

European Science, Engineering and Technology Highlights¹ February 2014

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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 Improving Collaboration Among Science Educators in Europe



A career in the fields of science, technology, engineering or mathematics (STEM) can offer exciting opportunities and challenges. However young Europeans are showing a reluctance to get on board with science: in fact, we are currently seeing a decline of around 10% in terms of numbers of STEM graduates. Our young people are missing out on employment opportunities, and the EU is missing out on talented future scientists.

SCIENTIX, a space for collaboration among science educators, is seeking ways to tackle this growing problem by building a European community for science and maths education - a community which supports the primary and secondary science teachers who are influencing our reluctant young science students on a daily basis.

Since 2009, this project has been promoting and supporting a Europe-wide collaboration among STEM educators by facilitating regular dissemination and sharing of know-how and best practices in science education. Over its first six years, it gathered 200 publicly-funded science education projects, and 1,000 STEM teaching and learning materials. From plant science projects in primary schools to ICT initiatives for innovative science teachers, the database of projects offers a huge range of activities for European science educators to get involved in or inspired by.

Now in its sixth year, SCIENTIX is building on this impressive bank of online knowledge and expanding to the national level. It is establishing a network of National Contact Points (NCPs) covering 30 European countries with the aim of connecting with STEM education professionals, organizing national workshops, webinars and networking events.

Full article available at: http://cordis.europa.eu/news/rcn/36438_en.html

More information available at: <http://www.SCIENTIX.eu>



2 First European Research Area Chairs to Boost Research Excellence in 11 Regions



Eleven universities and technical institutes in less developed regions in Europe are to receive up to €2.4 million (USD 3.3 million) each in EU funding to boost their research capacity through the appointment of the first ever "ERA Chairs", Maire Geoghegan-Quinn, European Commissioner for Research, Innovation and Science, announced. The initiative aims to bridge Europe's innovation divide by attracting top academics to organizations so that they can compete with centers of excellence elsewhere in the European Research Area (ERA). The first pilot call was open to research organizations located in less-developed EU regions or similar areas in

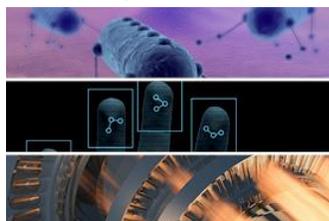
countries associated to the EU's seventh research framework program (FP7). A total of 111 proposals were submitted for evaluation, largely exceeding expectations. Nearly all Member States with eligible regions were represented. Once recruited, the ERA Chairs and their teams will undertake research in a wide spectrum of scientific fields, such as aquaculture, environmental chemistry, veterinary medicine, human computer interactions and low carbon emission in cities. Around 15 more ERA Chairs are expected to be announced next year following the first Horizon 2020 call published in December 2014.

The selected institutions have to award ERA Chairs to outstanding academics who have the capacity to raise standards and attract more high level staff as well as money from other sources, such as EU

research funding or regional funds. The positions must be published and respect ERA guidelines (gender balance, fairness, transparency, etc.). ERA Chair holders can come from anywhere in the world. Under Horizon 2020, ERA Chairs will be funded as a core scheme under the actions on "Spreading excellence and widening participation".

Full article available at: http://europa.eu/rapid/press-release_IP-14-125_en.htm?locale=en

3 European Research Council Funds 67 Innovative Projects Bridging the Gap to the Market



The European Research Council (ERC) has announced the winners of the latest competition for its top-up funding, 'Proof of Concept'. A total of 67 researchers, who already hold ERC grants, have received up to €150,000 each to bring their pioneering 'blue sky' research closer to the market. The projects cover everything from an exploration of the molecular foundations of psychiatric disorders to technological innovations that could help rescue skiers caught in avalanches or measure extreme waves.

