Issue March 2018

European Commission

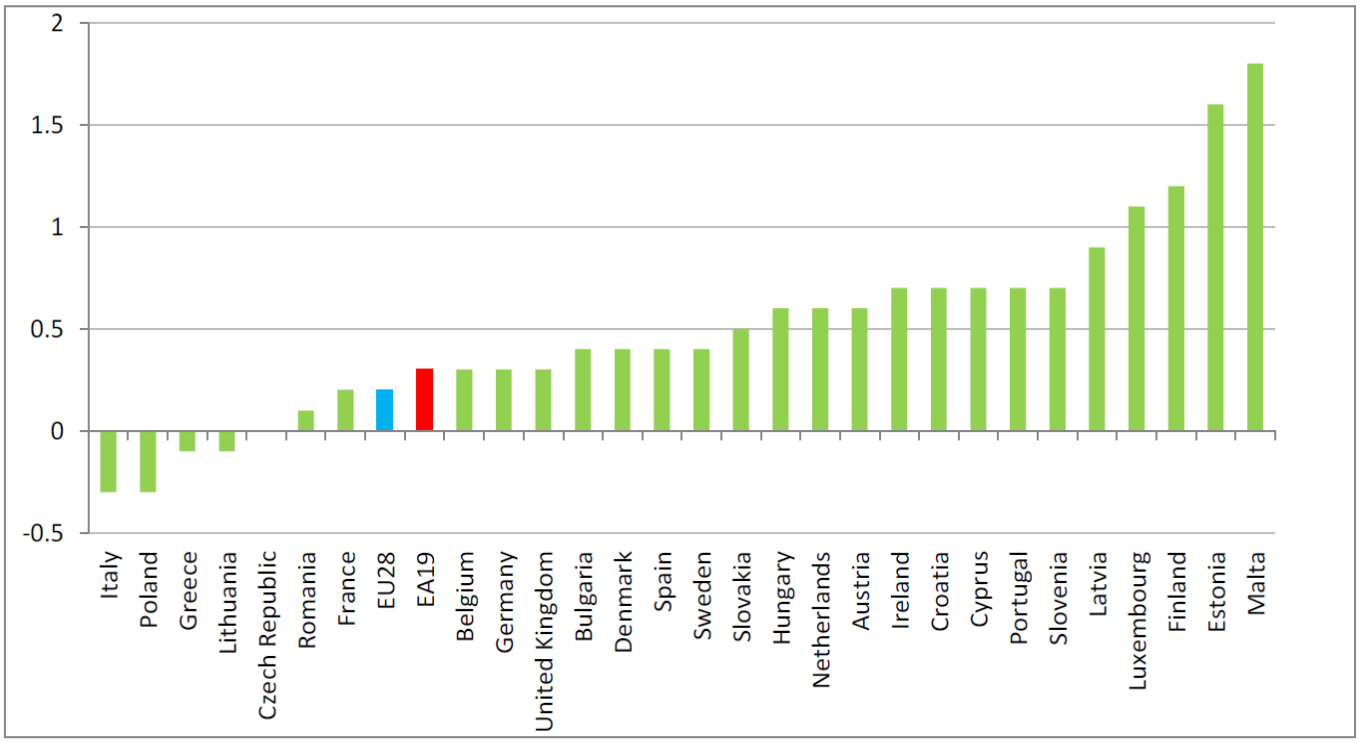
NEWSLETTER on STI Data and Indicators

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

1. Eurostat data on employment growth

On 14 March 2018 Eurostat published a news release on employment growth. According to Eurostat employment in EU 28 in the fourth quarter 2017 was up 0.2 % compared to the previous quarter and up 1.5% compared to the same quarter the year before (an increase of over 3 million). Eurostat estimates that in the fourth quarter 236.8 million men and women were employed in EU 28, **the highest level ever recorded**. Malta (+1.8%), Estonia (+1.6%), Finland (+1.2%), Luxembourg (+1.1%) and Latvia (+0.9%) recorded the highest increases compared with the previous quarter. In contrast, employment declined in Italy, Poland (both -0.3%), Greece and Lithuania (both -0.1%). It furthermore stagnated in the Czech Republic (despite strong economic growth, a very low unemployment rate limits the room for a growth in employment).
Compared to the same quarter of the previous year employment growth was strongest in Malta (+6.1%), Estonia (+5.7%) and Croatia (+3.8%).

