European Commission

State of the Innovation Union

Taking stock 2010 – 2014

Research and Innovation

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Directorate-General for Research and Innovation
Directorate B — Innovation Union and European Research Area
Unit B1 — Innovation Union Policy

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Executive summary

The Innovation Union was placed at the heart of the Europe 2020 strategy in 2010 with the aim to foster Europe's capacity to innovate. Innovation is indeed considered essential to preserve and improve Europe's competitiveness and its ability to create jobs and to tackle societal challenges. Four years after its launch, this Staff Working Document (SWD) takes stock of how it has been implemented and what first results it has delivered, keeping in mind that the Innovation Union is a ten years long strategy.

The Innovation Union is succeeding in building momentum around innovation, mobilising stakeholders and mainstreaming innovation in key European, national and regional policies.

Notably, the European budget allocated to research and innovation was increased, despite a decrease in the overall EU budget for 2014-2020. Also, despite the economic crisis, the Union has made progress towards its R&D investment target of 3 %. This is a clear sign that the EU is prioritising growth and jobs.

Considerable measures have also been taken to ensure that the R&I budget is well spent, including through simplification of programme architecture and participation rules in Horizon 2020, the deployment of European Research Area (ERA) measures and the development of an indicator to monitor innovation output.

As a comprehensive strategy, the Innovation Union addresses a wide range of elements that impact Europe's innovation eco-system and is succeeding in changing it. Excellent progress has been made in delivering on each of the Innovation Union blocks:

Strengthening the knowledge base and reducing fragmentation

The knowledge base in Europe is being strengthened, notably through the launch of Horizon 2020, the focusing of European Regional Development Funds on smart specialisation strategies, progress towards the European Research Area, and support for skills development. Within Horizon 2020, the new research and innovation framework programme, red tape was sensibly reduced, so as to allow wider, more competitive participation. All phases of the innovation cycle are now funded under a single programme, making sure that the knowledge produced can be better exploited for the realisation of new products and services. More private investment has been secured to address major societal challenges while boosting Europe's industrial competitiveness.

Public-private and public-public partnerships are one of the key elements of Horizon 2020. The private sector has committed to invest nearly €10 billion in Joint Technology Initiatives stimulating innovation in areas such as aeronautics, medicines, electronic components and systems, transport and bio-based industries, while contributing to reverse the declining role of industry in Europe. In addition, eight contractual Public Private Partnerships have been launched in areas such as green cars, energy efficient buildings and cleaner manufacturing processes, photonics and next generation internet. These partnerships are expected to leverage more than €6 billion of investments with substantial impact on the competitiveness of the EU industry and essential to address societal challenges.

The 2012 Communication on ERA helped to identify key measures to optimise the effectiveness of investment in R&D as well as to consolidate the partnership. The ERA Progress report also provides a factual basis to assess progress in key areas and work has started so as to assess the potential economic impact of these reforms.

Fragmentation is being reduced as well through better linkages between academia and business, between public and the private sectors and between sectors. Due to measures favouring researchers' mobility it is easier for European and third country researchers to develop their work anywhere in the continent.

Getting ideas to market

Great efforts have been made in delivering the tools for a more innovation-friendly business environment in Europe, such as the unitary patent and the revised public procurement directives which offer better opportunities for innovating.

Instruments to ease access to finance are in place and are about to start delivering, including reinforced debt and equity facilities and the venture capital passport. Such newly launched mechanisms and initiatives provide substantial support for innovation by leveraging the engagement of industry and business. Measures to overcome the insufficient availability of finance in Europe, a major obstacle to getting innovations to the market, have been put in place: the Risk-Sharing Finance Facility, jointly set up by the European Commission with the European Investment Bank Group, has ensured that for every billion euro of EU budget money the EIB has mobilised €12 billion in loans and over €30 billion in final R&I investment. This has led to additional resources of up to €40 billion since 2007 for research and innovation activities which would otherwise be left unfunded. Moreover, a specific SME instrument scheme was created to support SMEs in realising their best ideas.

While public intervention has in the past typically been used to stimulate the supply of research and new knowledge, over recent years it has increasingly been used to stimulate the demand for innovation with instruments such as pre-commercial public procurement, innovation-friendly regulation and standards-setting. For instance, procurement of innovation was facilitated through the development of modernised procurement directives, a methodology for the screening of regulation in terms of its impact on innovation was developed and tested by the Commission, the eco-innovation action plan was launched, and standard setting was modernised and made faster.

Maximising social and territorial cohesion

The Innovation Union has also tackled the challenge of territorial and social cohesion. For instance, smart specialisation strategies have been established as an ex-ante conditionality for investment priorities under research, technological development and innovation. The aim is to promote a better innovation performance across European regions and Member States, without compromising on excellence.

The increased emphasis on social and public sector innovation is ensuring a broader uptake and societal impact of innovation, as well as a change of mind-set with regards to who should be concerned by innovation and who can be an actor of change in the EU. In particular, momentum is building around public sector innovation, where actions undertaken went beyond the initial expectations of the Innovation Union.

The European Innovation Partnerships

The European Innovation Partnerships (EIPs) have presented a new approach to EU research and innovation. Five EIPs have been launched in key areas of active and healthy ageing, water, agriculture, raw materials and smart cities. They are now all in the implementation stage, having identified priorities, engaging a wide range of partners across the demand and supply sides of innovation, and starting to deliver first results. An independent evaluation of the overall performance of the EIPs has concluded that there are sound reasons for the EU to continue promoting the EIP approach, provided that the EIPs target systemic innovation with a strong focus on diffusion of innovation.

Leveraging our policies externally

The global dimension of innovation has equally been taken into account. Several initiatives have been developed to increase Europe's attractiveness as a research and innovation destination and partnerships between the EU and its Member States have been strengthened in the definition of priorities for cooperation with third countries, including with regards to the development of global research infrastructures.

Making it happen

Progress in Europe and Member State's innovation performance has been monitored in the framework of the integrated economic coordination ('European Semester'), through the Innovation Union Scoreboard and the Innovation Union Competitiveness Report. This will be continued and improved through the Policy Support Facility under Horizon 2020. Exchange of best practices and mutual learning have equally been facilitated by the EU. In order to better monitor how well the expenditure in R&I is delivering results, an innovation output indicator has been developed. It allows a measure of the ability of the economy to transform knowledge into successful marketable innovations, so as to inform policy makers about the effectiveness of their expenditure in R&I and innovation eco-system.

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, we should not be content with the results achieved and stop paying the necessary attention to Europe's innovation performance. The EU, its Member States and other stakeholders need to continue working together to improve the European innovation eco-system.

Some important gaps remain and need to be filled in order to turn Europe into a more innovative society. The experience gained in the first years of implementation of the Innovation Union is useful in identifying needs 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 on other European markets. This reduces the diffusion of innovative products and services and limits the chances for the emergence of new ones. The prospects of a full roll-out of the single market would indeed be a major driver of investment and innovation, including through the exploitation of digital technologies.

- Closer involvement of society has proven to be key 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.

- The public sector is increasingly recognised as a key driver of innovation. While its role in promoting innovation through regulation, fiscal policies, standard setting, procurement and supply-side policies has been tested in the past – and although there is room for an increased uptake of such tools in the future and for a better mix of supply and demand policies – its capacity to innovate itself so as to become more user-friendly, efficient and effective should be further explored.

- 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. At the same time, innovation can help lagging regions transform their economies and make them more competitive. Moreover, the benefits derived from the roll-out of smart specialisation strategies for research and innovation could be multiplied through better linkages across regions, allowing for the development of complementarities and European value chains.

- Despite great progress made through the EIT, the Knowledge Alliances and other skills development schemes, skills shortage and mismatch is still important. It does not only concern sector-specific skills, but also numeracy and literacy skills, as well as the '21st century skills' for creativity and entrepreneurial spirit.

- Innovation is becoming more central to our economy and to our society. As illustrated in this SWD, all of the Innovation Union commitments are currently on course, setting the building blocks for increased growth and jobs. 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 roll-out and use as well as to anticipate, where possible, further actions to optimise their impact, based on the lessons learnt during the first years of implementation.

CHAPTER 1

Strengthening the knowledge base and reducing fragmentation

Key messages

Good progress has been achieved in setting the basis for strengthening Europe's knowledge base and reducing its fragmentation.

The launch of the new EU research and innovation framework programme, Horizon 2020, and the development of ERA measures are important stepping stones in the path to a more research and innovation friendly environment in Europe.

Horizon 2020 is the biggest EU research and innovation framework programme ever launched, with over €80 billion dedicated to excellent research, industrial leadership and key societal challenges. It contributes to strengthening the knowledge base in Europe not only by funding research, but also by mainstreaming funding for activities in all stages of the innovation cycle, from frontier research to close-to-market innovation. It supports and encourages the participation of businesses, including SMEs. In parallel, billions are being invested in innovation-driven public private partnerships.

Key measures have been defined and put in place to attract more people to science and train enough researchers, in particular in the framework of the European Research Area.

The ERA is also contributing to reducing the fragmentation of the knowledge base in Europe, by putting in place measures aiming at facilitating the mobility of researchers across borders and across business and academia, among others. The recently launched U-multirank also contributes to this goal by improving the comparability of Higher Education Institutions based on broader criteria than other international university rankings. Also better coordination among European policies, for instance through the Grand Coalition for Digital Jobs, is key to reach this goal.

Examples of other measures that both strengthen Europe's knowledge base and reduce its fragmentation through better opportunities for linkages between business and academia include activities by the EIT KICs, the Knowledge Alliances, the development of the Innovative Doctoral Training Principles and the Maria Skłodowska Curie actions under Horizon 2020.

A better mapping of specific needs for research and innovation has been made possible, through a strengthened cooperation between the policy directorates of the Commission and the Joint Research Centre as well as due to the work carried out by the European Forum for Forward Looking Activities (EFFLA).

These actions are already providing valuable results and contributions to Europe's innovation eco-system. Nevertheless, it is too early to assess their full long term impact. For instance, Horizon 2020 was launched in 2014, but it will take some time before the projects and actions funded bear fruit.

Some gaps also remain in the implementation of the actions stemming from the commitments of the Innovation Union in this area. In particular, better coordination between policies at the European and Members States level would be highly profitable, notably with regards to researchers' mobility, open recruitment and uptake of the Innovative Doctoral Training Principles.

Progress so far

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."

Over the past years, 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 Researchers Report 2013[1] showed that the vast majority of countries reported new measures to train enough researchers to meet their national targets. This includes mainly three strands of measures: 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; 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.[2] The ERA Progress Report 2013[3] shows that incentives and/or strategies for gender equality in research are, to various degrees, in place in at least 18 Member States. It also shows that awareness programmes to attract girls to science and women to research are enforced by more than one third of Member States.

A series of EU policy initiatives such as the development of the EURAXESS network, in particular a large increase in the use of EURAXESS Jobs, the 'Scientific Visa Directive' (see commitment 30), a Human Resources Strategy for Researchers based on the Charter and Code,[4] and Principles of Innovative Doctoral

1 http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies
2 See Table 16, Researchers' Report 2013
3 http://ec.europa.eu/research/era/pdf/era_progress_report2013/era_progress_report2013.pdf
4 European Charter for Researchers and a Code of Conduct for the Recruitment of Researchers, available at: http://ec.europa.eu/euraxess/index.cfm/rights/whatIsAResearcher

Training have contributed to this progress. Marie Skłodowska-Curie actions (MSCA) 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.

Marie Skłodowska-Curie actions (MSCA) in Horizon 2020

65,000 researchers will be funded under MSCA in Horizon 2020. All of them will receive high quality research training and excellent career opportunities in both public and private sectors. The MSCA are exemplary in the way they have integrated the principles set out in the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers, notably by providing employment contracts with full social security coverage to Marie Curie fellows, offering outstanding career development opportunities to the researchers funded by the programme and using open, transparent, impartial and equitable methods for their selection and recruitment. All MSCA funded jobs are systematically published on the EURAXESS Jobs portal where a dedicated search directory has been set up. Gender is of particular concern to MSCA funding. The programme aims to increase women's participation in research through practices of equal treatment and family-friendly measures (a dedicated family allowance under Horizon 2020). The Career Restart Panel also helps those who wish to resume a career in research after a break.

Through the COFUND mechanism, extended in Horizon 2020 to doctoral programmes, the relevant regional, national and international actors introduce or further develop the transnational dimension of their offers. Moreover, they will be encouraged to align the practices of their doctoral and fellowship programmes with the EU principles on Innovative Doctoral Training.

"EURAXESS – Researchers in Motion" is a pan-European initiative across 40 countries[5] that aims to facilitate the mobility of researchers and enhance scientific collaboration between Europe and the world. The EURAXESS member countries have underlined their commitment to contribute to policy initiatives at both national and European level, by promoting the EURAXESS Jobs portal and improving outreach to industry partners who have specific needs.

Researchers can find more than 8,000 research-related offers on EURAXESS Jobs on any given day. In 2013, more than 40,000 jobs were published online compared with 7,500 in 2010. This excellent progress, which is helping to match demand and supply across borders, is due to concerted efforts by the Commission, several Member States and institutions to ensure that a much larger proportion of research vacancies are posted on the portal, e.g, the inclusion of vacancies from major job providers such as Naturejobs, AcademicTransfer (NL), Galaxie (FR), CINECA (IT) and Focus Research (BE). Some countries have also adopted national legislation to make it mandatory for publicly funded institutions to advertise their positions at EURAXESS Jobs (e.g. Poland, Croatia, Italy).

Researchers relocating in one of the 40 countries across Europe can also rely on the personalised assistance provided by the EURAXESS Service Centres. Since 2009 nearly one million researchers' queries have been treated.

With regards to the promotion of attractive employment conditions, EU Member States and Associated Countries continue to support the implementation of the European Charter & Code (C&C) which aims to improve researchers' working conditions. In particular, 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

5 Countries participating in EURAXESS are EU Member States and Associated Countries to the Framework Programme.

proposes different means of judging merit. More than 480 organisations from 35 countries in Europe and beyond have explicitly endorsed the principles underlying the C&C and the level of institutional endorsements of the C&C principles continues to grow. The Commission's Human Resources Strategy for Researchers focuses on the practical implementation of the C&C principles. More than 300 universities, research institutes and funders participate in it. So far, 178 'HR Excellence in Research' logos have been awarded to acknowledge their efforts.

Europe has relatively few researchers employed in industry, making up only 45 % of total researchers compared with 78 % in the US, 74 % in Japan and 62 % in China.[6] At the same time Europe continues to train an increasing number of PhDs (from around 72,000 in 2000 to 115,000 graduates in 2010). Although the nature of PhD training is diversifying and the majority of PhD graduates embark on careers outside of academia (evidence shows that in France, Germany and the UK over 50 % of all PhD degree holders now take up jobs outside academia), early stage researchers are often inadequately informed about career paths outside of academia and have insufficient experience in industry and other relevant employment sectors. Only one in ten early-stage researchers reported receiving training in entrepreneurship or intellectual property rights during their PhD.

As a response, the Commission has worked with experts from industry, academia, and national research ministries to prepare seven Principles for Innovative Doctoral Training,[7] to foster excellence and a critical mind-set and provide young researchers with transferable skills and exposure to industry and other employment sectors. The Council of Ministers has endorsed these principles and has called on Member States and universities to provide financial support (see Commitment 4).

The MSCA will enable around 25,000 doctoral candidates (around 3 % of the total number in the EU) to be recruited by 2020 to high-quality programmes in Europe. These will provide experience outside academia, hence developing increased employability skills amongst PhD holders.

A number of challenges remain and a coordinated effort by Member States and institutions is needed to remove remaining obstacles to researcher mobility, training and attractive careers. This includes 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 is therefore working 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. In particular, two Working Groups have been formed to tackle the issues of Innovative Doctoral Training and the Professional Development of Research Careers. This will include the development of a toolkit for those looking to implement the Innovative Doctoral Training principles.

6 http://ec.europa.eu/research/era/pdf/era_progress_report2013/era_progress_report2013.pdf
7 http://ec.europa.eu/euraxess/pdf/research_policies/Report_of_Mapping_Exercise_on_Doctoral_Training_FINAL.pdf

Commitment 2.1: 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."

Higher education institutions play an important role in several areas, including teaching, research knowledge transfer, international positioning and regional engagement. In order to reform higher education in Europe, increased transparency about how Europe's higher education institutions perform on each one of these dimensions is needed. To this end, the Commission has been working on the delivery of a new, independent and multidimensional ranking system to benchmark Higher Education Institutions (HEIs) performance, U-Multirank.

U-Multirank differs from existing world rankings by having a multidimensional, user-driven approach to international ranking of higher education institutions. It takes a holistic approach to rankings with the following five dimensions: teaching and learning, research, knowledge transfer, international orientation and regional engagement. There is no pre-defined weighting to the dimensions and indicators, unlike existing world rankings (which emphasise research through a composite indicator that accounts for around 60 % of the individual ranking place). As a result, it provides a more rounded approach to measuring university performance, by assessing all aspects of University activity, and it provides an overview of the diversity of European higher education, identifying the outstanding performers across all areas where HEIs are active.

This ranking is user-driven, as it allows users to develop personalised rankings by selecting indicators in terms of their own preferences and provides both ranking of whole institutions and of disciplines. The four disciplines in the 2014 ranking are: business studies, mechanical engineering, electrical engineering and physics.

The first U-Multirank results, with more than 500 HEIs (whole institutions) and 1272 disciplines (four discipline-specific rankings) were published in May 2014. In addition, over 360 institutions were included on the basis of publicly available data (from bibliometric and patent databases) mainly in the area of research and knowledge transfer. Participating institutions come from 70 countries around the world. Around 62 % of all institutions are from Europe, 17 % from North America, 14 % from Asia and 7 % from Oceania, Latin America and Africa.

U-Multirank is an important tool for every stakeholder involved: for policy makers as a transparency tool to reform higher education based on the inherent strengths of individual HEIs and thus build diversity and specialisation within European higher education; for students to make informed choices of where to study; for HEIs to seek partners and compare performance with their peers; and for business to find suitable partners for cooperation.

U-Multirank will publish three additional rankings in 2015, 2016 and 2017 before an independent organisation (independent from the Commission, member states and higher education institutions) is established in 2017. The European Commission will fund U-Multirank until the independent organisation is created.

Commitment 2.2: 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. They will help universities to modernise towards inter-disciplinarity, entrepreneurship and stronger business partnerships."

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 the cooperation between higher education and business a more common feature in European higher education systems.

The Commission launched the first call for the creation of the first three Knowledge Alliances pilot projects in 2011, which was followed by a second one in 2012. Both calls were supported with €1 M provided by the European Parliament each and both met with high interest (93 and 103 applications respectively) and provided a very strong proof of concept.

Following their success, in 2013 the Knowledge Alliances were integrated into the last 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 output of around 150 Knowledge Alliances over the funding period (2014-2020).

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."

The growth, competitiveness and innovation capability of European industry as well as social cohesion are increasingly dependent on the strategic and efficient use of information and communication technologies (ICT), as well as the knowledge, skills, competences and inventiveness of the European workforce and citizens.

There is broad consensus about the crucial importance of the long-term challenge of e-skills for Europe. As new technologies are developing rapidly, e-skills are increasingly sophisticated and need to be constantly updated. With demand for skilled ICT practitioners exceeding supply, Europe could face a shortage of up to 560,000 ICT workers in 2015 which could exceed 1 million by 2020. There is a critical need for individuals with e-skills as well as creativity, innovation and higher-level conceptual skills.

In response to this challenge, over the period 2010-2014 several important results have been delivered at EU level.

Foresight scenarios on the supply and demand (2015-2020) including individual country reports, an analysis of the impact of cloud computing, of cybersecurity, green IT and global sourcing on e-skills have been developed.

In 2012, two seminal reports on 'e-Skills and ICT Professionalism: Fostering a European ICT profession' and on 'e-Leadership: Vision, Roadmap and Foresight Scenarios' presented a clear vision and roadmap (2014-2020) for the promotion of ICT professionalism and of e-leadership in Europe.

