State of the Innovation Union

2015
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It is a pleasure for me to present the State of the Innovation Union 2015.

Innovation is, for modern economies, the main driver for growth. The OECD estimates that for high-income countries investments in innovation –intangible assets like skills, R&D, software – account for 60-70% of labour productivity growth. Innovation is also good for jobs: the stronger the innovation performance of EU Member States, the higher their employment rates.

Innovation policy, however, is still young. The EU itself started innovation policy 20 years ago, in 1995. The approach evolved, from linear, to a focus on networks and clusters, to the mainstreaming of innovation into sectorial policies, to an Innovation Union strategy, covering notably the role of the public sector in boosting innovation by setting the right framework conditions and acting itself as an innovator.

Five years after the Innovation Union was launched as one of the pillars of the Europe 2020 growth strategy, the present brochure shows that impressive progress has been made in numerous fields. We have achieved great progress in making Europe a more innovative continent since the launch of the Innovation Union in 2010. Nevertheless, the world has evolved since then and new elements need to be taken into account so as to better tackle the challenge of innovation in Europe.

It is now time to acknowledge the progress achieved and open a new chapter, with a focus on opening up our research and innovation systems through Open Innovation, Open Science and by being Open to the World.

Robert-Jan Smits
Director-General, DG Research and Innovation
Executive Summary

The Innovation Union was launched in 2010 as a flagship initiative of the Europe 2020 strategy to build on Europe's strengths and address its weaknesses with respect to innovation and thereby make Europe more competitive in times of budgetary constraints, demographic change and increased global competition.

To this end, the Innovation Union introduced a more strategic and broad approach to innovation by including actions that aimed to tackle both the supply and demand side elements of the innovation eco-system: the public sector, businesses, academia and finance. It equally assigned responsibilities and actions among the actors with the ability to shape the framework conditions for innovation, from the European Commission to Member States and Regional Governments, as well as other relevant stakeholders.

Five years after the launch of the Innovation Union, this review of the strategy builds on a stakeholder survey and an implementation assessment carried out by an external consultant.

This brochure takes stock of the progress achieved, identifies open issues and sets out next steps under each of the six building blocks: Strengthening the knowledge base and reducing fragmentation; Getting good ideas to market; Maximising social and territorial cohesion; Pooling forces to achieve breakthroughs: European Innovation Partnerships; Leveraging our policies externally; and Making it happen. To deliver on these blocks, 34 specific commitments for action were made in the Innovation Union.

The Innovation Union succeeded in building momentum around innovation, mobilising stakeholders and mainstreaming innovation in key European, national and regional policies. Decisive actions have been taken on all commitments, but the response has been uneven throughout the Member States. Moreover, while the last steps towards full implementation are within reach, it is not certain that all legislative actions will be implemented or that they will deliver the intended impact (e.g. the Unitary Patent and the revised Public Procurement Directives). The commitments that require greater involvement of Member States appear to have progressed to a lesser extent, either because of the long legislative processes (e.g. directives ratification), or because they are less binding in nature.

Hereafter is a summary of the main progress achieved under each block of the Innovation Union (see Figure 1 for an overview of the perceived success of the Innovation Union blocks according to the stakeholder survey).

![Figure 1: Perceived success of IU blocks according to stakeholder survey.](image_url)
**Strengthening the knowledge base and reducing fragmentation**

The main achievements under this priority are the implementation of the European Research Area (ERA) and the launch of Horizon 2020, the new research and innovation framework programme, streamlining funding and encouraging cross border collaboration.

The vast majority of European Member States now have measures in place under ERA to train enough researchers to meet their national targets. About half of all public research institutions in Europe have explicitly endorsed the principles underlying the Charter & Code, which aim to improve researchers’ working conditions. Half of the Marie Skłodowska-Curie funding in Horizon 2020 will be dedicated to innovative doctoral training, including industrial and joint doctorates. Moreover, U-Multirank has become the most comprehensive information system on universities in the world, covering 1200 higher education institutions.

The fragmentation of the knowledge base is also being reduced by pooling efforts to construct the priority European research infrastructures. Currently, 27 research infrastructures are under implementation, 14 of which are already providing services to their users.

Horizon 2020, the biggest R&I funding programme in the world features simplified access rules and specific tools encouraging business and SMEs participation. As of July 2015, about 40% of the organisations that have signed grant agreements under Horizon 2020 are newcomers, of which 80% are from the private commercial sector and the majority of the newcomers are SMEs. Extrapolating current trends to the end of 2020 around EUR 3 Billion will have been invested into thousands of Europe's most innovative SMEs through the SME Instrument. These actions promote industry/academia cooperation and the purposeful circulation of knowledge among the main components of the innovation eco-system. This is being done notably within the knowledge triangle -as promoted through the European Institute of Innovation and Technology- and between the science community and policy makers.

**Open issues and next steps:**

According to the stakeholder survey, the strongest feature of the Innovation Union in this block is Horizon 2020, because of its increased budget, cooperation and networking opportunities as well as its increased focus on innovation. Stakeholders also see potential for further streamlining and simplification and would want to see more activities dedicated to open science and open innovation, including better framework conditions relating to IP, data protection and data driven innovation.

In the coming years, further simplifications of access to Horizon 2020 and to the SME-specific tools will be continuously sought after, including with the mid-term review of Horizon 2020, as well as within the European Institute of Innovation and Technology and its Knowledge Innovation Communities.

Digital skills will further be addressed under the Digital Single Market. Moreover, new tools such as the Scientific Advice Mechanism are being put in place to ensure that policy development is increasingly based on science.
Getting good ideas to market

The key achievements in this area concern easing access to finance and leveraging the engagement of industry and business including through the creation of reinforced debt and equity facilities and the European venture capital passport. These are complemented by Horizon 2020’s specific section on access to risk finance, which has a budget of EUR 2.8 Billion to be implemented through ‘InnovFin – EU finance for innovators’. Moreover, so far, 34 European Venture Capital Funds have been established.

Key steps have been taken toward issuing the first European Unitary patent, which will allow for patent protection in 26 Member States on a one stop shop basis. The establishment of the Unitary Patent Court will also ensure that rulings are coherent in all participating countries. The costs for validating a Unitary patent for 26 Member States has been significantly reduced, leading to an estimated 78% reduction in costs to users. Guidelines have also been developed to safeguard against the use of intellectual property rights for anti-competitive purposes.

The Innovation Union provides several tools to increase demand for innovation. It has developed a methodology to screen the regulatory framework and assess whether a particular regulation encourages or hinders innovation. This methodology is now being used in the context of the Better Regulation initiative of the Commission. It has also led to modernised and faster standard-setting and better accounting for the innovation dimension in public procurements. The standardisation process has become faster, having fallen from 5 years in 2009 to approximately 2.5 years in 2014. Besides the new Directives favouring the procurement of innovation, substantial funds have also been allocated to support this goal, notably EUR 150 Million under CIP and FP7 programmes between 2010 and 2013. Under the first Horizon 2020 Work Programme (2014-2015), a total of EUR 115 Million was made available to support cross-border innovation procurement (EUR 130 Million including Coordination and Support actions).

Non-technological innovation has been given more prominence through initiatives aiming at harnessing the potential of creative industries and design-driven innovation. The European Creative Industries Alliance succeeded in mobilising at least EUR 45.8 Million directly or indirectly for the creative industries on top of the EUR 6.75 Million EU support for the initiative and the SEE platform initiative engaged over 800 policy-makers in applying design principles to policy-making.

Open issues and next steps:

Stakeholders surveyed pointed out that the SME instrument and the progress made on Unitary Patent are some of the most relevant achievements in this area. However, at this stage it is not certain whether or when the Unitary Patent will be delivered, so continued attention is required. Similarly, the impact of the revised Procurement Directives will need to be evaluated once they come into force.
Moreover, stakeholders see gaps in the completion of the Single Market, which are holding back innovation. They believe that a more innovation friendly regulatory framework is needed and that there needs to be a way to allow for more solutions to be tested, perhaps for instance, by using an “innovation principle”. The Commission will also seek to implement a pilot on “innovation deals”, which are a new bottom up approach to assess and clarify regulatory obstacles for innovative solutions, by setting up agreements with private stakeholders and national public authorities. Innovation Deals can verify the feasibility and sustainability of innovative solutions and their ability to contribute to stimulating investment and hence job creation.

According to the survey there is still need to improve knowledge circulation, open innovation and to foster further cooperation between industry and academia. Finally, more actions and funding for start-ups and SMEs would be welcome.

The Investment plan for Europe\(^1\) is intended to fundamentally change public policy and the financing tools underpinning investments in Europe, mobilising at least EUR 315 Billion in additional public and private investment into the real economy.

New products for improving access to finance are already in the exploratory phase, for instance concerning support for one or more European funds-of-funds from the EU budget to mobilise private capital investments in a wide range of risk-capital funds across Europe. In addition, stakeholders are being consulted on how to improve the uptake of the Venture Capital Passport.

**Maximising social and territorial cohesion**

The key achievements in this area include the deployment of strategies and tools which promote convergence across European regions in terms of innovation performance. The European Structural Investment Funds will contribute EUR 118 Billion to smart growth on the basis of the submission of a Smart Specialisation Strategy.

Social and public sector innovation have gained significant political attention. New actors have been engaged in various actions to raise awareness about the potential for innovation-based growth across European regions, including the civil society and the public and private sectors, paving the way for a more inclusive economy. The latest edition of the European Social Innovation Competition has attracted more than 1400 applications from all over Europe, confirming the success of the initiative.

**Open issues and next steps:**

According to the stakeholder survey, the key achievements in this area are the acknowledgement of the diversity of European regions and the development of Smart Specialisation Strategies. However, stakeholders perceive that territorial cohesion is still relatively low and that significant duplications in the Smart Specialisation Strategies of many regions may act as a barrier to their success.

In the future, it will be crucial to increase the involvement of those Member States and regions that are not yet very active in the area of research and innovation. Commission support for the emergence of world class clusters will continue with the COSME Programme and Territorial Cooperation’s INTERREG EUROPE Programmes.

More will be done to scale up social innovation and foster the growth of social enterprises. The launch of the Social Innovation Community and a challenge platform in 2016 will contribute to these goals. Moreover, research on topics relating to public sector innovation will be furthered under Horizon 2020 and new monitoring tools to benchmark public administrations’ innovative behaviour are being put in place in cooperation with the OECD.

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Pooling forces to achieve breakthroughs: European Innovation Partnerships

Five European Innovation Partnerships (EIPs) were launched in key areas of active and healthy ageing, water, agricultural productivity, raw materials and smart cities. The main achievements of the EIPs include the engagement of a wide range of partners across the demand and supply side, the launch of real-scale demonstrations, a collection of good practices, tools for their replication and compilations of evidence on the impact of integrated services. Nevertheless, further progress needs to be made in fast-tracking regulations, standardisation and the use of public procurement.

Open issues and next steps:

Stakeholders surveyed recognised the EIP’s strong networking effect thanks to their focus and clear priorities. EIPs are perceived as having a good impact on knowledge circulation. However, EIPs were also seen as being too big to be operational and not being inclusive enough.

An independent evaluation of the overall performance of the EIPs concluded that in order to achieve their objectives, the EIPs should target systemic innovation with a strong focus on diffusion of innovation.

Leveraging our policies externally

A strategic planning of priorities for future cooperation has been developed through roadmaps for international cooperation. Europe also offers excellent study and work opportunities to third countries’ nationals, who can in return enrich our continent’s research and innovation system with new ideas and perspectives. One of the key achievements in this respect is the Scientific Visa.

Open issues and next steps:

Stakeholders surveyed clearly identified the Scientific Visa as the most successful measure in this area although they regret the fact that European policies are not particularly visible outside of Europe. They also reported problems with cross-border mobility, due to issues such as the portability of grants. They believe that in the future Europe should develop a better strategy on international cooperation in the field of research and innovation, so as to make Europe more open to the world.

The dialogue with third countries and world regions to favour not only scientific cooperation, but also adequate framework conditions for innovation has been initiated. Further steps are being considered to attract entrepreneurs from third countries by extending the Blue Card Directive to them.

Making it happen

Key achievements in this area include measures to support Member States in implementing national reforms in the areas of research and innovation, such as the Self-assessment tools. The work done under the country review pilots and mutual learning seminars led to the launch of the Policy Support Facility in March 2015. Country-specific recommendations in the area of R&I are also given in the context of the European Semester.

In order to monitor and benchmark innovation performance across Europe and between Europe and its main international partners, monitoring tools like the Innovation Union Scoreboard, the Regional Innovation Scoreboard and the Innovation Output Indicator were put in place and are regularly published.
Open issues and next steps:

Stakeholders surveyed perceive monitoring and benchmarking as being useful and see the added value of mutual learning. They also believe that the Policy Support Facility is a good tool. They nevertheless think that there are currently too many monitoring and benchmarking tools, which need better coordination. Better analysis of the existing tools would also be welcome.

In the coming years lessons will be drawn from the first experiences within the Policy Support Facility to further fine-tune this tool. A new issue of the Innovation Union Scoreboard is expected in 2016.

Conclusions and next steps

Over the past years, a fundamental shift in the right direction has happened, reducing the innovation performance gap with our main competitors. The latest Innovation Union Scoreboard shows that, since 2008, the EU has managed to close almost half of its innovation performance gap with the US and Japan. Nevertheless, the gap with South Korea is widening and China is quickly catching up. As a consequence, the EU, its Member States and other stakeholders must continue to work together to improve the European innovation eco-system.

In addition to horizontal framework conditions, attention must also be devoted to innovation at sectorial level. Fit-for-purpose regulatory frameworks are essential for EU industry; they allow specific sectors to benefit from opportunities in the internal and global markets. Moreover, a pro-innovation regulatory climate attracts international investment. A recent Commission Staff Working Document evaluated how supportive to innovation the EU regulatory framework is at sectorial-level. It highlighted the need for forward-looking regulatory approaches, innovation-friendly and innovation targeting regulatory policies.

Some important gaps remain and need to be filled. The experience gained in the first years of implementation of the Innovation Union provides a useful base for exploring better responses to Europe’s innovation-related issues:

- The eco-system for innovation has been greatly improved by putting in place key single market measures. Nevertheless, inconsistencies of rules and practices remain and are hampering the development of high growth innovative firms, which often find it too burdensome and risky to operate in several European markets.
- Closer involvement of society has proven to be essential in fostering a wider innovation culture in Europe. It should be promoted in all phases of the innovation cycle so as to make innovation more relevant and acceptable and to improve its uptake. Citizens and users should be at the centre of new open innovation policies.
- Not all citizens and firms are on an equal footing with regards to innovation capacities and access to the benefits of innovation. Improving the inclusiveness of innovation appears to be increasingly important, including through further mainstreaming of actions and simplification of access rules.
- Despite great progress made through the EIT, the Knowledge Alliances and other skills development schemes, skills shortage and mismatch is still important. This concerns not only sector-specific skills, but also numeracy and literacy skills, as well as the ‘21st century skills’ for creativity, the digital economy and entrepreneurial spirit.

As illustrated in this review, all of the Innovation Union commitments are currently on course. To continue to reap the fruit of all the measures that the Innovation Union has put in motion, it is now essential to ensure their full rollout and use, setting the stage for more jobs and growth.

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2 (SWD 2015) Better regulations for innovation driven investment at EU level
Strengthening the knowledge base and reducing fragmentation

**Commitment 1**

**Put in place national strategies to train enough researchers**

“By the end of 2011, Member States should have strategies in place to train enough researchers to meet their national R&D targets and to promote attractive employment conditions in public research institutions. Gender and dual career considerations should be fully taken into account in these strategies.”

**Action taken**

Since the launch of the Innovation Union, Member States have introduced a range of measures, programmes, strategies and legislative acts to address the barriers to an open and attractive European labour market for researchers.

The vast majority of countries have new measures to train enough researchers to meet their national targets—mainly under these three headings: a) measures that national authorities and/or institutions have put in place to attract people to take science to an advanced level and thus potentially to become researchers;

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b) measures to enhance the quality and efficiency of doctoral training and provide life-long learning to researchers in accordance with national priorities and industry requirements; c) measures aiming to develop doctoral training in cooperation with industry so as to better link academia and the industry sector, leading to the development of projects of common interest and to an increased exploitation of research results by the enterprises.

According to the European Research Area (ERA) Progress Report 2014⁴, at least 17 Member States have in place, to some degree, incentives and/or strategies for gender equality in research. The same document reports that more than one third of Member States have awareness programmes to attract girls to science and women to research.

A series of EU policy initiatives have contributed to this progress. These include the development of the EURAXESS network⁵ (a large increase in the use of EURAXESS Jobs is particularly noteworthy); a Human Resources Strategy for Researchers based on the Charter and Code; and the Principles of Innovative Doctoral Training. An ‘Open, Transparent and Merit-based Recruitment Package’ has also been adopted by the Steering Group on Human Resources and Mobility to assist research performing organisations in implementing those principles to their recruitment processes.

Marie Skłodowska-Curie actions⁶ contribute to influencing ERA by setting standards for research training, attractive employment conditions and open recruitment for all EU-researchers, and by aligning national resources as well as influencing regional or national programmes through the co-fund mechanism.

**How it works**

EU Member States and Associated Countries continue to support the implementation of the European Charter & Code⁷, which aims to improve researchers’ working conditions. The European Charter for Researchers addresses the roles, responsibilities and entitlements of researchers and their employers or funding organisations. The Code of Conduct for the Recruitment of Researchers aims to improve recruitment, to make selection procedures fairer and more transparent and proposes different means of judging merit.

More than 730 organisations from 35 countries in Europe and beyond have explicitly endorsed the principles underlying the Charter & Code and the level of institutional endorsements of those principles continues to grow. This represents about half of all public research institutions in Europe. The Commission’s Human Resources Strategy for Researchers focuses on the practical implementation of the principles. So far, 252 ‘HR Excellence in Research’ awards have been granted to acknowledge these efforts.

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⁵ [http://ec.europa.eu/euraxess/index.cfm/services/networks](http://ec.europa.eu/euraxess/index.cfm/services/networks)
The ‘Open, Transparent and Merit-based Recruitment Package’ for research performing organisations includes a set of practical and useful tools for implementing open, transparent and merit-based recruitment practices. It is built and based on existing tools and good practices. The Package includes:

- The rationale: why is open, transparent and merit-based recruitment (OTM-R) essential?
- The principles and guidelines: what a good OTM-R system should look like?
- A checklist for institutions as a self-assessment tool: how do the current practices rate?
- The toolkit: a step by step guide to improve the OTM-R practices
- Examples of good practice

Open issues – Next Steps

A number of challenges remain and a coordinated effort by Member States and institutions will be needed to remove remaining obstacles to researcher mobility, training and attractive careers. This will include ensuring that all research positions are subject to open, transparent and merit-based recruitment practices.

Member States, research funding and research performing organisations are also encouraged to promote a wider uptake of the innovative doctoral training principles, including, where appropriate, through use of the European Structural and Investment Funds.

The Commission continues to work closely with the ERA Steering Group on Human Resources and Mobility, composed of Member State representatives on a range of initiatives related to an open labour market for researchers with ERA.

Commitment 2 – Part 1
Test feasibility of independent university ranking

“In 2011 the Commission will, on the basis of the current preparatory work, support an independent multi-dimensional international ranking system to benchmark university performance. This will allow the best performing European universities to be identified. In 2011 further steps will be proposed in a Communication on the reform and modernisation of higher education.”

Action taken

Effective higher education institutions play an important role in economic and social development, through their teaching, research and knowledge transfer, international positioning and regional engagement. In order to modernise higher education in Europe so as to maximise this role, greater evidence and transparency are needed as to how higher education institutions perform on these dimensions. Therefore, in 2013, the Commission launched U-Multirank, a new, independent and multidimensional ranking system to identify, in full transparency, how universities are performing across all dimensions of higher education. Rankings were published in 2014 and 2015.
How it works

U-Multirank\textsuperscript{10} is a new multi-dimensional, user-driven approach to international ranking of higher education institutions. The dimensions it includes are teaching and learning, research, knowledge transfer, international orientation and regional engagement. Based on empirical data U-Multirank compares institutions with similar institutional profiles and allows users to develop personalised rankings by selecting performance measures/indicators in terms of their own preferences.

The March 2015 ranking covers 1,200 higher education institutions, up from 850 in 2014. The universities come from 83 countries, with more than 1,800 faculties and 7,500 study programmes in seven fields of study. With 21,000 data scores on the institutional level and 37,000 on the field-base level, U-Multirank is the most comprehensive information system on universities in the world.

U-Multirank is based on a methodology that reflects both the diversity of higher education institutions and the variety of dimensions of university excellence in an international context. U-Multirank data are drawn from a number of sources, providing users with a comprehensive set of information: information supplied by institutions; data from international bibliometric and patent data bases; and surveys of more than 85,000 students at participating universities – one of the largest samples in the world, offering students a unique peer perspective.

U-Multirank shows that various aspects of excellence are to be found in many different universities and that the concept of the best university in the world depends on what one is measuring. It puts the spotlight on higher education institutions that have never before been visible in other global rankings, showing their strong performance in particular dimensions or indicators, including research indicators. The 2015 ranking showed for instance that Harvard and MIT in the US are the top performers when it comes to the highest numbers of publications and patents, but it also reveals that Reutlingen University of Applied Sciences in Germany has the highest percentage of co-publications with industry (showing the intensity of its cooperation with companies). This not only demonstrates that U-Multirank captures various aspects of excellence, but also shows how U-Multirank can play an important role

\textsuperscript{10} http://www.u-multirank.eu/?trackType=home%20-%20!home?trackType=home#!/home?trackType=home
in the innovation eco-system with its indicators on university performance in knowledge transfer. It provides other valuable insights into the global higher education system. For example, although many stakeholders highlight the growing importance of interdisciplinary research, U-Multirank data show that most universities are not very strong in this area, with only a few having a solid profile in publishing interdisciplinary publications.

Open issues - Next Steps

In order to optimise support to institutions using U-Multirank, a network of institutional coordinators to enhance communication and exchange is being set up, and a pilot initiative to reduce administrative burden by exploiting the use of national/international data sources is also underway.

U-Multirank will receive European Union funding to publish additional rankings in 2016 and 2017 (also extending its range of field-based rankings), with a view to establishing a sustainable funding base thereafter and adapting the governance model accordingly.

Commitment 2 – Part 2
Create business-academia Knowledge Alliances

“The Commission will also support business-academia collaborations through the creation of Knowledge Alliances between education and business to develop new curricula addressing innovation skills gaps (see also Commitment 3). They will help universities to modernise towards inter-disciplinarity, entrepreneurship and stronger business partnerships.”

Action taken

The Commission launched the first call for the creation of three Knowledge Alliances pilot projects in 2011. It was followed by a second one in 2012. Each call was supported with EUR 1 Million offered by the European Parliament. There was high interest in both calls with 93 and 103 applications respectively received, and they provided a very strong proof of concept.

Following the success of the 2011 and 2012 calls, in 2013 the Knowledge Alliances were integrated into the final call for proposals under the Lifelong Learning Programme (2007-2013) and were included in the Commission’s proposal for the Erasmus+ programme, with an expected outcome of around 120 Knowledge Alliances to be supported over the funding period (2014-2020).