Member States' growth rates for employment in the fourth quarter of 2017
% change over the previous quarter, seasonally adjusted



More info: http://ec.europa.eu/eurostat/documents/2995521/8735243/2-14032018-BP-EN.pdf/b3d7bbc2-952a-441e-a4eb-4a5da3d5f4bf

2. Eurostat data on employment by economic activity

To put the short term employment growth data in perspective, data on employment growth 2010-2016 have been extracted from the Eurostat Eurobase and are shown in the table below. Economic sectors, where employment declined are shown in red, sectors with an increase in employment are shown in green (more intensive green if growth was > 10%). The sector agriculture, forestry and fishing declined most since 2010, with nearly 1.7 million jobs lost. Employment in the construction sector declined by 9% (-1.5 million jobs). Mining and quarrying (-8.7%), and activities of households as employers (-9.3%) also strongly decreased.

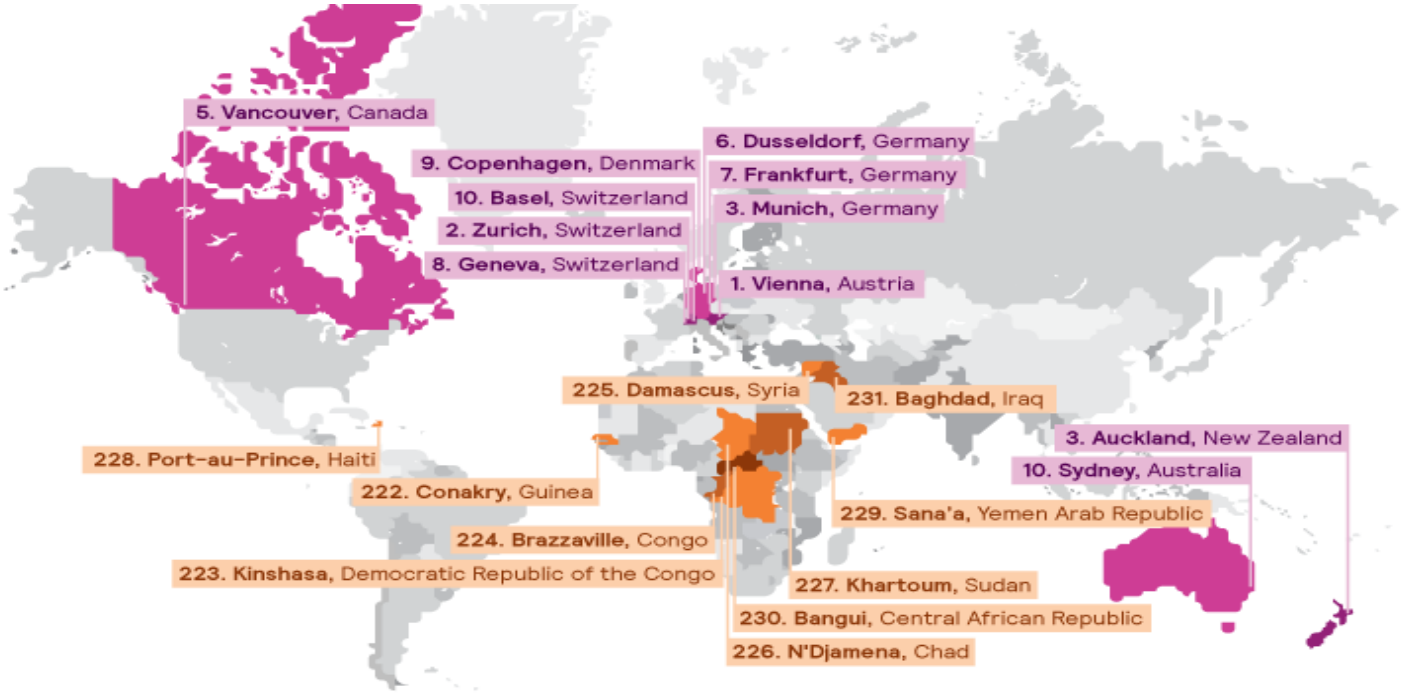
The strongest job growth since 2010 was in the sector professional, scientific and technical activities (which includes R&D), with 1.8 million new jobs (+16.8%). Employment in administrative and support service activities (+13.2%), accommodation and food service activities (+12.8%) and the arts and entertainment sector (+12.7%) also increased strongly. Education and health also expanded and together now employ 41 million people in the EU, more than the manufacturing sector, which in 2016 represented 15% of employment.