Full press release available at: <http://erc.europa.eu/>



4 What is New in the EU Erasmus+ Program for Education



2014 - 2020 programme for Education,
Training, Youth, and Sport

Erasmus+, the new European Union's program for education, entered into force on 1 January 2014. It covers the different education sectors ranging from school to adult education as well as youth non-formal learning. Its budget of €14.7 billion (US\$20 billion) plus €1.68 billion for international actions in the area of higher education – referring to actions involving individuals and institutions from non-European Union countries – represents a rise of over 40% compared with the previous programs. Almost half of it will be devoted to higher education and will allow for significantly increased opportunities for students, academics, higher education institutions, enterprises and other academic and non-academic players. A few figures show the magnitude of the change:

- Erasmus+ will allow two million students to study and train abroad in the next seven years, compared to a total of three million students in the previous 26 years.
- Around 150 'knowledge alliances', bringing together higher education institutions and enterprises with a view to fostering innovation, will be established, thus scaling up the current pilot project that funded a limited number per year in 2011-13.
- More than 25,000 students will receive full scholarships for high-level joint masters degrees as compared to 16,000 in the past 10 years.
- 200,000 masters students will benefit from the new loan guarantee scheme.
- 1,000 projects involving universities from other parts of the world will be funded to reinforce their capacities.

Erasmus+ will be structured around three key actions:

- Learning mobility of individuals – students, doctoral candidates, lecturers and staff: around 70% of the budget.
- Cooperation for innovation and good practices, in the form of partnerships between higher education institutions and-or businesses and other actors, and capacity building actions with institutions from non-industrialized countries: around 20% of the budget.
- Support for policy reform, aimed inter alia at supporting policy-making by EU member states through the 'open method of coordination', developing EU transparency and recognition tools or establishing policy dialogue with non EU countries: around 5% of the budget.

Full article available at: <http://www.universityworldnews.com/article.php?story=2014021015512327>



5 French MOOCs Make Their Debut



In a bid for France to catch up with the global development of MOOCs – massive open online courses – and establish itself as the leading francophone provider in the field, Higher Education Minister Geneviève Fioraso announced increased investment to promote the new French system as its first courses were launched this month. Since the France Université Numérique, or FUN, site opened last October, 88,000 students, high school pupils, employees, job seekers and retired people have registered for the French MOOCs – also known as CLOMs, *cours en ligne ouverts et massifs* – which are free of charge. France has been slow to join the MOOCs bandwagon, with only 3% of universities providing the courses, compared with 80% of US higher education institutions.

So far eight courses from seven higher education institutions have opened. More will start during the next few weeks and in the spring a second wave of institutions will join the FUN including leading business school HEC, the universities of Strasbourg, Paris 1 Panthéon-Sorbonne and Paris-Sud, and the Écoles normales supérieures of Cachan and Lyon, which will offer MOOCs on digital education for trainee teachers.

The three most popular MOOCs are “From manager to leader”, provided by the CNAM (14,000 registrations); “Philosophy and ways of life – from Socrates to Pierre Hadot and Michel Foucault”, from Paris Ouest Nanterre La Défense (nearly 6,000); and “Global space” offered by Sciences Po Paris (more than 5,000).

Fioraso announced for 2014 an additional €8 million (US\$11 million) on top of the €12 million initially budgeted to set up the MOOCs structure. She said €5 million would be devoted to professional education, and a €3 million bid for the ‘CréaMOOC’ project would be launched in coming months for financing equipment for campus video laboratories. She said an early assessment showed “an international interest for French MOOCs” and she hoped to increase bilateral agreements with third countries. Projects already underway included plans to internationalize the MOOCs, such as agreements to collaborate on their development with Mali, Tunisia, Haiti and Quebec, she said. Of the 88,000 registrations already made, 7% were from Africa and 5% from the Americas.

France has already signed a partnership with the Agence Universitaire de la Francophonie, or AUF, to promote and develop French-language MOOCs to link ‘North’ and ‘South’ higher education institutions to create courses together, and to propose examination and certification processes based on those of the AUF’s 44 digital campuses. Fioraso said MOOCs would be introduced this year on mathematics and biology, bringing together the French Academy of Sciences and African academics; and another course, on malaria, was planned between the universities of Bamako and Marseille.

