EUROPEAN COMMISSION BRUSSELS, 6.10.2010 COM(2010) 546 FINAL

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

EUROPE 2020 FLAGSHIP INITIATIVE, INNOVATION UNION, SEC(2010) 1161

Executive Summary

At a time of public budget constraints, major demographic changes and increasing global competition, Europe's competitiveness, our capacity to create millions of new jobs to replace those lost in the crisis and, overall, our future standard of living depends on our ability to drive innovation in products, services, business and social processes and models. This is why innovation has been placed at the heart of the Europe 2020 strategy. Innovation is also our best means of successfully tackling major societal challenges, such as climate change, energy and resource scarcity, health and ageing, which are becoming more urgent by the day.

Europe has no shortage of potential. We have world leading researchers, entrepreneurs and companies and unique strengths in our values, traditions, creativity and diversity. We have made great strides in creating the largest home market in the world. European enterprises and civil society are actively engaged in emerging and developing economies around the world. Many world-changing innovations can be traced back to Europe. But we can – and must do – much better. In a rapidly changing global economy, we must build on our strengths and decisively tackle our weaknesses:

– Under-investment in our knowledge foundation. Other countries, like the US and Japan, are out-investing us, and China is rapidly catching up.
– Unsatisfactory framework conditions, ranging from poor access to finance, high costs of IPR to slow standardisation and ineffective use of public procurement. This is a serious handicap when companies can choose to invest and conduct research in many other parts of the world.
– Too much fragmentation and costly duplication. We must spend our resources more efficiently and achieve critical mass.

Perhaps the biggest challenge for the EU and its Member States is to adopt a much more strategic approach to innovation. An approach whereby innovation is the overarching policy objective, where we take a medium- to longer-term perspective, where all policy instruments, measures and funding are designed to contribute to innovation, where EU and national/regional policies are closely aligned and mutually reinforcing, and last but not least, where the highest political level sets a strategic agenda, regularly monitors progress and tackles delays.

Innovation Union sets out such a bold, integrated and strategic approach, exploiting and leveraging our strengths in new and productive ways – and thereby maintain the economic foundation that supports our quality of life and our social model as our population ages. Business-as-usual equals gradually losing our competitive advantages, and accepting Europe's steady decline.

Concretely, to achieve Innovation Union, the following is needed:
1. In times of fiscal constraints, the EU and Member States need to continue to invest in education, R&D, innovation and ICTs. Such investments should where possible not only be protected from budget cuts, but should be stepped up.

2. This should go hand in hand with reforms to get more value for money and tackle fragmentation. EU and national research & innovation systems need to be better linked up with each other and their performance improved.

3. Our education systems at all levels need to be modernised. Excellence must even more become the guiding principle. We need more world-class universities, raise skill levels and attract top talent from abroad.

4. Researchers and innovators must be able to work and cooperate across the EU as easily as within national borders. The European Research Area must be completed within four years – putting in place the frameworks for a truly free movement of knowledge.

5. Access to EU programmes must be simplified and their leverage effect on private sector investment enhanced, with the support of the European Investment Bank. The role of the European Research Council should be reinforced. The framework programme's contribution to nurturing fastgrowing SMEs must be boosted. The European Regional Development Fund should be fully exploited to develop research and innovation capacities across Europe, based on smart regional specialisation strategies.

6. We need to get more innovation out of our research. Cooperation between the worlds of science and the world of business must be enhanced, obstacles removed and incentives put in place.

7. Remaining barriers for entrepreneurs to bring "ideas to market" must be removed: better access to finance, particularly for SMEs, affordable Intellectual Property Rights, smarter and more ambitious regulation and targets, faster setting of interoperable standards and strategic use of our massive procurement budgets. As an immediate step, agreement should be reached on the EU patent before the end of the year.

8. European Innovation Partnerships should be launched to accelerate research, development and market deployment of innovations to tackle major societal challenges, pool expertise and resources and boost the competitiveness of EU industry, starting with the area of healthy ageing.

9. Our strengths in design and creativity must be better exploited. We must champion social innovation. We must develop a better understanding of public sector innovation, identify and give visibility to successful initiatives, and benchmark progress.

10. We need to work better with our international partners. That means opening access to our R&D programmes, while ensuring comparable conditions abroad. That also means adopting a common EU front where needed to protect our interests.

This, in essence, is what Innovation Union is all about. The benefits will be significant: according to recent estimates, achieving our target of spending 3% of EU GDP on R&D by 2020 could create 3.7 million jobs and increase annual GDP by close to €800 billion by 2025[1]. Realising it will require the full and sustained support of the European Council and the European Parliament, Member State governments, businesses, public authorities, researchers and the public.

With Innovation Union, we have a vision, an agenda, a clear distribution of tasks and robust monitoring procedures. The European Commission will do what is necessary to make the Innovation Union a reality.