Calculations by DG RTD, Data:Eurostat (LFS data)	EU employment by NACE 2 sectors (thousands persons)			Employment by sector as % in total employment		Sectors employment as share of total employment in Member States in 2016 (%)			
	2010	2016	change (%)	2010	2016	Highest shares		Lowest shares	
Total	**215 641**	**223 566**	**3.7**	**100**	**100**				
Agriculture, forestry and fishing	11 003	9 427	-14.3	5.1	4.2	RO (23.1)	EL (12.3)	UK (1.1)	LU (0.9)
Mining and quarrying	839	766	-8.7	0.4	0.3	PL (1.4)	BG (0.9)	FR (0.1)	BE (0.1)
Manufacturing	33 764	34 534	2.3	15.7	15.4	CZ (27.8)	SI (25.2)	CY (7.1)	LU (4.2)
Electricity, gas, steam and air conditioning supply	1 652	1 564	-5.3	0.8	0.7	LV (1.6)	BG (1.3)	PT (0.4)	NL (0.4)
Water supply; sewerage, waste managem. and remediation activities	1 573	1 705	8.4	0.7	0.8	HR (1.7)	HU (1.4)	LU (0.4)	NL (0.4)
Construction	16 455	14 981	-9.0	7.6	6.7	SK (9.2)	EE (9.0)	NL (4.7)	EL (4.0)
Wholesale and retail trade; repair of motor vehicles and motorcycles	30 273	31 307	3.4	14.0	14.0	EL (17.9)	CY (17.9)	SE (11.5)	LU (7.3)
Transportation and storage	10 981	11 713	6.7	5.1	5.2	LV (9.3)	EE (7.9)	PT (4.1)	LU (4.1)
Accommodation, food service activities	9 508	10 729	12.8	4.4	4.8	EL (9.3)	CY (9.0)	RO (2.4)	PL (2.3)
Information and communication	6 147	6 746	9.7	2.9	3.0	EE (4.4)	IE (4.3)	LT (2.1)	RO (2.0)
Financial and insurance activities	6 471	6 544	1.1	3.0	2.9	LU (10.8)	CY (5.3)	LT (1.4)	RO (1.3)
Real estate activities	1 659	1 818	9.6	0.8	0.8	LV (2.4)	EE (1.8)	RO (0.2)	EL (0.1)
Professional, scientific and technical activities	10 658	12 450	16.8	4.9	5.6	SE (8.7)	LU (7.3)	SK (3.2)	RO (2.3)
Administrative and support service activities	8 328	9 424	13.2	3.9	4.2	BE (5.8)	NL (5.3)	EL (2.4)	SK (2.4)
Public administration and defence; compulsory social security	15 566	15 347	-1.4	7.2	6.9	HU (10.2)	LU (9.8)	IE (5.0)	FI (4.5)
Education	15 921	16 971	6.6	7.4	7.6	SE (11.5)	UK (10.5)	BG (5.7)	RO (4.1)
Human health and social work activities	22 175	24 310	9.6	10.3	10.9	DK (17.3)	FI (16.7)	BG (5.3)	RO (4.6)
Arts, entertainment and recreation	3 455	3 894	12.7	1.6	1.7	LV (2.8)	EE (2.7)	LU (1.2)	RO (0.7)
Other service activities	5 266	5 449	3.5	2.4	2.4	FI (3.0)	CY (3.0)	SK (1.5)	SI (1.4)
Activities of households as employers; households for own use	2 562	2 324	-9.3	1.2	1.0	CY (3.4)	ES (3.4)	BE (0.1)	NL (0.0)
Activities of extraterritorial organisations and bodies	194	192	-1.0	0.1	0.1	LU (5.8)	BE (1.0)	NL (0.0)	ES (0.0)