Full article available at: <http://www.universityworldnews.com/article.php?story=20140116162940765>



6 UN Scientific Advisory Boards Meets in Berlin



The Scientific Advisory Board (SAB) is a new body created by United Nations (UN) Secretary-General Ban Ki-moon. It is composed of 26 internationally leading scientists. The SAB is tasked with providing advice to the UN Secretary-General and the Executive Heads of UN organizations on strengthening the interface between science, policy and society, particularly in areas relevant to sustainable development. The creation of the Board was recommended in January 2012 by the Report of the UN Secretary-

General's High-Level Panel on Global Sustainability.

The UN Secretary-General has announced the creation of the SAB at the inaugural meeting of the High-Level Political Forum on Sustainable Development during the 68th session of the UN General Assembly, on 24 September 2013. On the same occasion, he informed that he had requested UNESCO to host the Secretariat for the Board. The inaugural meeting of the SAB will take place in Berlin on 30 and 31 January 2014 at the invitation of the German Federal Government. The session is organized by UNESCO, in cooperation with the German Federal Foreign Office and the German Commission for UNESCO.

The board's 26 members represent a broad research agenda. They will thus bring together in a coherent manner the collective capacity of all relevant scientific fields, with due regard to social and ethical dimensions of sustainable development. In general terms, the Scientific Advisory Board will be entrusted with the following functions:

- strengthening the linkage between science and policy;
- ensuring that up-to-date and rigorous science is appropriately reflected in high-level policy discussions within the UN system;
- offering advice, in cooperation and consultation with the UN agencies concerned, on how the many organizations in the UN system with a science, technology, engineering and humanities mission in the area of sustainability can work together more effectively, avoid mission creep and overlap, and curb counter-productive competition;
- offering recommendations to the Secretary-General on priorities related to science for sustainable development that should be supported or encouraged within or by the UN system, including for the post-2015 development process;
- carrying out relevant intellectual work including providing advice to the UN Secretary-General on up-to-date scientific issues relevant to sustainable development, including advice on "assessments and digests around concepts as 'planetary boundaries', 'tipping points' and 'environmental thresholds'...". This will allow the Secretary-General to articulate scientific issues which have attracted widespread attention in contemporary affairs.

From Germany, the President of the German Academy of Sciences Leopoldina, Professor Jörg Hinrich Hacker is member of the Board.

Full article available at: <http://live.rig2013.aperto.de/default/dachportal/en/Research-Landscape/News/2014/01/2014-01-24-UN-Scientific-Advisory-Board-1st-meeting-in-Berlin.html>



7 Ambitious New Educational Research Program in Norway



The Research Council of Norway's new Program for Research and Innovation in the Educational Sector (FINNUT) will allocate a total of NOK 700 million (USD 113 million) over a 10-year period.

At the recent kick-off conference for the program, a pleased Executive Director Jesper Simonsen of the Research Council stated that the Norwegian educational sector and educational research are clearly in a very positive phase. The FINNUT program will help to renew the research field, says Jesper Simonsen. *"The FINNUT program has been established to further develop knowledge institutions and the overall administration of education to the benefit of pupils, teachers and society at large. The program will help to renew the research field, promote innovation in the sector and serve as a collaborative arena for all of the actor groups involved,"* explains Mr Simonsen. He also points out that the program is a pilot activity in the larger effort to foster innovation in the public sector in Norway.

The FINNUT program consolidates two former Research Council program: the Program for Practice-based Educational Research (PRAKUT) and the Program for Norwegian Educational Research towards 2020 (UTDANNING2020). Professor Elaine Munthe of the University of Stavanger is the chair of the FINNUT program board, while Ane Marte Rasmussen is the program coordinator at the Research Council. A total of more than NOK 160 million (USD 26 million) is available for allocation under the program via six calls for proposals with an application deadline of 12 February.