The first calls under Erasmus+ met also very high interest. 230 applications were submitted to the 2014 call, out of which 10 projects were funded with the available budget; 200 applications were submitted to the 2015 call, out of which 8 projects will be funded with the available budget.

How it works

Knowledge Alliances are structured partnerships bringing together higher education institutions and companies with the aim to design and deliver new curricula and courses, to develop new and innovative ways of teaching and learning, to facilitate the flow of knowledge between higher education and companies, to stimulate interdisciplinary activities/learning and to develop entrepreneurial skills and attitudes. Knowledge Alliances cover a comprehensive set of different activities, including, for example, exchanges of students/academics and company staff.
The ultimate goal of the Knowledge Alliances is to stimulate innovation in and through higher education and to make cooperation between higher education and business a more common feature in European higher education systems.

The pilot Knowledge Alliances were successfully completed; they showed positive effects in the different partners (higher education institutions and business) involved and, in particular, on the learning experience of participating students. The different consortia reported that they would continue their cooperation and build on the results achieved within the projects. Often the effective impact of work undertaken in projects is only realised after a length of time.

**Open issues - Next Steps**

Interest in the Knowledge Alliances is very high. The low success rate (under 5%) could constitute a problem in the future since a number of good projects will not be funded. In addition it may discourage potential applicants from submitting a proposal to future calls.

The Knowledge Alliances projects selected and funded under the Lifelong Learning programme will come to an end at the beginning of 2016. Their results will be disseminated via the VALOR platform.
Commitment 3
Propose an integrated framework for e-skills

“In 2011, the Commission will propose an integrated framework for the development and promotion of e-skills for innovation and competitiveness, based on partnerships with stakeholders. This will be based on supply and demand, pan-European guidelines for new curricula, quality labels for industry-based training and awareness-raising activities.”

Action taken

The critical importance of addressing the long-term challenge of e-skills for Europe is broadly acknowledged. As new technologies rapidly develop, e-skills become increasingly sophisticated and need to be constantly updated. Demand for skilled ICT practitioners exceeds supply - it was estimated in 2010 that Europe could face a shortage of over 1 Million ICT workers by 2020. There is a critical need for individuals with e-skills as well as creativity, communication, innovation and higher-level conceptual skills.

In response to this challenge, several results have been delivered at EU level building on the EU e-skills strategy¹¹ over the period 2010-2015. Activities have expanded considerably both at EU and national level with the launch of several new initiatives covering both professional and user e-skills.

Foresight scenarios and individual country reports on the supply and demand of e-skills (until 2020) have been released. In addition curriculum development guidelines and analyses of: the impact of cloud computing, cybersecurity, green IT and global sourcing on e-skills have also been provided. In 2012, two important reports on ‘e-Skills and ICT Professionalism: Fostering a European ICT profession’¹² and on ‘e-Leadership: Vision, Roadmap and Foresight Scenarios’¹³ were published and presented a clear vision and roadmap to 2020 for the promotion of ICT professionalism and of e-leadership in Europe.

The European e-Competence Framework 3.0 (e-CF)\textsuperscript{14} was released in 2013 by the European Standardisation Committee (CEN) and is a major building block for skills development in the ICT profession. It provides a basis for the development of the ICT profession together with bodies of knowledge, ethics and education and training. The Framework has already been adopted by several countries as a national standard, e.g. Italy and the Netherlands, and became a European standard in 2015. Based on the e-CF, online self-assessment tools have been developed,\textsuperscript{15} and proposals for quality labels for IT industry training and certification have been released.

The proposed labels are based on the e-CF and EQAVET\textsuperscript{16} making it possible to distinguish different types of training and certification by reference to the e-CF. Leading IT companies have now mapped their IT training courses and certifications against the e-CF, including Microsoft, Cisco, CompTIA and HP. Launched in 2014 as a complementary initiative to the e-CF, a pan-European foundational ICT body of knowledge was released in 2015, providing another important support to e-Skills development.

The European Digital Competence Framework for Citizens (DIGCOMP)\textsuperscript{17} was released in 2013 by the Commission. It outlines five areas of digital competence, \textit{Information processing, Communication, Content creation, Safety and Problem solving}, and 21 competences in terms of learning outcomes (knowledge, skills, and attitudes). Descriptors for multiple levels have been developed and can be used for multiple purposes (self-assessment; curricula designs; learning outcomes descriptions; talent diagnosis, etc.). For example EUROPASS\textsuperscript{18} embeds a self-assessment tool of DIGCOMP. The framework was endorsed by EU Member States representatives in the Education and Training Programme of ET 2020. Several implementations and take-up of Member States are ongoing.

In 2013, e-leadership skills became an issue in policy and multi-stakeholder initiatives in 21 of (the then) 27 EU Member States. Developments are still in their infancy, though, with the exception of

\begin{itemize}
\item \textsuperscript{14} http://www.ecompetences.eu/
\item \textsuperscript{15} For example by the Council of European Professional Informatics Societies (CEPIS) and EXIN
\item \textsuperscript{16} EQAVET: European Quality Assurance in Vocational Education and Training
\item \textsuperscript{17} http://openeducation.europa.eu/sites/default/files/DIGCOMP%20brochure%202014%20.pdf
\item \textsuperscript{18} https://europass.cedefop.europa.eu/en/home
\end{itemize}
Denmark, Germany, Finland, Malta, the Netherlands and the UK. These skills have only become an issue in countries that rank at the top in Europe in terms the propensity for a country to exploit the opportunities offered by ICT. Demand for e-leadership is closely coupled with highest skilled digital jobs, resulting in a total demand for e-leaders of 776,000 in 2020. It is therefore estimated that the EU will need at least 200,000 additional e-leaders by 2020, or an extra 40,000 per year.

Pan-European guidelines for new curricula were published in 2015 using stakeholder input and analysis of best practices in cooperation with technical universities, business schools and EIT Digital. The first conference on the international dimension of e-skills and ICT professionalism on 26 March 2014 in Brussels attracted leading experts from Australia, Brazil, Canada, Chile, Japan, India, Malaysia, Russia, South Africa and the USA. A report on ‘the international dimension and the impact of Globalisation on e-skills’ was released on this occasion.

Building on the strong interest of stakeholders the ‘Grand Coalition for Digital Jobs’ was launched in March 2013. The Grand Coalition is a large and well-coordinated cross-European multi-stakeholder collaborative effort to reduce digital skills gaps and make the most of the job opportunities offered by digitisation in Europe.

External evaluations of the implementation of the e-skills strategy were performed in 2010 and in 2013 and a comprehensive analysis of the situation in Europe documenting progress including the benchmarking of Member States and stakeholder initiatives was released in 2014: ‘e-Skills in Europe: Measuring Progress and Moving Ahead’ with 28 individual country reports.

In May 2015 the Commission launched the Digital Single Market strategy. It makes a specific commitment to the development of digital skills. While the responsibility lies with the Member States, the Commission will support their efforts and will play its role in enhancing the recognition of digital skills and qualifications and increasing the level of ICT professionalism in Europe. The main priorities for the future for e-skills activities will be the promotion of ICT professionalism and e-leadership and the generation of a larger talent pool of ICT professionals, entrepreneurs, business leaders, managers and advanced users with a focus on the strategic use of new information and communication technologies. Synergy with activities targeting skills shortages for key enabling technologies will be established.

How it works

The analysis of national policy and initiatives in the ICT domain across EU Member States shows high or very high levels of activity in many countries in the digital literacy domain and in the e-skills area with the focus is on ICT practitioners. The group of leading countries includes the UK and Ireland. Belgium, Germany, Denmark, France, Malta the Netherlands and Sweden also perform strongly in terms of the level of activity for ensuring adequate supply of ICT practitioners on the labour market. There are clear indications that the e-skills agenda and the subsequent initiatives by the Commission including the e-Skills Manifesto have triggered Member States to engage in public debates about the e-skills issue and helped them to develop appropriate responses.

The Grand Coalition for Digital Jobs has been successful in attracting around 60 stakeholder pledges for direct action including, for example, offering training, apprenticeships, placements and/or carrying out awareness raising activities to encourage young people to study and pursue careers in ICT. It has also raised political awareness and support for these issues. In 13 Member States, national coalitions – national reflections of the Grand Coalition – have been set up and more are planned. Some Member States have also produced digital skills strategies.

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19 http://eskills-guide.eu/documents/
21 http://ec.europa.eu/priorities/digital-single-market/
Open issues – Next Steps

The supply of ICT practitioners has been growing slowly since 2010. The pace is now increasing and this encouraging trend must be sustained to maximise the benefits for Europe of the digital economy. The shortage is now expected to reach up to 825,000 in 2020. This shortfall has been deemed critical by stakeholders and needs to be resolved in the near future.\(^{23}\)

Despite the improvements, the degree of integration and consistency of policy-making is still limited in several Member States which are lacking a master strategy. Typically, measures are taken for adapting the education system to the demands of a knowledge-based economy, but in some countries little reference is being made to ICT practitioner skills and the need to boost supply of suitably qualified ICT professionals and digital leaders.

It is intended to build on the success of the Grand Coalition initiative by broadening its reach to involve both the ICT-using industry and social partners. Member States will be encouraged to develop their own national coalitions, involving a broad set of stakeholders, to identify the issues and solutions that are right for them while benefiting from the cross-European initiative, for example, in terms of sharing best practices and benefiting from economies of scale. It is also intended to mobilise all available European funds to support digital skills development for the benefit of European citizens, for jobs and for the growth of the European economy.

Commitment 4
Propose an ERA framework and supporting measures

“In 2012, the Commission will propose a European Research Area framework and supporting measures to remove obstacles to mobility and cross-border cooperation, aiming for them to be in force by end 2014. They will notably seek to ensure through a common approach:

• quality of doctoral training, attractive employment conditions and gender balance in research careers;

• mobility of researchers across countries and sectors, including through open recruitment in public research institutions and comparable research career structures and by facilitating the creation of European supplementary pension funds;

• cross-border operation of research performing organisations, funding agencies and foundations, including by ensuring simplicity and mutual coherence of funding rules and procedures, building on the work of stakeholders, funding agencies and their representative organisations;

• dissemination, transfer and use of research results, including through open access to publications and data from publicly funded research;

• opening of Member State operated research infrastructures to the full European user community; and

• consistency of EU and national strategies and actions for international cooperation in science and technology.”

Action taken

In 2012 the Commission adopted the Communication ‘A Reinforced European Research Area Partnership for Excellence and Growth’ which sets out five priorities: more effective national research and innovation systems, optimal transnational cooperation and competition (including research infrastructures), an open labour market for researchers, gender equality and gender mainstreaming in research and optimal circulation, access to and transfer of scientific knowledge. For each priority, the Communication presented a series of actions to be undertaken in a reinforced partnership by Member States, Stakeholder Organisations and the Commission. It also announced the establishment of the ERA Monitoring Mechanism to identify progress in ERA.

In the context of this reinforced partnership, to guarantee acceleration of the implementation of ERA by research stakeholders, the Commission also launched a Stakeholder Platform where currently five European stakeholder organisations have signed written commitments to work together with the Commission towards the implementation of ERA. The Platform provides a forum for regular interaction to explore the best ways to facilitate the implementation of the key ERA priorities.

In the conclusions of the Council meeting of the 28 and 29 May 2015, the Council endorsed a roadmap for the European Research Area (ERA) and set out the next steps to improve its governance. The purpose of the roadmap, which covers the years 2015 to 2020, is to identify and focus on measures that can provide the greatest benefits for Europe's science, research and innovation systems.

How it works

Through the reinforced ERA partnership, Member States, research stakeholders and the Commission promote the opening up of Europe's research systems to guarantee the very best conditions to increase research performance and thus fully capitalise on Europe's scientific and creative potential.

In this partnership, Member States remain the major drivers for change. They have the power to undertake the necessary national reforms for ERA at national level. This goes hand in hand with the involvement of research stakeholders, such as research funding councils, universities and other research performing organisations. Stakeholders are thus mobilised to implement the necessary changes, notably through the Stakeholders platform. Finally, the Commission facilitates the process, though orientation and necessary action, notably through the forthcoming Horizon 2020 programme.

The Commission also monitors the state of play of implementation in the countries participating in the ERA. The results were presented in the 2013 and 2014 progress reports.

The first ERA Progress Report was presented by the Commission in 2013. It included a thorough presentation of the state of play of ERA in the Member States and some Associated Countries as well as indications of ERA implementation by research performing organisations.

The second ERA Progress Report was presented in 2014 and included a full assessment of progress in the adoption of policies in support of ERA. It also outlined the implementation of ERA by research funders – who translate national policies into concrete measures – and by research performing organisations – the ones implementing the ERA actions in their daily work. The report found that complying with ERA was associated with increased performance: open and attractive research systems are more innovative, while ERA compliant institutions produce a higher number of publications and patent applications per researcher.

25 CESAER, EARTO, EUA, LERU, Science Europe
ERA stakeholder organisations promote ERA among their members. Almost all of them have adopted relevant ERA roadmaps and strategies and have published reports on how they have progressed towards ERA. The reports show real progress has been made by the members of the organisations, particularly in fields such as research infrastructures, doctoral training, gender policy and open access to publications.

**Open issues – Next Steps**

The conclusions of the Council meeting of the 28 and 29 May 2015 call on Member States and the Commission to begin implementing the top action priorities identified in the ERA Roadmap through appropriate actions in their action plans or strategies by mid-2016. They also invite ERAC to propose a set of core indicators and, where appropriate, qualitative methods for monitoring the implementation of the ERA Roadmap.

The Council conclusions also concern reviewing ERA governance to make the advisory structure of the ERA more efficient and effective. The Council Conclusions of 1 December 2015 clarified the ERA advisory structure, agreeing that all ERA-related groups should be under the remit of the Council.

The monitoring of the ERA Roadmap should be put in the context of the monitoring of the ERA progress and the Commission should consider possible integration of the monitoring of the ERA Roadmap into the ERA Progress Reports from 2016 on, in close cooperation with the Member States, while avoiding the creation of an unnecessary administrative burden.

The ERA stakeholder organisations, in their progress reports, also point to next steps that might be taken, notably that cross-border research cooperation needs more support to achieve its full potential.

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**Commitment 4.1**

**Comparable research careers structures**

**Action taken**

The 2011 communication ‘Towards a European Framework for Research Careers’\(^{26}\) set the basis for the creation of a framework to allow better comparability for research careers structures.

Consensus on the European Framework for Research Careers (EFRC) was reached in 2011 and the report was adopted by the ERA Steering Group on Human Resources and Mobility. The Framework was first introduced – for self-categorisation purposes – on the EURAXESS Jobs Portal. In 2012 the ERA Communication invited research stakeholder organisations to advertise all vacancies on the EURAXESS Jobs portal using the common profiles established in the Framework.

All the EURAXESS Jobs and national portals use the framework and its descriptors for their job categorisation, and most universities, other research organisations, funders and companies refer to the EFRC in their recruitment, human resources management and training.

EU programmes (Framework Programmes, Erasmus, and Erasmus Mundus) use the framework and its descriptors for their grant schemes.

How it works

The EFRC identifies both necessary and desirable characteristics, which could be applicable across a wide range of careers, including those in higher education, the private and public sectors.

The Framework is intended to foster cross-border and cross-sector researcher mobility, helping researchers to identify job offers and employers to find suitable candidates.

The Framework describes four broad profiles, with the following working titles:

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<tr>
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<th>Working Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>R1</td>
<td>First Stage Researcher</td>
<td>(up to the point of PhD)</td>
</tr>
<tr>
<td>R2</td>
<td>Recognised Researcher</td>
<td>(PhD holders or equivalent who are not yet fully independent)</td>
</tr>
<tr>
<td>R3</td>
<td>Established Researcher</td>
<td>(researchers who have developed a level of independence)</td>
</tr>
<tr>
<td>R4</td>
<td>Leading Researcher</td>
<td>(researchers leading their research area or field)</td>
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</table>

The Framework is sector-neutral. The descriptors apply to all researchers, regardless of whether they work in the private or public sector: in companies, NGOs, research institutes, research universities or universities of applied sciences. Regardless of any particular profession one can outline broad profiles that describe the different characteristics researchers may possess.

Open issues – Next Steps

The European Framework for Research Careers intends to support the research community: researchers, their employers (universities, research institutes and companies), funders and public authorities. Open positions posted on EURAXESS already utilise the Framework to indicate the researcher career stage. A wider uptake of the Framework is nevertheless desirable among research employers more generally across Europe.
Commitment 4.2
Innovative Doctoral training

Action taken

In 2011, a set of Principles for Innovative Doctoral Training\(^{27}\) was defined with the help of experts from university associations, industry and funding organisations. The principles reflect the Salzburg Principles of the European Universities Association (EUA), good practice in Member States and the Marie Skłodowska-Curie experience. The Principles were adopted by the ERA Steering Group on Human Resources and Mobility and endorsed in the November 2011 Council conclusions on the Modernisation of Higher education.

The principles refer to: 1) Research Excellence, 2) Attractive Institutional Environment (in line with the Charter & Code), 3) Interdisciplinary Research Options, 4) Exposure to industry and other relevant employment sectors, 5) International networking, 6) Transferable skills training, 7) Quality Assurance.

The 2012 ERA Communication\(^{28}\) invited research stakeholders to “provide structured doctoral training based on the Principles for Innovative Doctoral Training” and to “develop and implement structured programmes to increase mobility between industry and academia”.

\(^{28}\) http://ec.europa.eu/euraxess/pdf/research_policies/era-communication_en.pdf
Wider uptake has been explored through a study on the ‘Implementation of the principles in 2013’ (with on-site visits to 20 universities in 16 countries during 2013) and Marie Skłodowska-Curie action grant support. The aim was to verify the feasibility of the principles against current institutional practice and the emerging needs of the Innovation Union and to propose a set of recommendations to promote the implementation of the principles on a Europe wide scale. According to the results of the study, the principles are well-accepted and subscribed to by all target groups at institutional, doctoral, policy and non-academic levels and are considered as a ‘guiding tool’. Research excellence seems to be the ‘leading’ principle, based on quality assurance and attractiveness of the research/institutional environment.

How it works

The core component of doctoral training is the advancement of knowledge through original research. At the same time it is recognised that doctoral training must increasingly meet the needs of an employment market that is wider than academia. A set of seven principles for innovative doctoral training were developed in the framework of the European Research Area, based on best practices in Member States for this purpose.

Half of the Marie Skłodowska-Curie funding in Horizon 2020 will be dedicated to innovative doctoral training, including industrial and joint doctorates, with the obligation to follow the Principles for Innovative Doctoral Training. Marie Skłodowska-Curie actions (MSCA) combine research excellence with training on key transferable and entrepreneurial skills and encourage doctoral candidates to engage with industry and other employers during their fellowship, notably through appropriate secondments, thus reducing cultural and other barriers to mobility and inter-sector collaboration.

Open issues - Next Steps

Work is also on-going in Horizon 2020 on two of the principles, which are linked: increasing PhD exposure to industry and transferable skills training. Europe has a duty to train researchers to acquire the appropriate set of skills that may enable them to embrace a research and innovation career outside of academia. These are known as 21st century skills, including learning to learn, problem-solving, communication, leadership, how to exploit research results, and media and technology literacy, as well as how to manage industrial innovation processes. The feasibility of a European level initiative will be tested in this context. A concrete pilot action linking innovative SMEs to experienced researchers skilled in innovation management will start in 2016.

Commitment 4.3
Creation of a Pan-European Pension Fund for Researchers

Action taken

The mobility of researchers is a driver of excellence and a cornerstone in creating a European Research Area. However, researchers face many difficulties in preserving their supplementary pension benefits when moving between countries. This inevitably leads to inadequate pensions, decreased competitiveness and fragmentation of the European labour market for researchers.

The Commission committed itself in the 2012 ERA Communication to “support stakeholders in setting up pan-European supplementary pension fund(s) for researchers”. The October 2013 European Council provided political backing by calling “for adequate pensions for researchers”. This initiative covers a supplementary pension fund (2nd pillar occupational pension) and a voluntary retirement insurance scheme (3rd pillar pension).
Building on the work of a Task Force initiated by DG Research and Innovation, a dedicated group of employers launched the RESAVER consortium in October 2014. Following a public procurement procedure, DG RTD awarded a four-year, EUR 4 Million contract to Aon Belgium to provide the necessary support throughout the highly complex set-up process.

The fund was established under the ‘Institutions for Occupational Retirement Provision’ Directive. Starting in 2016, with first payments into the fund, the pension arrangement will be rolled-out across the European Economic Area.

RESAVER will be a state of the art retirement savings product that will enable mobile employees to remain affiliated to the same supplementary pension fund when moving between different countries and changing jobs.

**How it works**

The scheme will include the following components:

- A tailor-made pan-European pension fund run by research institutions, managing 2nd pillar occupational pension plans, will offer the physical pooling of assets and liabilities.
- A complementary pan-European network of country-specific insurance arrangements will be offered to employers registered in countries not yet part of the pan-European pension fund.
- A 3rd pillar insurance solution will be provided for professionals without a formal employment contract (depending on the country this could be grantees, temporary employees, doctoral candidates and seconded staff).

*Illustration: A young PhD candidate (25) in economics starts her career at Wien University, Austria. After her PhD, she moves to Belgium as post-doc and then to Hungary where she has been offered a permanent post as assistant professor. At 35, she decides to move back to Austria, where she has been offered a full professor position at the Wien University. Her employers are all members of RESAVER. After 40 years as a researcher, she decides to retire in Austria. Although she moved several times, her supplementary pension funds have been secured and she has not been penalised for being mobile: without RESAVER, this researcher would have been entitled to EUR 190,000 while with RESAVER she will be entitled to EUR 280,000, hence saving approximately EUR 90,000.*
Open issues – Next Steps

In 2016 RESAVER will become operational. The pension arrangement will thereafter be gradually rolled-out across the European Economic Area. Nevertheless, further actions will have to be taken to remove remaining obstacles that hinder public institutions from participating in the pension arrangement.

Given the existence of regulatory barriers in some Member States, as well as different national regulations, many public employers will be unable to join the pension arrangement from day one. Removing these barriers should remain a priority of the Commission and be addressed accordingly in cooperation with relevant stakeholders and Member States.

Commitment 5
Construct the priority European research infrastructures

“By 2015, Member States together with the Commission should have completed or launched the construction of 60% of the priority European research infrastructures currently identified by the European Strategy Forum for Research Infrastructures (ESFRI). The potential for innovation of these (ICT and other) infrastructures should be increased. The Member States are invited to review their Operational Programmes to facilitate the use of cohesion policy money for this purpose.”

Action taken

The European Strategy Forum for Research Infrastructures (ESFRI) roadmap published in 2010 contains 48 projects. The ESFRI Implementation Group (IG) published its first report on the state of the implementation of the projects on the ESFRI Roadmap in 2012. The IG report shows that the projects have made good progress towards achieving this commitment. The report identified a total of 27 projects that were under implementation accounting for 56% of the 48 ESFRI projects. The 2015 review by the IG increased this figure to 60%.

The Research Infrastructure (RI) part of Horizon 2020 has specific activities for fostering the innovation potential of European Research Infrastructures and a number of topics have been published to this effect in the work programme 2014-2015 and the upcoming work programme 2016-2017.