More info: http://ec.europa.eu/eurostat/data/database

3. Mercer Quality of living ranking

On 21 March **Mercer** published the 2018 edition of the *quality of living ranking of major cities*. Among the top 10 (in fact 11 cities, since two are ranked 10th) are 8 European cities, of which 5 in the EU, including Vienna, the top ranked city. Other EU cities in the top 10 are Munich (rank 3), Düsseldorf (6), Frankfurt (7) and Copenhagen (9). Switzerland has three cities in the top 10: Zurich (2), Geneva (8) and Basel (10). Canada (Vancouver, 6), New Zealand (Auckland, 3) and Australia (Sydney, 10) have one city each. The highest ranked city in Central and Eastern Europe is Prague (69), followed by Ljubljana (75) and Budapest (76). The top ranked city in the US is San Francisco (30). The highest ranked city in Latin America is Montevideo (77). In East Asia Singapore comes out best (25), in the Africa/Middle East region Dubai (74). The lowest ranked city worldwide is Baghdad (231), followed by Bangui (230) and Sanaa (229).



Mercer's Quality of Living research assists multinational organizations to compensate employees fairly when placing them on international assignments.

More info: https://mobilityexchange.mercer.com/Insights/quality-of-living-rankings

4. Data on the largest machine tools in production

On 27 February 2018 the German journal **Produktion** published a list of the 15 largest machine tools currently in production. The top 10 of these machines are shown in the table. 8 of the 10 largest machines are Made in Germany, 2 Made in Switzerland. However 3/4 of the large German machines are made by firms which are today owned by Chinese companies. The over 160 year old company Schiess (3 machines on the list), based in Eastern Germany, was bought in 2004 by the Shenyang Machine Tool Co Ltd, Waldrich Coburg (3 machines on the list) was bought in 2005 by Beijing N° 1 Machine Tools.

The company Waldrich Siegen, which produces the largest machine tool, is, together with Union Chemnitz, part of the Herkules Group, based in Siegen/Germany. In the top 15 is also a Spanish producer, Soraluce (based in the Basque country), with 3 machine tools and DMG Mori, a German-Japanese company. On 19 March the website of Produktion also released a list of countries with the largest mechanical engineering industries by 2016 turnover. China leads the list (turnover 964 bn), followed by the US (335 bn), Germany (262 bn), Japan (238 bn), Italy (116 bn) and South Korea (75 bn).

The world's largest machine tools

	Machine	Machining area m3	Company	Headquarter/ Ownership
1	Profimill 3	7.7	Waldrich S	DE/DE
2	Powertech gantry	3.6	Waldrich C	DE/China
3	Vertimaster 12VMG	2.8	Schiess	DE/China
4	Droop +Rein GGF	1.56	Starrag	CH
5	VME 10	1.53	Schiess	DE/China
6	Dörries VC	1.44	Starrag	CH
7	Powerturn	1.26	Waldrich C	DE/China
8	PR III 260	1.20	Union C	DE/DE
9	VM 10	0.78	Schiess	DE/China
10	Powertec	0.64	Waldrich C	DE/China

More info: https://www.produktion.de/bildergalerien/das-sind-die-groessten-werkzeugmaschinen-der-welt-387.html

5. OICA data on motor vehicle production

In March the **International Organization of Motor Vehicle Manufacturers (OICA)** published 2017 motor vehicle production data. World motor vehicle production increased in 2017 by 2.4% to reach over 97 million (of which 73 million cars and 24 million commercial vehicles), compared to a growth of 0.9% in the EU, 3.2% in China, 5.3% in Japan and a decline in the US (-8.1%).

In the EU production increased strongest in Finland (+90.8%) and the Netherlands (+75.0%). However, in both countries from a low basis and by contract manufacturers (Valmet automotive in Finland, Nedcar in the Netherlands, producing mostly cars for Daimler and for BMW). Slovenia also showed strong growth (with the Revoz Novo Mesto site producing Renault cars). In many Central and Eastern European countries, however, production stagnated or decreased, including Slovakia, the country with the highest motor vehicle production per capita worldwide (a new Jaguar Land Rover plant is, however, currently in construction in Slovakia).

Among the large car producing EU countries production increased most in France (+6.5%) and Italy (+3.5%), while declining in Germany (-1.8%) and the UK (-3.7%).

OICA also provides estimates of the world motor vehicle stock 2005-2015. In 2015 China replaced the US as the country with the largest passenger car fleet (expanding by 18 million to reach 136 million, versus 122 million in the US and 256 million in the EU). However, the US still leads as regards the number of commercial vehicles (142 million, to note that many vehicles used as passenger cars are classified in the US as commercial vehicles, versus 27 million in China and 38 million in the EU) and as regards the total motor vehicle stock (264 million, China: 174 million).

