic) South Korea (Samsung, LG Chem) and increasingly also China (BYD, CATL), which is building up capacity on a massive scale, are dominating the vehicle battery market.

More info: https://en.wikipedia.org/wiki/StreetScooter

Estonia: the EU's largest exporter of wooden houses

In September 2016 the Estonian Wooden Houses Association published data showing that Estonia, although representing only 4% of the EU wooden house industry (which had a turnover of €7.7 billion in 2015), was the biggest exporter of prefabrictaed wooden houses in the EU.
A look at the latest Eurostat statistics (see right column graph based on these data) shows that the upward trend of Estonian exports of prefabricated wooden houses continued in 2016 (+8.2%). The wooden house exports of Lithuania (now the second largest exporter in the EU), Latvia and Poland also increased strongly, while Germany and Finland saw a decline in the exports of such houses.
High exports of forest based products is one of the reasons why the Baltic States perform relatively poorly in the share of medium and high-tech exports (an indicator in the European Innovation Scoreboard).



More info: http://www.puitmajaliit.ee/news/only-6-countries-in-europe-produce-more-wooden-houses-than-estonia

Calendar of data releases and indicator based publications
Update of: 30/9/2017 (grey= already published)

2017	Eurostat data updates	Commission indicator based reports	Data and indicator based reports of other organisations
January			Transparency International Corruption Perception Index Bloomberg Innovation Index
February	Tertiary attainment (2016, prov.) High growth enterprises data (provisional, 2015)	Winter forecast (ECFIN)	OECD MSTI statistics (R&D expenditure)
March		DESI indicator (CNECT)	European Patent Office , annual results Reuters Most Innov. Institutions OICA world motor vehicle production data OECD R&D Statistics
April	Education headline indicators (LFS)		Internet Minute (Excelacom/Allaccess)
May	High-tech trade (2016) Venture capital (2016) Education enrolment, graduates Knowledge-int. activities (2016)	Spring Forecast (ECFIN) Skills forecast (Cedefop) Europe 2020 publication (ESTAT)	Invest Europe European Private Equity Report IMD World Competitiveness Yearbook
June	Education spending Employment high-tech (2016) HRST education inflows (2015)	European Innovation Scoreboard (GROW/RTD) Regional Innovation Scoreboard (GROW/RTD)	OECD MSTI publication Times Higher Ed. Reputations Ranking WIPO/Cornell/INSEAD Global Innovation Index
July	IPR (Patents, 2014), Community Trademarks (2016), RC Designs (2016)		UNESCO UIS STI stats release OECD Education at a Glance
August			Academic Ranking of World Universities (Shanghai)
September	Final high growth ent. data (2015) Economic data on high-tech (2016)		WEF Global Competitiveness Index THE university Ranking Reuters Innovative universities ranking
October	GBAORD (2016 preliminary)		World Bank Doing Business OECD STI Scoreboard (2-yearly)
November	R&D intensity (2016 preliminary, 2015 final) Knowledge-int. activities (2016) Employment high-tech (2016)	Autumn Forecast (ECFIN) Education Monitor (EAC) Annual Growth Survey (ECFIN)	Top500.org: Top 500 Supercomputer list
December	ICT household data (2016) ICT enterprise data (2016) HRST stocks (2016)	Industrial R&D Investment Scoreboard (JRC) Joint Employment Report (EMPL)	WIPO World Intellectual Property Indicators

Contact for more information: Richard Deiss (unit A4, Tel 64881), Dermot Lally (55614)