Several workshops have been organised to increase synergies between Horizon 2020 and the European Structural and Investment Funds (ESIF) so as to raise awareness among Member States on the potential of ESIF for the construction and operation of national and pan-European RI such as ESFRI and ERICs.

The Report ‘Enabling synergies between European Structural and Investment Funds, Horizon 2020 and other research, innovation and competitiveness-related Union programmes’ puts forward also guidelines for policy-makers and implementing bodies to promote and implement synergies between programmes and funds available.

How it works

In order to monitor the implementation of the ESFRI Roadmap projects, the European Commission decided together with ESFRI to set-up, in 2012, a high-level group of independent experts to conduct an in-depth analysis of the financial and managerial maturity of the projects. The main objective of this exercise was to identify the bottlenecks delaying the implementation of ESFRI projects and provide recommendations on how to overcome any difficulties. The group conducted its assessment on the basis of the UK gateway process, a well-proven tool developed for evaluating project proposals in a wide range of disciplines. The work of the assessment group served as a basis for the prioritisation exercise of the ESFRI projects that was carried out by the Member States in 2014. This process is now being continued by the ESFRI Implementation Group, which has delivered an implementation assessment of the current ESFRI projects on the Roadmap and proposed a methodology to assess the maturity of the RI candidates to be included in future ESFRI Roadmaps.

The high number of projects in the 2010 Roadmap30 (48) led to a prioritisation endorsed by the Competitiveness Council in May 2014 aimed at concentrating Member States resources on projects whose timely implementation was considered essential to extend the frontiers of knowledge. In order to appropriately concentrate resources and effort on a manageable pool of identified priorities, the number of projects in the 2016 Roadmap will be reduced to around 25, i.e. around 10 new projects in addition those projects from the 2008 and 2010 ESFRI Roadmap editions which have not yet completed their implementation phase.

An indicative multi-annual plan for budgeting and prioritisation of investments linked to EU priorities, and, where appropriate, ESFRI has to be adopted until the end of 2015 in order for a country/region to benefit from ERDF funding under priority 1 - Strengthening research, technological development and innovation (R&D target). The prioritisation should respond to the needs identified in the smart specialisation strategy; the prioritisation of investments has to take into account existing R&I infrastructures and capacities in Europe and, as appropriate, the priorities identified by the European Strategy Forum on Research Infrastructures (ESFRI).

Most countries and regions across Europe now have in place their Research and Innovation Strategies for Smart Specialisation (RIS3), as a result of the European Union’s new results orientated Cohesion Policy (see Commitment 24 and 25). With the objective of maximising synergies and cooperation at EU level, an ex-ante conditionality (EAC) for R&I investments under the European Regional Development Fund (ERDF) for the programming period 2014-2020 has been introduced consisting in the set-up of a national and/or regional RIS3. This EAC was split into two separate EACs - R&I smart specialization strategy and R&I infrastructure - in order to ensure the adequate definition of specific objectives for each of the investment priorities.

Open issues – Next steps

The implementation of the ESFRI projects faces many challenges. In order to meet the set objectives, long term investments and commitment of the Member States to the implementation process is crucial. The Informal Competitiveness Council of July 2014 highlighted the importance of long-term sustainability of RI, stressing that open access to RI and data, better links with industry as well as policy prioritisation based on a multi-level approach, at national, European and international level, were key to ensure sustainability.

Building on the achievements of European Research Area and the Innovation Union flagship initiative, there is now a need to identify the next steps for a more comprehensive approach and long term vision to RI, tackling their long term sustainability by fostering excellence, access, promoting talents, innovation and socio-economic impact, data management, international cooperation, instrumentation and links with industry, robust governance and funding models.

In order to exploit the opportunity available in ESIF, it is important to reconcile the long-term competitive advantages resulting from RI with the short-to-mid-term socio-economic advantages that qualify for the use of ESIF. At the same time, the National Contact Points of Horizon 2020 can be used to ensure information flow between the actors in the Member States and regions and to strengthen collaboration with Managing Authorities and regional support structures.
Commitment 6
Simplify and focus the future EU R&I programmes on Innovation Union

"Future EU research and innovation programmes will focus on Europe 2020 objectives and particularly the Innovation Union. In 2011, looking ahead to the next financial perspectives, the Commission will set out ways for future programmes to focus more on societal challenges, streamline funding instruments and radically simplify access through a better balance between a control-based and a trust-based system. The role of the ERC in promoting excellence should be strengthened and industry driven priorities reinforced (including industry driven partnerships in areas such as key enabling technologies) in the research Framework Programme."

Action taken

Horizon 2020 (Horizon 2020) implements the Innovation Union flagship initiative. Its goal is to ensure Europe produces world-class science and technology, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering solutions to major challenges facing our society. Horizon 2020 aims to strengthen the EU's position in science, strengthen industrial leadership in innovation, and address major societal concerns such as climate change, sustainable transport and mobility, and food safety. The first calls of the programme were launched at the end of 2013.

The programme was designed to fund excellent research and to deliver on innovation i.e. taking research outcomes to the market in order to enhance the impacts of research investment:

- Horizon 2020 brings together all existing EU research and innovation funding i.e. it combines the funding previously separately available from the framework programme for research and technological development (FP), the innovation-related activities of the competitiveness and innovation framework programme (CIP) and the European Institute of Innovation and Technology (EIT).
- Horizon 2020 adopted a problem solving approach to provide concrete solutions to society's greatest challenges such as climate change, health, transport, energy and food security.
- Horizon 2020 provides support in a seamless way from idea to market, including shorter project cycles that focus on the application of research and on demonstration of technologies at high Technological Readiness Levels, as well as longer term technological research projects.
- Horizon 2020 applies the broad concept of innovation which includes non-technological and non-research-based innovation and activities such as design, creativity, service, and process and business-model innovation.
- Horizon 2020 focuses on involving larger consortia of industry partners and small and medium-sized enterprises (SMEs) to ensure that research outcomes are developed into new products and services. In order to better serve the needs of potential industry partners, H2020 offers more versatile and strengthened financial instruments including the Risk Sharing Financial Facility, through supporting public procurement of innovative ideas and the SME instrument.
- Horizon 2020 was designed to simplify access to the programme by streamlining funding instruments and using simpler programme architecture and simpler rules for participation.

How it works

It is important to strike the right balance between excellence and rewarding good efforts in preparing excellent proposals by providing a chance of success. The work programmes have been fine-tuned by maintaining a challenge-based approach and setting out a tailored description of expected impacts for every topic so that the expected impact is clear. The objective is that applicants can readily understand whether proposal ideas fit within a topic, and to thus minimize submissions with lower chances of being selected.
The first year of Horizon 2020 showed an increased participation from industry partners and research organisations and a reduced participation of higher education establishments, compared to the Seventh Framework Programme for research (2007-2013) (FP7). However, higher education establishments are still the most highly represented bodies (~35%). Currently, the Horizon 2020 share of industrial participation (which is part of the wider group of organisations that register as ‘private commercial for profit’) is about 28% while in FP7 it was 25%) including SMEs, which make up 20% of all Horizon 2020 participations (SMEs made up 18% of FP7 participations).

Horizon 2020 is open and accessible to new participants. As of July 2015, of the 6,800 unique organisations that have signed grant agreements under Horizon 2020, about 40% are newcomers (i.e. they did not take part in FP7). Of these newcomers 80% are from the private commercial sector. The biggest part of newcomers are SMEs, nearly every second SME is new in Horizon 2020.

Horizon 2020’s provision includes a target of allocating a minimum of 20% of the total combined budgets for the specific objective ‘Leadership in enabling and industrial technologies’ (LEITs) and the priority ‘Societal challenges’ for SMEs. On the basis of the grant agreements signed in 2015 and in relation to the EU financial contribution allocated under ‘Societal Challenges’/‘LEITs’, 23.31% went to SMEs, while 5.38% was allocated to them via the SME Instrument.

Horizon 2020 has been massively simplified compared to previous Framework Programmes by such measures as a simple cost reimbursement approach, streamlined ex-ante checks, simplified requirements for work-time recording for project staff, a reduction of the audit burden, acceleration of the processes for signing grants with a maximum time of 8 months from call deadline to grant signature, and electronic-only management of proposals, grants and expert contracts, with the Participant Portal as the unique one-stop shop for all interactions with applicants, beneficiaries and experts. There has been a considerable acceleration of the granting process: 95% of the grants are now signed within 8 months of the call deadline. The average time to grant has been reduced by more than 50 days compared to the final year of FP7.

Open issues - Next Steps

Horizon 2020 is very attractive, with more than 36,000 eligible proposals submitted so far. As a direct result of the programme’s focus on major societal challenges, the calls address some of the key concerns of citizens and the simplification measures have made the calls more accessible than ever. A high number of applications were received for the 2014 calls resulting in a success rate of around 14% and many excellent proposals are not funded due to oversubscription to the calls. A definitive success rate will not be established until further into the multi-annual Horizon 2020 programme.

Further room for improvement, in particular concerning simplification in programme implementation has been explored with stakeholders in autumn 2015. The results of these feedback exercises will be followed up in different ways: changes not requiring adaptations to the legal basis of Horizon 2020 will be implemented immediately within a continuous improvement process, while further changes can be fed into the Horizon 2020 Interim evaluation.

Launched in October 2015, the new Seal of Excellence scheme will allow regions to recognise the quality label awarded to promising project proposals submitted under Horizon 2020, the EU’s research and innovation programme and promote their access to different funding sources like the European Structural and Investment Funds (ESIF) and other national or regional investment programmes.
Commitment 7
Ensure stronger involvement of SMEs in future EU R&I programmes

“The Commission will design future EU research and innovation programmes to ensure simple access and stronger involvement of SMEs, in particular those with a high growth potential. Further use should be made of partnerships with Member State agencies, building in particular on the experience of the Eureka Eurostars initiative.”

Action taken

Horizon 2020 has an integrated approach to addressing the needs of SMEs, who are encouraged to participate across the entire programme. They can engage in collaborative projects as part of a consortium, and are supported through a new, dedicated SME Instrument. The SME instrument is designed to develop, grow and internationalise highly innovative SMEs, regardless of whether they are high-tech and research-driven, or social or service companies whose innovations are not based on research. It is expected that this integrated approach, together with simplification efforts, will lead to at least 20% from the total combined budgets of the ‘Leadership in enabling and industrial technologies’ (LEIT) and the ‘Societal Challenges’ components of Horizon 2020 being allocated to SMEs over the 2014-2020 duration of Horizon 2020.

In addition, at least one-third of the budget of the debt and equity facilities of the ‘Access to Risk Finance’ part of Horizon 2020 is expected to be absorbed by SMEs via a range of products in the ‘InnovFin’ portfolio (see commitment 10) offering loans and equity investments, particularly early-stage venture capital.
The SME Instrument boosts innovation in SMEs: with a budget of close to EUR 3 Billion, it fills gaps in funding for high-risk, advanced research and excellent innovation by such firms. And with its simple rules and procedures, it provides easy access to Horizon 2020 for small firms. It was designed to particularly encourage individual SMEs (as potential sole beneficiaries) to put forward their most innovative ideas.

The permanently open SME Instrument call, launched in March 2014, features 13, mostly broad, topics and offers the following types of support:

- business innovation grants, as a lump sum of EUR 50,000, for feasibility assessment purposes (Phase 1);
- business innovation grants of EUR 500,000 to EUR 2.5 Million for innovation development and demonstration (Phase 2);
- free-of-charge business coaching to support and enhance a firm’s innovation capacity and help align the project with the company’s strategic business needs (Phase 3);
- a wide range of innovation support services (Phase 3);
- investment-readiness training and match-making activities with investors in order to foster the commercial take-up of the innovation.

The Eurostars 2 Joint Programme, undertaken by several Member States and Associated Countries as part of Eureka (with the participation of the EU), promotes market-oriented transnational activities of research-intensive SMEs in any field. By pooling together national resources, Eurostars 2 strengthens the integration of national research programmes contributing to the achievement of the European Research Area. The Joint Programme was proposed as part of the Innovation Investment Package in July 2013, and inter-institutional negotiations were successfully completed in February 2014.

Furthermore, SMEs are also encouraged to participate in other parts of Horizon 2020, such as the Marie Skłodowska-Curie actions (MSCA) or the activity on Future and Emerging Technologies. While all MSCA funding schemes are open to the participation of a wide range of non-academic players, the MSCA Innovative Training Networks (ITN) and Research and Innovation Staff Exchanges (RISE) are promoting in particular business-academia collaborations focusing on giving researchers appropriate skills and opportunities to contribute to SME and other business growth.

There are also actions aimed at developing and providing better innovation support services to, and better framework conditions for, R&I-driven SMEs, creating a favourable ecosystem for SME innovation and growth.

**How it works**

SME interest and participation in Horizon 2020 is very high and shows no signs of abating. On the basis of signed grant agreements by mid-July 2015, 23.3 % of the EU budget allocated to ‘Societal Challenges’ and ‘LEIT’ in Horizon 2020 was assigned to SMEs.

Extrapolating current trends to the end of 2020 around EUR 3 Billion will have been invested into thousands of Europe’s most innovative SMEs through the SME Instrument. In line with the targets set, this will amount to at least 7% of the combined budgets of the ‘Societal Challenges and
the Specific Objective ‘Leadership in Enabling and Industrial Technologies’ (LEITs). In 2014-2015, over EUR 500 Million was invested in innovation in SMEs via the SME Instrument; in 2016-2017 this should increase by 50%, leading to an investment of some EUR 750 Million (equivalent to 7.1% of the budgets available under ‘Societal Challenges’ and ‘LEITs’). The total average of investment of budgets of Societal Challenges and LEITs over 2014-2017 is over 6.2%. There will be further increases in investment via the SME Instrument in the years 2018-2020.

SMEs also benefit significantly from the new generation of debt and equity instruments under Horizon 2020. Known as ‘InnovFin - EU Finance for Innovators’ (see commitment 10), these instruments are expected to generate direct investments of more EUR 24 Billion and total final investments of more than EUR 50 Billion into R&I activities. At least a third of this is likely to be absorbed by SMEs, mostly early stage companies but also to some extent by those in the growth stage. Products that will benefit SMEs in particular include the ‘InnovFin SME Guarantee’, a debt facility supported by the European Investment Fund, which is already active in 15 countries, and ‘InnovFin SME Venture Capital', which is pumping EUR 430 Million into funds providing risk capital to innovative SMEs. Both products are working in synergy with the financial instruments available under the COSME programme, to form the Single EU Debt Financial Instrument31 and the Single EU Equity Financial Instrument32.

Open issues - Next Steps

Efforts to streamline programmes and instruments for SMEs are appreciated by stakeholders as marking substantial progress achieved compared to FP7. Despite the launch of the SME Instrument and the high number of applications, however, many stakeholders still perceive EU funding for SMEs, as well as for other entities, to have a high level of complexity. They think that the number of funding instruments should be reduced and the instruments streamlined even further so as to simplify the whole system even more, referring to the complexity of funding rules, overlaps in research areas, and the existence of heterogeneous initiatives. Overall, though, they feel a major step has been taken towards creating a more innovation-friendly programme.

With so many innovation-driven SMEs now funded, approaches should be explored to help innovation-driven SMEs participate even more in networks and clusters, benefit from incubation, accelerator and internationalisation opportunities, and match-make with both potential investors and larger firms seeking to partner with innovative SMEs. The new 2016-2017 Horizon 2020 work-programme for ‘Innovation in SMEs’ integrates several actions to help innovation-driven SMEs make the most of their expansion potential.

Boosting SMEs’ participation in parts of the programme where they are relatively under-represented, such as Joint Technology Initiatives, needs addressing.

Initiatives fostering policy learning between Member States on innovation policies for SMEs are popular and should be further pursued.

Reinforcement of support for the provision of high-quality business coaching and mentoring is essential to enable the SME Instrument to deliver on its full potential.

31 http://www.eif.org/what_we_do/guarantees/single_eu_debt_instrument/
32 http://www.eif.org/what_we_do/equity/single_eu_equity_instrument/
Commitment 8
Strengthen the science base for policy making through JRC and create EFFLA

“The Commission will strengthen the science base for policy making through its Joint Research Centre. The Commission will also create a European Forum on Forward Looking Activities bringing together existing studies and data and involving public and private stakeholders to improve the evidence base of policies.”

Action taken

In 2011, The European Commission created the European Forum on Forward Looking Activities (EFFLA). Its mission was to enhance collective forward looking intelligence, to help the EU to tackle upcoming societal challenges and to devise comprehensive and pro-active European Research & Innovation Policies. Its objectives were defined as follows:

- Advise the Commission on the basis of the most outstanding Forward Looking Activities on the early identification of emerging or disruptive grand societal challenges
- Within the selected grand challenges: detect the missing research and innovation challenges
- Detect the needs for further Forward Looking Activities
- Advise the European Commission on how to embed FLAs in (R&I) policymaking

How it works

The Forum brought together a set of high-level experts and decision makers (from academia, industry, Government, European and International Organisations, NGOs and think tanks) with very diverse profiles, able to mobilise the best available expertise and interact with key networks. It consists of 15 full members.

EFFLA delivered a series of policy briefs, addressed to the Commissioner and the cabinet, on issues ranging from institutionalising foresight in Research and Innovation policy to societal challenge addressed by Horizon 2020. EFFLA has also made recommendations for developing a foresight culture in the Commission, as well as for sense-making, foresight standards and cooperation with Member States. In addition, EFFLA has given advice on the societal challenges in Horizon 2020.

By advising the Commission on how to make foresight an integral part of the strategic programming cycle, EFFLA gave the Commission the capacity to better manage uncertainty and to address threats, to seize opportunities and to become a better user of foresight.
EFFLA played a key role in the establishment of a ‘foresight hub’ – a dedicated foresight team within DG RTD of the Commission. This hub’s role is to coordinate foresight across Horizon 2020 and to draw on foresight from Member States and elsewhere to inform strategic programming. A network of ‘foresight correspondents’ has been set up, in order to enable the existing foresight knowledge and in Horizon 2020 projects to be used more efficiently and effectively.

In June 2014, the members of EFFLA were incorporated into the work of the Research, Innovation and Science Policy Experts (RISE) high level group (HLG). A specialist high level expert group on Strategic Foresight in Research Innovation was established in 2015 to support the work of the foresight hub to bring foresight into the strategic programming of EU Research and Innovation policy.

Open issues - Next Steps

To facilitate the consideration of scientific evidence for EU policy making, the Commission will set up by the end of 2015 a Scientific Advice Mechanism (SAM). The Mechanism will replace the previously existing Chief Science Advisor function. It will rely on a High Level Group of 7 Scientific Advisors from different scientific disciplines and different nationalities. The group will be supported by an in-house service ensuring that scientific evidence from all types of research organisations or knowledge providers and notably from Science Academies will be taken into account.

SAM will provide to interested Commission departments services such as written opinions, workshops or quick ad-hoc meetings with scientists.

Commitment 9

Set out an EIT Strategic Innovation Agenda

“By mid-2011, the EIT should set out a Strategic Innovation Agenda to expand its activities as a showcase for Innovation in Europe. This should map out its long term development within the Innovation Union, including the creation of new KICs, close links with the private sector and a stronger role in entrepreneurship. It should also build on the EIT Foundation being set up in 2010 and on the introduction in 2011 of the EIT Degree as an internationally recognised label of excellence.”

Action taken

The European Institute of Innovation and Technology (EIT) is a body of the European Union based in Budapest, Hungary. It was established by Regulation (EC) No 294/2008 of the European Parliament and of the Council in March 2008 and became operational in 2010. An independent Governing Board comprising 15 high-calibre members from the higher education, research, business and innovation fields provides strategic direction. The EIT currently employs approximately 50 staff.

The EIT’s activities form part of the Horizon 2020 programme. Its overall mission is to contribute to sustainable European economic growth and competitiveness by reinforcing the innovation capacity of the Member States and the European Union. It aims to achieve this by bringing together leading higher education institutions, research labs and companies in dynamic cross-border partnerships – Knowledge and Innovation Communities (KICs) – that develop innovative products and services, start new companies, and train a new generation of entrepreneurs. KICs are selected by the Governing Board on the basis of open and competitive calls.

33 http://eit.europa.eu/regulation
34 http://ec.europa.eu/programmes/horizon2020/en
As required by the legislation governing the EIT, an initial Strategic Innovation Agenda was presented in 2011. This was followed by a Decision on the second Strategic Innovation Agenda (SIA)\textsuperscript{35} which was adopted by the European Parliament and Council in December 2013. This SIA was informed by the results of an independent evaluation of the EIT’s initial period as well as on an open consultation process. It set out a framework for the expansion of the EIT’s operations for the period from 2014 to 2020. Key elements include:

- A budget of EUR 2.7 Billion\textsuperscript{36};
- Consolidation of the three initial KICs set up in 2009 (Climate-KIC\textsuperscript{37}, EIT Digital\textsuperscript{38} and KIC InnoEnergy\textsuperscript{39});
- Creation of five new KICs to be launched in three separate calls. The second wave KICs were designated as planned in 2014: EIT Health\textsuperscript{40} (addressing the theme of innovation for healthy living and active ageing) and EIT Raw Materials\textsuperscript{41} (sustainable exploration, extraction, processing, recycling and substitution). Two further calls will be initiated in 2016 for Food4Future (sustainable supply chain from resources to consumers) and Added-value manufacturing; and, pending a positive outcome of the upcoming evaluation, in 2018 a call will be initiated for Urban mobility.

**How it works**

The KICs, which are independent legal entities, have followed differentiated approaches in building up their strategies and governance structures, reflecting different thematic fields. All are structured around a number of core partners and typically five to six co-location centres (i.e. innovation hotspots usually based within partners’ universities or companies), which are flanked by a varying number of additional affiliate partners, including small and medium-sized enterprises (SMEs). KICs are led by a Chief Executive Officer. KICs’ activities span the entire innovation chain and include, among others, the setting up of EIT-labelled Masters and PhD programmes, entrepreneurship education, summer schools, competitions, business creation services, start-ups and mobility schemes. There are now over 1,000 graduates from EIT-labelled Master and Doctoral programmes and this has spawned the development of an EIT Alumni network.

Each KIC is set up for a minimum of seven years (and up to fifteen years). This long-term perspective enables partners to commit to a strategic initiative for a longer time than in traditional innovation policy initiatives. It also ensures that the KIC is able to focus on short-, mid- and long-term objectives, remaining agile enough to adapt to emerging needs from the field in which they operate. KICs produce annual

\textsuperscript{36} This was revised to EUR2.383 Billion by Regulation (EU) 2015/1017 of the European Parliament and of the Council of 25 June 2015 on the European Fund for Strategic Investments, the European Investment Advisory Hub and the European Investment Project Portal and amending Regulations (EU) No 1291/2013 and (EU) No 1316/2013 — the European Fund for Strategic Investments
\textsuperscript{37} http://www.climate-kic.org/
\textsuperscript{38} https://www.eitdigital.eu/
\textsuperscript{39} http://www.kic-innoenergy.com/
\textsuperscript{40} https://eithealth.eu/
\textsuperscript{41} http://eitrawmaterials.eu/
business plans, including an ambitious portfolio of activities from education to business creation, with clear targets and deliverables, looking for both market and societal impact.