1 P. Zagamé (2010) The Cost of a non-innovative Europe.

1. INTRODUCTION

As public deficits are reined in to repair public finances and as our labour force begins to shrink, what will be the basis for Europe's future competitiveness? How will we create new growth and jobs? How will we get Europe's economy back on track?

How will we tackle growing societal challenges like climate change, energy supply, the scarcity of resources and the impact of demographic changes? How will we improve health and security and sustainably provide water and high-quality, affordable food?

The only answer is innovation, which is at the core of the Europe 2020 Strategy2 agreed by Member States at the June 2010 European Council, underpinning the smart, sustainable and inclusive growth the Strategy is aiming for. The "Innovation Union" is one of the seven flagships announced in the Europe 2020 Strategy. It aims to improve conditions and access to finance for research and innovation, to ensure that innovative ideas can be turned into products and services that create growth and jobs.

The Innovation Union has been developed alongside the flagship initiative on a Industrial Policy for the Globalisation Era, which aims to ensure a strong, competitive, and diversified manufacturing value chain, with particular emphasis on Small and Medium Sized Enterprises. It complements other flagship initiatives, such as the Digital Agenda, Youth on the Move and the Agenda for New Skills and Jobs. In conjunction with the Innovation Union, these will improve conditions for innovation, including by accelerating the roll-out of high speed internet and its applications, by securing a strong industrial base, and by promoting excellent education systems, modern labour markets, and the right skills mix for Europe's future labour force. Other major policies such as the re-launch of the single market through the Single Market Act, an effective competition policy and better access to third country markets through a new trade strategy, will also complement and strengthen the Innovation Union.

This Communication addresses the challenges and opportunities facing Europe in key areas where urgent and sustained efforts are required. It sets out clearly the key European, national and regional initiatives needed to create the Innovation Union[3].

Europe starts from a position of strength. Today, a number of Member States are world leaders in manufacturing, creativity, design, aerospace, telecommunications, energy and environmental technologies. We have regions amongst the most innovative in the world. Our economies are supported by some of the world's most dynamic public services and strong traditions in social innovation.

Yet we can and must do much better. We are under-investing in our knowledge base, spending every year 0.8% of GDP less than the US and 1.5% less than Japan in R&D – with major gaps in business R&D, venture capital investments4 - and our education system needs reform. Private sector R&D is increasingly outsourced to emerging economies and thousands

2 COM (2010) 2020

3 The initiatives proposed in Innovation Union are supported by the analyses provided in the accompanying staff working document, SEC (2010) 1160

4 Business R&D in the EU is 66% lower than the US and 122% lower than Japan, as a share of GDP; venture capital investments are 64% lower than the US; and the share of population completing tertiary education is 69% lower than the US and 76% lower than Japan (See Annex II).

of our best researchers and innovators have moved to countries where conditions are more favourable. According to recent estimates, achieving our target of spending 3% of EU GDP on R&D by 2020 could create 3.7 million jobs and increase annual GDP by close to €800 billion by 20255. Too few of our innovative SMEs grow into large companies. Although the EU market is the largest in the world, it remains fragmented and insufficiently innovationfriendly. Although our services sector accounts for 70% of the economy, our knowledgeintensive services are still under-developed.

Countries like China and South Korea are catching up fast and moving from being imitators to leaders in innovation (see EU-China comparisons in Annex II). Unlike the EU, they are pursuing a strategic approach to creating an innovation-friendly environment.

Their development creates huge market opportunities and new cooperation potential, but also considerable pressure on our companies. Meanwhile, the United States and Japan continue to lead the EU in innovation performance. The European Union needs to confront its challenges head on and to exploit its huge scientific and innovation potential. The EU must:

• Tackle unfavourable framework conditions: private investment in research and innovation is being held back and ideas prevented from reaching the market by poor availability of finance, costly patenting, market fragmentation, outdated regulations and procedures, slow standard-setting and the failure to use public procurement strategically. Moreover, barriers in the single market make it more difficult for different players to work together across border, using and sharing knowledge from all sources, which is increasingly how successful innovations are developed.

• Avoid fragmentation of effort: national and regional research and innovation systems are still working along separate tracks with only a marginal European dimension. This leads to costly duplication and overlap which is unacceptable at a time of tight finances. By better pooling our efforts and focusing on excellence, and by creating a true European Research Area, the EU can enhance the quality of research and Europe's potential for major breakthroughs and increase the effectiveness of the investments needed to get ideas to market.

In a global environment, Europe must also develop its own distinctive approach to innovation which builds on its strengths and capitalises on its values by:

• Focusing on innovations that address the major societal challenges identified in Europe 2020, strengthening our leadership in key technologies, reaping the potential these markets offer for innovative businesses, and enhancing EU competitiveness. Innovation must become a key element in EU policies and the EU must use the strong potential of the public sector in areas such as energy and water, health, public transport and education, to bring new solutions to the market.