The European e-Competence Framework 3.0 (e-CF) has been released in December 2013 by the European Standardisation Committee (CEN). It constitutes a basis for the development of the ICT profession together with bodies of knowledge, ethics and education and training. It has already been adopted by several countries as a national standard, e.g. Italy and the Netherlands, and should become a European standard in 2015. Based on the e-CF online self-assessment tools have been developed, e.g. by CEPIS and EXIN, and proposals for quality labels for IT industry training and certification have been released. The proposed labels are based on the e-Competence Framework and EQAVET (the European Quality Assurance in Vocational Education and Training) enabling to make it possible to distinguish different types of training and certification referenced against the e-Competence Framework. Leading IT companies have now been able to map their IT training courses and certifications against the e-CF, e.g. as Microsoft, Cisco, CompTIA, HP etc.

In 2013, e-leadership skills have started to become an issue in policy and multi-stakeholder initiatives of 21 of 27 EU Member States. Developments are still in their infancy, though, with the exception of Denmark, Germany, Finland, Malta, the Netherlands and the UK. These skills have only become an issue in countries which rank at the top in Europe in terms the propensity for a country to exploit the opportunities offered by ICT.

A complementary initiative on the development of common bodies of knowledge has been launched in January 2014 and future work will also address the issue of professional ethics. 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.

To raise awareness on e-skills and the demand for highly skilled digital jobs the Commission organised the e-Skills Week (26-30 March 2012). This initiative demonstrated a strong mobilisation of stakeholders in a wide range of pan-European and national activities including 2.235 events involving over 1.8 million participants in 37 European countries. New 'e-Skills for Jobs' campaigns will be organised over the period 2014-2016 with a view to reach larger target groups. As a result, numerous multi-stakeholder partnerships have been launched and in March 2014 a comprehensive analysis of the situation in Europe has been released: 'e-Skills in Europe: Measuring progress and Moving Ahead' including the benchmarking of Member States policies and over 100 multi-stakeholder partnerships.

The analysis of national policy and initiatives in the ICT domain across EU Member States shows high or even very high levels of activity in many countries not only in the digital literacy domain but also in the e-skills area where 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 in 2012 have triggered Member States to engage in public debates about the e-skills issue and helped them to develop appropriate responses. However, the degree of integration and consistency of policy-making is still limited in a significant number of Member States. Many countries lack a master strategy or the topic still does not attract continuous attention in policy-making across the different policy areas concerned. 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.

Building on the strong interest of stakeholders, President Barroso, Vice-Presidents Kroes and Tajani, Commissioners Andor and Vassiliou launched the 'Grand Coalition for Digital Jobs' in March 2013 at the conference on 'e-Skills and Education for Digital Jobs'. This initiative aims to further raise the profile of current efforts and increase the overall supply of ICT professionals and to match supply and demand of digital skills better. The goal is to start to increase the supply of ICT practitioners by 2015, so as to ensure a sufficient number in Europe by 2020. The initial mandate of the Grand Coalition runs from 2013 to 2015 with a review foreseen at the end of this term. The results of the Grand Coalition are encouraging: we have received more than 40 pledges so far, including from large companies, e.g. Google, Telefonica, SAP, Microsoft, Cisco, Oracle etc. Pledges have come in also from smaller companies, education providers and NGOs, while policy-makers all over Europe and the European Council (24-25 October 2014) have provided strong political support to the initiative. In addition, National Coalitions are being developed in more than 10 Member States with the aim of facilitating action at local level. For example, Lithuania and Poland have officially launched their national coalitions.

The main priorities for the future (2014-2020) 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. After a continuous decline since 2006, the supply of ICT practitioners has started to improve slowly after 2009. This promising trend must be sustained to maximise the benefits for Europe of the digital 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 co-operation, aiming for them to be in force by end 2014."

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 presents a series of actions to be undertaken by Member States, Stakeholder Organisations and the Commission. It also announces the setting up of the ERA Monitoring Mechanism to identify progress in ERA.

Alongside the ERA Communication, the Commission launched a Stakeholder Platform in which currently six European stakeholder organisations (SHO) take part.[8] These SHO have agreed to work together with the Commission towards the implementation of ERA. The Platform provides a forum where they interact regularly to explore the best ways to facilitate the implementation of the key ERA priorities.

In 2013 the Commission presented the first ERA Progress Report, which 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. Structural reforms are already being implemented at Member State level, and ERAC[9] has become a major forum of policy exchanges between Member States in terms of research policy.

8 Members of the Stakeholder Platform are: the Conference of European Schools for Advanced Engineering Education and Research (CESAER), European Association of Research and Technological Organisations (EARTO), the European University Association (EUA), the League of European Research Universities (LERU), NordForsk and Science Europe.

9 The Committee is a strategic policy advisory committee whose principal mission is to provide timely strategic input to the Council, the Commission and Member States on research and innovation issues that are relevant to the development of the European Research Area. http://www.consilium.europa.eu/policies/era/erac?lang=en

Almost all SHO published a report on how they have progressed towards ERA. The reports shows real progress has been made by the members of the SHO, especially in fields such as research infrastructures, doctoral training, gender policy and open access to publications. However, cross border research cooperation would need more support to achieve its full potential.

The Competitiveness Council, on 21 February 2014, acknowledged that "the ERA Progress Report 2013 provides a good initial analysis of the state-of-play of the implementation of the ERA priorities in the Member States and at European level. The report shows that much has already been achieved towards the construction of ERA, and also gives a first indication of possible areas for future action".

It also "invited the Member States in close cooperation with the Commission, considering the ERAC opinion and working through ERAC, to develop by mid-2015 an ERA roadmap at European level". Accordingly, it called on the Member States "to take fully into account the ERA implementation when developing national strategies. This may include the development of national ERA initiatives".

In 2014 the Commission will present the second ERA Progress Report, It will include a full assessment of progress in the adoption of policies in support of ERA. It will also present the implementation of ERA by research funders – the ones translating national policies into concrete measures - and by research performing organisations – the ones implementing the ERA actions in their daily work - in the different countries.

The Joint Programming process is one of the five ERA partnerships launched by the Commission in 2008.[10] A first assessment suggests that three Public-public partnerships can contribute to increased growth and well-being in the EU:

- The Joint Programming Initiative (JPI) on Neurodegenerative diseases (JPND) gathers 25 Member States. It has much increased the coordination of ERA research and contributed to increasing fourfold investment in the area between 2007 and 2011. Its Joint Call on Biomarkers for Alzheimer's disease is one of the biggest in the world. The JPI has attracted Canada as a full partner and the US National Institutes of Health (US-NIH) is negotiating possible collaborations.

- The Commission proposed to invest €600 M in a Joint Programme with 37 EU Member States and Associated Countries through the Art.185 initiative on Metrology.[11] According to the ex-ante Impact Assessment, the first Art.185 initiative (2007-2013) has contributed to increasing coordination on metrology research in the ERA, delivering equal quality to US NIST activities, for a fourth of the investment.

- All countries in the ERA undertake research on rare diseases, as private business would not invest in diseases affecting each less than 0.05 % of Europeans. However, together, the more than 6,000 diseases affect directly some 25 million Europeans.[12] No country can deal with such diseases alone. The ERA-NET scheme and the International Rare Diseases Research Consortium (IRDiRC)[13] have increased coordination of research not only in Europe, but in the whole world, contributing to the fact that available therapies on rare diseases were multiplied tenfold, from 14 in 2010, to more than 100 in 2014.[14]

10 Towards Joint Programming in Research COM(2008)468 Final, 14 July 2008
11 Public-private partnerships in Horizon 2020: a powerful tool to deliver on innovation and growth in Europe COM(2013) 494 final, 10 July 2013
12 http://ec.europa.eu/health/rare_diseases/policy/index_en.htm
13 http://ec.europa.eu/research/health/medical-research/rare-diseases/irdirc_en.html
14 http://www.irdirc.org/

Commitment 4.1: Comparable research careers structures

The 2011 communication 'Towards a European Framework for Research Careers' set the basis for the creation of a framework that allows better comparability for research careers structures. The European Framework for Research Careers (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 consists of four profiles:

- R1 - First Stage Researcher (up to the point of PhD)
- R2 - Recognised Researcher (PhD holders or equivalent who are not yet fully independent)
- R3 - Established Researcher (researchers who have developed a level of independence)
- R4 - Leading Researcher (researchers leading their research area or field)

Consensus among stakeholders on the Framework was reached in 2011 and the report was adopted by the ERA Steering Group on Human Resources and Mobility. The Framework was firstly introduced - for self-categorisation purposes - on the EURAXESS Jobs Portal and 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.

In 2013 most universities, other research organisations, funders and companies refer to the EFRC in their recruitment, human resources management, training and all the EURAXESS Jobs and national portals use the framework and its descriptors for their job categorisation. Also EU programmes (Framework Programme, Erasmus, Erasmus Mundus) use the framework and its descriptors for their grant schemes.

Commitment 4.2: Innovative Doctoral training

In 2011, a set of Principles for Innovative Doctoral training were defined with the help of experts from university associations, industry and funding organisations. They reflect the Salzburg Principles of the EUA, good practice in Member States and the Marie 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 invited research stakeholders to "provide structured doctoral training based on the Principles for Innovative Doctoral Training" and "develop and implement structured programmes to increase mobility between industry and academia".

Their 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 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.

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

A Working Group has been created by the ERA Steering Group on Human Resources and Mobility to look at practical ways to widen the uptake of the principles across Europe.

MSCA-backed researchers in team behind Higgs boson 'God particle' discovery

Six researchers associated to the Marie Skłodowska-Curie Initial Training Network (ITN) ACEOLE were directly involved in the revolutionary sub-atomic particle discovery of the Higgs Boson by the CERN, the European nuclear research facility. The discovery stands out as one of the great scientific achievements of the 21st Century so far.

The six fellows involved helped to develop the data readout systems used at the Large Hadron Collider particle accelerator tunnel at CERN.

Researchers from another ITN, 'TALENT', provided operational support for the experiment. This other network, created in 2012, is developing measurement tools for a better understanding of the precise nature of the new particle.

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

International mobility of researchers contributes to excellence. However, some administrative settings discourage such mobility. For instance, mobile researchers risk losing their supplementary pension benefits. In fact, approximately 12 % or 154,000 researchers from higher education institutions risk losing their pension entitlements when moving to another country.[15]

Building on earlier preparatory work, the Commission committed in 2012 to support stakeholders in setting up pan-European supplementary pension fund(s) for researchers. The purpose of the project is to ensure adequate and sustainable occupational pensions for mobile and non-mobile researchers in the European Economic Area.

A Task Force was created in 2013 to prepare a proposal on the establishment of a pan-European Retirement Savings Vehicle (RSV) for professionals employed by research organisations. In early 2014 the Task Force transformed into a consortium of committed employers. The purpose of the consortium is to promote the establishment of the Institution for Occupational Retirement Provision (IORP) that will manage occupational pension plan(s) for the benefit of researchers (and their beneficiaries) of the sponsoring undertakings (universities and/or research institutions) within the EEA. The consortium will represent sponsoring undertakings in the governance structure of the IORP and promote insurance-based or other forms of occupational retirement provision for researchers in the EU to supplement the IORP.

In addition to the seminars to raise awareness, the European Commission has foreseen €1.8 million under Horizon 2020 to sponsor the set-up of notably the IORP and the insurance scheme as well as the functional administration, including the selection of provider(s). The fund should become operational by the beginning of 2015, with defined pension contributions being transferred to the fund in early 2015.

15 MORE II Study

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 (and 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."

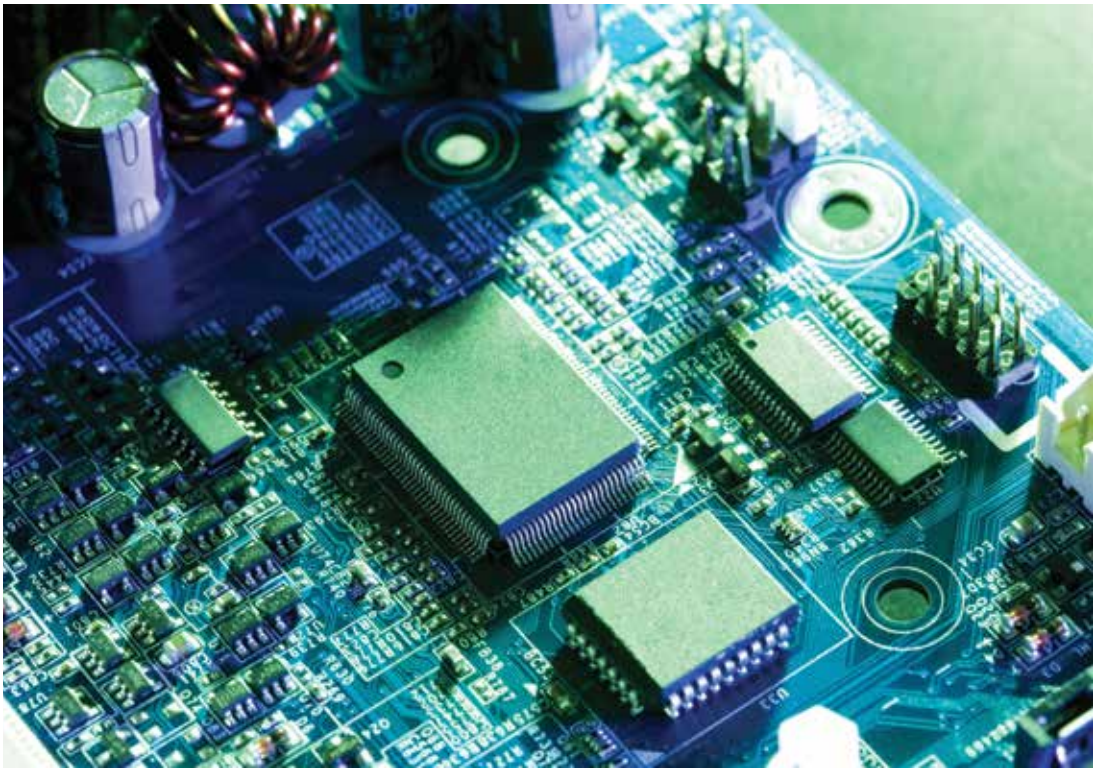
ESFRI, the European Strategy Forum on Research Infrastructures, is a strategic instrument whose mission is to support a coherent and strategy-led approach to policy-making on research infrastructures in Europe, and to facilitate multilateral initiatives leading to the better use and development of research infrastructures, at EU and international level. This strategy aims to overcome the barriers stemming from the fragmentation of national R&I policies and provides Europe with the most up-to-date Research Infrastructures, responding to the rapidly evolving science frontiers, promoting knowledge-based technologies and their extended use.

ESFRI issued a new Roadmap in 2010 highlighting priorities for research infrastructures for the following 10 years. The seventh Framework Programme for Research (2007-2013) has supported all ESFRI projects on the 2010 ESFRI Roadmap in order to carry out their Preparatory Phase towards actual construction and operation. The 2010 ESFRI Roadmap comprises forty-eight ESFRI research infrastructures, which cover a broad spectrum of scientific fields and includes also two projects from CERN's European Strategy for Particle Physics. Projects in the 2010 ESFRI Roadmap span social sciences and humanities (5), environmental sciences (9), energy (7), biological and medical sciences (13), materials and analytical facilities (6), physical sciences and engineering (7) and e-infrastructures (1). They are of different sizes and scope. These include the upgrading and/or the creation of 14 new large-scale single sited expensive facilities and 36 distributed RI, which in many cases will offer new European services and facilitate access of researchers to scientific resources, data, information and material in various scientific domains.

The ESFRI Implementation Group (IG) published in 2012 its first report on the state of the implementation of the projects on the ESFRI Roadmap 2010. The results of the IG report show that the projects are making good progress towards achieving the Innovation Union Commitment. The report identified a total of 27 projects that were "under implementation" making, thus, up to 56 % of the 48 ESFRI projects. According to the IG report, the most frequently cited bottleneck for ESFRI RI was, however, the development of a suitable funding model, which would be at the same time sustainable, equitable and realistic. Securing the necessary funding from Member States and Associated Countries is exacerbated by the current economic crisis. Eighteen national roadmaps are already published.[16] The focus of the current process is more on making decisions and securing long term commitments to the construction. However, according to conservative estimates, 14 ESFRI projects currently provide services to users.

An experts workshop was held in 2011 to assess the potential of RI for industrial innovation. Such workshop provided recommendations to enhance the role of RI in Horizon 2020.

16 See http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri-national-roadmaps



The European Commission, together with ESFRI, established a High Level Expert (AEG) in 2012 in order to make a more detailed assessment of the financial and managerial maturity of the ESFRI projects towards implementation. Published in 2013, the AEG report[17] shows that most of the ESFRI projects need substantial support and guidance both in terms of managerial and financial security but also regarding stakeholder engagement, project management, user strategy and risk evaluation.

The European Commission published the first Horizon 2020 calls for research infrastructures and has secured exceptional financial support for this ESFRI shortlist of projects. This one-time EU financial contribution under Horizon 2020 will only be made available once the Member States' commitment to those projects is confirmed.

Progress has been made in the adoption of Member States' and Associated Countries' national roadmaps which underpin national decisions for the participation to ESFRI projects. Long term investment and commitments of the Member States and Associated Countries to the implementation process is crucial.

In 2014, Commission services will issue a guide setting out cost-benefit analysis of major projects, including research infrastructure. Since 2007 JASPERS, a joint technical assistance facility for major projects run by the EIB with Commission co-funding, provided support for the preparation and implementation of research infrastructures, including 14 major projects with a total cost of over EUR 2 billion. Also the Commission encourages the inclusion of support for the ESFRI roadmap in national and regional programmes and smart specialisation strategies (as recommended by the 2012 ERA Communication). This reflects the requirement in the ex-ante conditionality relating to research and innovation infrastructures and capacities to adopt an indicative multi-annual plan for budgeting and prioritisation of investments linked to EU priorities, and, where appropriate, ESFRI.

17 For the AEG Report see: http://ec.europa.eu/research/infrastructures/pdf/jd-final-aegreport-23sept13.pdf

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."

Horizon 2020, the new EU programme for research and innovation running from 2014-2020, was proposed by the European Commission in November 2011 and adopted by the European Parliament and the Council in December 2013. The first work-programme (covering 2014-2015) was adopted by the Commission in December 2013 and agreed by the Member States and EEA EFTA countries in February 2014.

With a budget of nearly €80 billion over seven years, Horizon 2020 is the biggest EU research programme yet, and one of the biggest publicly funded worldwide. It is a totally new type of research and innovation programme for the EU that has been designed to deliver results that make a difference to people's lives. Built on three pillars - Excellent Science, Industrial Leadership and Societal Challenges - it will fund all types of activities, from frontier science to close-to-market innovation.

Horizon 2020 focuses on Europe 2020 and the Innovation Union in particular, by bringing together all existing EU research and innovation funding, providing support in a seamless way from idea to market, through streamlined funding instruments and simpler programme architecture and rules for participation.

Some key elements of Horizon 2020 are:

- A challenge-based approach to key issues facing societies, such as healthcare, sustainable agriculture, smarter and greener transport, and climate change;
- Investment in Key Enabling Technologies such as photonics, nanotechnologies and biotechnology;

- A dedicated SME Instrument and a 'Fast Track to Innovation' pilot scheme to speed up the time from idea to market, and to increase the participation of industry, SMEs and first time applicants (see commitment 7);
- Innovative public-private partnerships in areas such as new medicines, greener aircraft technologies and electronics;
- A reinforced European Institute of Innovation and Technology (see commitment 9);
- Increased funding for the European Research Council, already one of the world's premier frontier-research funding agencies;
- Strengthened Marie Skłodowska-Curie actions, providing grants for research fellowships (see commitments 1 and 4);
- A renewed focus on widening participation in less well-performing EU countries, including better synergies with European Structural and Investment Funds;
- A reinforced cooperation between science and society, pairing scientific excellence with social awareness and responsibility, increasing the attractiveness of science careers and promoting gender equality in research and innovation.