The EIT follows an ‘investor approach’ in its operations, by incentivising each KIC to turn seed investment from the EIT into tangible economic and social impact, such as the creation of new businesses and business opportunities, promoting a risk taking and entrepreneurial culture, and the creation of new and high quality jobs. The EIT disseminates good practices on how to integrate the knowledge triangle and the development of entrepreneurship, integrating relevant new partners where they can provide added value, and by actively fostering a new culture of knowledge sharing.

The EIT’s Performance Measurement System (PMS) was designed in 2012 to support a result-oriented monitoring of the implementation of the EIT strategy. The EIT is currently reviewing its monitoring and key performance indicators, and expects to introduce the improved system in 2016. The EIT reports on its results and activities in an Annual Activity Report. The most recent was adopted in June 2015 covering the financial year 201442.

In 2014, a new platform (EIT Stakeholder Platform) was established to enable structured dialogue with Member States and EU level umbrella organisations. This was further developed in 2015 with the three-day INNOVEIT event, which brought together relevant innovation actors. Three winners of the annual EIT awards43 were announced at INNOVEIT: LEDsafari EUR4 solar lamp that can be assembled by individuals without technical knowledge using locally available material; the Nordic Power Converter, which increases the effectiveness of power converters used in Billions of everyday products; and the EOLOS Floating Lidar System, which will increase the effectiveness of offshore wind energy developments.

Also in 2014 a regional outreach pilot scheme (EIT RIS) was launched, which encourages the KICs to tap into the potential offered by regions in Europe in line with their Smart Specialisation Strategies. The first full implementation of the RIS will begin in the KICs’ 2016 business plans.

The interest in the EIT activities and the related KICs has continued to increase over the years. For instance, the number of KIC partners in the first wave of KICs progressively increased from 79 in 2010, to 265 in 2011, over 500 in 2013 and over 600 in 2015.44

The EIT Governing Board decided in December 2014 to initiate the winding down of the EIT Foundation (EITF), in light of the lack of progress made and the EITF’s overall financial and operational situation. The process is planned to finish at the end of 2015.

Open issues – Next Steps

In order to improve the operations and increase their impact, the EIT and the KICs have launched in 2015 an internal simplification process. The process will address the grant cycle, business plans, monitoring and reporting, as well as explore a number of innovations in the overall operations. The process will seek to reduce overhead costs while delivering greater efficiency in the use of resources.

An independent external evaluation of the EIT will take place in the course of 2016, covering the EIT’s activities in the period 2011–2015. This will feed into the Horizon 2020 mid-term evaluation and into the EIT review, both of which are due by the end of 2017. It will provide a thorough assessment of EIT’s performance and achievements to date, in particular assessing the systemic level impact, efficiency and effectiveness, sustainability, relevance, coherence and EU added value. This evaluation will also provide an evidence base for designing the EIT’s future activities and initiatives, including the next Strategic Innovation Agenda (SIA), and for assessing the need for possible amendments to the EIT regulation.

43 http://eit.europa.eu/activities/entrepreneurship/eit-awards
44 European Institute of Innovation and Technology.
Getting good ideas to market

Commitment 10
Put in place EU level financial instruments to attract private finance

“By 2014: on the basis of Commission proposals, the EU should put in place financial instruments to attract a major increase in private finance and close the market gaps in investing in research and innovation. Contributions from the EU budget should create a major leverage effect and expand on the success of FP7 and CIP. The Commission will work with the European Investment Bank Group, national financial intermediaries and private investors to develop proposals addressing the following critical gaps: (i) investment in knowledge transfer and start-ups; (ii) venture capital for fast growing firms expanding on EU and global markets; (iii) risk-sharing finance for investments in R&D and innovation projects; and (iv) loans for innovative fast growing SMEs and midcaps. The proposals will ensure a high leverage effect, efficient management and simple access for businesses.”

Action taken

Horizon 2020 includes a specific section on ‘Access to Risk Finance’ with a budget for 2014-2020 (in current prices) is EUR 2.842 Million. Under the branding ‘InnovFin - EU Finance for Innovators’, a set of debt and equity financial instrument facilities and a range of accompanying measures have been put in place. These scale up and refine the debt financial instruments implemented under FP7 and CIP and complement the financial instruments of COSME. The first Horizon Work Programme (2014-2015) was agreed in February 2014. The second Work Programme (2016-2017) was agreed in October 2015 with a budget in current prices of indicatively EUR 338 Million for 2016 and EUR 413 Million for 2017.

As in FP7, these debt and equity facilities are run in a demand-driven manner, though the priorities of particular sectors or of other EU programmes are targeted when top-up funding is made available. The focus continues to be on attracting private investments to R&I, and as before, firms and other entities located in the EU or in non-EU countries associated to Horizon 2020 are eligible as beneficiaries unless otherwise specified.

These instruments are expected to generate direct investments of more EUR 24 Billion and total final investments of more than EUR 50 Billion in R&I activities. At least a third of this investment is likely to be absorbed by SMEs, mostly early stage companies but also to some extent by those in the growth stage. The InnovFin instruments are complementary to the European Fund for Strategic Investments (EFSI), which supports and reinforces them.

46 The Risk-sharing finance facility (RSFF) and the Risk Sharing Instrument (RSI)
47 The early-stage equity facility, GIF-1
The European Investment Bank (EIB) and the European Investment Fund (EIF) play an important role, as entrusted entities, in implementing each financial instrument facility on behalf of and in partnership with the European Commission. For the EIF, this role includes conducting calls for expressions of interest for selecting the financial intermediaries, such as banks and risk-capital funds that make the actual loans to, or investments in, SMEs and small midcaps. The EIB makes large loans directly and also uses financial intermediaries, particularly when supporting medium and large midcaps. Exploratory talks with other financial institutions of comparable stature are underway, and in future one or more may join the EIB and the EIF in running facilities for the European Commission.

A loan-matching platform, *Six simple steps to loan funding*, gives easy access to information on European financing solutions for innovation-related projects.

**How it works**

The response of the target groups to the InnovFin range of products, described below, has been very high, with targets for 2014 and 2015 reached or surpassed, and excellent deal-flow and signature pipelines. In particular, demand for InnovFin SME Guarantee in 2015 outstripped supply, though reinforcement by EFSI allowed the EIF to continue signing up financial intermediaries without pause.

**On the debt side**, the financial instruments provide loans for R&I-driven SMEs and small midcaps; loans plus hybrid and mezzanine finance for R&I-driven (or R&I done by) medium and large midcaps; and loans for R&I undertaken by larger firms, universities, R&I infrastructures, public-private partnerships, and special-purpose vehicles or projects:

**InnovFin Large Projects** aims to improve access to risk finance for R&I projects emanating from large firms and medium and large midcaps; universities and research institutes; R&I infrastructures (including innovation-enabling infrastructures); public-private partnerships; and special-purpose vehicles or projects (including those promoting first-of-a-kind, commercial-scale industrial demonstration projects). Loans from EUR 25 Million to EUR 300 Million are delivered directly by the EIB.

**InnovFin MidCap Growth Finance** offers long-term senior, subordinated or mezzanine loans, in order to improve access to finance mainly for innovative larger midcaps (up to 3000 employees), but also SMEs and small midcaps. Loans from EUR 7.5 Million to EUR 25 Million are delivered directly by EIB.

**InnovFin MidCap Guarantee** provides guarantees and counter-guarantees on debt financing of up to EUR 50 Million in order to improve access to finance for innovative larger midcaps (up to 3000 employees) in particular. This facility is implemented by the EIB, and is delivered through financial intermediaries – banks and financial institutions – in EU Member States and Associated Countries. The EIB provides a 50% guarantee.

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InnovFin Energy Demo Projects makes loans of between EUR 7.5 Million and EUR 25 Million to first-of-a-kind, commercial-scale industrial demonstration projects in the field of energy at Technology Readiness Level (TRL) 7 or 8, or extends guarantees to financial intermediaries who will make such loans. Projects must relate to unproven pre-commercial technologies in the field of innovative renewable energy, fuel cells and hydrogen technologies. Projects may include, amongst others, first-of-a-kind power, heat, and/or fuel production plants and first-of-a-kind manufacturing plants. Projects must have a commercial component and demonstrate the ability to generate revenues after completion.

InnovFin Infectious Diseases makes loans of between EUR 7.5 Million and EUR 75 Million to SMEs, midcaps, special project vehicles, research institutions and other entities for corporate or project finance, and to large pharmaceutical companies to finance the development of pre-identified medical products on a risk-sharing basis. To be eligible, projects developing innovative vaccines, drugs and medical or diagnostic devices must have gone through the preclinical stage, and preferably through early-stage clinical development, and be at the point of requiring clinical validation or be ready for later-stage clinical trials. Projects on research infrastructures must be novel and cover facilities, resources and related services to be used by the scientific community to conduct top-level research.

InnovFin SME Guarantee targets R&I-driven SMEs and small midcaps requiring loans of between EUR 25,000 and EUR 7.5 Million. The EIF implements this facility by providing direct guarantees to financial intermediaries (such as banks and non-bank lenders), who extend loans and leases to final beneficiaries. The EIF implements this facility by providing direct guarantees to financial intermediaries (such as banks and non-bank lenders), who extend loans and leases to final beneficiaries. The EIF also offers counter-guarantees to financial intermediaries (such as guarantee institutions) providing risk protection to banks or other entities extending loans to R&I-driven SMEs and small midcaps. The guarantee covers up to 50% of intermediaries’ incurred losses, and in the case of the SME Initiative mechanism, up to 80%. This uses funds from COSME, Horizon 2020 and European Structural and Investment Funds (ESIF) combined with resources from the EIB, to enable Member States and regions to channel significant amounts of ESIF through the InnovFin SME loan Guarantee. Member States and regions may choose to deliver part of their operational programmes by allocating national or regional programme contributions in this way, with disbursements geographically linked to contributions. The Initiative can take the form of joint portfolio guarantees or joint securitisation operations for the benefit of R&I-intensive SMEs and small midcaps.

49 http://www.eif.org/what_we_do/guarantees/single_eu_debt_instrument/
On the equity side, the financial instruments make available early-stage equity and quasi-equity for SMEs & small midcaps through financial intermediaries such as venture capital and business angel funds (some growth- and expansion-stage investments are possible, in particular in conjunction with COSME’s Equity Facility for Growth):

**InnovFin SME Venture Capital** improves access to risk finance for early-stage R&I-driven SMEs and small midcaps by supporting early-stage risk capital funds that invest, on a predominantly cross-border basis, in individual enterprises. The facility works in synergy with the Equity Facility for Growth available under the COSME programme which targets growth and expansion stage funds, to form the Single EU Equity Financial Instrument. SMEs and small midcaps located in Member States or in Associated Countries are eligible as final beneficiaries. The EIF makes and manages equity investments in risk-capital funds. The EIF is able to invest in a wide range of financial intermediaries, including those cooperating with business angels. The funds concerned make venture capital and quasi-equity (including mezzanine capital) early-stage investments in enterprises, which are mainly SMEs. In the case of multistage funds (i.e., covering both early- and growth-stage investments), funding can be provided pro rata from this facility and COSME’s Equity Facility for Growth. A window of this facility focuses on co-investments with business angels in the ICT domain.

Complementing the debt and equity products, **InnovFin Advisory** aims to improve the bankability and investment-readiness of complex projects that need substantial, long-term investments. It also provides advice to improve the investment conditions for access to risk finance for R&I through studies and the development of business cases for new financing mechanisms to support specific R&I policy objectives. The launch of the InnovFin Infectious Diseases product is the outcome of a successful Advisory assignment.

**Open issues - Next Steps**

According to the opinions gathered, stakeholders would welcome a reinforcement of already significant awareness-raising efforts; the introduction of a standard set of indicators to monitor the uptake of financial instruments; a reduction in the reporting obligations of financial intermediaries; and the creation of yet more instruments for additional target groups (such as start-up companies or microfirms) and target sectors (building on the InnovFin Infectious Diseases and Energy Demo Products pilots).

The Investment plan for Europe intends to fundamentally change public policy and the financing tools underpinning investments in Europe, mobilising at least EUR 315 Billion in additional public and private investment into the real economy.

In addition, several new, potential products are already at the exploratory design stage:

1. A business angel's product, building on the current ICT-focused pilot, could co-finance investments by business angels in innovative SMEs and small midcaps that aim to commercialise new products and services.
2. A technology transfer financing facility could co-finance investments made by existing technology transfer funds and vehicles.
3. Supporting one or more European funds-of-funds by the EU budget to mobilise private capital investments in a wide range of risk-capital funds across Europe, as indicated in the Action Plan on building Capital Markets Union.
4. Crowdfunding platforms might benefit from EU support in the form of guarantees or co-investments.

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50 Opinion were gathered through several conferences, the Horizon 2020 advisory group, meetings with pan-European associations and other stakeholders, as well as in the form of feedback from the EIF and the EIB.

Action taken

Access to finance is essential to enhance the competiveness and growth potential of SMEs. For this reason the European Commission presented a strategy to promote better access to finance for SMEs which includes a proposal for a regulation setting uniform rules for the marketing of venture capital funds. The European Venture Capital Regulation (EuVECA)\textsuperscript{52} entered into force in July 2013.

How it works

The EuVECA makes it easier for venture capitalists to raise funds across Europe for the benefit of start-ups. Once a set of requirements is met, all qualifying fund managers can raise capital under the designation ‘European Venture Capital Fund’ across the EU. They therefore no longer need to meet requirements which are different in every Member State. By introducing a single rulebook, venture capital funds have the potential to attract more capital commitments and become bigger.

So far 34 European Venture Capital Funds have been established with the majority marketing their products and services across more than one Member State.\textsuperscript{53} There is considerable interest by smaller operators to establish themselves as EuVECA managers. This is not surprising as the EuVECA rules explicitly limit eligible managers to firms that operate beneath the Alternative Investment Fund Managers Directive (AIFMD)\textsuperscript{54} thresholds.

Open issues – Next steps

As predicted in the pre-legislative impact assessment, the main obstacle to a rapid roll-out of EuVECA funds is the national registration process. In the post-crisis environment, national regulators are extremely cautious about registering smaller operators who find it more difficult than their larger peers to comply with a variety of post-crisis requirements, such as the separation of portfolio management and risk management functions or the independent valuation of investment assets. It has been highlighted by stakeholders and the European Economic and Social Committee targeting the regulation at small funds may limit the creation of EU Venture Capital Funds.

There are other factors that may diminish the attractiveness of the system, for example, national authorities (different from the ones that issued the passport to operate across all Member States under the new regulation) place additional charges on funds managers. Opportunities for improvement highlighted by stakeholders include: reducing the operational costs related to the registration process of managers, increasing flexibility, understanding how the operations of EuVECA managers are affected by different tax regimes in Europe and providing support and programmes for investment readiness and capacity-building to investors and fund managers.

\textsuperscript{52} http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0345&from=EN
\textsuperscript{54} http://ec.europa.eu/finance/investment/alternative_investments/index_en.htm
A consultation on EuVECA and the European Social Entrepreneurship Funds was launched on 30 September 2015 as part of the Capital Markets Union Action Plan. The consultation asks how the take-up of EuVECA can be improved. Specific questions relate to whether, and under what circumstances, the management of EuVECA should be opened up to managers authorised under AIFMD and what national barriers are limiting their success.

Ensuring full impact of this commitment will require striking a delicate balance between post-crisis requirements on prudential oversight and the need to stimulate investment in Europe’s real economy.
Commitment 12
Strengthen cross-border matching of innovative firms with investors

“The Commission will strengthen cross-border matching of innovative firms with suitable investors. It will appoint a leading figure to lead the process. In addition, in the context of the SME Finance Forum, the Commission will focus inter alia on the particular financing problems faced by small, innovative companies.”

Action taken

A European expert group was set up by the European Commission to identify current trends and best practices in matching innovative firms with investors on a cross-border basis and to formulate related policy recommendations. The expert group was chaired by the Chair of the British Business Angel Association, and delivered recommendations to be considered at both EU and Member State level.

The expert group also made recommendations about how R&D grants should be set up and recommended the creation of a business angels’ facility and of rules that would favour cooperation between business angels and venture capitalists.

Recommendations concerning R&D grants were taken into account in the design of the new SME Instrument (see Commitment 7). To follow up on the recommendation concerning business angels, a study that will deliver a more comprehensive picture of the potential for angel and crowd-funding investors to improve access to risk finance in the EU for, in particular, SMEs and small midcaps was included in the Horizon 2020 work programme for 2014-2015. In addition, a pilot of a business angels’ facility, focusing on ICT, was launched in 2015, paving the way for a pan-sectoral facility in 2016-2017.

The Startup Europe initiative, support actions under the SME Instrument and capacity-building measures under ‘Access to Risk Finance’ have been launched to support accelerator programmes, the coaching and mentoring of entrepreneurs, developing their investment-readiness, and facilitating interactions with investors.

How it works

Several meetings of the SME Finance Forum (including SMEs, banks and other financial institutions) were held from 2012 to 2014 to monitor the market situation and explore new ideas to improve access to finance for SMEs, including small, innovative companies. Recommendations regarding venture capital were taken into account in the design of the complementary equity products under Horizon 2020 and COSME (see Commitment 10). In addition, as a follow-up to the recommendations, the Enterprise Europe Network now provides more extensive advice and assistance to SMEs on accessing finance and cooperating closely with other local service providers such as financial intermediaries and accountants.

Open issues - Next Steps

Stakeholders continue to underline that cross-border cooperation is still difficult, in particular due to language and regulatory differences across Member States.
Commitment 13
Review State Aid Framework for R&D&I

“In 2011 the Commission will conduct a mid-term review of the State aid research and development and innovation framework clarifying which forms of innovation can be properly supported, including for key enabling technologies and innovations addressing major societal challenges, and their best use by Member States. The Commission will assess the effectiveness of the temporary State aid measures introduced in 2008, including the increased safe harbour for venture capital investments, and on this basis make the necessary proposals.”

Action taken

The Mid-Term Review of the Community Framework for State Aid for research and development and innovation (RDI) was finalised in 2011. Its objective was to start a reflection on the contribution of the RDI State Aid rules to achieving the EU’s innovation goals in order to further promote private investment in R&D, smarter public investment and innovation overall.

The Mid-Term Review concluded that the current RDI Framework is a useful instrument for ensuring that public support is well targeted, although all its possibilities have not been utilised by Member States to their full extent.

In parallel, the Commission launched a broader reflection on future RDI State aid policy, including on wider and more substantive issues such as aid effectiveness, aid architecture, and the proportionality of the rules. In addition, the existing rules on risk capital aid were also included within this broader review exercise. A public consultation in the form of a questionnaire was opened to Member States and stakeholders between 2011 and 2012.

After that, in 2012, the Commission launched the State Aid Modernisation initiative. The three main objectives of this reform package were to foster growth in the internal market; focus enforcement on cases with the biggest impact on the functioning of the internal market; and streamline the rules and increase the speed of decisions.

How it works

The implementation of State Aid Modernisation advanced quickly. In 2013, the Council adopted the revised Enabling Regulation, allowing the Commission to exempt by way of block exemption Regulation certain categories of aid from the obligation of prior notification, including R&D&I aid as well as aid to enhance access to finance for start-ups and early stage SMEs. On this basis, the Commission rapidly adopted a number of revised rules, which entered into force on 1 July 2014.

Firstly, the new General Block Exemption Regulation (GBER) was significantly extended, increasing the notification thresholds for R&D projects and including new exempted categories, such as innovation aid and aid for research infrastructures. The new GBER hence ensures that a large majority of RDI aid can be granted without need for notification to the Commission. Moreover, new rules on risk finance aid were included in the GBER in order to increase the investment amounts and the forms of finance available to SMEs up to their growth stage so as to cover their funding needs for entering the market and ramping up their production capacities.

Secondly, the Commission adopted new Risk Finance guidelines, which aim at ensuring that, in case of market failures and subject to a number of conditions, SMEs and small and innovative midcaps have adequate access to finance beyond the limits provided for under the GBER, in order to bring new products and ideas to the market.

Thirdly, the Commission also adopted a revised RDI framework, which is expected to improve clarity and establish greater legal certainty about the forms of support for investments RDI that do not constitute State aid and for RDI projects which entail State aid exceeding the notification thresholds set out in the GBER and which can nevertheless be considered as are compatible with EU State aid rules.

Last but not least, new standalone rules on important projects of common European interest (IPCEI) have been adopted with a view to encouraging Member States to channel their public spending to large projects making a clear contribution to economic growth, jobs and the competitiveness of Europe. Where private initiatives fail to materialise because of the significant risks and the transnational cooperation that such projects entail, Member States can fill the funding gap to overcome such market failures and boost the realisation of projects that otherwise would not have been launched.

Open issues - Next Steps

As from 1 July 2014, the Commission applies the principles set out in these new texts for the compatibility assessment of all notified RDI and risk finance aid. For their part, Member States must maintain detailed records regarding all aid measures containing all information necessary to establish that the relevant compatibility conditions have been fulfilled. These records must be maintained for 10 years from the date of award of the aid and must be provided to the Commission upon request.

The new rules will remain in force until 31 December 2020. However, the Commission may decide to review or change them at any time if this should be necessary for reasons associated with competition policy or in order to take account of other Union policies and international commitments, developments in the markets, or for any other justified reason.

Commitment 14
Deliver the EU Patent

“The European Parliament and Council should take the necessary steps to adopt the proposals on the EU patent, its linguistic regime and the unified system of dispute settlement. The objective is that the first EU patents are delivered in 2014.”

Action taken

The Unitary Patent project has been discussed for several decades. It was possible to gain momentum around this project within the framework of the Innovation Union. An enhanced cooperation was put in place to overcome the opposition of Member States that did not agree with the linguistic regime.

The ‘Unitary patent package’ was agreed between 2012 and 2013. It includes a Regulation creating a Unitary Patent (UP) and a Regulation establishing a translation regime applicable to the UP, as well as an international agreement among Member States setting up a single and specialised patent jurisdiction (the Unified Patent Court, UPC). The patent package implements enhanced cooperation between 26 Member States (all Member States except Spain and Croatia; the latter has expressed its willingness to join the enhanced cooperation; Italy joined the UP in October 2015).

The UP regulations entered into force on 20 January 2013. However, they will only apply from the date of entry into force of the UPC Agreement, which requires a minimum of 13 ratifications, including ratifications by France, Germany and the UK. So far the UPC agreement has been ratified by Austria, Belgium, Denmark, France, Luxembourg, Malta, Portugal and Sweden. The first UP providing uniform protection within the territory of the participating 26 Member States is expected to be granted in the course of 2016.62

The enhanced cooperation had to undergo a series of legal obstacles as both Italy and Spain challenged the adoption of the enhanced cooperation regime by filing complaints to the ECJ. The ECJ rejected these challenges. Spain appealed, but the ECJ rejected the challenges again in July 2015. These legal examinations have created some uncertainty around the project of the UP and may have delayed the ratification process by some Member States.

Technical implementation of the UP regulations is carried out by the Select Committee, established in March 2013 within the structure of European Patent Office (EPO), by the participating Member States. The Commission is an observer in this Committee. As a result of the work of the Select Committee, the Implementing rules for the UP are being finalised. Discussion on the renewal fees for the UP were provisionally concluded in June 2015. The discussion on the distribution key and the rules relating to the fees relating to the unitary patent are ongoing.