WORLD MOTOR VEHICLE PRODUCTION BY COUNTRY AND TYPE
Members Survey

UNITS	YTD 2016	YTD 2017		
ALL VEHICLES	Q4	Q4	VARIATION	DIFFERENCE
EUROPE	**21.486.270**	**22.161.107**	**3.1%**	**674.837**
- EUROPEAN UNION	**18.595.985**	**18.768.153**	**0.9%**	**172.168**
AUSTRIA	109.730	99.880	-9.0%	-9.850
BELGIUM	399.427	379.140	-5.1%	-20.287
FINLAND	48.000	91.598	90.8%	43.598
France	2.090.279	2.227.000	6.5%	136.721
GERMANY	5.746.808	5.645.581	-1.8%	-101.227
ITALY	1.103.305	1.142.210	3.5%	38.905
NETHERLANDS	89.889	157.280	75.0%	67.391
PORTUGAL	143.096	175.544	22.7%	32.448
SPAIN	2.885.922	2.848.335	-1.3%	-37.587
SWEDEN	205.374	226.000	10.0%	20.626
UNITED KINGDOM	1.816.622	1.749.385	-3.7%	-67.237
- EUROPEAN UNION New Members	**3.966.038**	**4.037.843**	**1.8%**	**71.805**
CZECH REPUBLIC	1.349.896	1.419.993	*0*	70.097
HUNGARY	526.500	505.400	-4.0%	-21.100
POLAND	681.834	689.729	1.2%	7.895
ROMANIA	359.306	359.250	0.0%	-56
SLOVAKIA	1.040.000	1.001.520	-3.7%	-38.480
SLOVENIA	133.702	189.852	42.0%	56.150
- OTHER EUROPE	**1.404.358**	**1.697.223**	**20.9%**	**292.865**
RUSSIA	1.303.544	1.551.293	19.0%	247.749
TURKEY	**1.485.927**	**1.695.731**	**14.1%**	**209.804**
AMERICA	**20.821.670**	**20.669.537**	**-0.7%**	**-152.133**
- NAFTA	**18.151.322**	**17.458.189**	**-3.8%**	**-693.133**
CANADA	2.370.656	2.199.789	-7.2%	-170.867
MEXICO	3.600.365	4.068.415	13.0%	468.050
USA	12.180.301	11.189.985	-8.1%	-990.316
- SOUTH AMERICA	**2.670.348**	**3.211.348**	**20.3%**	**541.000**
ARGENTINA	472.776	472.158	-0.1%	-618
BRAZIL	2.156.356	2.699.672	25.2%	543.316
ASIA-OCEANIA	**51.846.421**	**53.540.607**	**3.3%**	**1.694.186**
CHINA	28.118.794	29.015.434	3.2%	896.640
INDIA	4.519.341	4.782.896	5.8%	263.555
INDONESIA	1.177.797	1.216.615	3.3%	38.818
IRAN	1.282.172	1.515.396	18.2%	233.224
JAPAN	9.204.813	9.693.746	5.3%	488.933
SOUTH KOREA	4.228.509	4.114.913	-2.7%	-113.596
THAILAND	1.944.417	1.988.823	2.3%	44.406
AFRICA	**903.568**	**931.283**	**3.1%**	**27.715**
TOTAL	**95.057.929**	**97.302.534**	**2.4%**	**2.244.605**

Extract from original OICA Excel table

More info: http://www.oica.net/category/production-statistics/2017-statistics/

6. EPO data on patents

On 7 March 2018 the European Patent Office EPO) released results for the year 2017.

In 2017 the EPO received nearly 166 000 European patent applications, an increase of +3.9% compared to 2016. In 2017 EPO granted 106 000 European patents, up 10.1% on the previous year.

Only 47% of EPO applications come from one of the 38 EPO member states. The leading country for European patent applications is the US with over 42 000 applications in 2017 (+5.8%), followed by Germany (+1.9%) and Japan (+3.5%). The number of applications from China has grown strongly in 2017 (+16.6%), while applications from Korea were decreasing.

As regards EU Member States Denmark (+13.1%), Austria (+8.2%) and Spain (+7.4%) showed a strong growth in applications.