The programme for the first time brings all EU-level funding for research and innovation under one roof, provides a single set of rules and will radically slash red tape. The overarching goal is a more coherent, simpler programme that will make it easier to participate, especially for smaller research organisations and small businesses. Key elements include: a simpler programme architecture which makes it easier for participants to identify where funding opportunities exist; a single set of participation rules applying to all funding provided; electronic signature of grants and amendments; simpler funding rules, with overall two standard funding rates; a reduced burden of financial controls and audits, due partly to the use of flat rates for indirect costs, a major source of error in the past.

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."

The Horizon 2020 programme includes an integrated approach to SMEs.

SMEs are encouraged to participate across the whole Horizon 2020 programme. They can engage in collaborative projects as part of a consortium, and are supported through a new, dedicated SME Instrument[18] specially designed for highly innovative SMEs that want to develop, grow and internationalise, regardless of whether they are high-tech and research-driven or non-research conducting, social or service companies. The integrated approach, together with simplification efforts, are anticipated to lead to a minimum of 20 % (some €8.65 billion) flowing to SMEs from the total combined budgets of the specific objective 'Leadership in enabling and industrial technologies' and the 'Societal Challenges' over the 2014-2020 duration of Horizon 2020. Furthermore, at least one-third of the €2.842 billion budget of the debt and equity facilities of the 'Access to Risk Finance' part of Horizon 2020 is expected to be absorbed by SMEs.

18 SME Instrument on the Horizon 2020 Participant Portal: http://ec.europa.eu/programmes/horizon2020/en/h2020-section/sme-instrument

The SME Instrument will be crucial in achieving this target, as at least €3 billion will be channelled through it. The Instrument aims to fill gaps in funding for early-stage, high-risk research and innovation by SMEs, as well as stimulating breakthrough innovation. It provides easy access for small firms, with simple rules and procedures, and is designed to encourage individual SMEs (as potential mono-beneficiaries) to put forward their most innovative ideas. The permanently open call launched in March 2014 offers business innovation grants - a lump sum of €50,000[19] - for feasibility assessment purposes; business innovation grants of €500,000 to €2.5 million[20] for innovation development and demonstration; 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; a wide range of innovation support services; and facilitated access to risk finance to foster the commercial take-up of the innovation.

The Eurostars 2 Joint Programme, undertaken by several Member States and Associated Countries in the framework 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 also aims at strengthening 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 interinstitutional negotiations were successfully completed in February 2014.

Commitment 8: Strengthen the science base for policy making through JRC and create EFFLA

"The Commission will strengthen its 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."

Over the past years, the Joint Research Centre (JRC) has taken a number of initiatives to strengthen connections between its science and the Commission's policy agenda and meet the goal of becoming a major player in transforming science into policy advice. The new JRC Work Programme for 2014-15 identifies how the JRC's science supports different EU policies. In cooperation with Policy Directorates General in the Commission, the JRC aims to ensure that its scientific output is focused on the Commission's policy priorities.

The JRC is also raising the profile of science in policy debates through high level events bringing together top scientists and EU policymakers on key political issues.

Moreover, the JRC has reinforced its participation in the internal Commission impact assessment process for new policy initiatives and has revived its work on foresight, to help science inform strategy setting. It is carrying out foresight studies with the aim of contributing to the EU Policy cycle. So far, it has completed one foresight study on the Future of Standards and Standardisation. A JRC foresight study on Food and Health is also nearing completion. Two further studies on the Future of Eco-Industries and Global Food Security will be completed by June 2014.

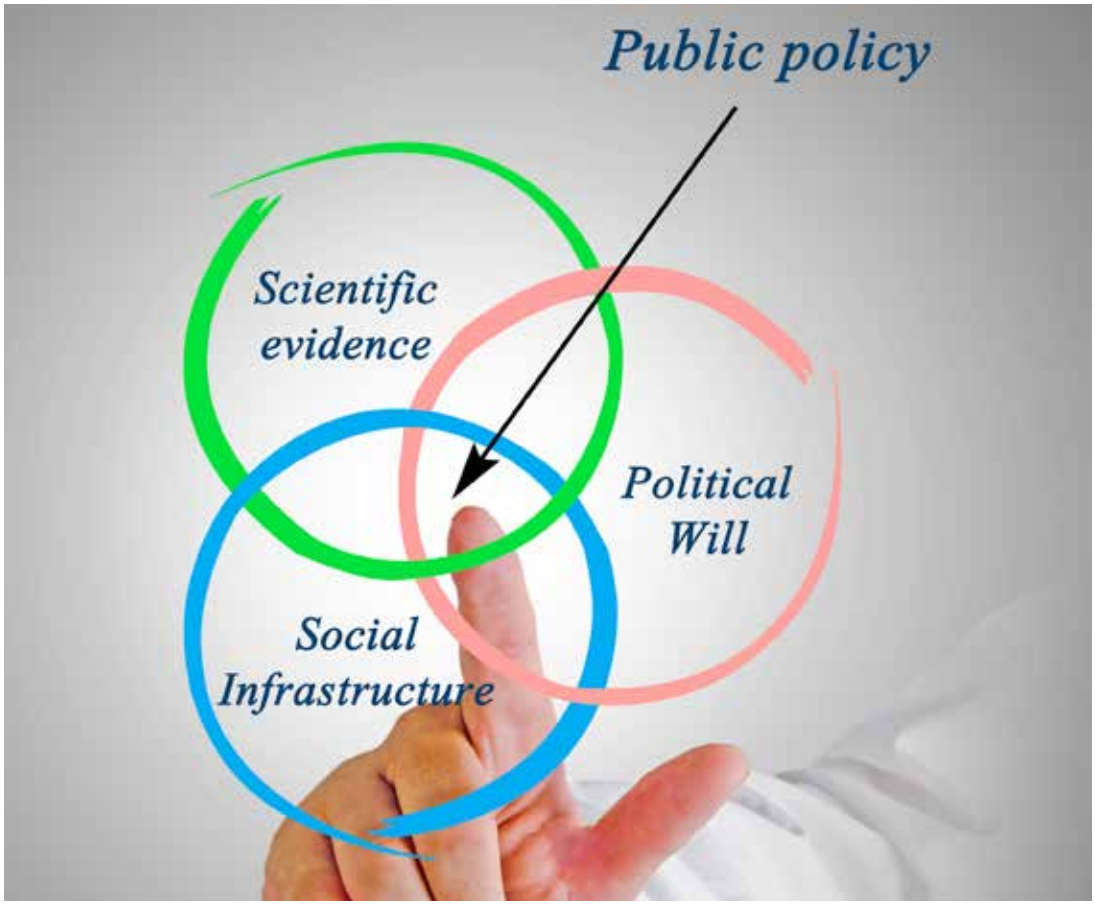
The European Forum on Forward Looking activities (EFFLA) was established in 2011. It delivered 17 policy briefs[21] on issues ranging from institutionalising foresight in Research and Innovation policy to societal challenge addressed by Horizon 2020.

19 70 % of total cost.
20 70 % of total cost as a general rule.
21 http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=former-expert-groups

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 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.



Commitment 9: Set out an EIT Strategic Innovation Agenda

"By mid-2011, the EIT should set out a Strategic Innovation Agenda (SIA) 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 Knowledge and Innovation Communities (KICs), close links with the private sector and a stronger role in entrepreneurship. It should also build on the EIT Foundation set up in 2010 and on the introduction in 2011 of the "EIT degree" as an internationally recognized label of excellence."

The European Institute of Innovation and Technology (EIT) brings together the three strands of the knowledge triangle of higher education, research and innovation in new types of partnership – Knowledge and Innovation Communities (KICs).

The Strategic Innovation Agenda (SIA) of the EIT was presented in 2011. It outlines the consolidation and further development of the three existing KICs - on climate change (Climate-KIC), sustainable energy (KIC InnoEnergy) and the future information and communication society (EIT ICT Labs) - and the creation of five new ones in the areas of innovation for healthy living and active ageing, food for future, raw materials, added value manufacturing, and urban mobility. The proposal further includes measures enhancing EIT's impact and ensuring KICs' expertise and lessons learned are shared across Europe. Based on the SIA, the call for KICs in the areas of 'Innovation for Healthy Living and Active Ageing' and 'Raw Materials' was launched in February 2014.

The criteria for awarding an EIT label for KICs Masters courses and PhD programmes were defined in 2012. By the end of 2012, more than 35 Masters courses have obtained the EIT label and more than 1,000 students have enrolled in EIT education programmes. As result of the education, innovation, business support and entrepreneurship activities, more than 100 start-ups have been created to date, more than 400 business ideas have been incubated and around 90 new products, services and processes have been launched.

By 2020 the EIT is expected to train 10,000 Master students and 10,000 PhDs, create 600 new companies, and achieve systemic impact in the way universities, research centres and companies cooperate for innovation. The EIT will strongly contribute to the objectives set out in Horizon 2020, in particular by addressing societal challenges in a complementary way to other initiatives.

EIT ICT Labs Master School

In 2014 the first Master students from the two year programme in ICT Innovation will graduate from the 21 participating top European universities. Their career options look bright as the evaluations from faculty, industry and the students themselves show that the combination of a technical major in the field of ICT and a minor in Innovation and Entrepreneurship truly boosts these skills.

The students are immerged in to the innovation areas of EIT ICT Labs through summer schools and winter camps connecting them to the ecosystem of researchers and industry in the field. This has proved to be very inspirational and a number of commercial ideas, projects and start-ups have formed. At the summer school on Health and Wellbeing in 2013 the students pitched ICT Business solutions for Philips by the end of the two week course.

"The students did very well. In general terms the quality of the solutions was quite good and some of them are nice input to our business cases. The enthusiasm and eagerness to crunch the cases were tremendous. The solutions were really refreshing in some cases and the final pitches showed that the students integrated the information they got in between. Fast learners! Very promising high potentials", said Lisette Appelo, Director Human Capital of Philips.

By each year the activities of the EIT ICT Labs is scaling up by 100 % so in autumn 2014 nearly 400 students will be welcomed and almost 100 will continue with further studies, as intrapreneurs in large companies or developing their own business creations.

The Foundation of the EIT (EITF) is an independent organisation dedicated to promoting a culture of innovation and entrepreneurship in Europe. It aims to enlarge the impact of the EIT via the promotion of entrepreneurial education, the creation of a new generation of young people with an entrepreneurial mind-set, and the development of an international network of talented professionals. The EIT Foundation gathers ten prominent companies actively involved in the implementation of the EIT Foundation's work programme.

In 2013, the EITF has started implementing its work programme via the launch of the Young Leaders Programme - an entrepreneurial and leadership training programme gathering young professionals, entrepreneurs and students from all over Europe to ponder over EU's innovation challenges and propose recommendations to overcome them to key innovation leaders. The Young Leaders group presented their conclusions and recommendations to a high-level audience in the Foundation's Annual Innovation Forum organised on the topic of data-driven innovation in March 2013. A new edition of the Young Leaders Programme on the topic of Future Learning Environments was launched in March 2014.

The Foundation of the EIT has also launched a European internship programme. The programme targets EU's talented people and aims at equipping them with the competences needed to work in highly entrepreneurial and innovative frameworks. The programme will contribute to bridging current skills and innovation gaps across countries, sectors or disciplines and help tackling youth unemployment challenges.

In the coming years the implementation of the SIA actions will be completed and the EIT Foundation will be consolidated. As indicated in the SIA, the EIT is expected to enhance and widen its impact across the innovation community in the next seven year period.

CHAPTER 2

Getting good ideas to market

Key messages

The business environment in Europe is becoming more innovation-friendly due to measures that favour the faster flow of ideas to market.

Better instruments to access finance, including reinforced debt and equity facilities and the venture capital passport, are in place and are about to start delivering. Clearer rules for state aid will start applying in the second half of 2014, leading to the possibility for Member States to design better economic incentives for innovation.

The basis for the development of a more efficient knowledge system that protects intellectual property and investments in knowledge while providing the conditions for open collaboration and knowledge sharing are in place. This concerns in particular the Unitary Patent, the exploration of knowledge markets for patents and licences, and the transition from a the concept of knowledge transfer to a system based on co-creation and open innovation.

Improved tools to foster demand for innovation have been put in place, including more modern standard setting, an operational methodology for regulatory screening, better rules for public procurement of innovation and the eco-innovation action plan.

New opportunities to innovate in the area of service innovation, building on a user-oriented approach, were exploited through initiatives linked to design, such as the European Design Leadership Board.

Progress so far

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 growth and innovation. Contributions from the EU budget should create a major leverage effect and expand on the success of current programmes. The Commission will work with the European Investment Bank Group, national financial intermediaries and private investors to develop proposals addressing the following critical gaps: investment in early stages of firm development, including knowledge transfer and start-ups; venture capital for fast growing firms expanding on EU and global markets; loans for innovative fast growing SMEs. The proposed instruments will have a high leverage effect, an efficient management and a simple access for businesses."

Horizon 2020 includes, for the first time in a framework programme, a specific section on 'Access to Risk Finance'. This covers a set of debt and equity financial instrument facilities and a range of accompanying measures that scale up and refine the debt financial instruments - the RSFF[22] and the RSI[23] - implemented under FP7, and the early-stage equity facility - GIF-1[24] - implemented under CIP. The facilities are designed to complement the financial instruments of COSME.[25] The first work-programme (covering 2014-2015) was agreed by the Member States and EEA EFTA countries in February 2014.[26] The budget for 2014-2020 in current prices[27] is €2,842 million.

As in FP7, debt and equity facilities will be run in a demand-driven manner, though the priorities of particular sectors or of other EU programmes will be targeted if top-up funding is made available, including from managing authorities wishing to invest part of their European Structural and Investment Funds (ESIF) programme contribution. The focus remains on attracting private investments into R&I. 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.

22 RSFF: http://www.eib.org/products/rsff
23 RSI: http://www.eif.org/what_we_do/guarantees/RSI
24 See http://ec.europa.eu/enterprise/policies/finance/cip-financial-instruments/index_en.htm
25 COSME provides a) succeeding SMEG under CIP, a Loan Guarantee Facility (LGF) providing counter-guarantees and other risk-sharing arrangements for guarantee schemes (including co-guarantees where appropriate), plus direct guarantees and other risk-sharing arrangements for other financial intermediaries; b) succeeding GIF-2 under CIP, an Equity Facility for Growth (EGF) to enhance the supply of risk capital.
26 2014-2015 'Access to Risk Finance' work-programme: http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-finance_en.pdf
27 Horizon 2020 budget breakdown: https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/Factsheet_budget_H2020_0.pdf

On the debt side, the products offered cover loans for R&I-driven SMEs and small midcaps,[28] loans, plus hybrid and mezzanine finance, for R&I-driven (or R&I undertaken by) medium and large midcaps, as well as loans for R&I undertaken by large firms, universities and other public research organisations, R&I infrastructures, public-private partnerships, and special-purpose vehicles or projects.

The equity facilities offer early-stage venture capital (VC) and quasi-equity for SMEs and small midcaps, plus a degree of potential investment in the growth stage, as well as equity and other forms of risk capital for the early stages, such as business angels investment, or technology transfer activities.

The European Investment Bank (EIB) and the European Investment Fund (EIF) will play an important role, as entrusted entities, in implementing each financial instrument facility on behalf of and in partnership with the European Commission. For EIF, this role includes (as under FP7 and CIP) conducting calls for expressions of interest for selecting the financial intermediaries, such as banks and risk-capital funds, that will make the actual loans to, or investments in, SMEs and small midcaps. While EIB will make large loans directly, it will also be able to use financial intermediaries as well, 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 EIB and EIF in running facilities for the European Commission. The first calls for expressions of interest by financial intermediaries are likely to take place in the third quarter of 2014, assuming that negotiations with EIB and EIF are successfully concluded by the end of the second quarter.

Commitment 11: Ensure cross-border operation of venture capital funds

"By the end of 2011, the Commission will present a proposal for a new legislative regime to ensure that Venture Capital funds established in any Member State can function and invest freely in the EU."

Access to finance is essential to enhance the competiveness and growth potential of SMEs. For this reason the European Commission is presenting 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) entered into force in July 2013. The new regulation makes it easier for venture capitalists to raise funds across Europe for the benefit of start-ups. The approach is simple: 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 will therefore no longer need to meet requirements which are different in every Member State. By introducing a single rulebook, venture capital funds will have the potential to attract more capital commitments and become bigger.

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)[29] thresholds.

At present, three requests for a cross-border marketing passport have been filed with the competent national authorities, two in the UK and one in Slovakia. The latter was unfortunately withdrawn due to the cost of obtaining a registration. Indeed, 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 in registering smaller operators who find it more difficult than their larger

28 There is no official or widely accepted definition of 'midcaps' at present. In implementing the Horizon 2020 financial instrument facilities and until an official definition is agreed, 'midcaps' are deemed to be enterprises comprising 250 to 3000 employees (in full-time equivalents). They are divided into 'small midcaps' of between 250 and 499 employees, and 'medium and large midcaps' of from 500 to 3000 employees.

29 http://ec.europa.eu/internal_market/investment/alternative_investments/index_en.htm#maincontentSec7

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.

More work needs to be conducted within the European Securities and Markets Authority (ESMA)[30] in order to entice national regulators to adopt a more flexible attitude in authorising EuVECA managers. Alternatively, the option of opening EUVECA funds to managers authorised under the AIFMD could be explored. The deployment of 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."

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

The expert group also made recommendations with regards to how R&D grants should be set up and recommended the creation of a business angels facility and of rules that would favour cooperation among business angels and venture capitalists. Recommendations concerning R&D grants were

30 http://www.esma.europa.eu/

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 was included in the Horizon 2020 work programme for 2014-2015 which should 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. In addition a pilot of a business angels facility focussing on ICT will be launched in 2015.

The Startup Europe initiative,[31] together with other matchmaking projects, have been launched in 2013 and 2014 to support accelerating programmes, coaching and mentoring of Web and ICT entrepreneurs, developing their investment readiness and facilitating interactions with investors across Europe.

Several meetings of the SME Finance Forum bringing together SMEs, banks and other financial institutions were organised from 2012 to 2014 to monitor the market situation and explore new ideas to improve access to finance for SME, including small, innovative companies.

The Commission is considering the recommendations made with regard to venture capital in the implementation details for the central financial instruments under Horizon 2020 and COSME.

Also, as a follow-up to the recommendations, the Enterprise Europe Network will provide more extensive advice and assistance to SMEs on accessing finance, and will cooperate closely with other local service providers such as financial intermediaries and accountants.

Commitment 13: Review State Aid Framework for R&D&I

"In 2011 the Commission will conduct a mid-term review of the State aid Framework on research, development and innovation 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."

The Mid-Term Review of the Community framework for State Aid for research and development and innovation was finalised in 2011.[32] Its objective was to start reflecting on the contribution of the R&D&I State Aid rules to the EU innovation goals in order to further promote private investment in R&D, smarter public investment and overall innovation.

The Mid-Term Review concluded that the current R&D&I Framework constitutes a useful instrument for well-targeted public support although all its possibilities have not been utilised by Member States to their full extent.

In parallel, a broader reflection was launched on the future R&D&I State aid policy, including on wider and more substantive issues such as aid effectiveness, architecture, and proportionality of the rules. To this effect a public consultation in the form of a questionnaire was opened to Member States and stakeholders between 2011 and 2012.

The European Commission then launched in 2012 the State Aid Modernisation (SAM), an ambitious reform package of State Aid policy with three key objectives: to foster growth in a strengthened, dynamic and competitive internal market, in line with the objectives of the Europe 2020 growth strategy; to focus enforcement on cases with the biggest impact on internal market; to streamline rules and ensure faster decisions.