In order for the UPC to become operational as soon as possible after the entry into force of the UPC Agreement, in February 2013 the signatory Member States created a Preparatory Committee in charge of the setting up of the UPC. The Commission is an observer in this Committee. The work of the Preparatory Committee is ongoing.

Since 2013 machine translations of patent applications and granted patents are available online and free of charge from and into English, French and German for 21 EU official languages (Patent Translate).63

62 The Commission has repeatedly urged Member States to speed up the ratification process of the UPC Agreement. The conclusions of the European Council of 21 March 2014 also confirmed the commitment to ratify the UPC Agreement and make the necessary legal and administrative arrangements so that the EU patent regime can enter into force by the end of 2014. However, the requisite legal and administrative arrangements ensuring the full functionality of the unitary patent regime might ultimately take more time to be agreed by Member States.

63 http://www.epo.org/searching/free/patent-translate.html
How it works

The patent with unitary effect is going to be optional for European patent holders wishing to protect their invention in the territory of 26 Member States in a one-stop-shop. Costs and administrative burden should be reduced since the UP will be granted centrally by the EPO with minimum translation requirements and no necessity to validate a granted patent on a national level.

The costs for validating a Unitary patent for 26 Member States,\textsuperscript{64} has been remarkably reduced, leading to an estimated 78\% of cost savings for users of the unitary patent protection.

The Unified Patent Court is expected to start functioning by the end of 2016.

It will be a single and specialised jurisdiction with competence for the future UP and the classical European patents avoiding unnecessary duplication of litigation cases before the national courts of several Member States. The savings from having access to a Unified Patent Court are expected to be between EUR 148 and EUR 289 Million\textsuperscript{65} per year. Cases in the UPC will be heard by highly-experienced legally and technically qualified judges sitting in multi-national panels and applying common procedural rules. The result will be development of a coherent and consistent case law, thereby increasing legal certainty and predictability.

Open issues – Next Steps

The use of an enhanced cooperation regime limited the role that the EC could take in defining the implementing rules, which were/are being defined by the Select and the Preparatory Committees. The Select Committee is made up of representatives of the National Patent Offices. This is potentially problematic since it pursues two opposed goals: on the one hand, the need to have low UP renewal fees to ensure that the UP system is affordable and it has a broad uptake; on the other the need to have

\textsuperscript{64} Estimates refer to a date prior to the entry of Italy in the system.
high UP renewal fees to ensure enough financial income for all national patent offices and the European Patent Office.

The entry into force of the UPC is also being delayed by lengthy administrative procedures concerning, for instance, the recruitment of the judges for the UPC and the public procurement process to acquire the necessary IT tools to connect the local offices of the UPC.

It is soon to say whether the system will be successful even if all the highest standards have been put in place since the first Unitary Patent has not been granted yet and the UPC has not entered into force.

The system will be successful only if it is widely used. Its use will depend on its ability to prove its reliability and on the economic strategy of European companies.

The uptake will most likely not be homogeneous throughout sectors: some sectors, such as the pharmaceutical, tend to apply for patents in all MS and are therefore likely to exploit the system widely. This is nevertheless not the case for other sectors. Most companies (65% in 2011 according to EPI) only apply for patents in 3 or less MS. If the UPC proves to be successful, they might be encouraged to pay the little extra cost of the UP compared to their current strategy to profit from greater legal certainty, but on the contrary they might not have an incentive to spend more to extend the protection of their patent to a broader geographical area.

In addition, the take up of the new unitary patent will also be linked with the quality of the judgement delivered by the Court: in spite of the economic advantages provided for by the unitary patent, some holders could be reluctant to opt in for the unitary patent if they question the possible outcome from the UPC.

**Commitment 15**

**Screen the regulatory framework in key areas**

“Starting in 2011: EU and Member States should undertake a screening of the regulatory framework in key areas, starting with those linked to eco-innovation and to the European Innovation Partnerships. This will identify the rules that need to be improved or updated and/or new rules that need to be implemented in order to provide sufficient and continuous incentives to drive innovation. The Commission will provide guidance on how best to organise this screening exercise.”

**Action taken**

A methodology to assess the effect of the regulatory frameworks on innovation was developed, with Commission support. The methodology provides a procedure for examining the interaction between regulation and innovation in a given policy area.

The methodology was then used to examine the impact of regulation in the fields of water and raw materials in conjunction with the relevant European Innovation Partnerships (see Commitment 29) who identified thematic priority areas in their spheres of expertise. This provided a means to test the methodology, identified the innovation effects of concrete regulations, and provided illustrative case studies from the two areas examined.
The Final Report on the Screening of the Regulatory Framework\textsuperscript{66} was published in 2013. This report provides an in-depth guide to the methodology and outlines the application of the methodology in the water and raw materials areas.

A condensed version of the methodology, A Short Guide on the Innovation Effects of Regulation,\textsuperscript{67} was published in 2014. This provides a step by step approach on how to implement the methodology in any regulatory area.

**How it works**

The need to maximise benefits and reduce costs, including regulatory burdens, is well established in European policy making. Impact assessments are conducted in advance of new regulations and fitness checks and evaluations are regularly carried out on existing legislation. The methodology complements this activity and provides a means to specifically examine whether the regulation is likely to stimulate or hamper innovation.

The methodology developed under Commitment 15 allows any policy maker who is examining regulatory frameworks to better understand the innovation-regulation interaction through a six step approach divided into three pillars – research, innovation and stakeholders.

**Open issues - Next Steps**

The *Final Report on the Screening of the Regulatory Framework*, by providing a working methodology and analytical framework for understanding the interaction of innovation and regulation, was an early and key piece of work in screening the European regulatory framework to enhance the ability of legislation to drive innovation.

\textsuperscript{67} https://ec.europa.eu/research/innovation-union/pdf/RegulatoryScreening_short_guide.pdf
In 2015 the Impact Assessment Guidelines of the Better Regulation Package include, for the first time, a tool that is specifically aimed at measuring impacts on research and innovation\textsuperscript{68} as part of the Better Regulation effort led by the Commission. ‘A Short Guide on the Innovation Effects of Regulation’\textsuperscript{69} is referenced as an information source by the research and innovation tool demonstrating the continuing relevance of the methodology.

Also in late 2015 the Commission published a Staff Working Document on Better regulations for innovation driven investment at EU Level, which further develops the work of screening the EU regulatory landscape to identify relevant regulatory barriers and gaps that hinder research and innovation and, consequently, the potential for creating economic value in Europe.

EU legislation has frequently proved capable of driving innovation and contributing with novel solutions to an improvement in European wellbeing and high standards for our society. However, this does not preclude the importance of constantly reviewing the impact of regulation on innovation. Therefore, the work on regulatory screening will continue to be extended to further policy domains on a cross Commission basis and including the viewpoints of external stakeholders.

\textsuperscript{68} http://ec.europa.eu/smart-regulation/guidelines/tool_18_en.htm
\textsuperscript{69} https://ec.europa.eu/research/innovation-union/pdf/RegulatoryScreening_short_guide.pdf
Commitment 16
Speed up and modernise standard-setting

“In early 2011, as a first step, the Commission will present a Communication accompanied by a legislative proposal on standardisation, which will inter alia cover the ICT sector, in order to speed up and modernise standard-setting to enable interoperability and foster innovation in fast-moving global markets. This will be combined with a multiannual programme to anticipate new standardisation needs and integration of standards into R&D projects in the research Framework Programme. The Communication will also examine options for ensuring in a longer term perspective that the standardisation system is able to adapt to the quickly evolving environment and to contribute to Europe’s strategic internal and external objectives (relating, among others, to innovation and technological development), including through the launch of an independent review.”

Action taken

In 2011 and 2012 the EU launched a set of initiatives to speed up and modernise standard-setting. Within this framework, a new Standardisation Package was introduced. The package sets out a strategic vision for European standards, the legal basis for the use of European standards in support of EU legislation and policies for the identification of ICT technical specifications and financing European standardisation. The Commission also launched an independent review, which has produced recommendations in 3 areas: governance, interaction and communication in the European standardisation system.

These initiatives are particularly important for two reasons. They represent a step forward in the definition of common standards and codification of information at EU level. They also create new instruments and promote actions to involve organisations of underrepresented stakeholders in the traditional process of standard definition and recognised specificities of standardisation in the ICT sector. For example, a dedicated European multi-stakeholder platform has been created for the ICT sector, to advise the Commission on matters related to ICT standardisation, enhance cooperation between the different ICT standard-setting organisations and to identify ICT technical specifications which may be eligible for referencing in public procurement while not yet recognizable as a formal standard (i.e., those adopted by European Standard Organisations (ESOs), international standards organisations, or national standardisation bodies).

Standardisation needs are also being anticipated through multi-annual programmes and linked to the research and innovation priorities in Horizon 2020. Around 25% of topics explicitly promote or mention standardisation activities in the combined total of Leadership in Enabling and Industrial Technology (LEIT), ICT, Space, NMB and Societal Challenges in the Work Programme for 2016-2017. In the case of LEIT actions related to ICT, standardisation is mentioned in more than 60% of the topics.

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72 Nanosciences, Nanotechnologies, Materials, Biotechnologies and new Production Technologies.
The EU Rolling Plan for ICT Standardisation is drafted and reviewed annually by the European Commission in collaboration with the European Multi-Stakeholder Platform on ICT Standardisation. It gives a multi-annual overview of the needs for preliminary or complementary ICT standardisation activities to undertake in support of EU policies and regulation. It is addressed to all ICT Stakeholders, standard makers or not, and gives a transparent view on how the policies are planned to be practically supported. Thanks to the wide participation in its drafting, it achieves to picture a unique view of the landscape of standardisation activities in a given policy area.

How it works

Standards play an important role for innovation. By codifying information on the state of the art of a particular technology, they enable dissemination of knowledge (both within and outside the relevant industry community). They bridge the gap between research and end-products or services, promote technology in the market and increase the probability of its take-up. Standardisation can facilitate the deployment of new technologies, interoperability between new products and services and serve as a platform for further innovation. Innovations can more easily gain market acceptance if they comply with existing standards for safety, quality and performance.

The development and implementation of research and innovation agendas including standardisation is essential in addressing competitiveness. Horizon 2020 gives stronger support to the market uptake of innovation. Standardisation activities are an essential channel for the market adoption of research results. In Horizon 2020, standardisation activities are promoted notably under the Leadership in Enabling and Industrial Technology priority as well as under each of the Societal Challenges.

A standardisation process that keeps pace with the rapid shortening of innovation cycles can ensure that the European industry remains competitive in a fast changing global landscape, maximising European companies’ first mover advantage. The new Framework Partnership Agreements with the European Standardisation Organisations includes Key Performance Indicators, one of which is the 50% reduction of the standard development time by 2020.

The new Standardisation Package has contributed to addressing crucial issues such as the length of the process of standards adoption: the standardisation process is now quicker having fallen from 5 years in 2009 to approximately 2.5 years in 2014.

Open issues – Next Steps

The Commission has proposed a Joint Initiative on Standardisation between the Commission, the industry, the European Standardisation Organisations and the standardisation community in general. The Pact will aim to speed up and better prioritise standard setting across the board.

The Commission will also adopt, in collaboration with the relevant stakeholders, a Priority ICT standardisation Plan identifying key priority domains and proposing actions to support the timely development of the ICT standards needed to achieve completion of the Digital Single Market.
Commitment 17
Set aside dedicated national procurement budgets for innovation; Set up an EU level support mechanism and facilitate joint procurement

“From 2011, Member States and regions should set aside dedicated budgets for pre-commercial procurements and public procurements of innovative products and services (including those defined by the Innovation Partnerships).

This should create procurement markets across the EU starting from at least EUR 10 Billion a year for innovations that improve the efficiency and quality of public services, while addressing the major societal challenges. The aim should be to achieve innovative procurement markets equivalent to those in the US. The Commission will provide guidance and set up a (financial) support mechanism to help contracting authorities to implement these procurements in a non-discriminatory and open manner, to pool demand, to draw up common specifications, and to promote SME access. In addition, the Commission will offer guidance on implementing joint procurements between contracting entities under the current public procurement directives and use the ongoing general evaluation of the current directives to examine the opportunity to introduce additional rules to make cross border joint procurements easier.”

Action taken

The Commission’s proposal that Member States and regions should set aside dedicated budgets for pre-commercial procurements and public procurements of innovative solutions was not taken up by the Council. Nevertheless, an increasing number of Member States and regions have integrated innovation procurement into their innovation policy mix. The type of intervention has ranged from strategy definition, target setting, financial incentives, awareness raising, capacity building, promotion of dialogue between procurers and suppliers to a combined approach of all or some of these elements.

At EU level, the Commission proposed, in December 2011, revisions of the EU Public Procurement Directives with the objective of facilitating procurement of innovative products and services and cross-border joint procurement. The revised Directives 2014/24/EU,73 2014/23/EU74 and 2014/25/EU,75 were adopted by Parliament and Council in 2014 and are expected to be transposed by April 2016.

The Commission also provided financial support to transnational cooperation to help Contracting Authorities implement innovation procurements. Between 2010 and 2013 almost EUR 150 Million was allocated under CIP and FP7 programmes to support the uptake of innovation procurement.

The new funding programme for R&I, Horizon 2020, has formally introduced two new dedicated instruments for the procurement of innovative solutions (PPI) and research (Pre-commercial procurement – PCP). Under the first Horizon 2020 Work Programme (2014-15), a total of EUR 115 Million was made available to directly support cross border innovation procurement, by topping up joint procurement budgets. The second Work programme (2016-17) foresees a similar effort, with an estimate of EUR 116 Million. It will cover areas like Health, Energy, Transport, Climate Change, Security, ICT & Research Infrastructures. Additional support has been provided through coordination and support actions to raise awareness, support networking and enhance procurer’s capacity to engage in innovation procurement.

In order to raise awareness and exchange experience and best practices, a Public Procurement of
Innovation Platform has been developed as a space for procurers and related stakeholders from around
Europe to gather and disseminate information and exchange.

In parallel, a technical assistance has been set up (EAFIP). It will be composed of a training toolkit,
local assistance to procurers (including on legal aspects) and organization of workshops and seminars
across Europe.

How it works

Over the past five years, interest in Innovation procurement has been growing in European countries.
The typology and the combination of support vary from one country to the other.

National approaches can start with an overarching national framework to promote the strategic use of
procurement in support of specific policy objectives such as environment and innovation (as it is the case
in Austria).

In some Member states specific targets have been set up to earmark procurement budget to support
innovation. Spain has fixed a 3% objective for innovation procurement; France aims at dedicating
2% of procurement budget for innovative companies (including SME’s) by 2020 and other countries
such as the Netherlands (2.5%) and Lithuania have developed similar targets (5% for PCP).

In other cases, Member States have developed specific competence centres to support procurers in
implementing procurement in general (Austria, Netherlands - Pianoo supporting more than
3500 procurers) or focussing more particularly on innovation procurement (Finland - Tekes with financial
support to administrative engineering).

Some countries are developing specific initiatives to promote the dialogue at an early stage between
suppliers and procurers (Belgium-Flanders, Norway and France with meet the buyers programmes).

The most advanced countries in the field have developed an integrated approach by setting up
programmes supporting PPI/PCP (FI, UK, NL, NO, SE) with a dedicated budget and appropriate support
services run by a procurement Agency (Pianoo-NL), an association of procurers and suppliers (NO), a
regional (IWT –Flanders) or national innovation agency (TEKES-FI, Vinnova-SE).

A cross border initiative has been launched by the Nordic countries (NO-FI-DK-SE-IS). As a result, a
Nordic program on innovation within public procurement with focus on health care has been set up and
three pilot projects have been funded.

The first results from the FP7 projects are promising: 45 procurement contracts have been awarded
under the first 7 PCP-FP7 projects, involving 84 entities, with a high proportion of SMEs and a significant
participation of universities. Almost all of the bidders are locating their R&D activities in Europe and offer
attractive prices as they have high expectations on the markets to be developed following their bid.

The revised Directives, should offer contracting authorities an improved framework to procure innovative
products and services by using more innovation friendly tender specifications and procedures.

At the level of tender specifications drafting, the directives keep encouraging the use of functional
requirements (avoiding solution prescription) and award criteria based on the most economically
advantageous tender (taking not only the price into consideration). The new procurement legal
framework also introduces the concept of total life cycle cost of purchases (so that innovative solutions
are evaluated in the light of their long-term financial benefits), and invites contracting authorities to express clearly what IPR they want to acquire either partially or fully (allowing a correct pricing for innovation procurement bids).

The directives also offer new and improved procedures to facilitate the dialogue between procurers and suppliers. The competitive dialogue procedure has been improved and simplified. It is of use in cases where contracting authorities are unable to define the means of satisfying their needs.

A new innovation partnership procedure, once transposed by Member States, will allow public authorities to call for tenders to solve a specific problem without pre-empting the solution, thus leaving room for negotiations between the authority and the bidding companies to find the most appropriate answer and come up with innovative solutions. The innovation partnership is structured in successive competitive stages and normally ends up with the commercial deployment of the solutions developed and tested during the procurement process.

A strengthened legal framework has been developed for pre-commercial procurement through the clarification of the exemption for R&D services in the public procurement Directives.

Finally, the new Directives provide explicit and clear rules on joint cross-border procurement ensuring the necessary legal certainty for contracting authorities and central purchasing bodies and offering economies of scale and risk-benefit sharing for and among procurers.

**Open issues – Next Steps**

Important efforts have been made to promote experience with public procurement in Member States and increase financial support to transnational cooperation. These, along with more innovation-friendly EU Public Procurement Directives are major steps in the right direction. However, many programmes and initiatives are still only at a pilot stage with limited scope and budgets.

To ensure a proper uptake, there is still a need to promote financial incentives, raise awareness, build capacity, and enhance dialogue between procurers and suppliers. Further efforts are needed to connect public procurement and policy objectives and overcome the fragmentation of demand so as to fully exploit the opportunities of the single market.

It is important that the transposition of the Directive is carried out quickly and correctly to make this new innovation friendly legal framework applicable.

As a positive signal in this direction, Member States have formulated, in June 2015, an opinion within the European Research Area and Innovation Committee (ERAC) calling for the creation of national strategic frameworks for innovation procurement (including action plans, support services and financial incentives) and the set-up of mutual learning initiatives and appropriate measurement and monitoring at European level.

The EU will continue to offer financial support under Horizon 2020. Nevertheless, feedback from the first calls for proposals show that further efforts are needed to mobilise the procurers’ communities so that innovation procurement can happen on a cross-border basis and contribute to making the single market less fragmented. At national and local level, opportunities to engage and promote innovation procurement can be further maximized by the use of European Structural and Investment Funds.
Commitment 18
Present an eco-innovation action plan

“By early 2011 the Commission will present an eco-innovation action plan building on the Innovation Union and focusing on the specific bottlenecks, challenges and opportunities for achieving environmental objectives through innovation.”

Action taken

A comprehensive set of initiatives to improve market uptake of eco-innovation, the Eco-innovation Action Plan (EcoAP)\(^{76}\), was adopted by the Commission in 2011. The plan was intended to accelerate development and uptake of eco-innovations by stepping up past actions, optimising the use of existing resources and mobilising additional financial resources. The Eco-innovation action plan was followed by a Strategic Implementation Plan agreed among Commission services in 2012.

\(^{76}\) http://ec.europa.eu/environment/ecoap/about-action-plan/index_en.htm
How it works

The EcoAP expands the EU’s focus from green technologies to every aspect of eco-innovation – including products and services. The aim is to bring benefits for the environment, create growth and jobs, and ensure more-efficient use of our increasingly scarce resources.

The EcoAP is directed at tackling the main barriers to eco-innovation such as market uncertainty and concerns around return on investment. It also addresses the main drivers for eco-innovation, including high energy prices, targeted regulations and standards as well as access to knowledge.

The Plan includes several actions including a number that are related to other Innovation Union commitments.

- using environmental policy and legislation as a driver to promote eco-innovation. A regulatory screening methodology (developed under Commitment 15) was applied to water and waste management policies in Europe.
- supporting demonstration projects and partnering to bring to the market promising, smart and ambitious operational technologies that have been suffering from low uptake. An approach based on partnerships between public and private actors and establishing networks can promote eco-innovation by achieving a critical mass that is required for new products or processes. The Commission has designed financial support to eco-innovation on the basis of this approach through FP7, CIP, LIFE+, the European Structural and Investment Funds and the Horizon 2020 and COSME programmes.
- developing new standards boosting eco-innovation (see Commitment 16);
- mobilising financial instruments and support services for SMEs (see Commitment 7);
- promoting eco-innovation through the European Innovation Partnerships (see Commitment 29).

The implementation of the Plan has already started as shown by, for instance, by the ECOPOL project, a transnational public partnership, developed by Member States to address the challenge of speeding up effective implementation of eco-innovation policies. Eco-innovation principles are spreading in Member States: as of 2014, 22 Member States had adopted a National Action Plan or equivalent document for Green Public Procurement and 26% of SMEs in the EU28 offered green products or services.

Examples of successful initiatives implemented under EcoAP include the networks INNOCAT (bundling demand for eco-innovative solutions in the catering sector) and INNEON (facilitating private investments into eco-innovative SMEs).

Open issues - Next Steps

The importance of eco-innovation and eco-industries in contributing to jobs, growth and investment as well as the goal of sustainable development continues to be a key priority for the Commission. The adoption of the EcoAP was further complemented by the adoption of the Green Action Plan for SMEs in 2014 that is currently being implemented. An EcoAP review is on-going with the aim to adopt in 2016 an updated Strategic Implementation Plan focussing on key deliverables of the upcoming Circular Economy Package on innovation and support to SMEs.

77 http://www.ecopol-project.eu/en/about_ecopol
78 As of November 2014 (Source: http://ec.europa.eu/environment/gpp/action_plan_en.htm)
79 Flash Eurobarometer survey 381: SMEs, Resource efficiency and green markets. Published Dec. 2013
80 Additional initiatives can be found here: http://ec.europa.eu/environment/ecoap/index_en.htm
Commitment 19 – Part 1
Establish a European Creative Industries Alliance

“As part of the follow up to the Green Paper on cultural and creative industries, the Commission will establish a European Creative Industries Alliance to develop new forms of support for these industries and promote the wider use of creativity by other sectors.”

Action taken

The European Creative Industries Alliance (ECIA) was launched in 2012\(^2\) as an integrated policy initiative. The related projects of the three-year initiative had been set up in December 2011 following an open call for proposals under the European Commission’s Competitiveness and Innovation Programme (CIP).

Soon after the ECIA launch, a Policy Learning Platform was set up under the Alliance. This platform consisted of representatives from twenty-seven organisations, including from two regions selected as European Creative Districts that joined in 2013. The platform brought together regional and national policy-makers supporting innovative creative industries to develop best practices in support of service innovation in creative industries.\(^3\)

How it works

The ECIA combined policy learning with eight concrete actions in the areas of innovation vouchers, better access to finance, and cluster excellence and cooperation in an integrated policy initiative. It created an open platform that brought together policy-makers and business support practitioners

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\(^3\) See European Creative Industries Alliance website at www.eciaplatform.eu
from 28 partner organisations and 12 countries. It shaped a community in Europe that actively supports creative industries as a driver for competitiveness, job creation and structural change by developing and testing better policies and tools for creative industries.