In his remarks at the opening conference, Director General Eivind Heder of the Ministry of Education and Research pointed out that there has been major growth in public funding for educational research channeled through the Research Council in recent years, from NOK 9 million (USD 1.5 million) in 2001 to NOK 80 million (USD 13 million) in 2014.

The Ministry views it as particularly important for the FINNUT program to encourage interdisciplinarity and build on existing national and international knowledge to ensure that research activities are as cumulative as possible. The dissemination of research results to ensure that they are utilized is another crucial task.

The FINNUT program will provide funding to research and innovation activities within the following thematic priority areas:

- Learning processes, assessment forms and learning outcomes;
- Practice, professional practice and competence-building;
- Management, administration, organization and achievement of results;
- Education, society and working life.

Full article available at:

http://www.forskningsradet.no/en/Newsarticle/Ambitious_new_educational_research_programme/1253992341450/p1177315753918



8 Funding Cuts Threaten the Future of R&D in Portugal



dreamstime.com

Drastic cuts in public funding for science and technology in Portugal are being applied as part of the government's sweeping austerity measures, without thought for a national long-term science strategy. The effects are particularly hard on young scientists. The number of PhD and postdoctoral fellowships awarded by the country's principal funder, the Science and Technology Foundation (FCT), fell by 40% from 2012 to 2013, and the 2014 budget for fellowships fell by 16.5% compared with last year.

Coupled with reductions in funding for research centres and research and development (R&D) projects, these cuts have serious long-term implications for the country's chance of developing a knowledge-based economy.

Full article available at:

<http://www.nature.com/nature/journal/v506/n7487/full/506159d.html>



9 Russian Government Eyes International Student Market



Despite Russian universities' low international rankings, many foreigners continue to enroll in the country's institutes. This year, the government has allocated more than \$1 billion to raise the prestige of getting a Russian education.

Just a couple of years ago, 145,900 foreign students were studying in Russia. Today, that figure is rising. Why do foreigners wish to study in Russia? Many students say they come for the high-quality, inexpensive education. These are future engineers, doctors and teachers — that is, representatives of the “difficult” professions. Most of them subsequently return home, but many stay — around 35 percent, according to estimates.

“We have a unique school in our academy. Students come specifically for that,” said Temirlan Dzhandarov, chair of the department of international cooperation at the Gnessin Academy of Music.

Few Russian universities have landed on the lists of the world's most prestigious universities. According to one list, only Moscow State University is in the top 100, and St. Petersburg State University is in the top 1,000. According to a different list, 18 Russian universities make the top 100. These showings are connected partly to how little the Russian education system is integrated into the world academic program. Even the government is aware of the serious lag of Russian universities and has earmarked 35 billion rubles (more than \$1 billion) for promoting Russian universities in the global educational rankings.

Full article available at: http://rbth.co.uk/society/2014/01/12/education_for_1_billion_33181.html



10 Russian Science Foundation Established



A law on the new Russian research funding agency, the Russian Science Foundation, was approved on 2 November 2013. It is planned that the agency will be set-up to operation in the course of a year. Its tasks and place in the national innovation system need still to be defined in detail. The law foresees preliminarily that the Foundation will be providing financial and organizational support for basic and exploratory research, for the training of researchers, and for leading research teams. It is not clear yet, which role it will take towards the already existing funding agencies, in particular the Russian Foundation for Basic Research and the Russian Foundation for Humanities.

Full article available at:

http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/ru/highlights/highlight_001



11 Russian Federal Agency for Scientific Organizations Established



In the frame of the reform of the Russian Academy of Sciences (RAS) a new Federal Agency for Scientific Organisations (FASO) has been established. The new state agency will take over the management of the institutes and of the vast property of the Academy. It is the result of a major reform of the Academy, which came into force with a law on the reorganization of the state academies on 30 September 2013. The reform caused heated debates in the Russian scientific community, whereby several scientists suspected the dissolution of the Russian Academy of Sciences in its current form. In the course of the coming year the management of the Academy's property and decisions on the R&D personnel will be discussed among FASO and the RAS leadership, before definite decisions will be taken. The effects of the reform are not clear yet; FASO may well become an important player in Russia's national innovation system. Former Deputy Minister of Finance, Mikhail Kotyukov, has been appointed as head of FASO.