31 http://ec.europa.eu/digital-agenda/about-startup-europe
32 http://ec.europa.eu/competition/state_aid/legislation/rdi_mid_term_review_en.pdf

The implementation of SAM is now well advanced. In particular, in 2013 the Council has adopted the revised Enabling regulation, which introduces new categories of aid that the Commission may decide to exempt from the obligation of prior notification, including innovation aid.

The Commission has also already adopted a number of revised rules, including new Risk Finance guidelines, which aim at ensuring that, in case of market failures, SMEs and small and innovative mid-caps have proper access to finance in order to bring new products and ideas to the market.

The new SAM rules are expected to be in place, ready to be used by Member States from the 1 July 2014. The new General Block Exemption Regulation (GBER) is expected to be significantly extended and, in particular, it should increase the notification thresholds for R&D projects and include new exempted categories such as innovation aid and aid for research infrastructure. The new GBER should therefore ensure that a large majority of research, development and innovation (R&D&I) aid should be granted without need for notification to the Commission. The newly revised R&D&I framework is also expected to improve clarity and establish greater legal certainty about the forms of support for investments in R&D&I which are compatible with EU State aid rules or lie outside the scope of the rules altogether. The Risk Finance Guidelines are better taking into account the needs of both innovative SMEs and Midcaps. Finally, the current Community Framework for State aid for R&D&I deals with compatibility of aid under Article 107(3)(b) of the Treaty, concerning aid to an important project of common European interest (IPCEI). In the revised guidelines and SAM rules, this guidance is expected to be elaborated and published in a new separate stand-alone Communication covering IPCEI.

Commitment 14: Deliver the EU Patent

"The European Parliament and Council should take the necessary steps to adopt the proposals on the EU patent (at present European patent with unitary effect or unitary patent), its linguistic regime and the unified system of dispute settlement."

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 25 Member States (all Member States except Italy, Spain and Croatia; the latter has expressed its willingness to join the enhanced cooperation).

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 and France. The first UP providing uniform protection within the territory of the participating 25 Member States is expected to be granted in the course of 2015.[33]

The patent with unitary effect is going to be optional for European patent holders wishing to protect their invention in the territory of 25 Member States in a one-stop-shop. Costs and administrative burden will 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.

33 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.

The costs of a Unitary patent for 25 Member States, covering procedural fees, i.e. on-line filing, search, examination and grant of a patent, and translations are expected to be remarkably reduced, leading to an estimated 85 % of cost savings for users of the unitary patent protection.[34] Nevertheless, the real costs of the Unitary patent depend on the implementation of the patent, the details of which are currently being defined by the Select Committee of the European Patents Office[35].

The Unified Patent Court is expected to start functioning in the course of 2015. 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 would be between 148 to €289 million[36] per year. Cases in the UPC will be heard by highly experienced legally and technically qualified judges sitting in multinational panels and applying common procedural rules. The result will be development of a coherent and consistent case-law, thereby increasing legal certainty and predictability.

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).[37]

Technical implementation of the UP regulations is carried out by the Select Committee, established in March 2013 within the structure of European Patent Organisation (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 will be finalised by June 2014, the discussion on the financial aspects of the UP as well as the discussion on the modalities of the compensation scheme for translation costs 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 objective is to prepare the UPC to be fully operational in 2015.

34 See http://ec.europa.eu/internal_market/indprop/docs/patent/faqs/cost-comparison_en.pdf
35 The Member States participating in the reinforced cooperation have been entrusted with giving the EPO the tasks outlined in Article 9(1) of Regulation 1257/2012, including in particular the granting and the administration of the unitary patent. Member States shall ensure the governance and supervision of the activities related to these tasks. To that end, they shall set up a Select Committee of the Administrative Council of the European Patent Organisation, which consist of the representatives of the participating Member States and a representative of the Commission as an observer.
36 Economic Cost-Benefit Analysis of a Unified and Integrated European Patent Litigation System, Harhoff, 2009.
37 http://www.epo.org/searching/free/patent-translate.html

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."

The regulatory environment is an important factor influencing the innovation activities of companies and the wider economic system within which they operate. Regulations can both foster or hamper innovation depending on how they are designed and implemented. For example, rules that are too prescriptive can in some cases not leave space for innovations but ambitious standards can work as an innovation driver.

In order to provide guidance on how best to organise the screening exercise, the Commission had the responsibility to develop a methodology that allows to assess the effect of the regulatory frameworks on innovation.. The aim is to identify the rules that need to be improved or updated and/or new rules that need to be implemented in order for regulation to foster innovation in those areas.

The methodology allows any policy maker who is interested in re-thinking regulatory set-ups to better foster innovation to analyse the innovation-regulation interaction through a six step approach. This methodology has been applied to the 'Water' and 'Raw Materials' European Innovation Partnerships (EIPs) (see commitment 29). This allowed to identify the innovation effects of concrete regulations, as well as to test the tool. It is now ready to be applied to areas where a need to address the impact of legislation on innovation has been identified.

The methodology and results were presented to the High-Level Group Meeting on Eco-innovation and will inform the activities under Action 1 'Environmental policy and regulation' of the Eco-innovation Action Plan (see commitment 18).

In the medium term it is expected that the EIPs Water and Raw Materials will use the results of the study to identify key innovation barriers in their respective fields of action. Based on this exercise, it will be possible to undertake concrete actions in order to ensure that legislation supports innovation.

In the long-term, a similar impact is expected in other sectors. The methodology has been developed with the objective of being flexible enough so that it can be used in any policy area. It is ready to be taken up to screen regulatory frameworks in other sectors and re-shape legislation to make it more innovation friendly.

The Water Framework Directive: stimulating innovation in Europe

The water framework directive (WFD, 2000) was found to have stimulated innovation directly and indirectly through quality requirements for water and stipulations on the use of best available technology. Infrastructure investments were necessary to varying degrees in the EU-15 and the, then, accession countries. Through the framework directive, the demand for water-related goods and services was induced. Being a stringent and reliable regulation, it signalled to European companies in the water sector a growing demand that was met through the diffusion of innovative goods and spurred the demand for innovative goods and services. The EU-internal demand for water goods was and still is mainly supplied by a growing European industry. Existing EU legislation, including several EU Directives are seen as important drivers as they provide 'room' for innovation by imposing stricter standards which require new technologies to meet them. Environmental regulations were found to be more influential in promoting technological innovation in the water sector than economic regulation.

Current waste legislation: more ambitious regulation is needed to foster innovation

Current legislation constitutes a barrier to innovation in terms of recycling and in view of fostering the use of secondary raw materials. Waste legislation basically aims to divert waste disposal away from landfill – with the effect that many countries have invested in incinerating technologies and infrastructures creating large capacities at relatively low cost for disposing of waste. This form is by far cheaper than recycling, which needs a thorough sorting and dismantling of complex goods prior to recovering useful materials. Recycling is also still too costly compared to buying new raw material. Since the price of the competing technology and raw material respectively are too cheap to pose a real driver towards recycling and the use of secondary raw materials, much more demanding regulation, possibly in a package with fiscal measures is needed to incentivise recycling, and to create demand and a new market for secondary raw materials.

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 multi-annual 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."

A Communication setting out a strategic vision for European standards was published in 2011 and a Regulation implementing its legislative measures followed in 2012. Together they set the basis for a European standardisation system that is fit to foster innovation.

In this package, the Commission requires faster standard-setting for innovative products and services.

Since European standards are used above all by businesses as a tool to facilitate the market penetration of innovative goods and reducing production costs, standards must keep pace with ever faster product development cycles. It is especially vital that in areas where Europe is the driving innovation force in developing new types of tradable goods, services and technologies – for instance in areas such as electric vehicles, security, energy efficiency and smart grids – the creation of the European standard is fast so as to assert it as an international standard.

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.

Standardisation needs are also being anticipated through multi-annual programmes. The annual Union work programme for European standardisation together with the rolling plan for ICT standardisation cover the standardisation deliverables that the Commission intends to request from the European standardisation organisations in the coming year and the specific policies they support. The multi-annual programmes also refer to the research and innovation priorities concerning standardisation which are embedded in Horizon 2020.

The standardisation process is now quicker, lasting on average 2.5 years, compared to 4 in 2010. The recent introduction of a more performance based co-funding of the European standardisation organisations by the Commission is expected to contribute even further to a faster standard-setting for innovative products and services. An independent review was launched in January 2014 and will deliver its results in autumn. Among other objectives, it will assess whether the standardisation system is prepared to support innovation and technological development in the long term.

Commitment 17: Set aside dedicated national procurement budgets for innovation. Set up a 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 €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."

The Commission's proposal that Member States and regions should set aside dedicated budgets for pre-commercial procurements and public procurements of innovative solutions has not been taken up by the Council. Nevertheless, an increasing number of Member States now have some experience with public procurement as an instrument of innovation policy. For instance:

- Some Member States have introduced allocations for innovation procurement. Spain, for instance, introduced a 3 % quota for innovation procurement in its procurement law of July 2011. Another example is France where the National Pact for Growth, Competitiveness and Employment requires that at least 2 % of the public order of the State, its operators and hospitals are made with innovative companies.

- In 2012, Italy assigned more than €300 million to pre-commercial procurement. It will be deployed in Southern Italy with the support of structural funds. Moreover, the higher risk related to these purchases can be covered by a special risk-sharing facility established in cooperation with the European Investment Bank (see commitment 10).

- Cross-border collaboration is also developing. In 2012, the Nordic Ministers of Industry launched a flagship project in health care to strengthen the collaboration between Norway, Finland, Sweden, Denmark and Iceland on innovation procurement.[38]

The Commission has provided financial support to transnational cooperation to help contracting authorities implement innovation procurements:

- The FP7 and CIP programmes have provided financial support to innovation procurement since 2009 where they invited proposals to create networks of procurers to raise awareness, share knowledge and debate common public service needs. In 2011 the support was extended to offer co-financing for procurers to jointly implement innovation procurement (Pre-Commercial Procurement (PCP) supported via FP7, Public Procurement of Innovation (PPI) supported via CIP) to find common solutions to shared needs. In 2009-10, over €4 million were spent on networking procurers. In 2011-12, FP7 and CIP supported innovation procurement with €43 million. In 2013, FP7 and CIP calls allocated nearly €100 million to innovation procurement. Efforts have also been financed to develop guides to support public procurers of innovation in a number of sectors (e.g. sustainable construction, and health), and a more general guide has been developed as well: "Public Procurement of Innovation - Guidance for public authorities".

38 http://www.nordicinnovation.org/projects/public-procurement-and-innovation-within-the-nordic-health-sector/

Procuring innovative solutions across borders to assist elderly people

Public procurers from five countries - UK, Denmark, Sweden, Finland and the Netherlands - have launched the first joint cross-border pre-commercial procurement call for tender in March 2013, under the FP7 project SILVER. The goal is to develop new robotics-based solutions for assisting elderly people with physical or cognitive disabilities. Such technological solutions, when implemented in elderly care, will make it possible by 2020 to care for 10 % more people using the same number of carers. The PCP process will be executed in three phases, ending in March 2016. The result will be 2-3 products to be tested in all partnering countries.

In September 2013, the **SILVER** consortium finished the assessment phase of the PCP call for tender. In total, seven European SMEs/consortia have succeeded out of 33 tenderers submitted. Phase 1 of the SILVER Pre-Commercial Procurement process was launched in October. This phase is a feasibility study during which successful tenderers are expected to verify the technical, economic and organisational feasibility of their ideas. Phase 2 of SILVER started in April 2014, following the evaluation of the Phase 1 results.

Proposals from successful tenderers include, for example, an intelligent robot arm that provides support at the moment the person is losing stability and fears falling or could actually fall. It follows passively all of the user's movements and gets active in the user's unstable situations; the robotic arm then becomes a stiff support.

Another example is a mobile sensor platform that is able to navigate inside an apartment and monitor clients in a non-invasive manner. The monitoring is used to provide 24/7 safety and behavioural analysis. Also, the robot assistant can bring water and medicine, carry food and other items around and find items such as a pair of glasses.

In the CIP-funded PPI project **STOPANDGO**, six Italian, English, Spanish and Dutch elderly care procurers will undertake together a €17.2 million public procurement of innovative solutions to trigger the market to deliver ICT based telecare services that enable to care for frail elderly that suffer from multiple conditions at the same time such as heart failure, diabetes, etc. Additional health sector organisations that also participate in the project will help to develop PPI tender specifications suitable for European wide deployment of the solutions.

- In the first Work Programme (2014-15) under Horizon 2020 the total WP budget in support of innovation procurement is more than €120 million (excluding procurements related to Galileo and Global Navigation Satellite System (GNSS) evolution under the Space section). The projects will encourage public procurers to deploy more innovative solutions in the areas of ICT, Health, Secure Societies, Transport, Bio-economy, Energy and Climate action. These include topping-up of call budgets for both PCPs and PPIs, as well as support to networks of public procurers.

- Under Space, specific public procurement actions are funded for the developments for a Galileo Public Regulated Service. Also for GNSS evolution, activities are conducted pre-dominantly through procurement. Under Research Infrastructures, an additional €14 million of support to PCP is foreseen in the field of scientific instrumentation. Furthermore, there is PCP support under the GÉANT Framework Programme Agreement.[39]

The Commission proposed, in December 2011, revisions of the EU Public Procurement Directives that should facilitate procurement of innovative products and services and cross-border joint procurement. The revised Directives were adopted by Parliament and Council in February 2014. They include important improvements for innovation, related to:

- An emphasis on quality, innovative characteristics, environmental considerations and/or social aspects, transparency in sub-contracting and stronger rules against abnormally low bids.

- The requirement for contracting authorities to specify clearly in the tender specifications which intellectual property rights they (partially or fully) want to acquire, thus providing more legal certainty to vendors in advance about which IPRs they will obtain and enabling fair competition as innovation procurement bids can be priced correctly.

- A new innovation partnership procedure that allows 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. The procedure is structured in successive stages where contracting authorities shall pay particular attention to criteria concerning the tenderers' capacity and experience in the field of R&D and of developing innovative solutions. The competition among the tenderers thus takes place in the initial phase of the procedure; the selected tenderer develops the solution for the contracting authority which is then directly acquired by the contracting authority for its normal use.

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

- An improved and simplified competitive dialogue procedure that is of use in cases where contracting authorities are unable to define the means of satisfying their needs.

- Facilitated cross-border joint procurement where contracting authorities from different Member States cooperate and jointly award public contracts, hence exploiting economies of scale and risk-benefit sharing, not least for innovative projects involving a greater amount of risk than reasonably bearable by a single contracting authority. In addition, contracting authorities from different Member States may set up joint legal bodies.

The agreed text of the new EU Public Procurement Directives also encourages the division of contracts into lots to improve access to public procurement for SMEs. In general, simplification measures throughout the directives make public procurement procedures more accessible for SMEs, e.g. the system will be based on self-declarations and only the winning bidder will have to provide original documentation.

39 GÉANT is recognised as the European communications commons that supports the rise of compute- and data-intensive collaborative research and education through innovative services, operational excellence and global reach. http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/2142-einfra-8-2014.html

In order to **raise awareness and exchange experience and best practice**, a Public Procurement of Innovation Platform has been developed as a space for procurers and related stakeholders from around Europe to discuss, share views and get in contact. So far, more than 1,500 procurers and stakeholders are part of the platform.[40] Moreover, a number of high-level European conferences have been held to share experiences about innovation procurement across Member States, including in July 2012 in Paris, November 2012 in Madrid, March 2013 in Berlin, and November 2013 in Kraków.

To help **quantify pre-commercial procurement**, the Commission is finalising a two year study that started in 2012 for quantifying the public procurement of R&D for ICT solutions in Europe. The study has gathered quantitative data on the amount of R&D, the amount of ICT, and the amount of ICT related R&D procurements conducted by contracting authorities across Europe. Data analysis provides amounts procured per country, across different areas of public sector activity, and also identifies the key contracting authorities per country. The study also proposes a methodology and guidelines to set up a systematic way of collecting in the future this type of national data about R&D and ICT procurement expenditure. The results of the study indicate that the level of R&D procurement in Europe in the period 2008-2011 has not increased significantly, except in countries where political initiatives were taken to set targets or dedicate specific budgets to PCP.

Increasing experience with public procurement in Member States, more financial support to transnational cooperation, and more innovation-friendly EU Public Procurement Directives are all important steps in the right direction. However, many programmes and initiatives are still only at a pilot stage with limited scope and budgets.

This is due to deficiencies that persist, such as: lack of incentives, lack of awareness, knowledge and expertise, disconnection between public procurement and policy objectives, fragmentation of public procurement markets and general risk aversion. There are other important factors that are holding back the uptake of innovation procurement, such as an insufficient coordination between different national administrations and between national and regional/local levels, as well as the inadequate coverage of the whole procurement chain with an analysis of requirements and open market consultations.

Therefore, there is still a need for awareness-raising and promotion to ensure a common understanding of the role of innovation in public procurement and to ensure ownership in implementation and roll-out. Continued financial support for networking and for incentivising common procurements is also necessary, as is further analysis and guidance in implementation.

40 https://www.innovation-procurement.org

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."

The Eco-innovation Action Plan (EcoAP)[41] is a comprehensive set of initiatives to improve the market's uptake of eco-innovation. Adopted by the Commission in 2011, the plan 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 aims to target eco-innovation's biggest barriers, such as market uncertainty and worries about return on investment. It also addresses eco-innovation's main drivers, among them high energy prices, targeted regulations and standards, and access to knowledge. Above all the plan will strive 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.

It is composed by seven actions, including:

- using environmental policy and legislation as a driver to promote eco-innovation. The regulatory screening methodology was applied to water and waste management policies in Europe (see commitment 15). It was presented in March 2014 to the High Level Working Group of EcoAP Member States representatives,

41 http://ec.europa.eu/environment/ecoap/about-action-plan/index_en.htm

for discussion and dissemination at national level. Further screening will be done when the thematic legislation is being reviewed or new legislation developed. Further screening will be carried out as part of the 'Commission Refit exercise'.

- supporting demonstration projects and partnering to bring to the market promising, smart and ambitious operational technologies that have been suffering from low uptake. Eco-innovative solutions have difficulty in penetrating into well-established markets. An approach based on enhancing 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, as from 2014, 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).

HydroWEEE Demo project

Waste from Electrical and Electronic Equipment (WEEE) is the fastest growing waste stream in the EU, growing at a rate of 3 to 5 % per year. At the same time, electric and electronic products contain high amounts of diverse metals such as yttrium, indium, lithium, cobalt, zinc, copper, gold, silver, or nickel. The HydroWEEE Demo constitutes a follow-up to an earlier project HydroWEEE which studied the recovery of rare and precious metals from WEEE using hydrometallurgical processes. The HydroWEEE processes produced metals pure enough to be used by end-users directly for electroplating and other applications. The HydroWEEE Demo[42] advances the work further with the objective to build two industrial scale, real-life demonstration plants (one stationary and one mobile) in order to test the performance and prove the viability of the processes. The mobile plant (in a container) could be attractive for smaller recycling companies as several SMEs could benefit from the same plant at different times and hence reduce the necessary quantities of waste as well as the required investment. The consortium consists of nine partners, five SMEs and four research organisations, from three EU Member States (Austria, Italy and Romania) and from Serbia. The project is coordinated by Kopacek KG, an SME from Austria.

42 www.sat-research.at/hydroWEEE

Plastic recycling for construction

The amount of plastics sent for incineration or landfill within the EU is on the rise. At the same time there is an ever-increasing need for aggregate for mortar and lightweight concrete. A study conducted in the Italian market alone found 400,000 tons of aggregate a year, destined for lightweight concrete, was being produced.

The project NUMIX[43] (High performance, lightweight aggregate for concrete from the recycling of urban waste) set out to develop two products from recycled plastics: a polymeric foam to replace expanded clay as a base for lightweight concrete, and homogenous flakes to be used as aggregate for mortar and as raw material for the expanded granules.

The project successfully produced a recycled plastics replacement for expanded clay and by the end of project, about 6,000 tons of plastic waste was recovered. By using a plastics based lightweight aggregate instead of expanded clay, the project reduced water consumption to 10 % from 15 %.