The European Creative Districts projects aim to demonstrate how traditional industrial regions can, via their policies and support measures for entrepreneurship and innovation, help to create a supportive ecosystem in which creative entrepreneurs can develop, innovate, grow and internationalise. Funded by the European Parliament and implemented by the Commission, the two selected regional projects from Wallonia in Belgium and Prato in Italy (which were linked to the ECIA and will run until 2016) have demonstrated how to transform industrial regions by better capitalising on creativity.

Across the nine projects carried out between 2012 and 2014, the ECIA succeeded in mobilising at least EUR 45.8 Million directly or indirectly for the creative industries on top of the EUR 6.75 Million EU support for the initiative. For example, the success of the VINCI project, which implemented a EUR 100,000 innovation voucher scheme, contributed to the establishment of a National Creative Voucher scheme in Austria that provided EUR 3 Million support for fostering cross-sectoral collaboration between SMEs from other industries and creative service providers, with a further EUR 1.5 Million allocated in 2015.

The cross-sectoral collaborations supported included the IT sector on mobile solutions, tourism, enhancing online presence for agrifood, retail and other sectors, innovative materials and textiles, bringing design and creative solutions in the healthcare and manufacturing sectors such as the automotive. Guidance material was prepared under concrete actions such as the FAME project Coaching Manual to make creative industries investment-ready and attract investors to creative businesses, the Cluster 2020 report on Taking Co-working to the next level and the ECCL project report on Creative Camps on support of creative entrepreneurship and cross-sectoral cooperation and the development of a coaching process scheme for creative cluster managers.

Some 3570 SMEs have benefitted directly from the ECIA's concrete actions so far. This includes by receiving customised innovation support such as innovation vouchers, mentoring, training, cross-border matchmaking etc. or by participating in workshops and events. Many more SMEs are understood to have been reached indirectly through the linked networks and communication efforts. An additional 2460 stakeholders participated in ECIA activities, including policy-makers, practitioners and representatives from SME intermediaries, cluster organisations, investors, etc.

In November 2014, the Policy Learning Platform of ECIA presented ten policy recommendations with concrete cases in its ‘Create! Innovate! Grow!’ report towards ‘A new policy agenda to maximise the innovative contributions of Europe’s creative industries’. The recommendations were discussed with 200 stakeholders at the Closing Conference on 27-28 November in Amsterdam and concentrate on the following three areas:

1. Stimulate innovation and growth by enabling cross-sectoral collaboration;
2. Building better business support and access to finance in effective regional ecosystems; and
3. Measure and raise awareness of the value of the cultural and creative industries as a key driver of innovation and growth.

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85 http://www.awsg.at/Content.Node/5071.de.php
87 More information about the European Creative Cluster Lab project is available at http://www.eciaplatform.eu/project/eccl/
89 http://www.eciaplatform.eu/newsarticle/ecia-closing-conference-this-is-just-the-start/
Open issues – Next Steps

In order to unlock the potential of the creative industries, more efforts need to be undertaken to raise awareness of the role of creative industries in general and of the policies and tools tested under the ECIA. One of the recommendations presented by the Policy Learning Platform stressed the need to “Incentivise and support stronger advocacy for cultural and creative industries”.90

The fact that creative industries contribute to 6.7 Million jobs and 3.3% of GDP, and that they tend to grow faster than the rest of the economy91 and widely support innovation in other industries is not yet widely known. A 2011 report92 shows, for example, that an (incorrect) perception of creative industries as being risky persists and presents an obstacle for growth – despite the fact that the survival rate of UK businesses in creative industries is in fact higher than in other industries. Therefore, the importance of creative industries in the wider economy cannot be ignored. When considering also other related sectors, the European Cluster Observatory identified more than 12.1 Million jobs in wider creative industries that displayed a growth rate of 1.61% - the highest growth rate of the ten identified emerging industries during the economically difficult years of 2007-2012.93

Efforts have been made by the organisations involved in the ECIA to raise awareness at high policy level of the Alliance’s final policy recommendations, e.g. through the organisation of a number of workshops in Europe’s regions. The ECIA policy recommendations were presented to the Council Cultural Affairs Committee on 6th of February 2015 which prepared conclusions on “cultural and creative cross-overs to stimulate innovation, economic sustainability and social inclusion”94. In its meeting on 18-19 May 2015, the Council of the European Union adopted the Conclusions which invited Member States “to promote favourable conditions for the cultural and creative sectors to further develop their potential in the context of cross-sectoral partnerships, including by considering the recommendation of the European Creative Industries Alliance, through appropriate measures”. Moreover, the Council invited the Commission to “develop a comprehensive strategic approach to boost the competitiveness and development of cultural and creative industries, while emphasising their role in the overall innovation process across all industries.”

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91 2010 European Competitiveness Report
Finally, at a follow-up workshop in Brussels on 23 September 2015 involving over 80 stakeholders, the launch of a renewed European Creative Industries Alliance was announced. Members of the ECIA project announced that they had decided to set up an association to continue the work of the Alliance beyond the end of the duration of the Commission-financed projects.95

The European Creative Industries Alliance therefore marked the start of a process towards making a better use of cultural and creative industries as a driving force for fostering industrial transformation and economic growth.

Commitment 19 – Part 2
Set up a European Design Leadership board

“In 2011, the Commission will set up a European Design Leadership Board which will be invited to make proposals within a year to enhance the role of design in innovation policy, for example through EU and/or national programmes, and a European Design Excellence label.”

Action taken

The Commission set up the European Design Leadership Board in 2011. Since then the board has made proposals on how to improve the integration of design and user-driven innovation into innovation policy and support. This group of fifteen experts from industry, SMEs, national and regional innovation agencies and the academic world presented its recommendations to former Commission Vice-President Tajani in September 2012 at the European Design Innovation Summit in Helsinki.

The Commission staff working document ‘Implementing an Action Plan for Design-Driven Innovation’,96 published in 2013, described existing and forthcoming actions endorsed by the Commission and relating to the promotion of design-driven innovation in different policy fields. The 14 action lines of the Action Plan built on the recommendations of the European Design Leadership Board and on a stakeholder consultation. Coordination among the Commission services involved in implementing the Action Plan for Design-Driven Innovation has resulted in important synergies, for instance relating to the calls under Horizon 2020 (see Commitment 6).

The Commission also launched the European Design Innovation Initiative (EDII) call97 in 2011, resulting in six projects that aimed to exploit the full potential of design for innovation, to reinforce the link between design, innovation and competitiveness, and to improve the impact of innovation policies by speeding up the uptake of design as a user-centred innovation tool in national, regional and EU innovation policies. Altogether forty-six organisations from nineteen EU Member States were involved in the six implementing consortia.98 All six projects have now finished and delivered very interesting results in applying design thinking in businesses and public sector organisations.

The Industrial Policy Communication Update99 and the Communication promoting cultural and creative sectors,100 also stress the role of design for innovation.

95 http://www.eciaplatform.eu/newsarticle/launch-of-the-renewed-ecia/
96 http://ec.europa.eu/growth/industry/innovation/policy/design/index_en.htm
97 http://europeandesigninnovation.eu/
98 The description of the six projects is available at http://ec.europa.eu/growth/industry/innovation/policy/design/index_en.htm
100 http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0537&from=EN
How it works

The Design for Europe platform\(^1\) is a key instrument helping the Commission to implement the Action Plan for Design-Driven Innovation. Implementation started in January 2014 and will continue until December 2016. Design for Europe is implemented by a consortium of 14 organisations (universities, labs, national agencies, etc.) and therefore reaches a wide public\(^2\). In order to achieve a widespread recognition of the potential of design as a key innovation driver there is a need for full commitment of Member States, as well as for more projects to be implemented in the field to make national and local actors aware of the benefits of design.

The Design for Europe Platform connects the design community and helps convince businesses and public sector organisations to apply design techniques in their daily operations. Many concrete case studies and instruments can be consulted on the platform. A network of ambassadors has also been put in place. The project also organises events, seminars and practical support, helping to raise awareness and capability among potential beneficiaries.

In addition, the six projects under the European Design Innovation Initiative have made a significant contribution by advocating design as a user-centred innovation tool. They achieved this goal by, for example, delivering training material and contributing to a better measurement of the economic impact of design. Some of the funded projects have demonstrated a positive impact in terms of enhancing the role of design in national innovation policies. The SEE (Sharing Experience Europe – Policy Innovation Design) platform project, for example, influenced 17 design-related policies and 40 design-related programmes delivering 102 workshops, and engaging over 800 policy-makers.

Open issues – Next Steps

As a result of these actions, awareness and recognition of design as a driver for innovation has increased among businesses, in the public sector as well as among policy makers. In times of economic constraints, there is growing appetite to learn ways to deliver products and services efficiently and ensuring a high user satisfaction.

Nevertheless, many EU countries still lack a robust design infrastructure and design capability and awareness of design as a driver for innovation is still far from optimal among policy makers. There is a lack of competent intermediaries in many European regions to provide professional services to those who are interested in learning more about how design can benefit them. Actions to upgrade the competencies of business development organisations and other relevant intermediaries will be implemented through a new ‘train the trainers’ programme to start in late 2015 until late 2018. In addition and thanks to sensitisation activities carried out within the Commission, many actions foreseen under the 2016-2017 Work Programme of Horizon 2020 directly include a ‘design’ dimension or embed the same principles through the objectives of co-creation or user-centred innovation.

\(^{1}\) http://www.designforeurope.eu/
\(^{2}\) Approximately 10,000 followers on social media and 2000 subscriptions to the newsletter in less than 2 years.
Commitment 20
Promote open access; support smart research information services

“The Commission will promote open access to the results of publicly funded research. It will aim to make open access to publications the general principle for projects funded by the EU research Framework Programmes. The Commission will also support the development of smart research information services that are fully searchable and allow results from research projects to be easily accessed.”

Action taken

In July 2012 the Commission adopted the Communication Towards better access to scientific information: boosting the benefits of public investments in research.103 It was accompanied by a Recommendation to Member States on access to and preservation of scientific information.

Open access to peer-reviewed scientific publications the default setting in Horizon 2020 (see Commitment 6). Horizon 2020 also includes the Open Research Data Pilot which aims to improve and maximise access to and re-use of research data generated by projects.

How it works

The data pilot applies to selected core areas of Horizon 2020 but other projects outside this remit will be able to participate on an individual voluntary basis. Projects may opt out of the Pilot on Open Research Data in Horizon 2020 under defined circumstances, including conflict with obligation to protect results, with confidentiality obligations, with security obligations or with rules on protection of personal data. They may also opt out if the achievement of the action’s main objective would be jeopardised by making specific parts of the research data openly accessible.

Projects participating in the Pilot on Open Research Data are required to submit a first version of their Data Management Plan (DMP) latest at month 6 of the project. The DMP can be updated if necessary. Guidance for DMP, including a suggested template, is provided in the Horizon 2020 Data Management Guidelines.104

Comprehensive search tools have been developed for peer-reviewed articles from research receiving FP7 funding and most of the output is now easily findable through the portal of the OpenAIRE infrastructure.105 Work is currently ongoing (pilot phase) to provide links between these research articles and the underlying research data. The infrastructure connects to EC IT services (Common Research Data warehouse or CORDA) and receives article metadata from the article repositories of most EU research institutions as well as main international thematic repositories (arXiv and PubMed Central). The collected information is contextualised and available for the search services using advanced text and data mining tools.

The Commission is also supporting projects that aim to develop digital identifier infrastructures for objects (e.g. research datasets) and authors. Such infrastructures are expected to enable the development of more advanced and trustable search services (as a basic infrastructure on which the next generation of intelligent search tools can rely). The ODIN project106 and its follow-up project

105 https://www.openaire.eu
106 http://www.odin-project.eu
THOR\textsuperscript{107} are developing an interoperability network to promote the implementation of interoperable, open and persistent author and object identifiers (digital object identifiers - DOI), by exploring disciplinary proofs of concept in Social Sciences and Humanities as well as in High Energy Physics. It brings together the DataCite consortium, which has assigned over 6 Million DOI names in the last few years to make research data citeable, and the Open Researcher and Contributor ID (ORCID) initiative which has over 1.5 Million researchers and contributors registered since its launch in October 2012.

The infrastructure that now allows searching for peer-reviewed articles and underlying data will be expanded to other kinds of literature and research object under Horizon 2020.

Most Member States are putting strategies in place regarding access and dissemination of scientific information, but their approaches vary considerably, with the recent ERA progress report noting “gradual yet visible progress”. This refers also to the fact that several Member States choose soft law rather than hard law when implementing Open Access. In order to follow-up on the actions outlined in the Recommendation on access to and preservation of scientific information (2012), Member States were

\textsuperscript{107} http://project-thor.eu/
asked to nominate a National Point of Reference (NPR) to facilitate exchange of information and enable mutual learning. A first meeting of the NPRs was held in December 2013. The meeting served as a ‘get to know each other’ occasion but also to learn more about the situation in the Member States and which aspects different Member States want to prioritise. Member States were asked to report on the implementation of the Recommendation in their respective countries, and a report will be finalised by the end of 2015. Further meetings of the NPRs took place in September 2014 and October 2015.

There is significant interest in the subject in stakeholder organisations and a variety of events have been organised by the community in a ‘bottom up’ fashion. The Commission has participated and contributed to many of those, for example the LERU Conference of 2012, the Nordforsk Open Data Workshop, a COST workshop, and the Science Europe ERA Europe High Level Workshop. Six stakeholder associations have signed Memoranda of Understanding with the Commission on the ERA, committing themselves, inter alia, to promote open access within their membership. Open access is therefore one of the topics for regular discussion in the ERA High Level Stakeholder Platform and the associated doers network. The Research Data Alliance has also taken an active role in promoting research data sharing (with an important contribution from the EC funded RDA Europe project 108).

Open issues - Next Steps

The Commission realises that there is a growing demand for faster and more open access to scientific information as part of the systemic change in the whole life cycle of research and innovation, referred to as open science. Thus the Commission has integrated and is further developing its open access policies to scientific peer reviewed publications and to research data within the broader policy context of open science. This includes issues such as peer review, alternative metrics and citizen science. Commissioner Moedas has announced Open Science as one of his main priorities, and has indicated that a European Open Science Agenda will be announced in 2016 under the Dutch Presidency, which also plans to focus on open science and open access.

Science is a global endeavour and so is open access, with over 200 organisations mandating open access in one form or another around the globe. The Commission is therefore actively reaching out and interacting with key stakeholders in order to exchange knowledge and identify lessons learned and best practices. The Commission is advocating open access in a wide range of policy fora, including the Global Research Council, G8, UNESCO, OECD, the Berlin Open Access Conferences, the Research Data Alliance and others.

Further support for Data Management Plans (DMP) in Horizon 2020 will be announced in a later stage, but already some MS have developed or are developing tools to facilitate DMP creation in compliance with the Horizon 2020 guidelines. The EU funded projects EUDAT and OpenAIRE2020 are supporting some of these efforts. In addition OpenAIRE helpdesk and National Open Access desks provide guidance on Data Management in Horizon 2020 and on the Open Data Pilot.

OpenAIRE publication data collections will be connected to the EC Horizon 2020 research information system (SyGMA). Through this link, data collected from OpenAIRE data sources will be available for EC staff for monitoring purposes and to project coordinators for project reporting purposes.

108 http://europe.rd-alliance.org/
Action taken

The Commission Recommendation on the management of intellectual property in knowledge transfer and Code of Practice for universities and other public research organisations has been in place since 2008, providing guidance on effective collaboration in research projects, in particular between universities and other public research organisations and industrial participants.

Building on that, Horizon 2020 put in place simple and clear rules for participation, including a particular focus on the exploitation and the transfer/licensing of the results of the projects funded. The rules are being implemented with the help of a simplified and user–friendly Model Grant Agreement and supported by concise and practical guidance on effective collaborative research.

The Horizon 2020 rules for participation and dissemination state that members of a consortium wishing to participate in an action shall conclude an internal agreement (consortium agreement). Based on expert analysis and in consultation with major stakeholders, a set of model agreements facilitating the forming of a consortium for knowledge transfer activities has been developed. In addition, guidance on the use of consortium agreements has been produced and integrated into the Horizon 2020 online grants manual.

To facilitate and support the development and cross-border networking of national knowledge transfer office networks and the work of existing pan-European networks, the Commission has launched an initiative that aims at enhancing collaboration on knowledge transfer among the TTOs (Technology Transfer Offices) of large European public research organisations - the ‘European TTO Circle’. The TTO Circle includes 25 of the largest research organisations in Europe.

How it works

Effective collaboration in research projects still remains an issue in certain research projects, in particular between universities and other public research organisations and industrial participants. The exploitation of research results often requires effective knowledge transfer which sometimes is lacking in practice. The EU research funding could provide a leading example to Member States with regards to best practices for the management of intellectual property in research.

With regards to the improvement of knowledge transfer, action was taken on two levels. On the one hand, the use of grant and consortium agreements was improved within EU funding programmes in order to facilitate effective collaborative research and the flow of ideas. On the other hand, competence building and exchanges

Commitment 21
Facilitate collaborative research and knowledge transfer

“The Commission will facilitate effective collaborative research and knowledge transfer within the research Framework Programmes and beyond. It will work with stakeholders to develop a set of model consortium agreements with options ranging from traditional approaches to protect IP through to more open ones. Mechanisms are also needed to further strengthen knowledge transfer offices in public research organisations, in particular through trans-national collaboration.”

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110 The Commission is not a party to the consortium agreements in Horizon 2020. The use of the developed model agreements is optional and in no way mandatory for any actions under Horizon 2020. The model templates have not been validated by the Commission services, and the Commission does not recommend the use of any specific model template over the other.
111 European TTO CIRCLE and its partners, please see http://www.jrc.ec.europa.eu.eu_tto_circle
of good practices across knowledge transfer offices in large public research organisations was supported. Horizon 2020 rules for participation are based on the widely acknowledged Seventh Framework Programme provisions. They have been further improved and clarified and their scope was extended to cover specific innovation related aspects. The Commission has worked closely with relevant Member State representatives to ensure that the rules will be implemented with the help of a simplified and user–friendly Model Grant Agreement.

As Horizon 2020 has a stronger focus on innovation, an analysis on the use of consortium agreements has been performed taking the innovation elements into consideration. The developed model agreements provide a non-affiliated complementary alternative to the existing model agreements to form a consortium for knowledge transfer activities. The developed models cover the entire life of an action, from preparation and submission of the proposal to research and development to commercial exploitation.

The Commission is also performing an analysis on the role and impact of existing knowledge transfer networks, platforms their initiatives and activities, as well as financial instruments so as to identify what additional action or support would facilitate knowledge circulation. It also explores the potential for additional support via EU-level financial instruments or facilities.

One of the tasks of the TTO Circle is to foster the sharing of expertise, the exchange of best practices and the development of synergies at European level in the field of IP and knowledge transfer. In addition, its activities include facilitating R&D collaboration, raising entrepreneurial culture in Public Research Organisations (PROs) and strengthening the capacities of the knowledge transfer officers.

**Open issues – Next Steps**

Although a large number of knowledge transfer offices (KTOs) have been established over the last decade, the quality and size of knowledge transfer offices, and the resources available to them, vary greatly across the EU. There is considerable expertise and support available, but there are indications that communication within and between national networks of KTOs is not sufficiently well developed to ensure that expertise and support is made available to those who need it.

The Commission works closely with key stakeholders with the aim to further identify, collect and share best practices as well as to identify and discuss solutions for issues of common concern and emerging issues. The Commission has also launched a study with the overall objective to consolidate an EU wide information base on open innovation and knowledge transfer. This includes an in-depth analysis on performance of PROs and Higher Education Institutes performing research in knowledge transfer through new and emerging mechanisms, as well as analysis on perceptions of stakeholders on the barriers, challenges, on-going practices and success factors. The findings will contribute to the development of a comprehensive policy approach to knowledge transfer and open innovation as identified in the 2012 ERA Communication (see Commitment 4). The results of the study will also help to determine which additional measures might be needed to ensure an optimal flow of knowledge between the public research
organisations and business thereby contributing to the development of the knowledge based economy.
The process of facilitating effective collaborative research and knowledge transfer remains an open
challenge, along with the activities of the TTO Circle to enhance dialogue among stakeholders.

The insights gained under Commitment 22 point to concrete issues that need addressing for knowledge
transfer and open innovation processes to be enhanced. A survey is planned to shed more light on needs
perceived by technology transfer offices and SMEs.

There has been an improvement over the past years in the overall understanding of knowledge transfer processes
which passed from a linear process involving Universities and Businesses to a more complex multidimensional
approach. Knowledge transfer processes are now focused on knowledge and innovation and encompass a variety
of aspects (e.g. IPRs protection, spin-off of Universities, open access, digitalisation) and a high number of actors
(SMEs, knowledge brokers, intermediaries, individuals, public and private research organisations, etc.).

Commitment 22
Develop a European knowledge market for patents and licencing

“By the end of 2011, working closely with Member States and stakeholders, the
Commission will make proposals to develop a European knowledge market for patents
and licensing. This should build on Member State experience in trading platforms that
match supply and demand, market places to enable financial investments in intangible
assets, and other ideas for breathing new life into neglected intellectual property, such as
patent pools and innovation brokering.”

Action taken

To explore the options for an emergence of a genuine European knowledge market for patents and licences, the
Commission investigated a set of options for a valorisation instrument for intellectual property (IP) at EU level.

A study commissioned to assess financial market places for IP also included a survey open to Member States
and stakeholders. A group of experts involving stakeholders and Member States to assess available evidence
and provide a technical assessment about existing and emerging initiatives was established. The findings and
conclusions of the group’s work and of the study constituted an input to the Staff Working Document ‘Towards
enhanced patent valorisation for growth and jobs’. This document, published in 2012, presented the major
obstacles that European companies, mainly SMEs, face in exploiting patents, especially ‘dormant patents’:

1. the difficulty in assessing patent value;
2. difficult access to funding of commercialisation of patents;
3. low transparency of the patent market;
4. insufficient awareness of business opportunities;
5. high transaction costs.

Based on current initiatives aimed at addressing issues in this area in Member States and at EU level,
the document also outlined short-, medium- and long-term options which could be undertaken in the
EU to tap the potential for economic growth by better exploiting patents. It served as the basis for
subsequent discussions on the need for and ways to enhance patent exploitation.

How it works

On the basis of the results of the SWD, further work was undertaken. Different expert groups looked at the development of methods for valuation and options for aggregation of patents as a way to foster the patent market and the design of a policy instrument encouraging SMEs to engage on the demand-side of a knowledge market was tested.

The goal of the project Exploitation of IP for Industrial Innovation was to assess, by way of a field trial, whether (and, if so, how and under which conditions) an effective policy instrument could be designed to increase the likelihood of new business development based upon external IP acquisition and more specifically, unused patented inventions. It demonstrated that a policy instrument can be developed to increase the use of external IP by SMEs focusing on awareness and transaction costs. The proposed policy pursues three aims: (i) support the SMEs in their external IP acquisition, (ii) increase awareness and provide tools to SME advisory and support organisations and (iii) increase awareness in SMEs. The project also showed that it is not possible to develop a policy focused exclusively on dormant patents as it is almost impossible to identify them. It is considered best to implement the instrument at regional or national level as most SME support is already managed at these levels and there are inherent benefits in proximity.

