European Science, Engineering and Technology Highlights[1]
NOVEMBER and DECEMBER 2013

To navigate down the report, hold down the CTRL key and click on the title to go to the desired article. You may return to the selected country by clicking on the ⇮ at the bottom of each article.

[1] *Note: If you would like additional information or background, please feel free to contact either Carine Polliotti at cpolliot@nsf.gov or Ana Helman at ahelman@nsf.gov*

1 New Agreement between the European Research Council and Korea

Signing of the Implementing Arrangement by the Commissioner Máire Geoghegan-Quinn and by the Korea's Minister of Science, ICT and Future Planning, Choi Mun-Kee, in the presence of the President of the European Council, Mr Herman Van Rompuy, the South Korea's President, Park Geun-Hye and the President of the European Commission, Mr José Manuel Barroso.
Credit "The Council of the European Union".

A new initiative has been launched to boost opportunities for early-career Korean scientists to come to Europe to join the research teams of European Research Council (ERC) grantees. The agreement was signed by Minister of Science, ICT and Future Planning of the Republic of Korea, Choi Mun Kee, and – on behalf of the ERC – the European Commissioner for Research, Innovation and Science, Máire Geoghegan-Quinn. The objective of the agreement is to stimulate cooperation by bringing the best researchers together to exchange ideas and experiences, and to enhance their international profile and knowledge. The initiative will make it easier for early-career Korean top scientists to be part of ERC-funded research teams for six to twelve months.

The common initiative signed today is in the form of an 'implementing arrangement' of the existing EU-Korea Scientific and Technological Cooperation agreement signed in 2006. Researchers from Korea who will become part of teams led by ERC grantees will be supported through the ERC grant in the same way as any other team member. The first agreement of this kind was signed in July 2012 with the US National Science Foundation (NSF) to provide opportunities for early-career NSF researchers to join ERC- funded teams in Europe.

To date, three Korean researchers have been awarded ERC grants and are based in research institutions in Denmark, the Netherlands and the UK.

More information available at: http://erc.europa.eu/

2 The European Commission's Joint Research Center Supports the Danube Innovation Partnership

© EU, 2013

The Joint Research Center (JRC) formally launched the Danube Innovation Partnership at a kick-off meeting on 29 October in Bucharest, Romania. The Partnership gathers universities and research centers, technology transfer offices, local and national governments from 14 countries, as well as European stakeholders. It is an integral part of the JRC's Scientific Support to the Danube Strategy initiative, which seeks to improve the economic development across the region and boost growth and jobs through better policy making and funding.

JRC's scientific support of the Danube Strategy aims to support the development of research and innovation strategies for smart specialization. It focuses on four scientific priorities: environment protection, irrigation and agricultural development, navigability and energy production.

Note: The European Commission's Joint Research Centre (JRC) is a department (Directorate-General, DG) of the European Commission providing independent scientific and technological support for EU policy-making.

Full article available at:
http://ec.europa.eu/dgs/jrc/index.cfm?id=1410&dt_code=NWS&obj_id=18200&ori=RSS

3 Horizon 2020 EU Research Program Approved by the European Parliament

Horizon 2020, the European Union's (EU) €70.2 billion (USD 95 billion) framework program for research and innovation in 2014-2020, was approved by Members of the European Parliament (MEPs) on Thursday November 21st. Parliament amended it to improve support for small firms, attract more people into science and more scientists to join the program, and earmark funding for non-fossil energy research.
"After lengthy negotiations and a great joint effort by all my colleagues, today we finally approved the Horizon 2020 package. I am very satisfied with the result achieved, which will promote scientific excellence in Europe, strengthen our industrial leadership and support Small and Medium-sized Enterprises with a total budget of 70 billion euro", said Industry and Research Committee chair and Parliament's lead negotiator on the five legislative files Amalia Sartori (European People's Party, Italy).

The Horizon 2020 program has three main pillars:
• Societal challenges (39% of the total budget which includes investments in health, energy, transport, climate action and freedom and security research projects),
• Excellent science (32% which includes grants to top-level individual researchers, and investments in future technologies and training for researchers), and
• Industrial leadership (22% which includes investments in biotechnology and space technologies, access to risk finance and support for innovative small firms)

MEPs made it a target that at least 11% of the Horizon 2020 budget should go to small and medium sized enterprises (SMEs). Moreover, there will be a specialized SMEs department, with its own budget, to ensure that the program's calls for tenders are SME-friendly.