Commitment 19.1: Establish a European Creative Industries Alliance

"In 2011 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."

The European Creative Industries Alliance (ECIA) is an integrated policy initiative that combines policy learning with eight concrete actions on innovation vouchers, better access to finance, and cluster excellence and cooperation. It is an open platform that brings together policy-makers and business support practitioners from 28 partner organisations and 12 countries. Its overall aim is to shape 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 three-year initiative was set up in December 2011, following an open call for proposals under CIP-EIP. The ECIA Policy Learning Platform[44] consists of representatives from twenty-seven organisations, including two European Creative Districts that joined in 2013.

43 http://www.numix-ecoinnovation.eu/
44 www.eciaplatform.eu

The European Creative Districts 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 that were linked to the Alliance should especially demonstrate in 2013-2014 how to transform industrial regions through better capitalising on creativity.

The final policy roadmap and concrete recommendations of the ECIA will be delivered at the end of 2014.

Across its nine projects, the Alliance has so far reportedly already mobilised €45.8 million directly or indirectly for the creative industries on top of the €6.75 million EU support for the initiative. For instance, the success of the VINCI project that implemented a €100,000 innovation voucher scheme contributed to the set-up of a National Creative Voucher scheme in Austria that provided €3 million support for fostering cross-sectoral collaboration between SMEs from other industries and creative service providers, with a further €1.5 million planned for 2014.

The cross-sectoral linkages explored include the IT sector on mobile solutions, tourism, enhancing online presence for agrofood, retail and other sectors, innovative materials and textiles, bringing design and creative solutions in the healthcare and manufacturing sector such as automotive.

Guidance material has been prepared by the concrete actions such as the FAME Coaching Manual for making creative industries investment-ready and attract investors for creative industries businesses, the Cluster 2020 report on Taking Co-working to the next level or the ECCL 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 so far from the Alliance's concrete actions by having received customised innovation support such as innovation vouchers, mentoring, training, cross-border matchmaking etc. or having participated in workshops and events. Many further SMEs are expected to have been reached indirectly through the linked networks and communication efforts. An additional 2460 stakeholders participated in the Alliance's activities, including policy-makers, practitioners and representatives from SME intermediaries, cluster organisations, investors, etc.

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 Alliance. The fact that creative industries contribute to 6.7 million jobs and 3.3 % of GDP, and that they grow faster than the rest of the economy[45] and widely support innovation in other industries is not yet so widely known. Instead, a 2011 report[46] shows, for instance, that the wrong perception of creative industries being risky is maintained and presents an obstacle for growth – despite the fact that the survival rate of UK businesses in creative industries is higher than in other industries. Efforts will need to be made to raise awareness at high policy level of the Alliance's final policy roadmap.

45 2010 European Competitiveness Report
46 Demos, 'Risky business', 2011. http://www.demos.co.uk/publications/riskybusiness

Commitment 19.2: 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, for example through EU and/or national programmes, and a 'European Design Excellence' label."

The Commission set up the European Design Leadership Board in 2011. The objective of the board was to make 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 Vice-President Tajani in September 2012 at the European Design Innovation Summit in Helsinki.

The Commission also launched the European Design Innovation Initiative (EDII) call in 2011, resulting in six projects which are currently under way. There are altogether forty-six organisations from nineteen EU Member States involved in these six implementing consortia.

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

The Commission staff working document 'Implementing an Action Plan for Design-Driven Innovation', published in 2013, describes current and upcoming actions endorsed by the Commission and relating to promoting design-driven innovation in different policy fields. The 14 action lines of the Action Plan build on the recommendations of the European Design Leadership Board and on a consultation with stakeholders. 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 European Design Innovation Platform[47] (EDIP) is a key instrument helping the Commission to implement the Action Plan for Design-Driven Innovation. The implementation of the EDIP started in January 2014 and will continue for three years. The EDIP is implemented by a consortium of fourteen organisations, led by the Design Council.

47 www.designplatform.eu

The Sharing Experience Europe (SEE) Platform: integrating design into innovation policies and programmes

The SEE Platform[48] is a network of 11 European partners engaging with government to integrate design into innovation policies and programmes. Through new research, workshops for policy-makers and case studies, SEE has created a bank of evidence to support policy-makers in developing design policies and programmes. Design is an approach to problem-solving that can be used across the private and public sectors to drive innovation in products, services, society and even policy-making by integrating the needs of the user.

The SEE partners have held over fifty workshops for policy-makers on the themes of design policy, design support, service design, social design and design management. These workshops use hands-on tools to build capacity for design-led innovation among government officials. The project manager, Anna Whicher from Cardiff Metropolitan University, says "SEE can demonstrate impact in all of the partner countries because we've facilitated peer-learning and exchange among innovation policy-makers across Europe enabling them to transfer and adapt best practices in design policies and programmes". As a result of policy-makers participating in SEE workshops, engagement by SEE partners and drawing on SEE research, design now features in national level policies in Denmark, Estonia, Finland and Greece as well as at regional level in Wales (UK), South Bohemia (Czech Republic), Greater Copenhagen (Denmark), Central Finland, Central Macedonia (Greece), Flanders (Belgium) and Silesia (Poland).
In addition to influencing 11 policies, SEE has resulted in the implementation of 34 new design-related programmes/initiatives. This amounts to new investment in design programmes of over €5.8 million.
Phil Allen (Head of Knowledge Transfer, Welsh Government) says, "From SEE, the Welsh Government has recognised the economic importance of design and is financing a number of new programmes to enable companies to use design effectively."

For Barbara Szafir in the Silesian Government, "Participation in SEE has changed our mind-set within the Silesian Government and we now put the citizens at the heart of new policy and programme development. We were also one of the first regional governments to employ designers as an approach to public service re-development." According to Bernard de Potter (Administrator General of Enterprise Flanders, Flemish Government), "SEE has resulted in real life changes in our organisation, we have included design in our SME support programme, we are using service design as an instrument for improving our day to day work and design is part of our region's top-level economic policy".

The six projects under the EDII call are making a significant contribution by advocating design as a user-centred innovation tool, delivering training material, helping to better measure the economic impact of design and in many other ways.

The European Design Innovation Platform will ensure capacity over three years to deliver the digital platform as well as events, seminars and practical support, helping to raise awareness and capability among potential beneficiaries.

As a consequence 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 the policy makers. In times of economic constraints, there is growing appetite to learn ways to deliver products and services efficiently but with a high user satisfaction.

48 www.seeplatform.eu

Nevertheless, many EU countries still lack a robust design infrastructure and design capability and awareness of design as a driver for innovation is still poor among the 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 are planned under the 2014-2015 work programme of Horizon 2020.

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."

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

In Horizon 2020 (see commitment 6) the Commission has made open access to peer-reviewed scientific publications the default setting. A novelty in Horizon 2020 is the Open Research Data Pilot which aims to improve and maximise access to and re-use of research data generated by projects. The data pilot will apply 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.

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.[49] Work is currently ongoing (pilot phase) for providing links between the same research articles and the underlying research data. The infrastructure connects to EC IT services (Common Research Datawarehouse 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 next generation intelligent search tools can rely). The ODIN project[50] is 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 1.6 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 330,000 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 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 OA. In order to follow up on the actions outlined in the Recommendation on access to and preservation of scientific information (2012), Member States were asked to nominate a National Point of Reference (NPR) to facilitate exchange of information and enable mutual learning. A first meeting of the NPR 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 have been asked to report on the implementation of the Recommendation in their respective countries. A further meeting of the NPR will take place in 2014. Furthermore, ERAC has recently launched a task force on open access and innovation.

As for Stakeholder Organisations, there is significant interest in the subject and a variety of events have been organised by the community itself in a 'bottom up' fashion. The Commission has participated and contributed to many of those, for instance 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 also to promote open access within their membership. Open access is therefore also one of the topics for regular discussion in the ERA High Level Stakeholder Platform and the associated doers network.

49 https://www.openaire.eu
50 http://www.odin-project.eu

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. Thus the Commission has ingrained OA within its new Science 2.0 policy initiative.

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.

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."

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 Commission Recommendation on the management of intellectual property in knowledge transfer and Code of Practice for universities and other public research organisations (C(2008)1329) already provides guidance in this respect. Furthermore, 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 in best practice for the management of intellectual property in research.

The Commission has proposed simple and clear rules for participation in Horizon 2020, including a particular focus on exploitation and the transfer/licensing of the results of the projects funded. The rules have been based on the widely acknowledged Seventh Framework Programme provisions with further improvements and clarifications and an extended scope 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. Finally, the rules are supported by concise and practical guidance on effective collaborative research.

The Horizon 2020 rules for participation and dissemination foresee that members of a consortium wishing to participate in an action shall conclude an internal agreement (consortium agreement). Some EU and national level model consortium agreements for research cooperation exist. However, as Horizon 2020 has a stronger focus on innovation, an analysis on the use of consortium agreements has been performed taking these aspects into consideration.

In view of this, existing model agreements used in the Member States, associated countries and in major trading partners have been identified. An analysis has also been performed to identify the status of these model agreements, the impact of these agreements on knowledge transfer activity, core common elements and critical differences. Based on this analysis and in consultation with major stakeholders, guidance on the use of consortium agreements will be produced and integrated into the Horizon 2020 online grants manual.

Although a large number of knowledge transfer offices 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 knowledge transfer offices (KTOs) is not presently sufficiently well developed to ensure that expertise and support is made available to those who need it.

An analysis has been performed on the role and impact of existing knowledge transfer networks, platforms and initiatives and their activities to identify what additional activity or support would enhance the level of knowledge transfer. In addition, an analysis has been done on existing financial instruments, particularly on IP market trends, to foster technology transfer activities and the potential for additional support via EU-level financial instruments or facilities. 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 is working with relevant stakeholder groups 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 the 'European TTO Circle', an initiative that aims at enhancing collaboration on knowledge transfer among the TTOs (Technology Transfer Offices) of large European public research organisations[51]. One of the tasks of the TTO Circle is to foster 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, the activities include also facilitating R&D collaboration, raising entrepreneurial culture in PROs and strengthening the capacities of the knowledge transfer officers.

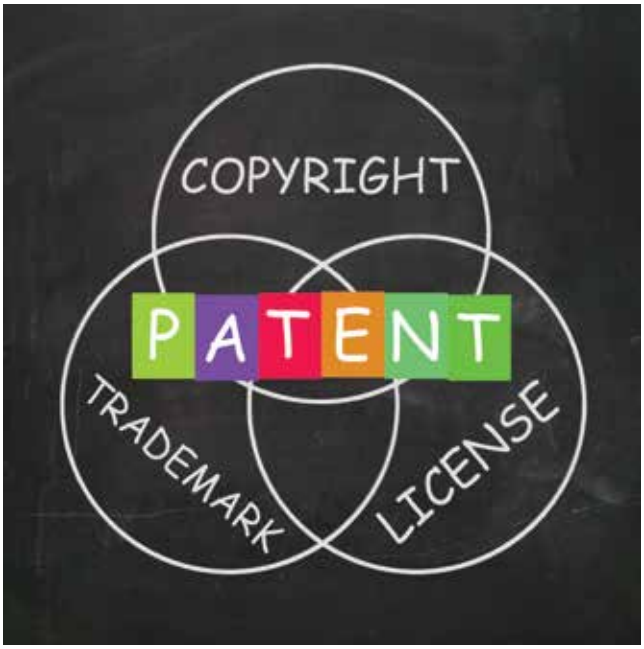
As knowledge transfer offices are only one element in the area of knowledge transfer and open innovation, the Commission has committed in the context of the European Research Area (see commitment 4), to developing a comprehensive policy approach on open innovation and knowledge transfer. For this purpose, the Commission has established an Expert Group to assess what can be done to improve knowledge sharing and utilisation. The Expert Group has delivered a report which offers a new, advanced open innovation paradigm: it sets out to describe how to build and fund ecosystems for co-creation.

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 Public Research Organisations and Higher Education Institutes performing research in knowledge transfer through new and emerging mechanisms, as well as 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. 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.

51 For information on the European TTO CIRCLE and its partners, please see http://www.jrc.ec.europa.eu/eu_tto_circle

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."



To facilitate the 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, also in response to the invitation by the European Council, which put emphasis on the development of options for an exploitation instrument that could make the access to the knowledge market notably by SMEs easier.

As a first step, a group of experts involving stakeholders and Member States to gather evidence and provide a technical assessment about existing and emerging initiatives was established. A study commissioned to assess financial market places for IP also included a survey open to Member States and stakeholders. The findings and conclusions were documented in two published reports[52] that constituted an input to the Staff Working Document (SWD) 'Towards enhanced patent valorisation for growth and jobs'.[53] The SWD presents the major obstacles that European companies, mainly SMEs, face in exploiting patents, especially 'dormant patents'. While describing current initiatives aiming at addressing issues in this area in Member States and at the level of the EU, the document also outlines short-, medium- and long-term options which could be undertaken in the Union to tap the potential for economic growth by better exploiting patents.

The SWD described a series of barriers to exploitation of patents including:

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

52 http://ec.europa.eu/enterprise/policies/innovation/policy/intellectual-property/index_en.htm
53 http://ec.europa.eu/enterprise/policies/innovation/files/swd-2012-458_en.pdf

In order to gather insights on how to address the barriers identified, two Expert Groups were created:

- Expert group on IP valuation: This expert group was created to address the difficulty in assessing value and in access to funding. To do this, the group was tasked to look at which improvements could be done regarding the evaluation of the economic value of IP in order to foster IP related transactions and IP based finance. The Expert Group has 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. It has also proposed policy recommendations on how to overcome these barriers.

- Expert group on Patent valorisation: studies indicate that a large share of all granted patents remain unused. Some of these may potentially be of interest to third parties for commercialisation. Europe may therefore benefit from a market mechanism which would allow the supply and demand side of unused patents to meet to enable the establishment of purchase or licensing agreements. An expert group on patent valorisation was created and it will look at how to increase transparency of the IP market, increase awareness of business opportunities around IP and decrease transactions costs linked to IP transactions. The expert group will consider options for EU level action to foster aggregation of Intellectual Property that could be (partly) funded or in other ways promoted at the EU level. The expert group will specifically address patent funds, patent pools and other forms of aggregation including brokerages. The expert group is due to report in the second half of 2014.

A pilot project was also launched in 2013 to assess the feasibility of an IP market place to raise the exploitation of patents from the demand-side and it will deliver its results at the end of 2014.

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."

The Commission adopted the Guidelines on horizontal agreements in 2010. 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. 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, to the extent possible, minimise the risk for that type of behaviour by building in safeguards in the standard setting process. These rules now apply to national competition authorities, the Commission, companies and national courts.

CHAPTER 3

Maximising social and territorial cohesion

Key messages

The Innovation Union puts emphasis on new strategies and tools with the goal of achieving increased cohesion whilst encouraging excellence, tackling societal challenges and creating jobs through innovation.

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 achievement of this same goal.

The obligation to develop Smart specialisation strategies as a precondition for European Regional Development Funds' innovation-related investments triggered a massive number of regions and Member States to reconsider their research and innovation policies and strategies. This strategy development was not limited to ERDF investments, but also impacted on innovation investments under other national and regional investments, including from the European Agricultural Fund for Rural Development and investments in human capital for research and innovation, including European Social Fund investments. This led in many Member States and regions to a significant change in the policy-making culture in terms of stakeholder involvement, inter-departmental cooperation, evidence-based policy making and a shift towards a holistic and systemic innovation policy concept. Such strategies are a key stepping stone towards place-specific, knowledge-based economic transformation.

Social and public sector innovation have moved towards the top of political attention. The Commission now supports social innovation in a number of ways, including though support for the up-scaling of successful projects. A lot has been achieved in the area of public sector innovation, where dedicated research actions were complemented by the creation of related inducement prizes and exploratory work was conducted to analyse possible future actions in this field.

New actors have been informed, consulted and involved in these actions, spreading the innovation culture to radically new areas and raising awareness about the potential for innovation-based growth across European regions, social groups and the public and private sector, paving the way for a more inclusive economy.

Progress so far

Commitments 24 and 25: Improve the use of structural funds for research and innovation

"Starting in 2010: Member States should considerably improve their use of existing Structural Funds for research & innovation projects, helping people to acquire the necessary skills, improving the performance of national systems and implementing smart specialisation strategies and trans-national projects. This should also apply to the pre-accession funding for EU candidate countries. The Commission stands ready to assist and will use its regional research and cluster initiatives to support this change and establish a "smart specialisation platform" by 2012, including further support for the emergence of world class clusters. Further details are in an accompanying Communication.

Member States should initiate the preparation of post 2013 Structural Fund programmes with an increased focus on innovation and smart specialisation. Future regulations governing the operation of the European Regional Development Fund should further commit substantial financial resources to support innovation initiatives within the regions of the European Union."

Research and Innovation strategies for smart specialisation are a key element to ensure optimal innovation impact of the future Cohesion policy investment. These strategies are about better, stakeholder-driven and comprehensive policy-making to foster place-specific, knowledge-based economic transformation.

The introduction of the smart specialisation concept in the strategic planning of EU Member States and regions has been a key factor in aligning the European Regional Development Fund (ERDF) with other growth policy measures through intelligent policy design. This was triggered by including smart specialisation strategies as an ex-ante conditionality for investment priorities under Research, Technological Development and Innovation for all Members States. The expected ERDF funding for R&D, innovation, ICT, competitiveness of SMEs and the low-carbon economy is about EUR 110 billion in 2014-20.

The Common Provisions Regulation for the ESIF[54] endorsed the proposal of the Commission and 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 own strengths to business

54 Regulation (EU) N° 1303/2013 of the European Parliament and of the Council of 17 December 2013

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."

The Commission has supported Member States in this transition through the development of the 'Guide to Research and Innovation Strategies for Smart Specialisation' (RIS3) in cooperation with leading academics, important European networks, advisory groups and the OECD. It also actively supports the Member States and regions in the development of such strategies, for instance it has sponsored expert advice for over 15 national and 80 regional strategies in a total of 20 countries. A series of thematic guides was also prepared and disseminated among national and regional policy makers and managing authorities.[55] Guidance material has been developed on how to improve synergies between ESIF investments, Horizon 2020, COSME, Erasmus+, CreativeEurope and digital services funding from the Connecting Europe Facility. Smart specialisation strategies play a pivotal role in this, as national and regional innovation policy makers have to consider up-stream and down-stream actions from Horizon 2020, and thrive for innovation excellence in a limited number of priority areas.

Further support is provided by a Mirror Group on smart specialisation composed by academic advisers, representatives of EU networks and initiatives and international organisations like OECD and World Bank.

55 "Regional policy for smart growth of SMEs", "The Smart Guide to Service Innovation", "The Smart Guide to Innovation-Based Incubators (IBI)", "Building Entrepreneurial Mindsets and Skills in the EU", "Connecting Universities to Regional Growth: A Practical Guide", "Guide to Broadband Investment", "Connecting Smart and Sustainable Growth through Smart Specialisation", "Guide to Social Innovation". Others are being developed on "Clusters", "Science and Technological Parks", "Broadband investments", "Synergies between Horion2020 and ESIF".

The Smart Specialisation Platform[56] was launched in 2012 to support regions and Member States in developing and implementing smart specialisation strategies. The services it offers include: advice, access to data material, guidance and methodological support, examples of good practice and mutual learning tools to peers and experts. Over 160 authorities (including 14 Member States) are registered to the Platform.

In order to help regions to position themselves, to find their unique niches and to seek out potential partners for collaboration, the Commission has developed Eye@RIS3, a mapping tool that provides an overview on the emerging smart specialisations across Europe.[57] This tool, in its pilot phase, will enable the cooperation among national and regional innovation actors around shared smart specialisation fields.