On valuation methods, an Expert Group\textsuperscript{113} was created to address the difficulty in assessing value and in access to funding. To do this, the group was tasked to look at what improvements could be made regarding the evaluation of the economic value of IP in order to foster IP related transactions and IP based finance. The Expert Group identified the following main barriers to the efficient use of IP valuation by stakeholders: lack of data on IP transactions; issues regarding trust on the IP valuations performed in the market; the lack of reporting of the IP owned by the company in company’s annual reporting as well as little engagement by banks in accepting intangibles as collaterals for loans. The Group also proposed policy recommendations on how to overcome these barriers.

As regards aggregation, another expert group\textsuperscript{114} concluded that it would not be appropriate to invest public money in a fund that would acquire patent rights, bundle them and licence them to users. Whereas patent pools represent another form of aggregation, where patents need to be bundled in order that implementers of technology can licence a bundle of patents needed to ensure freedom to operate on a given product market, the expert group noted that normally, makers of public policy are not in the best position to determine which pools should be formed. It did recognise that exceptionally, in the case of a social need not being addressed by the market, such as a failure to bring a medicine to the market, public intervention could mandate the creation of a patent pool. This group concluded that as regards commercialisation of publicly funded research, the issue is not so much a lack of aggregation but rather a matter of the immaturity of the underlying technology. Thus it recommended that public support could be used to foster technology development funds.

Following these recommendations, the Commission intends to launch a technology transfer financial facility, within Horizon 2020’s access to risk finance, to finance the proof of concept of publicly funded research results and their commercialisation through spinoffs or licencing. It is also investigating the possibilities for using intellectual assets as collateral for loans under InnovFin.

Open issues – Next Steps

Conscious that smaller entities such as SMEs and the technology transfer offices of universities and other public research organisations are encountering difficulties in transacting in this market, the Commission plans to carry out a survey of these entities in 2016 to determine the nature of the barriers they face and possible remedies.

Commitment 23
Safeguard against the use of IPRs for anti-competitive purposes

“The Commission will examine the role of Competition Policy in safeguarding against the use of intellectual property rights for anti-competitive purposes. It will analyse the implications of collaborative IPR agreements as part of its review of the application of its anti-trust rules to horizontal agreements between competing companies.”

Action taken

The Commission adopted the Guidelines on horizontal agreements115 in 2010. One of the main changes introduced in the Horizontal Guidelines is a substantial revision of the standardisation chapter.

How it works

Article 101(1) of the Treaty on the Functioning of the European Union (TFEU) prohibits agreements which have as their object or effect the restriction of competition. For there to be restrictive effects on competition under Article 101(1) TFEU, the agreement must have, or be likely to have an appreciable adverse impact on at least one of the parameters of competition on the market, such as price, output, product quality and variety, or innovation.

The revised chapter on standardisation agreements provides guidance on how industry should structure their standard setting agreements in order to avoid the risk of infringing EU competition law. The purpose of this chapter is to give guidance on how to ensure that the process of selecting industry standards is competitive and that, once the standard is adopted, access is given on fair, reasonable and non-discriminatory (FRAND) terms to interested users. Experience has shown that in practice many of the complaints and cases related to standard-setting arise i.e. because of a lack of transparency during the selection process, notably in the context of intellectual property rights.

In particular, the guidelines provide a safe harbour for standard setting agreements that respect certain conditions, including conditions for ensuring transparency about intellectual property rights that could become relevant for the standard.

In relation to misuse of intellectual property rights in this context, for example the so called patent ambush, the line is to, as far as possible, minimise the risk for that type of behaviour by building safeguards into the standard setting process. These rules may now guide the Commission, national competition authorities, companies and national courts.

Open issues - Next Steps

An evaluation is planned for 2018, in order to understand the main effects of the implementation of the Guidelines.

Action taken

The European Structural Investment Funds (ESIF) will contribute EUR 118 Billion to smart growth in order to make the European economy more competitive in the longer term, including through support for research and innovation, information and communication technologies and SME development. ESIF also provides important purchasing power for innovative solutions in other fields such as energy, environment, and transport which can help innovative firms. Since 2010, the development of Smart Specialisation Strategies has been a pre-condition (ex-ante conditionality) for ESIF’s innovation-related investments for the programming period 2014-2020.

The requirement to put national/regional innovation strategies for smart specialisation in place led in many Member States and regions to a significant change in policy-making culture in terms of stakeholder involvement, inter-departmental cooperation, evidence-based policymaking and a shift towards a holistic and systemic innovation policy concept. Such strategies are a stepping-stone towards place-specific, knowledge-based economic transformation.
The Commission has supported Member States through a wide range of measures. In 2012, it established the Smart Specialisation Platform at the JRC-IPTS in Seville\(^\text{116}\) to support regions and Member States in developing and implementing smart specialisation strategies. 159 EU regions and 17 Member States are registered on the Platform. Six Non-EU regions have also joined to share and exchange their experience. 15 Member States and 60 regions have been peer-reviewed through it. The Platform also developed the ‘Guide to Research and Innovation Strategies for Smart Specialisation’ in cooperation with leading academics, important European networks, advisory groups and the OECD. The role of the Platform has been gradually evolving into a hub for implementation across Europe.

A series of thematic guides\(^\text{117}\) and policy briefs\(^\text{118}\) have been prepared and disseminated among national and regional policy makers and managing authorities. In order to help regions find their unique niches and seek out potential partners for collaboration, the Platform has developed Eye@RIS3\(^\text{119}\), a mapping tool that provides an overview on the emerging smart specialisations across Europe.

Experts engaged by DG Regional and Urban Policy and DG Research and Innovation also assisted Member States and regions in the development of smart specialisation strategies, as well as examining their relationship to universities, clusters and broader policy issues in the context of Europe 2020. The Commission launched the pilot project Stairway to Excellence in 2014 to support post-2004 EU regions and countries in developing and exploiting the synergies between Horizon 2020 (Horizon 2020) and European Structural and Investment Funds (ESIF). The project also aims to help them close the innovation gap and stimulate the early and effective implementation of national and regional Smart Specialisation strategies.

The ESIF funds need to be leveraged as much as possible both in terms of finance and in terms of strategy. It is necessary to ensure the synergetic use of instruments and the integration of cohesion, research and industrial policies at all levels of government. Well-developed and targeted project selection criteria are important, as are implementation mechanisms that facilitate the combined use of different financial sources, reducing the administrative burden. The Commission developed specific guidance for ministries, managing authorities and bodies in charge of Horizon 2020 on how to improve synergies between ESIF investments, Horizon 2020, COSME, Erasmus+, CreativeEurope and digital services funding from the Connecting Europe Facility\(^\text{120}\).

In January 2014 the political leaders of the Vanguard Regions pledged their commitment to work jointly on EU projects of scale and value with the aim of supporting EU ambitions to revitalise EU economic growth, creating the ‘Vanguard Initiative for New Growth through Smart Specialisation’\(^\text{121}\). A first result, is the definition, together with Commission services, of a framework for a Smart Specialisation Platform which will stimulate interregional cooperation and co-investments in European value chains based on smart specialisation areas.

\(^{116}\) [http://s3platform.jrc.ec.europa.eu/home]
\(^{117}\) [http://s3platform.jrc.ec.europa.eu/guides]
\(^{118}\) [http://s3platform.jrc.ec.europa.eu/links]
\(^{119}\) [http://s3platform.jrc.ec.europa.eu/map]
\(^{120}\) [http://ec.europa.eu/regional_policy/sources/docgener/guides/synergy/synergies_en.pdf]
\(^{121}\) [http://www.5vanguardinitiative.eu/]
How it works

The Common Provisions Regulation for the ESIF\textsuperscript{122} defines smart specialisation strategies as “national or regional innovation strategies which set priorities in order to build competitive advantage by developing and matching research and innovation strengths to business needs in order to address emerging opportunities and market developments in a coherent manner, while avoiding duplication and fragmentation of efforts; a smart specialisation strategy may take the form of, or be included in, a national or regional research and innovation (R&I) strategic policy framework.” They are essential to ensure an optimal innovation impact of ESIF investments through better, stakeholder-driven and comprehensive policy-making to foster place-specific, knowledge-based economic transformation.

A concrete example of the implementation of the synergies approach is the ‘Seal of Excellence’. This is a quality label awarded to project proposals submitted for funding under Horizon 2020, which succeeded in passing all of the stringent selection and award criteria but could not be funded under the available Call budget. The Horizon 2020 ‘SME instrument’ has been selected for the introduction of the ‘Seal of Excellence’ because of the relevance to regional and national funders, as the project proposals are mostly led by a single SME and address small scale R&I actions close to the market with a clear territorial impact.

Open issues – Next Steps

When a Member State or region was unable to develop its Smart Specialisation Strategy in time for the adoption of its programming documents, an action plan had to be provided as a temporary solution, before end-2016. The Commission will support the implementation of the action plans to develop the outstanding smart specialisation strategies.

The S3 Platform will build on the experience gained in its first period of activity and carry out a number of tasks to serve regional and national policymakers. It will seek to: (i) reinforce the incorporation of the smart specialisation concept and methodology into regional and national innovation strategies; (ii) accompany the implementation and monitoring of the strategies; (iii) facilitate exchange of experience, mutual learning and cooperation namely at trans-national level; (iv) feed into and upgrade both guidance and analytical tools for policymakers.

Concerning the implementation phase of the national/regional smart specialisation strategies a number of elements are crucial:

- identifying, selecting and implementing high-quality projects;
- the active involvement of research and industrial communities as well as of the civil society in the entrepreneurial discovery processes facilitated by regional or national public authorities will remain essential to explore new domains of market opportunity;
- sound monitoring and evaluation systems; public administration should continuously be informed about the business environment and take into account its dynamism and also the experience acquired and developed over time;
- exploiting further synergies with other Funds and instruments (e.g. Horizon 2020 or COSME);
- further developing the interregional, macro-regional and cross-border dimension to build economies of scale and scope.

There is an urgent need to tap into Europe’s unexploited potential in research and innovation through a stronger involvement of those Member States and regions that are less involved in R&I. Smart

specialisation strategies with a sound and evidence-based focus on regional assets and strengths are expected to bring convergence in innovation performance across regions and countries. Horizon 2020 also includes a set of measures Teaming, Twinning and ERA Chairs aimed at ‘Spreading Excellence and Widening Participation’ which contribute to the same goal.

Commission support for the emergence of world-class clusters will continue with the COSME Programme, Horizon 2020 and Territorial Cooperation’s INTERREG EUROPE Programmes. The latter will support cooperation platforms for innovation stakeholders on strategic domains and will partially continue the activities of the FP7 transnational cooperation of research-driven clusters.

**Commitment 26**

**Launch a Social Innovation pilot; promote social innovation in European Social Fund**

“The Commission will launch a European Social Innovation pilot which will provide expertise and a networked ‘virtual hub’ for social entrepreneurs and the public and third sectors.

It will promote social innovation through the European Social Fund (ESF) building on the significant investments in social innovation which the ESF has made over the last ten years, all along the innovation cycle. This will be complemented by support to innovative social experiments to be developed in the framework of the European Platform against Poverty.

Social innovation should become a mainstream focus in the next generation of European Social Fund programmes. Member States are encouraged to already step up efforts to promote social innovation through the ESF.”

**Action taken**

The European Commission provides support to social innovation in a number of ways.

The Social Innovation Europe platform123 was launched in 2011 as a virtual hub connecting social innovators and providing an overview of existing actions throughout Europe. Since its creation, the platform has attracted 5,000 registered users/contributors from 35 countries and receives on average 10,000 visits a month. It has become a reference portal in Europe recognised for its hands-on content. The success of this pilot demonstrates the need to keep connecting and expanding the social innovation community in Europe. This initiative will be sustained through the larger Social Innovation Community project to be launched in 2016.

Social innovation is being mainstreamed in the 2014-2020 programming period. In the new regulation on the European Social Fund (ESF), the approach to social innovation is more strategic. The ESF promotes social innovation and Member States have to identity themes for social innovation in their Operational Programmes or during the implementation phase. Member States are given flexibility to target social needs that are particularly relevant to them. Measures are intended to test and scale up ideas that will influence other policy areas, therefore spreading social innovation to new sectors. The initiative Collective Awareness Platforms for Sustainability and Social Innovation” (CAPS) aims at designing and piloting online platforms. CAPS create awareness around sustainability problems and offer collaborative solutions based on networks of people, ideas, sensors, etc., hence enabling new forms of social innovation. After a very successful first call under Horizon 2020 in 2014, which received more than 190 proposals, a second call was launched 2015 with an

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123 https://webgate.ec.europa.eu/socialinnovationeurope/
additional budget of 43 M€. Within three years 24 additional CAPS platforms will be operational across Europe. The sustainability-related themes currently under consideration range from energy & environment to 3Dmaker spaces, open care for medical empowerment, voting algorithms for participatory budgeting in municipal government, citizen engagement for sustainable transport infrastructure, antipoverty and antislavery awareness networks, financial education and risk education for the public at large.

In order to support the deployment of measures encouraging social innovation at all levels, a Guide to Social innovation\textsuperscript{124} was published in 2013 to support practitioners at regional level, as well as public administrators. An important Conference on Social Policy Innovation was held in 2014 bringing together all relevant stakeholders to provide practical policy experiences on how social innovation can contribute to implementation of efficient and effective reforms for the modernisation of social protection systems.

\textsuperscript{124} \url{http://ec.europa.eu/regional_policy/sources/docgener/presenta/social_innovation/social_innovation_2013.pdf}
Furthermore, the Employment and Social Innovation Programme of the European Social Fund (EaSI), which has replaced the PROGRESS programme since January 2014, offers increased possibilities for social innovation actions and investment in the Member States and funding allocated in the new programme for social innovation has increased from EUR 3.5 Million to EUR 10-14 Million a year. Support for social innovation has been also provided in the framework of the European Platform against poverty and social exclusion\textsuperscript{125}.

A pilot action on networks of incubators for social innovation was launched in 2013 to support two networks (BENISI and TRANSITION)\textsuperscript{126} to assess, support and scale up social innovations in Europe with the support of the ‘Capacities’ programme of FP7. For this action, incubators include any organisation that acts as such at local or regional level, including universities and business networks. The two networks, supported with EUR 1 Million each, with a broad geographical coverage across the EU, have started to assess, provide support to and scale-up hundreds of local social innovations, disseminating them also to other regions in Europe. The action will provide new knowledge and methods that will contribute to the challenge of scaling up social innovations which are successful at small scale so as to fully exploit their potential.

The European Social Innovation Competition\textsuperscript{127} is organised every year to directly support new solutions and raise awareness about social innovation. The first two editions in 2013 and 2014 focused on the best social innovation solutions to help people move towards work or into new types of work. The first edition attracted more than 600 ideas and the second more than 1,200 ideas. The 2015 edition shifted to exploring ‘new ways to grow’ thanks to social innovation, notably through the possibilities offered by the collaborative economy, the circular economy and the latest technologies (e.g. 3D-printing or connected objects). It attracted more than 1,400 entries confirming the success of the competition and of its design, which includes 3 prizes of EUR 50,000 every year but also a strong mentoring component for a larger group of 30 ‘semi-finalists’. Social innovation is also covered by other EU awards such as the RegioStars\textsuperscript{128}.

Finally, the Social Business Initiative\textsuperscript{129} also contributes to social innovation, although with a focus on support to social enterprises and to a favourable environment to their growth. In addition, Social Entrepreneurship is considered as an investment priority and the EaSI (entrepreneurship axe) offers funding of EUR 86 Million to support the creation and scaling-up of social enterprises by stimulating, broadening and speeding up the development of social finance markets across Europe.

**How it works**

The actions in place support networking, visibility of social innovation at EU level, capacity building and the mainstreaming of social innovation in EU programmes.

**Open issues – Next Steps**

Among the remaining challenges are the scaling up of social innovation across Europe, the expansion of the community towards the whole business/ investor community and the inclusion of a stronger social innovation dimension in EU programmes.

The growth of social enterprises remains an important issue, but more has been done in this area through the creation of incubators, competitions, platforms and new tools for access to finance. The question of replication and local adaptation of social innovations is equally important, and more needs to be done to understand how to support the spreading of good ideas and innovations.

\textsuperscript{125} http://ec.europa.eu/social/main.jsp?catId=961  
\textsuperscript{126} http://transitionproject.eu/transition-benis-transition-two-projects-one-goal-test-analyse-promote-social-innovation-incubation-in-europe/  
\textsuperscript{127} http://ec.europa.eu/growth/industry/innovation/policy/social/competition/index_en.htm  
\textsuperscript{128} http://ec.europa.eu/regional_policy/en/regio-stars-awards/  
\textsuperscript{129} http://ec.europa.eu/internal_market/publications/docs/sbi-brochure/sbi-brochure-web_en.pdf
The main open issue therefore is the question of providing social solutions, e.g. using social innovation as a tool to support the modernisation of social protection systems and to address major challenges in our society that matter to citizens.

A contribution to the tackling of these challenges will come from the Social innovation Community that will be launched in 2016 to connect major networks and platforms in the field. It will bring together researchers, practitioners, policy makers and social innovators, and it will facilitate the take up of results for policy development.

A challenge platform will also be launched in 2016 in order to foster the collaboration between social enterprises and all sorts of SMEs in tackling together concrete societal challenges. Social enterprises would thereby tap into a larger pool of capacities and on the other hand SMEs may find new markets to explore. It is hoped that as a result of this convergence of interests, more societal challenges will find appropriate and concrete solutions.

Commitment 27
Support a research programme on public sector and social innovation; pilot a European Public Sector Innovation Scoreboard

“Starting in 2011, the Commission will support a substantial research programme on public sector and social innovation, looking at issues such as measurement and evaluation, financing and other barriers to scaling up and development. As an immediate step, it will pilot a European Public Sector Innovation Scoreboard as a basis for further work to benchmark public sector innovation. It will explore with Member States whether it is appropriate to bring together new learning experiences and networks for public sector leaders at European level.”

Action taken

The public sector plays an important role in catalysing innovation in the wider economy and it is itself a source of innovation that can be exploited for productivity improvements and efficiency gains.

The European support for the research agenda on public sector and social innovation increased in budget in the last year of FP7 to around EUR 12 Million. Important research projects were launched such as LIPSE130, which looks at ways of learning from, and leveraging the innovation in the public sector. Other important areas of research in which support has been given includes the role of social innovation can play against rising inequality, the economic foundations of social and public sector innovation, the role of the third sector in social entrepreneurship. The broad approach to innovation in Horizon 2020 further enables citizen engagement and empowerment across many fields.

In order to understand better the innovation potential of the public sector and to measure its performance, the Community Innovation Survey131 introduced questions linked to innovation in the public sector. The 2012 Innobarometer132 singled out the public sector, whereas the 2014 edition looked at the role of public support in the commercialisation of innovations. Based on this and other data, a pilot European Public Sector Innovation Scoreboard (EPSIS) was launched in 2013133. The Scoreboard developed 22 indicators to measure public sector innovation in dimensions such as human resources,

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130 http://www.lipse.org/
131 http://ec.europa.eu/eurostat/web/microdata/community-innovation-survey
quality of public services, innovation capacity, drivers and barriers of public sector innovation, innovators in public administration, effects on business performance and government procurement.

A high-level expert group on public sector innovation, set up by the European Commission, proposed in its final report134 four principles for a new innovation paradigm in the public sector. These are: co-design and co-creation of innovative solutions; adoption of new and collaborative service delivery models; embracing creative disruption from technology; and the adoption of an attitude of experimentation and entrepreneurship in public administration. Following one of the report’s recommendations, the EU Policy Lab, an innovation lab within the Joint Research Centre (JRC) of the European Commission, started in 2014.

Several awards were launched or continued in order to highlight achievements and best practices in these two fields. The 2015 edition of the Social Innovation Competition135 received over 1400 ideas; the three winners were announced in November 2015. The ageing population was publicly voted as topic of the first inducement prize in social innovation136; the competition will be launched in 2016. The European Prize for Innovation in Public Administration (launched in 2012) gave more visibility and connected the most dynamic and forward-looking initiatives. The second edition of the European Capital of Innovation Award137 will be announced in 2016. Besides putting the spotlight on the European cities with the best innovation ecosystem—connecting citizens, public organizations, academia, and business, it will also help them city scale up their efforts in this field.

How it works

Specific research projects deepen our understanding of the workings and impacts of social innovation and public sector innovation. Within Horizon 2020, specific actions supporting social innovation are supported through Societal Challenge 6 ‘Europe in a changing world: inclusive, innovative and reflective societies’.

135 http://ec.europa.eu/growth/industry/innovation/policy/social/competition/
136 http://ec.europa.eu/research/horizonprize/index.cfm?prize=social-innovation
137 http://ec.europa.eu/research/innovation-union/index_en.cfm?section=icapital
An important aspect is linked to measurement and evaluation. Research projects also help in this respect, as do the surveys and scoreboards developed by the European Commission. Prizes have been used as a means to tackle both financing and other barriers to scaling up of social innovation and of innovation in the public sector. These awards have a strong potential to induce further innovation through the public recognition of achievements and the provision of role models while also making winners more attractive for funding from other sources. They also build networks of like-minded individuals and organisations, and help overcome fragmentation and isolation.

Open issues – Next Steps

Data availability on innovation in the public sector is still scarce while the need for better benchmarking and monitoring is increasing. To this end, the European Commission is working in partnership with the OECD to further develop the Observatory of Public Sector Innovation in order to mainstream innovation aspects into regular data collection and analysis.

Learning loops and better dissemination of the results of on-going research projects (both on public sector innovation and social innovation) will continue to be strengthened.

The Horizon 2020 Work Programme 2016-2017 will provide further support to research in these fields, in particular through Societal Challenge 6 in all the central themes: co-creation (e.g. topics on ‘Applied co-creation to deliver public services’, ‘User-driven innovation: value creation through design-enabled innovation’), understanding Europe (e.g. topics on ‘Understanding the transformation of European public administrations’, ‘Participatory approaches and social innovation in culture’) and reversing inequalities (e.g. ‘Dynamics of inequalities across the life-course’).

Commitment 28
Consult social partners on interaction between the knowledge economy and the labour market

“The Commission will consult the social partners to examine how the knowledge economy can be spread to all occupational levels and all sectors. It will ask the social partners for proposals on how to develop a sectoral labour market strategy for the caring sector.”

Action taken

The issue of how to spread the knowledge economy to all occupational levels is a crucial one to make innovation permeate our society and flourish across all economic sectors. The Commission has started discussions with social partners on this issue to make this process truly inclusive and take into account the specificities of each sector.

This commitment is at an early stage of implementation. European social partners were contacted in 2013 to agree on a schedule for discussions around the potential of the Innovation Union and the European Workplace Innovation Network (EUWIN) to spreading innovation to all occupational levels and sectors.

139 http://portal.ukwon.eu/
The Commission has also started presenting sector-specific, innovation–related information, such as the report on ‘Retail Sector Innovation’,\(^{140}\) which includes recommendations for social partners and skills councils.\(^{141}\)

Other ways of engaging social partners have also been explored. For instance the social partners of the agriculture sector\(^{142}\) are also members of the Board of the European Innovation Partnership on Agricultural Productivity and Sustainability (see Commitment 29).