Full article available at:

http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/ru/highlights/highlight_001



12 E.U. Postpones Horizon 2020 Talks with Switzerland after Immigration Vote



Swiss scientists could be the first to feel the effects of a referendum in which Swiss people agreed to cap the entry of migrants into their country. As an indirect consequence of the vote, held on 9 February, the European Union has postponed negotiations to include Switzerland as an associated country to Horizon 2020, the bloc's research and innovation program, and to the higher education program Erasmus+, which both run from 2014 through 2020. Switzerland has been an associated country to the European Union's research programs since 2004; this means that Swiss researchers are eligible for funding just like scientists from an E.U. member state. Both sides assumed that the agreement would soon be renewed and would apply retrospectively from the beginning of Horizon 2020 on 1 January.

But the immigration referendum got in the way—indirectly. The European Union expects Switzerland to include Croatia, which entered the union last year, in its agreement on the free movement of persons. But after the vote, Switzerland informed Croatia that it would not be able to sign the deal in its current form. The European Commission had warned that not honoring the Croatian deal would endanger Switzerland's association agreements for Horizon 2020 and Erasmus+.

If Switzerland lost its associated country status, it would be considered as a third country. Under a third country scenario, Swiss institutions would not be able to host grantees from the prestigious European Research Council (ERC).

The delays do not affect scientists who receive money from Horizon 2020's predecessor, the Seventh Framework Program (FP7): these projects will be funded until they end. To become associated with FP7, Switzerland paid about €1.6 billion (USD 2.2 billion) into the E.U. budget, according to the European Commission. At the last count in November 2013, Swiss researchers took part in about 3000 projects under FP7, receiving €1.8 billion (USD 2.5 billion) from the European Union. These figures include about €500 million (USD 685 million) going to more than 300 ERC grantees.

Full article available at: <http://news.sciencemag.org/europe/2014/02/e.u.-postpones-horizon-2020-talks-switzerland-after-immigration-vote>



13 UK's EPSRC E-Infrastructure Roadmap Published



A coherent strategy for developing and delivering the UK's future e-infrastructure needs is essential in driving forward the continued development of a globally competitive research base within the UK. The Engineering and Physical Sciences Research Council (EPSRC) along with its sister Research Councils, the Funding Councils, the Technology Strategy Board and the Department for Business, Innovation & Skills (BIS) plays a key role in developing the strategy as well as delivering the funding to support e-infrastructure in the UK and the development of a sustainable and cutting edge e-infrastructure eco-system is vital in allowing EPSRC to deliver its Strategic Goals and support excellent and innovative science and engineering research.

The EPSRC Research Infrastructure team, with the help of its Strategic Advisory team, Research Council colleagues and key members of the EPS community, have formulated an EPSRC e-infrastructure roadmap to begin to develop a clear strategy and action plan for EPSRC. In the roadmap EPSRC aims to:

- Understand the whole UK e-infrastructure landscape, view it holistically and consider it within an international context
- Understand the requirements of the EPS research community that make use of e-infrastructure; ensuring there are no gaps or duplication
- Identify where EPSRC, and more specifically the EPSRC Research Infrastructure team can add the most value
- Provide a framework for spending reviews and business cases for funding opportunities from government
- Be used as a discussion tool with other stakeholders and Research Councils.

Due to the fast moving nature of developments and investments in this area we are proposing that the roadmap will be treated as living document and we invite feedback and further input from the broader research community and key stakeholders. The first proposed revision date for the roadmap is June 2014.

Full article available at: <http://www.epsrc.ac.uk/newsevents/news/2014/Pages/infrastructureroadmap.aspx>