Research and Innovation Strategies for Smart Specialisation in Flanders

In Flanders, change was needed because of persisting competitiveness and productivity problems. The government decided to identify competitive advantages in specific R&D and innovation domains/clusters. On the one hand, nanotechnology and biotechnology are two sectors of activity already strong in Flanders. On the other hand, there are market opportunities opening up due to societal challenges. The Flemish healthcare system is transforming into a more personalised 'care and cure' system. The challenge is to improve the performance while keeping it affordable.

Nano for Health (NFH) is an example of smart specialisation for Flanders, which can contribute to the challenge of implementing personalised 'care and cure' programmes, by combining the complementary strengths of nano-electronics and biotechnology at the crossroads of two important clusters and ecosystems in Flanders, namely DSP Valley and FlandersBio.[58]

NFH is capitalising on complementarities, especially at the research level. DSP Valley has a strategic research centre, IMEC, specialised in miniaturisation and nano-electronics. FlandersBio has another research centre, VIB, specialised in biotechnology and life sciences. The goal of this combination is to offer new possibilities to successfully make the transition towards 'personalised therapy' in the health sector, which in turn empowers new and emerging industries.

Several projects have already been developed and reached industrial development stage. The Flemish contact offers some examples, all of them resulting in new job creation:

- Implantable stimulators enabled by ultra-low power electronics (i.e. N4H success mainly electronics driven)
- Hearing implants developed by Cochlear/DSP Valley
- Personalised care through tailored and targeted medicine (mainly biotech/pharma driven) by Janssen Pharmaceutics/FlandersBio
- New solutions for personalised care through rapid diagnostics: instant diagnosis by combining know-how at the crossroads of nano-electronics (including micro-fluidics) and biotechnology, e.g. Biocartis combines the know-how of DSP Valley and FlandersBio
- Other possibilities: Eyelab diagnostic chip, wearable ECG or EEG monitoring (these are still under development)

56 http://s3platform.jrc.ec.europa.eu/home
57 http://s3platform.jrc.ec.europa.eu/map
58 A film illustrates innovation at the crossroads of two different technology domains, illustrates employment possibilities and entrepreneurship at its best: http://ec.europa.eu/regional_policy/videos/level2.cfm?LAN=EN&idtheme=5

Fifteen expert groups for the EU 12, plus Greece, Portugal and Spain – each comprising two experts – were set up in 2013 to identify key R&I related issues in the development of the smart specialisation strategies. The work of the expert groups is now complete and their final reports have been made available to the Commission and the Member States. Other expert groups have looked into some specific aspects of smart specialisation, such as the involvement of universities[59] or the role that clusters can play.

Under Horizon 2020, 'Spreading excellence and widening participation' includes specific measures for engaging those countries that are less involved in the EU R&I effort, e.g. Teaming, Twinning and ERA Chairs that will support the implementation of research related aspects of smart specialisation strategies. The actions of Teaming and Twinning will create new Centres of Excellence and expertise and encourage pan-European networking among researchers with a strong focus on excellence and innovation. They will facilitate knowledge transfer and exchange of best practice between research institutions, building on the strengths of leading partners. ERA Chairs will bring outstanding researchers to universities and other research institutions that have high potential for research excellence. Technical assistance to cohesion countries for the translation of the RIS3 into concrete measures is provided by the 'Joint Assistance to Support Projects in European Regions' (JASPERS).

Synergies with smart specialisation strategies can also be envisaged under Horizon 2020 Marie Skłodowska-Curie COFUND which supports the internationalisation of human resources in research and innovation and provides co-financing to regional or national programmes in order to spread excellent practices in research training and career development.

In the coming years the Commission will support the implementation of action plans to develop the outstanding RIS3, support the regions and Member States in their efforts to strengthen the inter-regional and trans-national cooperation on smart specialisation fields in order to achieve critical mass, complementarity and the transformation of value-chains and internationalisation clusters (thematic smart specialisation platforms), monitor the implementation of the RIS3 of the Member States and regions. It will also support cooperation across borders.

Commission support for the emergence of world class clusters will continue with the COSME Programme 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.

59 http://ec.europa.eu/research/regions/documents/publications/ExpertReport-Universities_and_Smart_Spec-WebPublication-A4.pdf

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."

The European Commission provides support to social innovation in a number of ways. As a first concrete action, the Social Innovation Europe platform[60] was launched in 2011 as a virtual hub connecting social innovators and providing an overview of actions throughout Europe. Since its creation, the platform has federated 5,000 registered users/contributors from 35 countries and receives on average 7,000 visits a month. It has become a reference portal in Europe, which is recognised for its hands-on content.

Furthermore, social policy now has a strong focus on social innovation, namely under the European Social Fund and in particular through the Progress programme which is replaced by the Employment and Social Innovation Programme since January 2014. Support for social innovation against poverty and social inclusion is also provided by the European Platform against poverty and social exclusion.

In the 2014-2020 programming period, social innovation is going to be mainstreamed. In the new regulation on the European Social Fund, the approach to social innovation is more strategic. Member States have to programme social innovation-related activities, but they are given the flexibility to target social needs that are particularly relevant to them. Such measures are meant to test and scale up ideas that will influence other policy areas, therefore spreading social innovation to new sectors.

In addition, supported by the 'Capacities' part of FP7, a pilot action on networks of incubators for social innovation was launched in 2013 to support two European networks to assess, support and scale up social innovations in Europe. 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 €1 million each, with a broad geographical coverage across the EU, have started to assess, provide support and scale-up hundreds of local social innovations, disseminating them also to other regions in Europe. The action will also provide new knowledge and methods that will contribute to the challenge of scaling up social innovations, which are successful at small scale, to reach their potential.

In order to raise awareness on this topic, the European Social Innovation Competition is organised every year since 2012 to directly support new solutions and raise awareness about social innovation. The first two editions 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 for that purpose. Social innovation is also covered by other EU awards such as the RegioStars awards.

60 http://www.socialinnovationeurope.eu

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."

The public sector is a hidden source of enormous innovation potential, which we need to encourage. Social innovation, new and emerging technologies, digital platforms, all processes and tools that facilitate greater engagement of citizens and more opening of public administrations play big parts in rendering the public sector more innovative and continuously aligned to the needs of society.

Support for social innovation research has increased in scope and budget in the last three years of FP7 (from €4 million in 2011 to around €12 million in 2013, with more topics). The areas of research include the role of social innovation in the fight against inequalities, its role in the public sector and in innovative social services, its economic underpinnings, its role for empowering citizens and promoting social change, the role of the third sector in socio-economic development and social entrepreneurship.

Horizon 2020's broad approach to innovation further strengthens social and public sector innovation and provides many opportunities for take-up across all areas. For the first multiannual work programme of Horizon 2020, social innovation is relevant to many topics, such as industrial leadership and societal challenges.

Specific actions supporting social innovation are also included under the 'new forms of innovation' call in Societal Challenge 6: Europe in a changing world: inclusive, innovative and reflective societies.

These include support to create mobile, personalised public services, using open data and services, enhancing transparency and decision-making processes of public administrations, the launch of a Social innovation community in 2015, support to the public sector observatory of the OECD, a new competition for the prize of the European capital of Innovation, as well as continuation of support to the Social innovation competition for the next years

With Horizon 2020, the objectives of public sector innovation and the reforms needed to achieve them will be significantly advanced. The approach takes into account both new technologies and the necessary accompanying organisational changes towards more effective, efficient and open public administrations.

At the end of 2013 the Commission published the Report of the Expert Group on Public sector innovation 'Powering European Public sector Innovation: towards a new architecture'. The report proposed four principles for a new innovation paradigm in the public sector: co-design and co-creation of innovative solutions; adoption of new and collaborative service delivery models; embracing of creative disruption from technology; and adoption of an attitude of experimentation and entrepreneurship.[61]

61 http://ec.europa.eu/research/innovation-union/pdf/PSI_EG.pdf#view=fit&pagemode=none

Awards have a strong potential to drive innovation through the public recognition of achievements and the provision of role models. Through the Prize for Innovation in Public Administration for example, the Commission has given visibility to the most dynamic, forward-looking and innovative public administrations. These cases can inspire other public administrations in Europe to innovate.

The European capital of Innovation Award, also gave visibility to the role of cities as ecosystems driving innovation. In addition, a new action to be launched in 2015 provides support for public administrations to acquire the innovation skills needed to drive innovation, such as creativity and idea generation, through an innovation leadership programme that aims to reach out to some 60,000 leaders throughout the EU, at national, regional and local level.

To ensure monitoring of public sector innovation, the pilot European Public Sector Innovation Scoreboard (EPSIS) was published in June 2013. It developed 22 indicators to measure public sector innovation in dimensions such as human resources, quality of public services, innovation capacity, drivers and barriers of public sector innovation, innovators in public administration, effects on business performance, government procurement. The data availability on public sector innovation is still scarce but the awareness of the need for better benchmarking and monitoring is growing. To this end, the Commission established an agreement with the OECD that prepared the first proposals for preliminary measurement guidelines. These proposals have already been presented and discussed in a number of technical meetings with international experts

and EU and OECD Member States. The findings will contribute to building an evidence base for improving the measurement of innovation and can help shape proposals for extending the Oslo Manual[62] framework to the public sector in a future revision. This is a crucial step as it will give specific guidance on mainstreaming the public sector innovation issues into the regular data collection.

In parallel, the Commission has undertaken other activities to better understand and measure public sector innovation. Some aspects of the public sector innovation have already been included in the current Community Innovation Survey (CIS) 2012 and are planned to be included in the forthcoming CIS 2014, most notably the role of the public sector on business innovation and innovative public procurement. In addition, another Flash Eurobaromter (Innobarometer) has been conducted to learn more about the role of the public sector in commercialisation of innovation across the EU.

It is planned that another European Public Sector Innovation Scoreboard will be published in 2015.

62 http://www.oecd.org/innovation/inno/oslomanualguidelinesforcollectingandinterpretinginnovationdata3rdedition.htm

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."

The issue of how to spread the knowledge economy to all occupational levels is a crucial one to make innovation pervasive to our society and to make it flourish across economic sectors. To this end, the Commission has started discussions with social partners, so as to make this process truly inclusive and to 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 innovation Union and the European Workplace Innovation Network (EUWIN) network and their potential for spreading innovation to all occupational levels and sectors.

The European social dialogue committee at cross-industry level and the sectoral social dialogue committees[63] were chosen as the most appropriate frame for these exchanges. Two sectors have integrated the topic into their work programme[64] and eight sectoral EU social partners' organisations[65] and the European Confederation of Executives and Managerial Staff (CEC) confirmed their interest in participating in such dialogues.

The Commission has also started presenting sector-specific innovation–related information, such as the report on 'Retail Sector Innovation',[66] which includes recommendations for social partners and the skills councils.[67] The 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 recently created commerce skills council[68], with the aim to help the council identify skills gaps and needs in term of innovation in this sector.

Other ways of engaging social partners have also been explored. For instance the social partners of the agriculture sector[69] are also members of the Board of the European Innovation Partnership (EIP) on Agricultural Productivity and Sustainability (see commitment 29).

Commission services will continue to liaise with EU social partners and organise an exchange of views between them and the Commission services at a Liaison Forum meeting in 2014 with the aim to recall the importance of the Innovation Union and to assess the way social partners can further contribute to this process in the coming years.

63 http://ec.europa.eu/social
64 Food & drink industry and local and regional governments.
65 Central government administration, commerce sector, food and drink industry, education, leather and tanning, local and regional governments, personal services and textile and clothing.
66 http://ec.europa.eu/research/innovation-union/pdf/Report_from_EG_on_Retail_Sector_Innovation_A4_FINAL_2.pdf
67 http://ec.europa.eu/social/main.jsp?catId=784&langId=en
68 http://www.europeancommerce.eu/eng/default.aspx
69 Effat and Copa-Cogeca.

CHAPTER 4

Pooling forces to achieve breakthroughs: European Innovation Partnerships

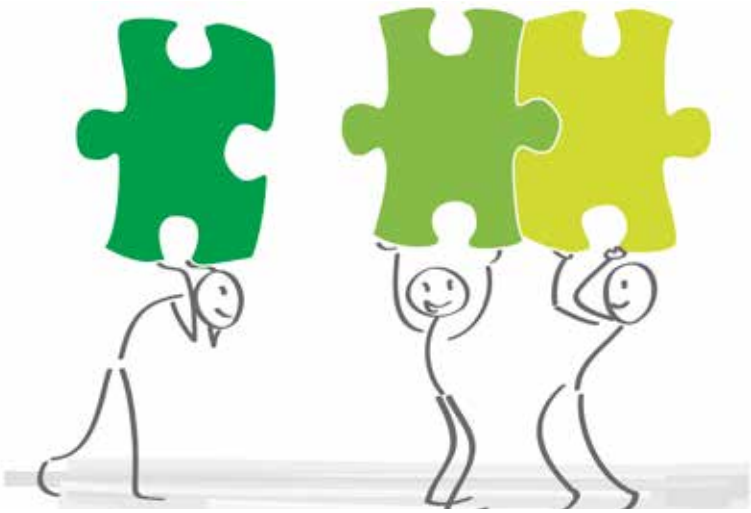
Key messages

European Innovation Partnerships (EIPs) present a new approach to EU research and innovation by being challenge-driven, acting across the whole research and innovation chain, and streamlining existing instruments and initiatives.

Five EIPs have been launched in the areas of active and healthy ageing, water, agricultural productivity and sustainability, raw materials and smart cities and communities. All five are now in the implementation stage, having identified priorities and engaged a wider range of actors across the demand and supply sides of innovation.

In a short period of time, the EIPs have established themselves in the European research and innovation landscape and mobilised a wide range of partners. With more than 700 commitments from new stakeholder groupings so far, EIPs have proved a considerable outreach, and first results are emerging: mapping of good practices, practical toolkits for replication, collection of evidence on impact and implementation of integrated services.

An expert group has assessed progress and evaluated the overall performance of the EIPs. The group has concluded that the EIP is the right approach to help enable future European economic growth and welfare. Their recommendations imply improvements that can be made to the current EIPs and significant changes to the way that future EIPs are launched and run.



Progress so far

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 has started preparations in the pilot partnership on active and healthy ageing in 2011. Taking into account the views of Parliament and Council and input from other stakeholders, it will present an assessment of the experiences in this pilot in summer 2011, and present proposals for further partnerships in autumn 2011."

The **European Innovation Partnership on Active and Healthy Ageing** (EIP AHA) was the first to be launched, in May 2011. It aims to make the EU a place of excellence in innovation for healthy ageing, by securing a triple win for Europe: (1) improving the health status and quality of life of European citizens, with a particular focus on older people; (2) supporting the long-term sustainability and efficiency of health and social care systems; and (3) enhancing the competitiveness of EU industry through an improved business environment providing the foundations for growth and expansion of new markets.

- In November 2011 the EIP AHA Steering Group presented its Strategic Implementation Plan (SIP) with 14 priority areas. In addition, horizontal actions were identified that address framework conditions, promote connections between the different priority areas of work, and are enablers for all other actions, including regulatory and funding schemes.

- Six Action Groups were launched in 2012 in the subset of those priority areas where stakeholders had demonstrated significant readiness and commitment to engage: (1) Prescription and adherence action at regional level; (2) Falls Prevention; (3) Prevention of functional decline and frailty; (4) Integrated care; (5) Independent living; and (6) Age-friendly environments.

AHA Action Groups

The six AHA Action Groups gather over 500 commitments, comprising 1,000 regions and municipalities and 3,000 partners, including research/academia, civil society, health and care providers, large industry and SMEs, mobilising over €1 billion. Their work is expected to have an impact on over 2 million patients and 30 million citizens by 2015. Their first deliverables, which included a collation of good practices and toolkits for their replication, as well as a compilation of evidence on the impact of implementing integrated services, were presented in November 2013.

- In February 2012 the Commission endorsed the SIP of the EIP AHA and set out a number of EU-level actions to support it. The SIP proposed governance arrangements for effective implementation, suggested a monitoring and assessment framework to ensure timely delivery of objectives and headline target, proposed the improvement and development of framework conditions and singled out the added-value of EU interventions.

- The EIP AHA has issued two open Invitations for Commitments whereby groups of stakeholders were able to propose initiatives that support the specific SIP actions. Candidates meeting the criteria were then invited to join and contribute to one or more of the six Action Groups. Since spring 2012, 500 commitments have been submitted, bringing together public authorities, technology companies, health providers, industry and non-governmental organisations. The Action Groups have developed action plans around the commitments and already begun to implement them.

- The EIP AHA also issued an Invitation for Reference Sites. These are coalitions of regions, cities, integrated hospitals or care organisations that are able to demonstrate impactful and innovative practices which could be transferred to other European contexts. They provide the EIP with examples of comprehensive, innovation-based approaches to active and healthy ageing - solutions that can be scaled-up and replicated across the EU. After a peer review process the EIP AHA has selected a total of 32 Reference Sites, from 12 Member States.

AHA Reference Sites

The 32 AHA Reference Sites represent a rich collection of real life examples of ICT-enabled innovation for active and healthy ageing being implemented within a coherent strategy. They are committed to working with others to replicate transferable elements of their schemes while sharing lessons learned and conditions for success. So more regions will be able to benefit from their successes, and avoid making expensive mistakes along the way. Some examples: A shared IT system in Denmark collects and shares information on citizens with chronic illness, allowing them to stay at home. The Andalusian e-health strategy is increasing e-prescriptions and reducing hospital admissions through prevention, bringing savings of €200 million. The Circles of Care service in the province of Noord-Brabant has brought savings of € 1.5 million per year for night staff care. The Scottish risk prediction tool helps identify patients with a risk of emergency admission to hospital, leading to less hospital admission, reduced hospital stay and savings of €250 per patient.

- The EIP AHA features a web-based marketplace that allows stakeholders to exchange innovative ideas, find partners, share emerging initiatives and disseminate evidence. So far, more than 1,300 partners have signed up to the marketplace and 300 ideas and/or initiatives have been posted. Two AHA Conferences of Partners have taken place so far, in November 2012 and in November 2013, to discuss how to implement and scale up innovations for active and healthy ageing and what contribution they can make to regions. A third Conference of Partners is scheduled for December 2014.

A year after the adoption of the six action plans the preliminary achievements centre mostly on the analysis and sharing of good practices, mutual learning, dissemination and awareness-raising, and cooperation among partners.

The next challenge of the EIP AHA is large-scale deployment. Pilots and deployment actions are taking place, as demonstrated by Reference Sites and good practices, but still on a smaller scale than needed to reach the overall goal by 2020 of two more healthy life years for the European citizen. To this end a 'Reference Sites and Regions Twinning' exercise is under way. It aims to bring together regions that are keen to learn, with regions that have knowledge, tools and experience to offer on a particular issue or in a particular area. The first twinning event took place at the Conference of Partners in 2013 and the next one is scheduled for the eHealth Forum in May 2014. Additional efforts towards scaling up are being developed in a number of regions' 'smart specialisation strategies' which may be supported, among others, by EU regional funding (see commitments 24 and 25).

In recent years, a number of EU programmes and initiatives have evolved in line with the EIP AHA action areas, enhancing coherence, consistency and impact. Examples are focus areas and priorities of the first work programme under Horizon 2020, the Active and Assisted Living (AAL) Joint Programme 2, and the call for an EIT KIC on 'Innovation for healthy living and active ageing'.

After the endorsement of the AHA SIP, the Commission put forward proposals for additional EIPs, drawing lessons from the pilot. In February 2012, the Commission proposed EIPs on 'Agricultural Productivity and Sustainability' and on 'Raw Materials'. In May 2012 it added a proposal for an EIP on 'Water' and in July it proposed a 'Smart Cities and Communities' EIP.

Following the endorsement from the Council in June 2012, the **EIP on Water** delivered its Strategic Implementation Plan in December 2012. The partnership aims to achieve the following headline target by 2020: identify, test, scale-up, disseminate and stimulate the uptake of innovative solutions by the market and society for ten major water related challenges.

The City Blueprints Action Group

The City Blueprints Action Group of the Water EIP includes a so-called 'learning alliance' of European cities to share their best practices and tools on Urban Water Cycle Services with the objective to make investments in urban water systems infrastructure more efficient.