To further EU climate goals, MEPs earmarked 85% of the Horizon 2020 energy budget (around €5.4 billion – USD 7.3 billion) for non-fossil fuel energy research.

Parliament's negotiators ensured that around €750 million (USD 1 billion) from the Horizon 2020 budget will go to measures to widen the group of researchers participating in the program, e.g. by attracting new applicants or promoting networking of research institutions.

Parliament's negotiators also ensured that over €400 million (USD 541 million) will go to "Science with and for society" projects to attract young students to take up careers in science, promote gender equality and encourage citizens to take part in science education.

After Parliament's vote, the program needs to be formally adopted by EU member states too, in the coming weeks. The program starts on 1 January 2014.

Full article available at: http://www.europarl.europa.eu/news/en/news-room/content/20131115IPR24730/html/Horizon-2020-research-programme-more-support-for-small-firms-and-new-players

4 Launch of the EU-Russia Year of Science 2014

The 'EU-Russia Year of Science 2014' has been officially launched at an event in Moscow. Its purpose is to celebrate and promote the vibrant and multifaceted scientific and technological co-operation between the two partners. About 200 events are planned in Russia and EU member states. Some will be dedicated events, while others will include a strong focus and/or special sessions on EU-Russia science and technology co-operation. The timing of the 'Year of Science' benefits from the conjunction of key related events in 2014, including the launch of Horizon 2020, the renewal of the EU-Russia Science and Technology Agreement, the launch of the Russian State Program and the Russian Federal Targeted Programs for research and development.

In keeping with the EU's new international co-operation strategy for research and innovation, future co-operation will focus on three mutually agreed "flagship" priority areas: aeronautics, ICT and research infrastructures. The Joint Research Centre (JRC) and Russia also currently co-operate in many areas, including nuclear energy, the environment, soils and food security, forestry, agriculture and energy efficiency. Plans are being made for further co-operation in various fields through the on-going EU-funded ERA-Net.RUS project, which gathers 18 partner organizations, six from Russia and 12 from the EU, including the JRC.

Full article available at: http://horizon2020projects.com/global-collaboration/year-to-celebrate-eu-russia-st-co-operation-begins/
More information: http://www.eu-russia-yearofscience.eu/en/1379.php

5 Finns Have High Trust in Science

Science, both as an institution and more specifically through certain organizations, is highly trusted by Finns. This information is provided by the Finnish Science Barometer 2013, a survey examining Finns' attitudes towards science and their opinions on scientific and technological progress.

Three out of four respondents reported being interested in nature and the environment. Social affairs in general came in second, with 72%. Two out of three respondents (65%) say that they follow science, research and technology-related issues with great interest. The percentage of respondents interested in science has increased by eight percentage points since 2010. Interest in economy, politics and social affairs has also grown since 2010.

Seven out of ten Finns report having interest in general progress in science, research results and inventions. The respondents find medicine the most interesting field of science. More than two-thirds (68%) state that they follow progress in medicine, such as the development of new drugs and treatments, with environmental research a close second (66%). About half of the respondents were interested in historical and cultural research, IT, gene technology and biotechnology, while one out of three found space research interesting. Policies and funding issues related to science are deemed the least interesting category of all scientific themes (24%), while more than one third were interested in the international success of Finnish science (36%).

Of the sources of scientific information, television and radio are the most important (85% find these at least fairly important). Newspapers are seen almost as important (75%). The Internet was not far behind traditional mass media (Internet, data networks and social media, 69%).

The news topics recognized by the greatest number of respondents, making them also those most followed, were human influence on climate change (87% report to have followed this topic at least to some extent) and the recommended dosage of vitamin D (80%). Two news topics nearly as widely recognized and followed were protection of privacy online (73%) and vaccine safety (74%). The remaining four news topics – the Higgs boson, biobank, research project tender procedure and revival of minority languages – attracted considerably less attention.