**How it works**

The European social dialogue committee at cross-industry level and the sectoral social dialogue committees\(^{143}\) were chosen as the most appropriate frame for these exchanges. Two sectors have integrated the topic into their work programme,\(^{144}\) eight sectoral EU social partners’ organisations\(^{145}\) and the European Confederation of Executives and Managerial Staff confirmed their interest in participating in such dialogues.

The ‘Retail Sector Innovation’ report was presented at the commerce sector’s EU Social Dialogue Committee meeting at the beginning of 2014 and met the interest of both employers’ and trade unions’ representatives. It was also presented to The European Sector Skills Council for Commerce\(^{146}\), with the aim to help the council identify skills gaps and needs in term of innovation in this sector.

**Open issues – Next Steps**

Commission services will continue to liaise with EU social partners and will inform them on new policy developments concerning the Innovation Union. This will happen in the Liaison Forum, which takes place at regular intervals and brings together representatives from sectoral social partners and cross-industry social partners. Taking into account the specificities of social dialogue the Commission will thereby focus on workplace-related social aspects of the transition to the knowledge economy and respect the autonomy of social partners, when it comes to defining the agenda of their dialogue.

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142 Effat and Copa-Cogeca
144 Food & drink industry and local and regional governments
145 Central government administration, commerce sector, food and drink industry, education, leather and tanning, local and regional governments, personal services and textile and clothing.
146 [http://www.europeancommerce.eu/](http://www.europeancommerce.eu/)
Pooling forces to achieve breakthroughs: European Innovation Partnerships

**Commitment 29**

**Pilot and present proposals for European Innovation Partnerships**

“The Council, Parliament, Member States, industry and other stakeholders are invited to support the innovation partnership concept and to indicate the specific commitments they will undertake to make the concept work. The Commission invites all key stakeholders to commit themselves to pooling efforts and resources to achieve the partnership’s intended objectives.

The Commission would welcome views and ideas on the areas being considered for future partnerships and other possible candidates that meet the success criteria.

As a first concrete step, the Commission will start preparations to launch a pilot partnership on active and healthy ageing by the beginning of 2011. Taking into account the views of Parliament and Council and input from other stakeholders, it will present proposals for further partnerships during 2011.”

**Action taken**

The European Innovation Partnerships (EIPs) represent a new approach to EU innovation: they are challenge driven, act across the whole innovation chain, streamline, simplify and better coordinate existing initiatives.

Within a relatively short period, five EIPs have mobilised substantial commitments and established themselves in the European research and innovation landscape, covering the following topics:

- active and healthy ageing;
- water;
- raw materials;
- agricultural productivity;
- sustainability, smart cities and communities.

They were each conceived to have first measurable outcomes within 1-3 years and headline targets to be achieved within 5-8 years (2020). They have all identified priorities and mobilised a wide range of stakeholders across demand and supply sides to accelerate the uptake of R&D and market deployment of innovations.

EIP invitations for commitments have gathered more than 1000 actions so far involving over 7000 partners who are working together to develop and deploy innovations, replicate transferable elements and share lessons learned.

After the successful pilot phase of the EIP on Active and Healthy Ageing, 4 additional EIPs were identified and established in 2012. Each EIP requires a Strategic Implementation Plan, a high profile
Steering Board, the completion of several calls for commitments aimed at involving key stakeholders, the structuring the collaborative work in Action Groups, and the set-up of dedicated marketplaces.

How it works

The EIPs address major societal and environmental challenges and create market opportunities through a coordinated multi-stakeholder approach. They constitute one of the main novelties of the Innovation Union, with the goal to create the conditions for systemic innovation to address some of the greatest societal challenges faced in Europe. Rather than a traditional top-down funding instrument, their aim is to catalyse collaborative action across value chains and sectors, to enable greater risk-taking by stakeholders, and to develop a broader concept of innovation beyond technological issues, with a particular emphasis on the role and involvement of the demand side.

The first results of the EIPs, such as real-scale demonstrations, collections of good practices, toolkits for their replication, and compilations of evidence on the impact of integrated services, are emerging. The assessment of the EIPs highlights that they have been effective in integrating stakeholders, getting early activities on their way serving as an EU-wide observatory of practice in innovation and deepening the dialogue between policy-maker and innovator.

Open issues – Next Steps

Significant achievements have emerged in terms of involving a broad range of key stakeholders through a demand-driven approach. The capacity to bring together the innovators, users and policy-makers to facilitate the collaboration and knowledge exchange through the working/action groups has been particularly important. EIPs have been successful in raising awareness of specific challenges and in catalysing actions by the community.

Despite the positive developments, further progress needs to be made in fast tracking regulations, standardisation and the use of public procurement. The main execution-related challenges lie in the structure, objectives monitoring and communication. Further steps need to be taken to create a consistent and dedicated EIP structure, streamlining the approaches across different EIPs. Greater transparency about selection criteria, targets and indicators is needed. There is a need to achieve greater clarity in communicating the EIP process and to proactively involve start-ups and disruptive innovators in order to avoid the usual suspects effect.

It is still early to assess the impact of the EIPs, as the evaluation framework has not yet been deployed. One significant achievement is the involvement of a broad range of key stakeholders through a demand-driven approach, although there is still unexploited capacity for SMEs involvement. The EIPs have managed to successfully pilot a novel approach to innovation policy, which remains highly strategic for the future competitiveness of Europe and for addressing societal challenges. They managed to achieve stakeholders’ awareness and participation, and to facilitate peer to peer knowledge exchange. There is however a great potential to address systemic issues and framework conditions such as regulation, public procurement or standardisation.
To remain competitive in the global economy the EU needs to boost its innovative capacity, which requires increasing numbers of highly-skilled and entrepreneurial individuals. Therefore Europe must become more attractive for international talent and create the appropriate tools to reach this objective.

To this end, specific tools, such as the EURAXESS LINKS, originally launched in 2008, were further developed under the Innovation Union.

The inclusion of a new policy on legal migration within the 8th priority of President Juncker’s Political Guidelines provides new opportunities to address the challenge of making the EU ‘at least as attractive as the favourite migration destinations such as Australia, Canada and the USA’.

To engage in a new, dynamic and proactive approach to global talent, the 2015 Communication ‘A European Agenda on Migration’ foresees the possible expansion of the EU Blue Card to entrepreneurs from non-EU countries and the establishment of an ‘attractive EU-wide scheme for highly qualified third-country nationals’.

A public consultation and impact assessment of a proposal for a revision of the ‘Blue Card’ Directive were launched. In addition, an experts’ meeting organised in May 2015 recommended establishing a support scheme for highly skilled non-EU resident entrepreneurial innovators.

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How it works

EURAXESS LINKS is the international arm of the EURAXESS initiative linking Europe to the rest of the world. Through their websites, monthly newsletters and activities the EURAXESS Links country representatives maintain the link between Europe and the world. The aim is to promote the attractiveness of Europe to undertake research of EU and non-EU researchers outside Europe. EURAXESS Links officers are located in the following countries and regions: ASEAN, Brazil, China, India, Japan and North America.

By meeting its objective (to attract highly skilled non-EU resident entrepreneurial innovators) the scheme aims to facilitate the creation and development of high-tech companies in Europe by these legal migrants and European returnees, as well as their integration in the European economic ecosystem. The scheme will build on existing initiatives and services at European, national, regional or city level in the Member States and create appropriate synergies.

Open issues - Next Steps

A study is about to be launched to design the scheme for third country entrepreneurs. It will design the architecture of a service platform, promotion tools and assess budget needs. Results are expected in 2016.

An even stronger collaboration with the EURAXESS Centres based in Europe is envisaged to support swift relocation of researchers from third countries.
Commitment 31
Propose common EU/MS priorities and approaches for scientific cooperation with third countries

“The European Union and its Member States should treat scientific cooperation with third countries as an issue of common concern and develop common approaches.

This should contribute to global approaches and solutions to societal challenges and to the establishment of a level-playing field (removing barriers to market access, facilitating standardisation, IPR protection, access to procurement etc.). In 2012 together with the ERA Framework, the Commission will propose common EU / Member States priorities in S&T as a basis for coordinated positions or joint initiatives vis-à-vis third countries, building on the work of the Strategic Forum for International Cooperation.

In the meantime, the EU and Member States should act in a concerted manner when engaging in S&T agreements and activities with third countries. The potential scope for umbrella agreements between the EU and Member States with third countries will be explored.”

Action taken

Deepening and strengthening the partnership between the Commission and the Member States is an important element of the strategic approach set out in the 2012 Communication on enhancing and focusing EU international cooperation in research and innovation148.

Considerable progress has been made, notably through:

- Improving the framework conditions for research and innovation cooperation across the world through policy dialogues with the EU’s partners, as well as through the involvement of the EU and Member States in global fora such as the Global Research Council.

- The preparation of multi-annual roadmaps for key countries and regions with the involvement of Member States through the Strategic Forum for International Science and Technology Cooperation (SFIC).

- The development and testing of methodologies in the context of SFIC to identify common priorities and implement joint actions through a number of geographic initiatives for the USA, China, Brazil and Russia.

Support for policy dialogues and/or joint research and innovation activities between EU/Member States and selected international partner countries and regions have been undertaken through a series of FP7 and Horizon 2020 policy support projects with activities supporting bilateral and bi-regional policy dialogues, networking and twinning events, support to National Contact Points, awareness raising and training.

Member States and Countries Associated to Horizon 2020 have collaborated to design and implement joint R&I programmes and calls. Notably, the Article 185 instrument was used to set up the European Developing Countries Clinical Trial Partnership and work is ongoing towards a renewed Euro-Mediterranean research and innovation cooperation. In addition, a number of third countries and regions have participated in ERA-NETS (Africa, Black Sea, India, Japan, Latin America, Mediterranean, South Korea, Russia, and Western Balkans).

Cooperation is also carried out through global multilateral initiatives, for example, in addressing nano-safety. The project Nanoreg\textsuperscript{149}, developed in the context of the OECD Working Party on Manufactured nano-materials, benefits from multi-lateral financing from the EU Framework Programme 7, Member States and industry.

The potential scope for umbrella agreements between the EU and Member States with third countries has been explored, including through a study\textsuperscript{150} conducted in 2013. The study gave an overview of the range of selected Science, Technology and Innovation agreements used by the EU, Member States and the USA. It explored the impact of these STI agreements and the potential scope for developing umbrella agreements. The study recommended that a group be set up to explore and support the willingness of individual Member States to invest in a concerted action under a ‘Basic Principles Umbrella’ and to explore the practical possibilities of such an Umbrella. The recommendation was discussed in the context of SFIC although to date there have been no concrete follow-ups.

**How it works**

In the context of the policy dialogues with partner countries and regions, growing attention is devoted to addressing framework conditions for engaging in international cooperation to create a level playing field for cooperation among researchers from across the world. These conditions include matching funding mechanisms for cooperation, reciprocal eligibility to participate in national R&I programmes, efficient and fair IPR systems, proper rules for data access, and efficient visa regimes.

The strategy for enhancing and focusing EU international cooperation in research and innovation calls for a systematic and coherent identification of priorities for international cooperation with the EU’s partner countries and regions, with a view to subsequently implementing these through activities with the necessary scale and scope, in particular in the context of Horizon 2020.

The S&T dialogues with the EU’s partners is the primary vehicle for identifying priorities in line with the principles of common interest, mutual benefit, optimal scale and scope, partnership and synergy.

This priority setting process is reflected in multi-annual roadmaps. For each of the partner countries and regions, the roadmaps provide a full overview of the governing framework, current state of play and overview of future priorities for the relevant co-operation.

The development, in the context of SFIC, of the initiatives for the USA, China, Brazil and Russia include information events, networking of Member States science counsellors resulting in strategic documents, the definition of Strategic Research and Innovation Agendas highlighting main opportunities for joint EU/Member States/Associated Countries activities with third countries and the creation of thematic groups.

**Open issues - Next Steps**

Science and innovation are global endeavours and researchers should be able to work together smoothly across borders.

Europe shall continue to proactively address any obstacles to the efficient international cooperation of researchers by ensuring fair and equitable framework conditions through S&T cooperation agreements, agreements in other areas such as trade, S&T policy dialogues and relevant global fora.

\textsuperscript{149} http://nanoreg.eu/
\textsuperscript{150} http://ec.europa.eu/research/sicp/pdf/publications/Final_Basic_Principles_Science_Tech_Innovation-MainReport.pdf#view=fit&pgemode=none
The 2014 report on the implementation of the international cooperation strategy\(^{150}\) included examples, in the form of multi-annual roadmaps, of how priorities have been set with some partner countries and regions. The strategic priority setting process is a continuous one with all partner countries and regions, and the planning and outcome of the S&T dialogues will systematically be placed in a central repository with up-to-date information on framework conditions and thematic priorities for cooperation.

The international dimension of Horizon 2020 will be further strengthened through a better integration of international cooperation in the Strategic Programming and work programme development based on the priorities identified with the EU’s partner countries and regions.

The international dimension of ERA will involve third countries cooperation both at national and EU levels and rely on joint strategic approaches by Member States based on their national priorities as contained in the ERA Roadmap 2015-20. This should translate into strengthened multi-lateral research and innovation cooperation with third countries where relevant, including to maximise the impact of cooperation and to tackle common societal challenges.

It is important that the global approach to international cooperation in research and innovation also entails strengthening synergies with the activities of the Member States. This shall continue to be pursued in particular through the SFIC, providing strategic advice on the development and implementation of the EU strategy.

### Commitment 32
#### Roll out global research infrastructures

“The European Union should step up its cooperation on the roll-out of the global research infrastructures. By 2012, agreement should be reached with international partners on the development of research infrastructures, including ICT infrastructures, which owing to cost, complexity and/or interoperability requirements can only be developed on a global scale.”

### Action taken

The EU has reinforced its commitment to the activities of the Group of Senior Officials on global Research Infrastructures (the GSO)\(^{152}\). The group, established in 2008 to provide a non-binding and open forum for policy exchanges on global research infrastructures, developed a Framework paper\(^{153}\) identifying the key principles to be addressed in presenting a research infrastructure as a candidate for international partnership. The Framework was endorsed by the G8 Science Ministers in 2013.

### How it works

Based on the agreed framework, the GSO has been working along two lines: identifying possible common grounds for deriving best practices in the domain of Access, Data Management, Research Infrastructure Life Cycle and Evaluation; identifying concrete opportunities for collaboration by compiling a list of research infrastructures of potential global interest.

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\(^{152}\) The GSO is composed by representatives from Australia, Brazil, Canada, China, the European Commission, France, Germany, India, Italy, Japan, Mexico, Russia, South Africa, UK, and USA.

That list is now being used to promote the implementation of new collaborations (on a bi-lateral/multi-lateral basis) between research infrastructures and to launch a number of case studies aimed at stress testing the Framework and at better investigating how potential global collaborations could/should be addressed by the GSO based on best practices.

In order to integrate the GSO work strand with other research infrastructure policy dimensions, the European Commission acts as a proxy within the forum to promote the European Strategy Forum on Research Infrastructures (ESFRI) and the EIROforum\textsuperscript{154} as research infrastructure are considered to be of clear global interest.

**Open issues – Next steps**

The G7 Science Ministers in their meeting of October 2015 widely recognised the progresses achieved and the concrete outputs being delivered by the GSO over the past years and invited the Group to go a step ahead in terms of enhancing the level of interaction in order to "identify potential opportunities, risks, gaps, or overlaps in capability that may need to be addressed as science and technology continue to develop over the next 20 years".\textsuperscript{155}

\textsuperscript{154} http://www.eiroforum.org/

\textsuperscript{155} Communiqué of the Meeting of the G7 Ministers of Science - Berlin, 8-9 October 2015 https://www.bmbf.de/files/English_version.pdf
Between 2010 and 2014, as an in-kind contribution to national self-assessments, the Commission supported peer reviews of five national research and innovation (R&I) systems (Belgium, Estonia, Denmark, Spain and Iceland) based on the framework set in Annex 1 of the Communication 'Innovation Union Flagship Initiative'. Commission services also provided further, indirect support to national self-assessments through annual mutual learning seminars bringing together national policymakers to exchange information on selected R&I policy issues.

In 2012, Commission services commissioned an independent evaluation report of the first three peer reviews. While those experiences were assessed as very positive (as they contributed to the development of new national innovation strategies), a set of recommendations for further improvements of the peer review system was established. A 2014 workshop with the Member States helped to further identify success factors for the peer reviews.

The outcomes of these exercises were used to design a new tool under Horizon 2020, the Policy Support Facility (PSF)\(^\text{156}\) which was launched in 2015 to address the limitations encountered so far in the peer review and mutual learning processes and to offer support to a broader range of policy makers in structuring their policy reforms.

With the objective of improving the design, implementation and evaluation of R&I policies, the PSF provides best practice, leading expertise and guidance to Member States and Associated Countries (on a voluntary basis) through a broad range of services attuned to their specific needs. In this way the PSF replies to the strong need expressed by Member States for more customer-oriented services to

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\(^\text{156}\) http://ec.europa.eu/research/index.cfm?pg=newsalert&year=2015&na-na-030315
support evidence-based policymaking. The PSF is making the peer reviews system more systematic and professional and facilitates decisions of public authorities to seek support in reviewing R&I systems.

Moreover, the national R&I policy developments have been continuously monitored in the framework of the integrated economic coordination (‘European semester’), leading to Country-Specific Recommendations addressing R&I issues.

Commission services further contributed to develop the evidence base for R&I policy-making through preparing and issuing two editions of the ‘Innovation Union Competitiveness report’ and two editions of the ‘Research and Innovation performance in the EU: Innovation Union progress at country level’, as well as through commissioning and issuing a series of studies.

How it works

There are three main services offered by the PSF to the Member States and Associated Countries:

- first, in-depth peer reviews of countries’ R&I systems, i.e. comprehensive examination of national R&I systems by experts to detect strengths and weaknesses and recommend paths for reform;
- second, tailored support to specific reforms, including, for example, expert support in putting in place a national strategy for human resources or designing and implementing a national infrastructures roadmap;
- third, in-depth mutual learning on specific topics between interested countries. This is a comprehensive process of exchange of experiences between the Member States on specific topics such as performance-based funding of public research organisations.

Finally, an online library is being set up, in conjunction with the Research and Innovation Observatory (RIO). The aim is to make available country-based information on Member State R&I policies and performance, covering good practices, relevant statistics and dedicated reports.

In the context of the European Semester, the Country Reports issued by the Commission systematically identify for each Member State its main R&I policy challenge(s), i.e. the main bottleneck(s) impeding the full contribution of research and innovation to smart, sustainable and inclusive growth. They also assess whether an adequate policy response is in place, in line with the dimension of the identified challenge.

The Country Reports’ analyses constitute the base for the Country-Specific Recommendations, which in the area of R&I address issues such as prioritising public investments in R&I, increasing the efficiency of these investments and their leveraging effect on business through smart specialisation and public-private cooperation, ensuring a business environment supportive of R&I private investment and of the emergence of fast growing innovative SMEs.

Open issues - Next Steps

The PSF introduces many novelties: the first exercises launched in its framework will effectively function as pilots. For example, in the case of the pre-peer review system (aimed to support a country in the preparation phase of a peer review, offering a quick scan of the R&I system and aiming at providing a solid evidence-base and focus areas for the full peer review): no relevant examples of previous preparatory activities of this kind exist. It will be therefore essential to ensure a quick but thorough feedback from these pilot exercises so that all lessons can be rapidly drawn and any appropriate adjustments made for the subsequent exercises.

Commitment 34
Develop an innovation headline indicator; Monitor progress using Innovation Union Scoreboard

“The Commission proposes to launch the necessary work for the development of a new indicator measuring the share of fast-growing innovative companies in the economy. This will require the full cooperation of Member States and international partners. Subject to these commitments, the Commission will submit the necessary proposals and take urgent action to develop this indicator within the next two years, working with the OECD, as appropriate, so that it can become, over time, a new headline indicator allowing as part of the EU 2020 strategy to benchmark the EU’s performance against its main trading partners.

Starting immediately, the Commission will monitor overall progress on innovation performance using the Research and Innovation Union scoreboard.”

Action taken

The Commission examined various indicator variants in detail and discussed results with Member States. To underpin the indicator a specific data collection was launched with Eurostat. In 2013 the Commission published a Communication159 and a Staff Working Document160 presenting the proposed innovation output indicator and its components in detail. Further methodological work to fine-tune some components was carried out during 2014 and 2015. Calculations to update the results have been carried out since 2013 on an annual basis. Work is still ongoing to enhance the international dimension of the indicator by collecting data for non-European countries.

How it works

The indicator proposed is a composite indicator with 4 components capturing technological innovation, absorption of skills, competitiveness of knowledge-intensive goods and services and employment in fast-growing firms of innovative sector. The underlying sub-indicators are:

- Number of PCT patent applications per Billion GDP (PPP)
- Employment in knowledge-intensive activities in business industries as a % of total employment
- Share of medium-high and high tech products in goods exports
- Knowledge-intensive service exports as a % of service exports
- Average innovativeness scores of fast-growing enterprises

All sub-indicators are at the same time sub-indicators of the Innovation Union Scoreboard. The data underpinning the sub-indicators are from Eurostat and OECD. Data are available for all EU countries and for selected ERA countries, plus USA and Japan. Time series have been produced starting with 2010 as a reference year. Results have in the past been published in the Innovation Union country profiles and in the Innovation Union Scoreboard. The 2014 edition of the Innovation Output Indicator showed Germany, Sweden and Ireland as the best-performing EU countries.

The annual Innovation Union Scoreboard\textsuperscript{161} provides a comparative assessment of the research and innovation performance of the EU Member States and the relative strengths and weaknesses of their research and innovation systems. Capturing a total of 25 different indicators, the scoreboard helps Member States assess areas in which they need to concentrate their efforts in order to boost their innovation performance. Every two years, the Innovation Union Scoreboard is accompanied by a Regional Innovation Scoreboard.

The 2015 Innovation Union Scoreboard reveals that the crisis has left an impact on the private sector's innovative activity. While the EU's overall level of innovation has remained stable, the number of innovative firms is in decline. Sweden is once more the EU's innovation leader, followed by Denmark, Finland and Germany. In global comparison, the EU has continued to close its innovation gap towards the US and Japan, while the innovation gap with South Korea is widening.

The Innovation Union Scoreboard and the Regional Innovation Scoreboard attract large attention from policy makers and media across Europe. The results of the scoreboards feed into the European Competitiveness Report and the European Semester.

**Open issues - Next Steps**

Discussions are ongoing on the fine-tuning of indicators (e.g., adaptation of the Knowledge-intensive service exports sub-indicator to the updated Balance of Payments Manual) and on improving the timeliness of data.

\textsuperscript{161} http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/index_en.htm
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The Innovation Union was launched in 2010 as a flagship initiative of the Europe 2020 strategy to build on Europe's strengths and address its weaknesses with respect to innovation and thereby make Europe more competitive in times of budgetary constraints, demographic change and increased global competition.

Five years after the launch of the Innovation Union, the State of the Innovation Union 2015 takes stock of the progress achieved under each of the 34 specific commitments for action made in the Innovation Union and shows that great results have been achieved in delivering the Innovation Union.

*Research and Innovation policy*