- This aim has been further elaborated through four general headline targets: (1) Resolving water challenges with sustainable innovations; (2) Creating market opportunities and removing barriers for global water solutions; (3) Increasing competitiveness of the European water sector through fostering partnerships; and (4) Supporting the green economy through blue innovation.

- Together with the SIP, a first Invitation for Commitments for Action Groups was issued, resulting in 64 commitments involving more than 700 organisations and the setting up of nine Action Groups. Another 38 commitments, involving over 550 organisations from 45 countries, were received in response to a second 'Invitation for Commitments' launched in November 2013, resulting in 16 selected Action Groups. All selected Action Groups have a wide spread across the innovation value chain. The Action Groups are committing to work on developing and applying innovative solutions related to one or more of the priority actions described in the SIP: (1) Water reuse and recycling, (2) Water and wastewater treatment, including recovery of resources, (3) Water-energy nexus, (4) Flood and drought risk management, (5) Ecosystem services, (6) Water governance, (7) Decision support systems and monitoring, and (8) Financing for innovation. Furthermore, 'smart technology' has been identified as an enabling factor within all other priorities. Other European and national water related initiatives have aligned their strategic agendas to the SIP.

- The EIP Water Task Force has developed action plans for the removal of persistent barriers to (water) innovation in the areas of 1) Public Procurement; 2) Public-Public and Public-Private Partnerships; 3) Financial Instruments; 4) Regulation; and 5) Show Cases and Demonstration Sites.

- The Water EIP has also developed a web-based marketplace - an online collaboration platform for information exchange, matchmaking and teaming-up of public and private sector experts, organisations, innovative solutions and resources. The marketplace went live in August 2013 and now has well over 1,000 registered users. Over 2,600 readers have subscribed to the monthly EIP Water newsletter. A first EIP Water Conference took place in November 2013, and a second conference is planned for November 2014.

The VERDYGO Action Group

The VERDYGO Action Group will prove the innovative concept of modular low-cost adjustable waste water treatment plants in real-scale demonstration sites in Romania and Spain and possibly other locations.

The **Agricultural Productivity and Sustainability EIP** was endorsed by Council in June 2012 and its Steering Group reached an agreement on its Strategic Implementation Plan in July 2013. The partnership identifies the headline target of reversing the recent trend of diminishing productivity gains by 2020 (indicator for productivity and efficiency) and securing soil functionality in Europe at a satisfactory level by 2020 (indicator for sustainability of agriculture).

- Four challenges are addressed as priorities: (1) Resource efficiency, (2) Provision of societal and environmental goods and ecosystem services, (3) Establishing a sustainable consumption and supply chain, and (4) Innovation culture.

- An EIP Service Point was set up in April 2013 to collect and disseminate the results of the work of Operational Groups under the Rural Development Programme and the results of relevant Horizon 2020 projects. The service point is also providing help to find partners and information, facilitate exchange of knowledge and experience, and liaise with other existing networks in order to gather all relevant expertise and information about innovation initiatives.

- The EIP service point animates discussion on innovation in priority areas via Focus Groups. In these groups, experts discuss potential ways forward on how to address specific challenges in specific areas of action. The results of these focus groups are also disseminated via workshops and seminars.

- So far, ten Focus Groups have started in the areas of organic farming, protein crops, animal husbandry, genetic resources, organic matter content of soils, integrated pest management in brassica production, high nature value farming profitability, mainstreaming precision farming, profitability of permanent grassland, and fertiliser efficiency with focus on horticulture in open field.

The **Raw Materials EIP** was endorsed by Council in October 2012, and its Steering Group adopted its Strategic Implementation Plan in September 2013. The partnership aims to ensure the sustainable supply of raw materials to the European economy whilst increasing benefits for society as a whole.

- This will be achieved by: (1) Reducing import dependency and promoting production and exports by improving supply conditions from EU, diversifying raw materials sourcing and improving resource efficiency, including recycling, and finding alternative raw materials; and (2) Putting Europe at the forefront in raw materials sectors and mitigating the related negative environmental, social and health impacts.

- A web-based marketplace for exchange between stakeholders opened in September 2013, and the Commission launched an Invitation for Commitments in October 2013. This resulted in 80 commitments, and Action Groups are now being organised for implementation.

- A Raw Materials EIP Conference was held in December 2013, and a second conference is scheduled for November 2014.

The Raw Materials University Days

The Raw Materials University Days is a communication campaign launched in the framework of the EIP. It promotes studies and career opportunities in the raw materials sector through a series of events in Member States showing practical examples of prospects in raw materials exploration, extraction, processing, recycling and substitution, and covering a number of industrial sectors.

The High Level Group of the **Smart Cities and Communities EIP,** endorsed by Council in March 2013, adopted its Strategic Implementation Plan (SIP) in October 2013. The partnership aims to significantly improve citizens' quality of life, to increase the competitiveness of Europe's industry and innovative SMEs to provide a strong contribution to sustainability and the EU's 20/20/20 energy and climate targets.

- This will be achieved through the wide-reaching roll out of integrated, scalable, sustainable Smart City solutions – specifically in areas where energy production, distribution and use; mobility and transport; and information and communication technologies are intimately linked. This cross-sectorial focus is clearly present also in the High Level and Sherpa groups of this EIP. The focus area 'Smart Cities' in Horizon 2020 was inspired by SIP and will support the large deployment of Smart Cities solutions in a number of pilot cities and their further roll-out in other cities.

- An Invitation for Commitments was issued in February 2014 inviting all stakeholders to step forward and support the objectives of the EIP by communicating and sharing their ideas and plans for actions at the interface of energy, transport and ICT. Building on the SIP and to give ideas for commitments an Operational Implementation Plan was published along with the Invitation. An information and brokerage event was held in February 2014.

- the Smart Cities Stakeholder Platform is in place with the aim of identifying and spreading information on technology solutions and needs required by practitioners and providing information for policy support. A Smart Cities and Communities EIP Launch Conference was held in November 2013. This Platform currently involves around 2700 members and will be instrumental in setting up 'Action Clusters' following the close of the Invitation for Commitment.

The Commission committed from the outset to assess progress and evaluate the overall performance of the EIP concept in 2013. To this end, it set up an independent expert group under the chairmanship of Finland's ex-prime minister, Mr Esko Aho. The group delivered its report in February 2014 and presented it to Member States in the Council in May 2014.

- The group concludes that the EIP is the right approach to help enable future European economic growth and welfare. The group recognises that the ambition of the EIPs was rightfully set high, but recommends improvements in the execution of the current EIPs and is calling for a second iteration of EIPs based on modified targets and approach.

- The group's core assessment is that the EIPs 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. The implementation of the EIPs promises to deliver significant outcomes, and the group concludes that there are sound reasons for the EU to continue promoting the EIP approach, provided that the EIPs target systemic innovation with a strong focus on diffusion of innovation.
- However, the group also expresses concerns that the process has suffered from a complex operational model, hampered by a lack of a dedicated EIP structure and divergence of views within the Commission, insufficient commitment from Member States and weakness to bring in new actors.

- The group's recommendations imply improvements that can be made to the current EIPs and significant changes to the way that future EIPs are launched and run. For instance, on-going EIPs should seek a stronger focus on demand side measures and innovation diffusion, e.g. public procurement, standard-setting, regulation, incentives for adoption, replication and scaling-up of innovative solutions, spreading of best practice. They should be more pro-active in bringing in new actors who may have significant relevance for the development of future ecosystems and markets, and they should intensify their ongoing work on indicators and monitoring and evaluation frameworks. The Commission is already working with the five on-going EIPs to see how additional steps could be taken to strengthen their implementation.

- According to the group's recommendations, future EIPs should be launched only where there are clear needs for systemic change in areas with great innovation potential, societal need, business opportunity and need for partnering across Europe. They should focus on mobilising demand, experimentation and diffusion; be proactive in bringing in new actors; and have clear indicators for success. They should continue as a core element of EU innovation policy, with the Competitiveness Council being more involved and individual Commissioners continuing to chair each EIP. The Commission is taking full account of the expert group's findings and recommendations, and it invites the other partners in these partnerships to also take good note and react to the conclusions of the group. The Commission's views on the overall future of EIPs will need to be seen in the new policy context that will develop over the next year.

CHAPTER 5

Leveraging our policies externally

Key messages

Cooperating with our external partners is essential to share resources in tackling common issues and building on common priorities as well as to achieve excellence.

To this end, partnerships between the EU and its Member States have been strengthened with regards to the definition of common long term visions identifying priorities for cooperation with third countries, including the identification of common research infrastructures priorities.

In parallel, Europe is becoming more attractive by improving access and work conditions for foreign researchers interested in carrying out their projects in the EU. Further steps remain to be taken to make Europe even more attractive, for instance through the full roll out of the European Research Area actions at Member States level.

Progress so far

Commitment 30: Put in place integrated policies to attract global talent

"By 2012, the European Union and its Member States should put into place integrated policies to ensure that the best academics, researchers and innovators reside and work in Europe and to attract a sufficient number of highly skilled third country nationals to stay in Europe."

The European Commission, in cooperation with Member States, has initiated a wide range of initiatives to facilitate researchers' mobility and increase the attractiveness of the research profession in Europe. These include measures to facilitate access to information on mobility (via the EURAXESS portals and EURAXESS Links), the 'Scientific Visa' package facilitating administrative procedures for third country researchers entering the European Community, Marie Skłodowska-Curie actions and Destination Europe Events.

The MORE2 study[70] showed that the EU can be an attractive place in which to carry out research. 72 % of the non-EU researchers who had been to the EU would like to have stayed longer, and 93 % would recommend other colleagues to work in Europe as researchers. However, when asked to compare the research environment in the EU with that outside the EU, the majority of researchers report that conditions such as remuneration and career progression are generally better outside the EU.

At national level, measures include reforms to the higher education sector linked to the Bologna process. In addition, many countries have introduced national mobility schemes to boost different types of researcher mobility (inward, outward and cross-sectoral). Many of these schemes promote inward mobility from both EU and non-EU countries providing financial incentives for early stage researchers. The KOLUMB Programme (Poland), for example, awards fellowships to the best young scholars to enable them to stay (from 6-12 months) at the world's leading research centres. Non-financial incentives include measures promoting 'dual careers', such as the Dual Career Network (France, Germany and Switzerland). Some countries provide tax incentives to facilitate researchers' mobility in Europe while others such as Ireland offer special visas to attract researchers to engage in research.

70 http://ec.europa.eu/euraxess/pdf/research_policies/more2/Final%20report.pdf

Fast-track immigration is an important consideration for internationally mobile researchers and is thus an important factor in helping attract the best global talent to Europe. In 2013, the Commission adopted a proposal for a directive on the conditions of entry and residence of third-country nationals for the purposes of research and studies. This proposal aims to improve the current 'Scientific Visa Directive' by setting clearer time limits for national authorities to decide on applications, and providing researchers with greater opportunities for mobility and access to the labour market after their stay. The new rules on the Scientific Visa should take effect as of 2016, following transposing by the Member States.

WELCOME Programme – Foundation for Polish Science

The overall objective of the WELCOME Programme is to engage outstanding researchers from abroad in creating research teams in Poland and intensify the degree of international cooperation of Polish institutes and universities. The Programme targets foreign researchers with at least a PhD degree who either plan to work in Poland or have established their research teams in Poland no earlier than five years prior to the cut-off date.

Polish researchers with at least a PhD degree, who have either have stayed abroad for at least two years and intend to come back to Poland or have already returned to Poland (within the two years prior to the cut-off date), are also eligible to apply. The projects must be of at least three years' envisaged duration.

EURAXESS Links is a networking service offering European and non-European researchers opportunities for international collaboration and career mobility. The EURAXESS Links network was launched in 2006 and is successfully running in the following countries: USA (2006), Japan (2008), China (2009), India (2010), four ASEAN countries (Singapore in 2010 and Indonesia, Thailand and Malaysia in 2012) and Brazil (2013). A North American hub now also covers Canada. EURAXESS Links phase 2, which started in 2013, has enlarged the scope of the network by supporting not only European researchers based in third countries, but also non-European researchers wishing to move to Europe.

Over 20% of the researchers funded by the Marie Curie Actions are non-European nationals, and this strong international dimension will be maintained in the Marie Skłodowska-Curie actions. Under Horizon 2020 the actions will contribute to talent attraction by funding around 15,000 non-EU researchers - out of 65,000 - between 2014 and 2020 to start or pursue their careers in Europe. Experienced researchers of any nationality will be able to apply for a fully-funded Fellowship in Europe of up to two years and special participation conditions will be available for those who have previously left Europe.

Finally, 'Destination Europe' is an initiative of the European Union and its Member States to showcase Europe's vibrant and exciting research and innovation culture. Supported by the Strategic Forum for International Science and Technology Cooperation (SFIC), 'Destination Europe' raises awareness of the attractiveness of Europe's research and innovation landscape and communicates the opportunities Europe has to offer to researchers currently working in the USA. Six 'Destination Europe' events have been held in the USA since 2012, highlighting career and funding opportunities available at national and EU level and more are scheduled for 2014 and 2015.

Commitment 31: Propose common EU/Member States priorities and approaches for scientific cooperation with third countries

"The European Union and its Member States must 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."

The 2012 Communication on enhancing and focusing EU international cooperation in research and innovation was a major milestone in setting the overall scene. A strengthened partnership between the Commission and the Member States is a central element of the new strategy and considerable progress was made since, notably through:

- The development and testing of methodologies in the context of the Strategic Forum for International Science and Technology Cooperation (SFIC) to identify common priorities and implement joint actions through a number of geographic/thematic initiatives.
- The start of the preparation of multi-annual Roadmaps for key countries and regions (to be completed in autumn 2014) with the involvement of Member States through the SFIC.
- The pursuit of joint EU/Member States dialogues with key world regions.
- Support for policy dialogues and/or joint research activities between EU/Member States and selected international partner countries and regions under a series of FP7 BILAT, INCO-NET and ERA-NET projects. Similar support will be pursued under Horizon 2020.

Progress has been made in the development of common principles conducive to research cooperation at global level through enhanced involvement of the EU and member States in global fora such as the Global Research Council (GRC), the Belmont Forum, the OECD Global Science Forum, etc.

Important steps have been made towards establishing a level playing field for research and innovation between the EU and its partners. The Union's funding programme for research and innovation, Horizon 2020, is fully open to participation from international partner countries and Europe's markets are also the most open in the world, offering investors access to a European internal market with predictable and fair rules. Europe is thus striving for this openness to be reciprocated by all of the Union's partner countries, including by ensuring equivalent protection of IPR, removing barriers to trade, facilitating standardisation and giving access to procurements. Negotiation by the European Union of Free Trade Agreements (FTAs) contributes to these efforts and to the establishment of a level playing field with our trading partners, in particular ensuring equivalent levels of protection of intellectual property rights. In addition, efforts are being made in this sense in the R&I dialogues with partner countries. The aim is to promote win-win situations so as to foster international research and innovation opportunities.

Progress to varying degrees has been made in coordinating positions among Member States and launching joint actions vis-à-vis third countries through the initiatives launched by the Strategic Forum for International Cooperation (SFIC**)**. The SFIC has in particular developed initiatives targeting China, Brazil, India and the USA. Such initiatives 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 (e.g. thematic groups on water, health and energy research and innovation were agreed with India).

SFIC initiatives in the USA

The SFIC has developed a roadmap for its USA initiative with five main headlines: 1) Enhancing the scale of cooperation building on existing large scale initiatives at national and EU level; 2) developing the innovation dimension; 3) improving the framework conditions for cooperation, 4) information sharing and 5) the Destination Europe Initiative.

In parallel, **major dialogues of the EU and its Member States** with world regions, have been progressing, notably with the African Union, the CELAC, the Mediterranean region and the Eastern Partnership.

EU-African Union

- At the November 2013 meeting of the **EU-Africa High Level Policy Dialogue on Science, Technology and Innovation,** the parties agreed to start working towards a long-term jointly funded and co-owned research and innovation partnership with a first focus on food and nutrition security and sustainable agriculture.
- During 2014, a high level expert working group will be tasked to develop a detailed roadmap concretely defining the scope and outlining the different steps towards this new partnership. Funding for its implementation will come from Horizon 2020.
- Operational discussions on the envelopes dedicated to STI in the EU development funding as well as Member States programmes will look at the outcome the EU-Africa HLPD.

Country initiatives and regional dialogues contribute to:

- Mutual information among Member States on bilateral international activities;
- Exchange of best practices;
- Concerted actions, either in the information/communication domain or in actual joint research activities with targeted countries or regions, and to the development of mutually coherent cooperation policies;
- Simplified engagement of targeted countries and regions with Europe (at Member States and EU level);
- Strengthening European voice in global fora and organisations.

A study to analyse the best practices for S&T Agreements and on the feasibility, advantages and disadvantages of "Umbrella Agreements" was completed in 2014 and the SFIC is currently considering possible follow-up actions to it.

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 which owing to cost and/or complexity, can only be developed on a global scale."

Global research infrastructures are key elements in research and innovation policies but in some cases their global nature, complexity, high costs and requirements in terms of qualified staff make it impossible for one country or region to build and operate them. The impact of closer cooperation is expected to improve the coherence and coordination of global scientific efforts, becoming more effective in planning, constructing and using global research infrastructures.

In 2013, the G8 Science Ministers agreed on proposing some new areas for collaboration among G8 members, including Global Research infrastructures and adopted a framework for cooperation which describes the principles and reference terms.

A new mandate for the Group of Senior Officials (GSO) was also approved, enabling them to promote this framework and exchange information on potential future research infrastructures that may present opportunities for international collaboration.

In the coming years, the GSO will share information on national research infrastructures and priorities, identifying areas of potential benefit that could be achieved through sharing of best practices. A representative list of global research infrastructures open to global cooperation of interest to new partners is to be created. The GSO has been invited by the G8 Science Ministers to report on progress in 2015.[71]

71 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/206801/G8_Science_Meeting_Statement_12_June_2013.pdf

CHAPTER 6

Making it happen

Key messages

Progress in Europe and Member State's innovation performance has been monitored through the Innovation Union Scoreboard, peer review exercises and self-assessments supported by the Commission, as well as in the framework of the integrated economic coordination ('European Semester').

The use of such monitoring in order to orient research and innovation policies requires a longer timeframe, so as to take into account the length of policy cycles. This explains why only few Member States have used the Self-Assessment Tool. Monitoring will be continued and improved through the Policy Support Facility under Horizon 2020.

In order to keep research and innovation policies relevant and up to date to face emerging challenges, it is essential to facilitate the policy dialogue with all stakeholders concerned. To this end the EU Innovation Convention was organised in 2011 and 2014, so as to provide Commission service with relevant information with regards to emerging issues and trends as well as with an opportunity to discuss them with those who are most concerned.

Progress so far

Commitment 33: Member States R&I Systems

"Member States are invited to carry out self-assessments based on the policy features identified in Annex 1 of the IU and identify key challenges and critical reforms as part of their National Reform Programmes. The Commission will support this process through exchanges of best practice, peer reviews and developing the evidence base. It will also apply them to its own research and innovation initiatives. Progress will be monitored in the framework of the integrated economic coordination ('European semester')."

Since the start of FP7, the Commission was supporting up to six peer reviews per year, as an in-kind contribution to national self-assessments. In October 2010,[72] the Innovation Union flagship reaffirmed the role of peer reviews in support of reforming national R&I systems. In particular, it invited Member States to carry out self-assessments using the Innovation Union Self-Assessment Tool (SAT) to identify key challenges and critical reforms as part of their National Reform Programmes.

Since 2012, the Commission has also supported the Member States and regions in revisiting their innovation and research strategies in order to align them to the smart specialisation paradigm (see above under commitments 24 and 25).