The survey also examined how well the Finns are familiar with the achievements of Finnish science and scientists. The most widely known achievement was AIV (Artturi Ilmari Virtanen) silage. Expressions connected to mobile phones, mobile technology and Nokia came second, closely followed by xylitol. Gene research and gene technology were also ranked close to the top, while Linux as well as cancer research, treatments and drugs were also mentioned frequently.

The respondents were also asked to assess their level of trust in various institutions and operators of Finnish society. Finnish universities and other institutions of higher education are trusted nearly as much as the defense forces. More than seven out of ten respondents have great trust in these higher education institutions. Only the police are seen as more trustworthy than the above-mentioned organizations. VTT Technical Research Centre of Finland is the most trusted science and research organization on the list.

More information:
The Finnish Science Barometer 2013 was commissioned by the Finnish Society for Scientific Information (Tieteen tiedotus ry) from Yhdyskuntatutkimus Oy. A total of 971 people gave written responses to the survey. The report in Finnish and its summary in English are available on the website of the Finnish Society for Scientific Information:
www.tieteentiedotus.fi/tiedebarometri.html

Full article available at:
http://www.aka.fi/en-GB/A/Academy-of-Finland/Media-services/Releases1/The-Finnish-Science-Barometer-2013-Finns-have-high-trust-in-science/

6 The French National Research Agency to Coordinate the New Flagships ERA-NET on "Human Brain and "Graphene"

The European Research Area Network (ERA-NET) FLAG-ERA initiative, coordinated by the French National Research Agency (ANR0, gathers 22 research funding agencies, research performing organizations and ministries in Europe around a common goal: supporting the "FET Flagship" projects of the European Commission, in particular the two large-scale projects on graphene and on the human brain.

As a network of research funding agencies and research performing organizations funded by the European Commission, an ERA-NET is an instrument of the EU policy to develop and strengthen the coordination of national research programs. Those actions materialize for example through the launching of transnational calls for collaborative proposals on selected topics. ANR takes part in those calls and finances the French teams.

The ERA-NET FLAG-ERA gathers many European countries and should contribute to building the two FET-Flagship projects: the "Graphene" project, whose goal is to accelerate the development and commercialization of applications using graphene, a material full of promise and the "Human Brain Project" (HBP), which notably aims at creating a highly detailed simulation of the complete human brain by using a supercomputer. The Flagship projects were selected by the European Commission following an unprecedented two-year European-wide contest on Future and emerging technologies (FET). Each project should receive €1 billion (USD 1.35 billion) over ten years, half to be provided by the European Commission and half by national partners (States, universities, private sector).

Beyond these two projects, FLAG-ERA will also support the work carried out by the other four pilot projects that were launched during the selection stage but that were finally not selected by the European Commission.

The kick-off meeting of the ERA-NET FLAG-ERA was held on November 12-14 in Amsterdam in the presence of around sixty representatives from 19 countries and from the European Commission.

Adapted from:
http://www.agence-nationale-recherche.fr/en/news/news/single/anr-to-coordinate-a-new-era-net/nc/
More information: http://www.flagera.eu/

7 UK and US Water Engineers Collaborate on Global Water Issues

A new trans-Atlantic collaboration, 'Clean Water for All', will bring leading water engineers from the United States and the UK together to tackle problems of providing clean, sustainable water supplies. Five different research teams at UK universities will partner with academics from universities across the US. The UK projects are looking at water treatment and purification, water re-use, storm water

management, sustainability of supplies and water infrastructures. These five projects are supported by The Engineering and Physical Sciences Research Council (EPSRC), and additional projects are supported by the **National Science Foundation (NSF)** in the USA, with a combined funding of around £800,000 (USD 1273, 000) to supplement existing grant awards. Expertise from both countries will be shared at workshops, symposiums, via visits and videoconference calls leading to new robust collaborations and adding value to existing research projects involving 12 UK universities. Kedar Pandya, Head of Engineering at EPSRC said: "Building on the success of this year's Engineering Grand Challenges Summit, EPSRC is delighted to be working with the NSF to support UK and US researchers to address key challenges in clean water for all."

The University of Exeter will collaborate with The University of Utah and The University of Arizona on urban water systems to make them more sustainable and resilient, especially for urban drainage and water resource distribution systems.