On a per capita basis Switzerland leads in EPO patent applications, followed by the Netherlands (412), Denmark (377), Sweden (374), and Finland (329).

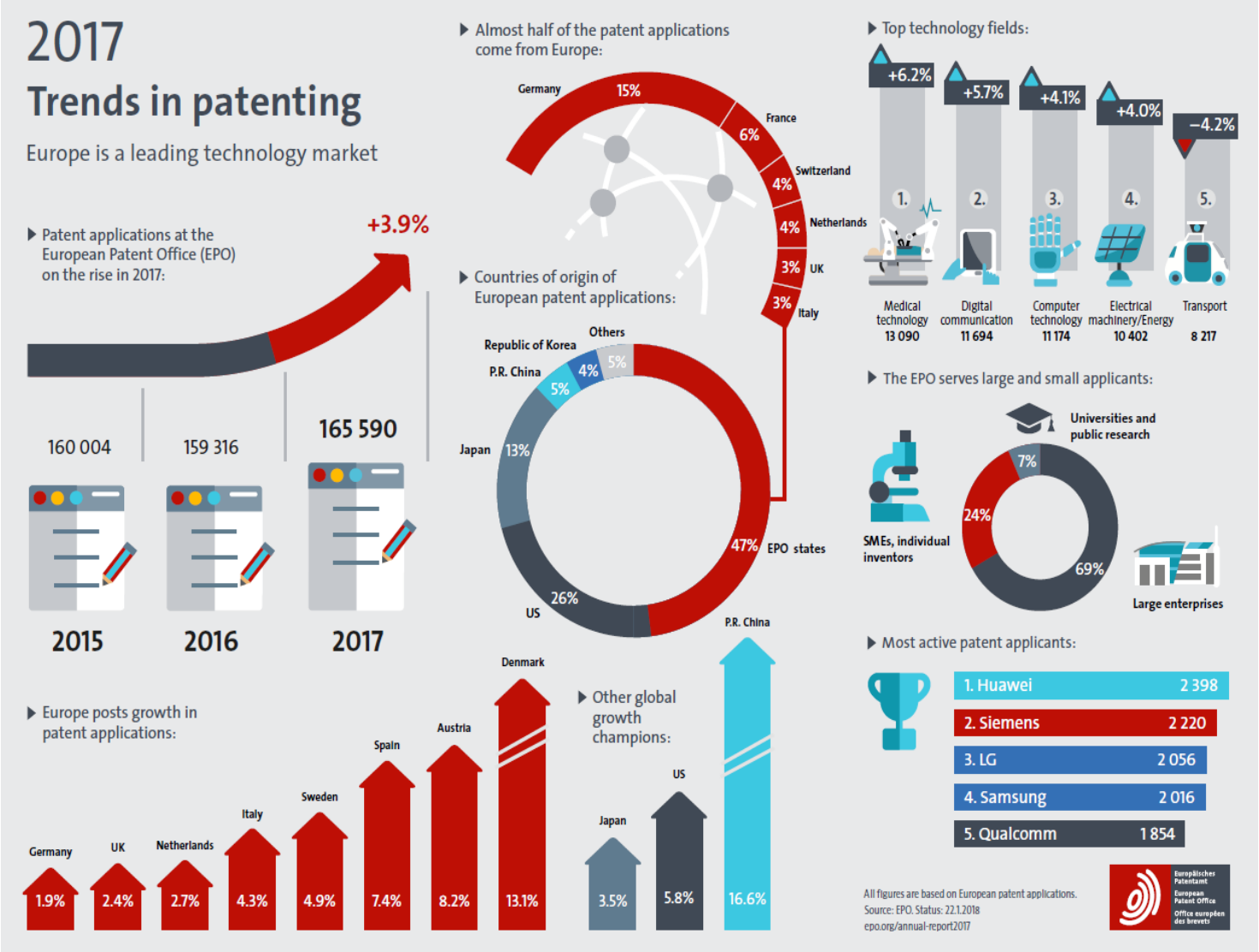
In 2017 a Chinese company, Huawei was the most active applicant, with about 2400 applications. Siemens came second (with a strong growth of 18.7% compared to 2016), followed by the Korean companies LG and Samsung, both with fewer patent applications than the year before. Apart from Siemens (DE), Philips (NL), Robert Bosch (DE) and Ericsson (SE) are other European companies in the top 10 (which has also 3 US companies: Qualcomm, United Technologies and Intel).