Only a small number of countries have requested to be peer reviewed over the last three years (Belgium, Estonia, Denmark, Spain and Iceland). There is no evidence of other countries having used the SAT tool and the Commission can only confirm that Belgium, Estonia and Denmark have used the IU self-assessment tool in 2011 and 2012 and that Spain and Iceland are using it in 2014, as part of the peer review of their R&I systems. Nevertheless, it is possible that more Member States have used it, at least to a certain extent, when preparing their National Reform Programmes.

72 In 2003 the European Council invited Member States and the Commission to apply the Open Method of Coordination in support of the 3% R&D investment target. As a result, 14 Member States were peer reviewed during the period 2004-2010. This experience fed into the new cycle of the peer reviews using IU SAT.

The progress on the achievement of R&I policy developments has been continuously monitored in the framework of the integrated economic coordination ('European semester') leading to the Commission proposals for Country Specific Recommendations (CSRs) related to R&I. Commission services provided further, indirect support to national self-assessments through annual ERAC mutual learning seminars bringing together national policymakers to exchange information on selected policy issues closely linked to the implementation of CSRs and about main policy orientations in the field of R&I in the context of Europe 2020.

The new approach of the national peer reviews and the introduction of SAT are considered positive by Member States, bringing a systematic and structured methodology to the process, in support of reforms of the national R&I systems. In parallel to the Danish peer review (2012) Commission services commissioned an independent expert to prepare a short report 'SAT tool in ERAC peer reviews- First Lessons' summarising the experience of the three SAT pilots. The process has also proven to be very useful for the national and regional authorities of the countries reviewed (not limited to Member States), and also for the countries who participated as peers. In particular, it contributed to the development of the new national innovation strategies in Estonia and Denmark.

The Icelandic and Spanish peer reviews are ongoing and the specific focus points have been identified through the self-assessment tool by both countries. Concrete recommendations on improvements to be made to the Icelandic R&I policy (June 2014) and to the Spanish R&I policy (July 2014) should constitute the outcome of the process. As an example, the Spanish authorities have announced that they would examine very closely the outcome of the peer review exercise in order to inspire national reforms of the Spanish R&I system.

Overall the progress made in 2010-2014 on this commitment is delayed, as fewer Member States than expected explicitly embarked in a full-scale review of their R&I system based on the SAT. The reasons for the lack of success include the perceived sensitivity of such an exercise, the visibility of its outcome and the fact that it is usually linked to a major revision of the national innovation policy/ strategy (which only takes place every four or five years in a given Member State).
Under Horizon 2020, a new tool, the Policy Support Facility (PSF), is being launched to remedy this situation and offer support to a broader range of policy makers in structuring their policy reforms. PSF will provide access to relevant evidence-bases, expertise and evaluation results through services with the aim of improving the design and implementation of research and innovation reforms linked to quality strategies, programmes and institutions. [73]. The PSF will therefore offer, on a voluntary basis, dedicated support to national and regional authorities when assessing their R&I systems in view of launching reforms. This tool aims to make current peer reviews systematic and professional, as well as to facilitate the decision of public authorities to seek support when reviewing their R&I systems.

73 As stated in the Communication 'Research and innovation as sources of renewed growth', the Commission will draw on the experience gained from the self-assessment tool in the Innovation Union flagship initiative, and fully exploit the R&I Observatory and the Policy Support Facility foreseen in Horizon 2020 to assist Member States in the successful implementation of R&I reforms."

Commitment 34: Develop an Innovation Headline Indicator and 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."

The new indicator of innovation output was developed at the request of the European Council in order to benchmark national innovation policies and monitor the EU's performance against its main trading partners.

A first proposal was presented to Member States in 2012, two years after the start of the work and in line with the request by the Innovation Union flagship initiative. Two additional workshops with the Member States followed, and a dedicated inter-service Task Force of the Commission services worked intensely on the indicator in 2013.

The Commission's Communication 'Measuring innovation output in Europe: towards a new indicator' was subsequently adopted in September 2013. A comprehensive technical Staff Working Document accompanied the Communication.

By zooming in on innovation output, the new indicator of innovation output complements the one on R&D intensity (3%) in the Europe 2020 strategy. The new indicator supports policy-makers in establishing new or reinforced actions to remove bottlenecks preventing innovators from translating ideas into successful products and services.

To measure innovation output, the Commission opted for using four indicators from the outputs and firm activities types in the the Innovation Union Scoreboard, grouped into three components (patents, employment in knowledge-intensive activities (KIA), and competitiveness of knowledge-intensive goods and services), and a new measure of employment in fast-growing firms of innovative sectors.

The patents component takes into account inventions that exploit the knowledge generated by investing in R&D and innovation, and which can be transformed into successful technologies. Similarly, the indicators of the intensity of employment of skilled labour, in KIA and in fast-growing firms, provide an indication of the orientation of the economy towards the production of goods and services with innovation added value. Finally, the trade flows associated with those commodities measure their capacity to reach global markets.

The new indicator supports policy-makers, in the context of the Europe 2020 strategy**,** in establishing new or reinforced actions to remove bottlenecks preventing innovators from translating ideas into successful products and services. Within the research and innovation strand of the European Semester, the indicator will be used to monitor progress and performance as regards innovation output. It will also form an integral part of the 'country profiles' which the Commission puts forward annually to measure R&I performance in EU Member States and Associated Countries ('Research and Innovation performance in EU Member States and Associated countries Innovation Union progress at country level').

In the first Semester of 2014 the indicator was brought to its full potential in line with the areas identified in the Communication. Additionally, the indicator was included in the IU Competitiveness Database hosted by the Commission.

Innovation output is wide-ranging and differs from sector to sector. Measuring it entails quantifying the extent to which ideas for new products and services, stemming from innovative sectors, carry an economic added value and are capable of reaching the market.

The annual Innovation Union Scoreboard 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. It helps Member States assess areas in which they need to concentrate their efforts in order to boost their innovation performance. Furthermore, it gives a view on the performance of the Union in comparison to almost all its global strategic trading partners.

The Innovation Union Scoreboard, following the methodology of the previous editions and revised in 2010 with the adoption of the Innovation Union, captures a total of 25 different indicators. Every two years the Innovation Union Scoreboard is accompanied by a Regional Innovation Scoreboard.

In the latest IUS2014 edition, the last 25th indicator was added 'Employment in fast-growing firm of innovative sectors'. This indicator is part of the new Innovation Output Indicator.

The Innovation Union Scoreboard as well as the Regional Innovation Scoreboard attract a large attention of policy makers across Europe and are relatively widely commented upon by national and regional media. This not only points out to the key results but it helps keep ongoing the debate on the relevance of innovation for the economic growth and jobs. In January 2014, the European Parliament stressed in its resolution on reindustrialisation of Europe that particular account should be taken of the annual Innovation Union Scoreboard.

Innovation Convention 2011 and 2014

According to the Innovation Union Communication, the Commission has to facilitate debate and exchanges of ideas and best practices focusing on the Innovation Union. To further encourage this process of change and to promote an innovation mind-set, the Commission is entrusted to convene an Innovation Convention to discuss the state of the Innovation Union "involving Ministers, Members of the European Parliament, business leaders, deans of universities and research centres, bankers and venture capitalists, top researchers, innovators and citizens of Europe".

Two events have been organised since 2010 in Brussels, and the concept of a biennial EU Innovation Convention is gaining brand recognition and widespread support.

The first Innovation Convention took place in December 2011 and gathered some 1200 participants. It was widely recognised as the major innovation-related event in Europe for the years to come, and was described as "a creative get-together of some of the world's brightest people from across all sectors involved in research, innovation and science". The concept proved to work very well, being a successful mix of main sessions, with an unusual combination of speakers, parallel 'fringe' events, master classes, networking events, an exhibition and an award ceremony. Sessions were designed to promote interactivity and ensure variety, and were focused on how to create impact and real 'stories'.

The second Innovation Convention was convened on 10 and 11 March 2014. Compared to the first edition, it doubled the number of participants (2400) and presented an even richer programme, aiming at discussing innovation in all its facets. The range of topics was broader, the use of digital technologies (e.g. registration by barcode scan, paperfree event) and the increase in the networking events number ensured a smoother visitor experience. The inclusion of high profile, innovative award ceremonies (Women Innovators, Inducement Prize On Vaccine Health and European Capital of Innovation) provided tangible examples of success in different fields.

The messages conveyed by almost 80 high-level speakers and enthusiastically supported by participants confirmed the consolidated support to innovation-friendly policies by the general public. There was a strong, growing demand for further actions aiming at promoting a true innovation culture. There was also a clear demand for new approaches to be further explored, e.g. inducement prizes, which help 'democratise innovation'.

Progress on Innovation Union Commitments

The following table intends to offer an overall summary of the progress in the implementation of the Innovation Union commitments presented in this Staff Working Document. It aims to highlight progress in the delivery of the actions that were put in place to fulfil the commitments, as well as examples of how these actions are being implemented.

COMMITMENT	ACTIONS DELIVERED	EXAMPLES OF IMPLEMENTATION
1 Put in place national strategies to train enough researchers	• Most countries have put in place strategies; • Commission has put in place tools to favour this process. Remaining gaps (deadline 2011): • Some Member States still have to put in place such strategies.	 • New innovative doctoral training opportunities available in some Member States; • EURAXESS available to researchers.
2.2 Test feasibility of independent university ranking	• Feasibility of the ranking tested.	 • U-Multirank launched in 2014; • 500 Higher Education Institutions participated in this ranking. Tool available for students and researchers to compare universities in new ways.
2.1 Create business-academia "Knowledge Alliances"	• Knowledge Alliances piloted and scaled up in Erasmus+. Follow-up: • +150 new Knowledge Alliances foreseen in the programming period 2014-2020.	 • Higher Education Institutions and businesses took part in the first Knowledge Alliances. New Knowledge Alliances are being launched in 2014; • Results of the first Knowledge Alliances pilots available.
3 Propose an integrated framework for e-skills	• Grand coalition for digital jobs; • E-competence framework 3.0 released; • Roadmap for the promotion of ICT professionalism and e-leadership 2014-2020 released.	 • E-competence framework adopted as a standard by some Member States.
4 Propose an ERA framework and supporting measures	• ERA Proposed in 2012; • ERA measures under implementation; • European Framework for Research Careers created; • Principles for Innovative doctoral training defined, disseminated, verified and supported; • Pan-European Pension fund, consortium established, funding foreseen in H2020. Remaining gaps (deadlines: proposal in 2012, measures to be in place by 2014): • Some Member States still have to align their systems to ERA principles; • Pan-European Pension fund expected to be operational in 2015.	 • European Framework for Research Careers widely used for recruitment by universities, companies, etc.; • Joint Programming Initiatives.

	COMMITMENT	ACTIONS DELIVERED		EXAMPLES OF IMPLEMENTATION
5	**Construct the priority European Research Infrastructures**	• 56% under implementation. Remaining gaps: • goal: 60% by 2015.	✓	• 14 infrastructures provide services to their users.
6	**Simplify and focus future EU research and innovation programmes on Innovation Union**	• Horizon 2020 launched with focus on the Innovation Union.	✓	• First calls of Horizon 2020 launched.
7	**Ensure stronger involvement of SME in future EU R&I programmes**	• SME instrument within Horizon 2020.	✓	• SME instrument ready to be used in Horizon 2020.
8	**Strengthen the science base for policy making through JRC and create EFFLA**	• Better connections with JRC developed; • European Forum for Forward Looking Activities established.	✓	• Work of the JRC and of EFFLA influencing Commission policy making and strategic programming.
9	**Set out EIT strategic agenda**	• Strategic Innovation Agenda set and under implementation; • New Knowledge and Innovation Communities launched; • Activities of the EIT foundation expanded.	✓	• 35 master courses with EIT label; • More than 1,000 students enrolled in EIT courses; • More than 100 start-ups created; • More than 400 ideas incubated; • 90 new products and services launched.
10	**Put in place EU-level financial instruments to attract private finance**	• 'Access to Risk finance' under Horizon 2020; • First calls for expression of interest by financial intermediaries expected to take place in the third quarter of 2014.	✓	
11	**Ensure cross border operation of venture capital funds**	• The European Venture Capital Regulation entered into force in July 2013.	✓	• At least 2 applications presented to MS.
12	**Strengthen cross border matching of innovative firms with investors**	• Expert group delivered recommendations to the Commission.	✓	• These recommendations have been taken into account in the delivery of the financial instruments within Horizon 2020.
13	**Review State Aid Framework for R&D&I**	• State Aid Framework for R&D&I reviewed.	✓	• State Aid Modernisation rules ready to be used as of July 2014.

COMMITMENT	ACTIONS DELIVERED	EXAMPLES OF IMPLEMENTATION
14 Deliver the EU Patent	• 'Unitary patent package' agreed; • Machine translations available since 2013. Remaining gaps (deadline 2014): • Implementing rules to be defined by the Select Committee by the end of 2014; • 13 Member States have to ratify the Unitary Patent Court agreement for it to enter into force (2 ratifications so far); • Implementing rules for the Unitary Patent Court are being discussed within the Preparatory Committee. It is expected to start working in 2015.	
15 Screen the regulatory framework in key areas	• Regulatory Screening methodology developed and applied to regulations relating to eco-innovation and European Innovation Partnerships.	 • Methodology applied to water directive and regulation on raw materials.
16 Speed-up and modernise standard-setting	• Communication adopted in 2011. • Implementing regulation in 2012.	 • Quicker (37%) standardisation process.
17.1 Set aside national procurement budgets for innovation	• Commitment not taken up by the Council.	 • Some Member States have introduced measures to use public procurement as an instrument for innovation policy (e.g. Spain, Italy, Finland, Sweden, Denmark, etc.).
17.2 Set up an EU level support mechanism and facilitate joint procurement	• Financial support to transnational cooperation provided by the Commission; • Revised Public Procurement directives facilitating the procurement of innovation adopted by Parliament and Council in 2014; • Guidance and awareness raising activities carried out by the Commission. Remaining gaps: • Member States to transpose directives.	 • Joint procurement under FP7 calls.
18 Present an eco-innovation action plan	• Action Plan adopted in 2011.	 • Strategic Implementation Plan agreed in 2012 and currently under implementation.

COMMITMENT	ACTIONS DELIVERED	EXAMPLES OF IMPLEMENTATION
19.1 Establish a European Creative Industries Alliance	• European Creative Industries Alliance established in 2011.	✓ • More than €45 million mobilised on top of a €6.75 million EU support for the European Creative Industries Alliance; • Influence on the national schemes, including the National Creative Voucher scheme in Austria; • More than 3500 SMEs benefited from the activities of the European Creative Industries Alliance and an additional 2460 stakeholders participated in its activities.
19.2 Set up a European Design Leadership Board	• European Design Leadership Board established. It delivered proposals on how to enhance the role of design in innovation.	✓ • Staff Working Document 'Implementing an Action Plan for design driven innovation' published in 2013; • European Design Innovation Platform established; • European Design Innovation Initiative call.
20 Promote open access; support smart research information services	• Communication 'Towards better access to scientific information: boosting the benefits of public investments in research', including recommendations to Member States; • Open access in Horizon 2020; • Search tools developed.	✓ • ODIN project.
21 Facilitate collaborative research and knowledge transfer	• Clear and easy participation rules for Horizon 2020; • Analysis of impact on innovation of consortium agreements carried out; • Guidance on the use of consortium agreements produced and integrated into the Horizon 2020 online grants manual; • Analysis of knowledge transfer and open innovation.	✓ • European Technology Transfer Offices circle.
22 Develop a European knowledge market for patents and licensing	• Staff Working Document 'Towards enhanced patent valorisation for growth and jobs' published in 2012.	✓ • Expert groups on Intellectual Property valuation and on Patent valorisation established; • Pilot project will deliver results at the end of 2014; • Results of the expert group on patent valorisation to be delivered.
23 Safeguard against the use of IPRs for anti-competitive purposes	• Guidelines on horizontal agreements adopted in 2010.	✓ • These rules now apply to national competition authorities, the Commission; companies and national courts.

COMMITMENT	ACTIONS DELIVERED	EXAMPLES OF IMPLEMENTATION
24 & 25 **Improve the use of Structural Funds for research and innovation**	• Research and Innovation strategies for Smart Specialisation introduced in the strategic planning of Member States and regions; • Smart specialisation strategies introduced as an ex-ante conditionality to access European Regional Development Fund funding for research, technological development and innovation; • Commission support to Member States an regions; • Smart Specialisation Platform launched in 2012.	• National and regional smart specialisation strategies defined in most Member States/regions.
26 **Launch a Social Innovation pilot; promote social innovation in European Social Fund**	• Social Innovation Europe platform launched in 2011; • Bigger role for social innovation in the European Social Fund.	• European Social Innovation Competition; • Support to networks of incubators for social innovation.
27 **Support a research programme on public sector and social innovation; pilot a European Public Sector Innovation Scoreboard**	• Social and public sector innovation included in Horizon 2020 topics; • European Public Sector Innovation Scoreboard piloted.	• European Prize for Innovation in Public; • Expert group on public sector innovation; • iCapital.
28 **Consult social partners on interaction between the knowledge economy and market**	• EU social partners contacted and first consultations took place in 2013. Follow-up: • Further consultations planned in 2014 and beyond.	• European Workplace Innovation Network.
29 **Pilot and present proposals for European Innovation Partnerships**	• European Innovation Partnerships launched, piloted and evaluated.	• More than 700 commitments for action; • Reference sites for sharing lessons and replicating transferable results; • Web-based marketplaces with well over 1000 registered users for each; • First results emerging: collections of good practices and toolkits for their replication, compilations of evidence on impacts etc.

COMMITMENT	ACTIONS DELIVERED	EXAMPLES OF IMPLEMENTATION
30 Put in place integrated policies to attract global talent	• National measures being deployed to foster researchers' mobility; • Scientific Visa; • Marie Skłodowska Curie Actions; • Destination Europe Events. Remaining gaps: • New Scientific Visa to take effect in 2016, after transposition by Member States.	• EURAXESS and EURAXESS Links.
31 Propose common EU / Member States priorities and approaches for scientific cooperation with third countries	• Communication on enhancing and focusing EU international cooperation in research and innovation adopted in 2012. Remaining gaps: • On-going work of the Strategic Forum for International Cooperation to identify common priorities and implement joint actions. Roadmaps to be completed by the end of 2014; • Ongoing dialogues with third countries and world regions.	• Strategic Forum for International Cooperation initiatives targeting China, Brazil, India and the USA.
32 Roll-out global research infrastructures	• New framework for cooperation agreed in 2013 at G8 level. Remaining gaps (deadline 2012): • Report on list of existing infrastructures and priorities expected in 2015.	
33 Self-assess national research and innovation systems and identify challenges and reforms	• Commission support made available to Member States; • 5/28 Member States have requested peer reviewing; • Progress monitored through European Semester, leading to Country Specific Recommendations; • 3 countries confirmed use of Self-Assessment Tool. Follow-up: • New tool launched under Horizon 2020.	• Peer reviews carried out for Belgium, Estonia, Denmark, Spain and Iceland.
34.1 Develop an innovation headline indicator	• Communication 'Measuring innovation output in Europe: towards a new indicator' adopted in 2013.	• Indicator used for Country Specific Recommendations in 2014.
34.2 Monitor progress using Innovation Union Scoreboard	• Innovation Union Scoreboard updated in 2010.	• Innovation Union Scoreboard published yearly. Latest available issue in 2014.

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The Innovation Union was placed at the heart of the Europe 2020 strategy in 2010 with the aim to foster Europe's capacity to innovate. Innovation is indeed considered essential to preserve and improve Europe's competitiveness and its ability to create jobs and to tackle societal challenges.

Four years after its launch, this Staff Working Document (SWD) takes stock of how it has been implemented and what first results it has delivered, keeping in mind that the Innovation Union is a ten years long strategy.

The Innovation Union is succeeding in building momentum around innovation, mobilising stakeholders and mainstreaming innovation in key European, national and regional policies.

As a comprehensive strategy, the Innovation Union addresses a wide range of elements that impact Europe's innovation eco-system and is succeeding in changing it. Excellent progress has been made in delivering on each of the Innovation Union building blocks.

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