The University of Glasgow is exploring new technologies such as synthetic biology, nanomaterial science and bio-electrochemical systems and applying them to water engineering. In Scotland providing water and wastewater services to remote rural populations using existing infrastructure is chemical and energy intensive. Similarly half of the world's population do not live in urban areas. A three day workshop will address challenges of water use in rural communities and put together proposals for further research with US and UK development.

A symposium will be held by The University of Sheffield to explore water re-use in urban areas, and how US and UK expertise can improve solutions for re-using water in both countries.

The University of Oxford are teaming up with The University of Massachusetts and Sandia National Laboratory and will focus on using algorithms to improve methodology for assessing risks to water security, and modelling how resilient piped networks are.

A research group including the Universities of Nottingham, Cambridge, Leeds, and Cranfield University, UWE, London School of Economics, Newcastle University and Heriot-Watt University are working on the research project, 'Delivering and Evaluating Multiple Flood Risk Benefits in Blue-Green Cities.' A Blue-Green city aims to recreate a natural water cycle, and bring water management and green infrastructure together whilst providing measures to deal with flooding. The funds will support academic visits, student exchanges and collaborative meetings.

"The NSF and the EPSRC coordinated their investments to spur the creation of breakthrough solutions to clean water challenges," said **Pramod Khargonekar, NSF Assistant Director for Engineering.**

Full article available at:
http://www.epsrc.ac.uk/newsevents/news/2013/Pages/globalwaterissues.aspx

8 Research Partnership Grants in Education Launched by UK and US

A higher education grant competition has been launched as a major collaboration between the United States and United Kingdom. The Global Innovation Initiative plans to strengthen higher education research partnerships between the US, UK and selected countries –

Brazil, China, India and Indonesia. The two governments expect the initiative to provide grant opportunities for university consortia on topics of global significance in science, technology, engineering and mathematics (STEM) in the following four areas: energy, climate change and the environment; agriculture, food security and water; public health and well-being; and urbanization. A press release said grants of up to US$250,000 would fund new research activities, faculty and researcher exchanges, joint publications and symposia, and various other multilateral efforts. Applications for both countries' competitions are open now, and grant recipients will be announced in early 2014. One of the initiative's prime goals is to build multilateral research capacity at higher education institutions in the US, the UK, and the four other countries, acknowledging these nations' growing contributions to the global knowledge economy and to solving globally important issues.

Two parallel but separate grant competitions will be offered in the UK and the US and an institution from either country will be required to take the lead on the partnership. Partnership proposals with a US lead institution will apply through the competition in that country and those with a UK lead institution will apply through the UK competition. The initiative is funded by the US Department of State, UK Department for Business, Innovation and Skills, and the British Council, which will also serve as the implementing partner in the UK. In the US, the Institute of International Education will implement the program in partnership with the US Department of State's Bureau of Educational and Cultural Affairs. "The Global Innovation Initiative will build on the long history of collaboration between the UK and US in higher education, research and development – reflecting our mutual recognition that STEM education and a strong innovation ecosystem are essential elements of economic prosperity, national security, health and welfare, and environmental sustainability," said Meghann Curtis, US State Department deputy assistant secretary for academic programs.

Full article available at:
http://www.universityworldnews.com/article.php?story=20131031143022871

9 UK Announces over 70 New Centers to Train Tomorrow's Engineers and Scientists

EPSRC
Pioneering research and skills

Details of how a £350 million (USD 566 million) fund will be used to train over 3,500 postgraduate students in engineering and physical sciences, was announced by Universities and Science Minister, David Willetts.

This is the UK's largest investment in postgraduate training in engineering and physical sciences. It will fund over seventy new Centers for Doctoral Training (CDTs), spread across 24 UK universities.

The funding, targeted at areas vital to economic growth, has been allocated by the Engineering and Physical Sciences Research Council (EPSRC).

A total of 1000 partners will be involved in the Centers, leveraging in around £250 million (USD 404 million) worth of support. Many of the Centers will involve research that connects to key industries and important technologies which will aid innovation and growth. A number of the other Research Councils, including the Medical Research Council and Biotechnology and Biological Sciences Research Council, are also contributing towards Centers with key relevance

to their fields of research. EPSRC may announce a further group of Centers if more resource can be secured.

Full article available at:
http://www.epsrc.ac.uk/newsevents/news/2013/Pages/phdnewcentres.aspx