The top technology fields in 2017 were medical technology (+6.2%), digital communication (+5.7%) and computer technology (+4.1%).

7% of EPO patent applications were filed by universities and public research organisations, 24% by SMEs and 69% by large companies.

It should be noted that EPO is not an EU-body, and that it is self-financed (receipts from fees, annual budget about 2 bn Euro). With a staff of about 7000, of which over 4000 patent examiners, it is the second-largest inter-government organisation in Europe.

While EPO provides a single patent grant procedure, the patents granted are not Europe-wide patents, but a bundle of national patents. This will change with the Unitary Patent, the ratification of which is currently ongoing (UK and DE still to ratify). EPO currently expects the Unitary Patent to be in place late 2018 or early 2019.

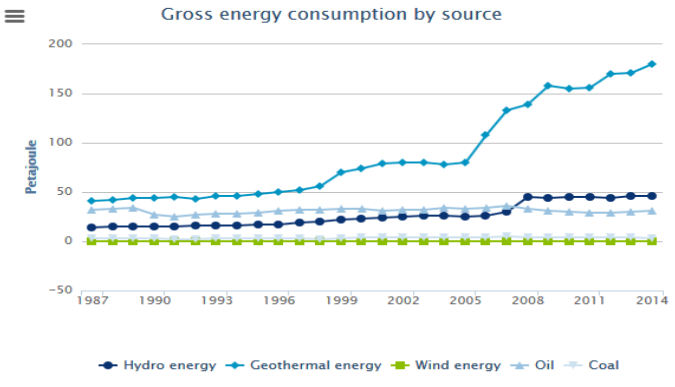


More info: http://www.epo.org/news-issues/press/releases/archive/2018/20180307.html

7. Miscellaneous results from national data sources

Iceland: Cryptocurrency mining consuming more energy than all households

Cryptocurrency 'mining' (for example for Bitcoins) is using increasing amounts of electric energy via the large number of computers involved. According to recent estimates the energy consumption of the cryptocurrency mining network is already equivalent to those of countries such as Ireland or Denmark. Iceland attracts a large amount of 'mining' activities because of its low electricity prices related to the abundance of geothermal and hydroenergy. In addition its cold climate lowers the need to invest in air-conditioning for keeping server rooms cool. It is expected that the energy used in Iceland for crypto-currency will in 2018 overtake the energy use of all Icelandic households.

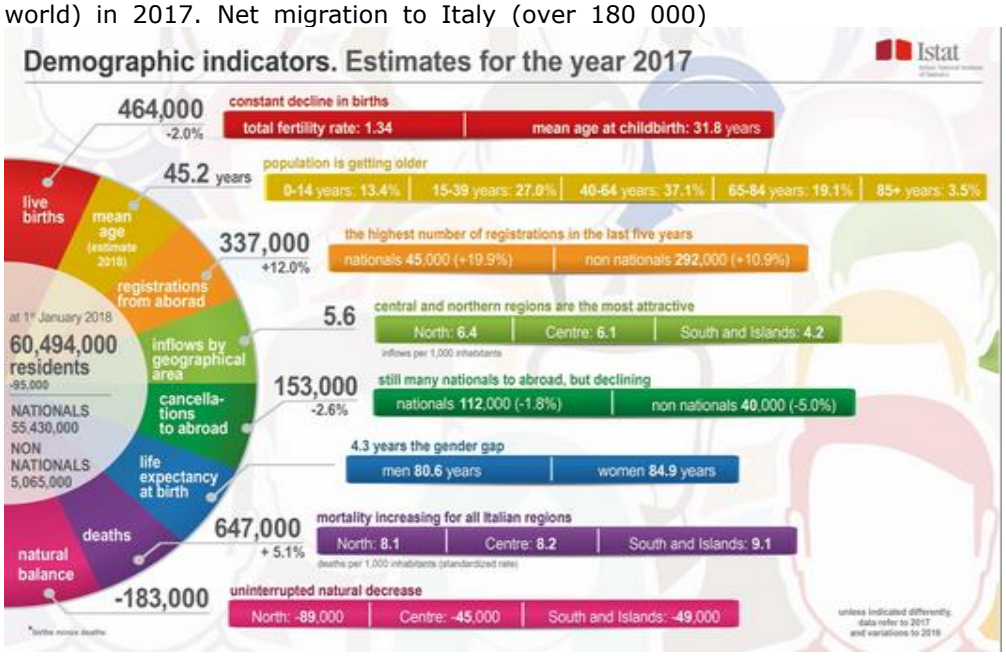


More info: https://www.theguardian.com/world/2018/feb/13/how-iceland-became-the-bitcoin-miners-paradise

Italy: Lowest number of births since 1861

On 8 February 2018, the Statistical Office of Italy (ISTAT) published estimates for key demographic data for the country for the year 2017 (see infograph below). According to ISTAT the number of births in Italy declined in 2017 to the lowest figure since 1861 (when the country was unified and statistical records began). Since

2015 every year ISTAT had to announce the lowest number of births ever recorded. In 2017 the number of births declined again by 2% compared to the year before, to 464 000. At 7.7 births per 1000 persons Italy propably had the the lowest crude birth rate in Europe (and the world) in 2017. Net migration to Italy (over 180 000) somehow compensates for the birth deficit but in 2017 the population is estimated to have declined by 95 000 (partly a result of correcting registers), to reach 60.5 million, of which over 5 million foreigners.



East Asia: Number of births and fertility at record lows in several countries

Japan: In December 2017 the Statistical Bureau of Japan estimated the number of births in 2017 to have fallen to 940 000, the lowest number since records began in 1899. At the same time deaths in Japan marked a post-war peak, reaching 1.34 million, implying a natural decline of the population of about 400 000, also a new record.

South Korea: at the beginning of 2018 the Statistical Office of South Korea showed that the 2017 fertility rate in the country had fallen to the lowest level since records began (1.05 children/woman, one of the lowest fertility rates in the world). The number of deaths in South Korea at the same time reached an all-time high in 2017 and for the first time ever has outnumbered births.

Taiwan reported the slowest population increase ever in 2017.

Malaysia: the Statistical Office of Malaysia reported in October 2017 that the fertility rate in 2016 amounted to 1.9 children per woman, the lowest ever recorded.

Outside Asia lowest fertility levels ever recorded were also reported for 2017 for New Zealand and Iceland.

Calendar of data releases and indicator based publications
Update of: 26/3/2018 (grey= already published)

2018	Eurostat data updates	Commission indicator based reports	Data and indicator based reports of other organisations
January			Bloomberg Innovation Index
February	Provisional tertiary attainment data (2017; based on 3 q 2017, 1 q 2016)	Winter forecast (ECFIN) Science Research and Innovation Performance Report (RTD)	OECD MSTI statistics (R&D expenditure)
March	R&D expenditure data update (revision of preliminary 2016 results)	DESI indicator (CNECT)	European Patent Office , annual results OICA world motor vehicle production data Reuters Most Innov. Institutions OECD R&D Statistics
April	Education headline indicators (LFS)		Internet Minute (Excelacom/Allaccess)
May	High-tech trade (2017) Education enrolment, graduates Knowledge-int. activities (2017)	Spring Forecast (ECFIN) Europe 2020 publication (ESTAT)	Invest Europe European Private Equity Report IMD World Competitiveness Yearbook
June	Education spending Employment high-tech (2017) HRST education inflows (2016)	European Innovation Scoreboard (GROW/RTD)	OECD MSTI publication Times Higher Ed. Reputations Ranking WIPO/Cornell/INSEAD Global Innovation Index
July			UNESCO UIS STI stats release OECD Education at a Glance
August			Academic Ranking of World Universities (Shanghai)
September	Final high growth ent. data (2016) Economic data on high-tech (2017)		WEF Global Competitiveness Index
October	GBORD (2017 preliminary)		World Bank Doing Business
November	R&D intensity (2017 preliminary, 2016 final) Knowledge-int. activities (2017) Employment high-tech (2017)	Autumn Forecast (ECFIN) Education Monitor (EAC) Annual Growth Survey (ECFIN) Joint Employment Report (EMPL) (draft)	Top500.org: Top 500 Supercomputer list OECD STI Outlook (2-yearly)
December	ICT household data (2018) ICT enterprise data (2018) HRST stocks (2017)	Industrial R&D Investment Scoreboard (JRC) (ERA Progress Report)	WIPO World Intellectual Property Indicators

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