• Pursuing a broad concept of innovation, both research-driven innovation and innovation in business models, design, branding and services that add value for users and where Europe has unique talents. The creativity and diversity of our people and the strength of European creative industries, offer huge potential for new growth and jobs through innovation, especially for SMEs.

5 P. Zagamé, (2010) The cost of a non-innovative Europe, http://ec.europa.eu/research/socialsciences/policy-briefs-research-achievements_en.html

• Involving all actors and all regions in the innovation cycle: not only major companies but also SMEs in all sectors, including the public sector, the social economy and citizens themselves ('social innovation'); not only a few high-tech areas, but all regions in Europe and every Member State, each focusing on its own strengths ("smart specialisation") with Europe, Member States and regions acting in partnership.

In addition, given that undistorted competition and well functioning competitive markets are key for innovation, a strict enforcement of competition rules that ensure market access and opportunities for new entrants is a necessary condition.

Alongside the European Parliament, the European Council will monitor Europe's performance on the thematic areas of the Europe 2020 strategy. The first such assessment will be devoted to research and innovation in December 2010. To achieve the Innovation Union there needs to be a sea change. In the post-crisis world, Europe must move away from "business as usual" and make innovation its overarching policy objective. What is needed to transform the EU economy into a genuine Innovation Union is political leadership, bold decisions and determined implementation.

The European Union should commit to creating a true "Innovation Union" by 2020 by:

– Taking collective responsibility for a strategic, inclusive and business-oriented research and innovation policy, to tackle major societal challenges, raise competitiveness and generate new jobs. The Commission will reflect this strategic approach to innovation in all its policies and invites the other EU institutions to do likewise.

– Prioritising and protecting investments in our knowledge base, reducing costly fragmentation and making Europe a more rewarding place for innovation and for bringing ideas to market. A deadline of 2014 should be set for delivering the European Research Area.

– Agreeing to launch European innovation partnerships, the first on active and healthy ageing, to pool resources and expertise to find solutions to societal challenges and to build competitive advantage in key markets.

2. STRENGTHENING THE KNOWLEDGE BASE AND REDUCING FRAGMENTATION

2.1. Promoting excellence in education and skills development

Massive programmes of education, training and promotion of research and innovation careers have been set up in many countries across the world. The EU must ensure that it has a sufficient supply of highly qualified workers, who should be offered attractive careers and easy mobility across sectors and countries; otherwise innovative investments and talent will move elsewhere[6].

The starting point for the Innovation Union is to create an excellent, modern education system in all Member States. Although Europe has a good basic education system compared to many

6 Policies and measures to promote access to quality education, well-functioning labour markets and skills development will be addressed in the Europe 2020 flagships "Youth on the move" and "New skills for new jobs", respectively.

parts of the world, significant weaknesses remain with science teaching in some Member States. There are still too few girls taking science to an advanced level. Moreover, innovation is now needed in almost all walks of life: schools must ensure that all young people are ready to meet this challenge.

Higher education reform is equally urgent. Most European universities do not attract enough top global talent, with relatively few in leading positions in existing international rankings. European universities should be freed from over-regulation and micro-management in return for full institutional accountability. Universities also need more diversity in their missions and outlook, with smarter specialisation across different fields.

The number of researchers in Europe as a share of the population is well below that of the US, Japan and other countries. The EU will need at least one million new research jobs if it is to reach the R&D target of 3%. The number of researchers required is significantly higher, as many researchers will retire over the next decade. The EU and its Member States should strengthen their capacity to attract and train young people to become researchers and offer internationally competitive research careers to keep them in Europe and attract the best from abroad. In this respect, the Marie Curie fellowships under the Research Framework Programme are playing an important role to strengthen the skills development, mobility and careers of researchers across borders.7 More broadly, more needs to be done to address innovation skills shortages and to implement European e-skills agenda8. This is crucial to accelerate the development and the adoption of innovative business models by European enterprises, especially SMEs.

Businesses should also be more involved in curricula development and doctoral training so that skills better match industry needs building for instance on the University Business Forum9. There are good examples of inter-disciplinary approaches in universities bringing together skills ranging from research to financial and business skills and from creativity and design to intercultural skills10.

Innovation Union commitments

1. 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.

2. In 2011 the Commission will, on the basis of the current preparatory work[11], 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. The Commission will also support business-academia collaborations through the creation of "Knowledge Alliances" between education and business to develop new

7 http://ec.europa.eu/research/mariecurieactions/
8 Ref. "e-Skills for the 21st Century: Fostering Competitiveness, Growth and Jobs", COM(2007) 496
9 Cf. http://ec.europa.eu/education/higher-education/doc1261_en.htm
10 The new Aalto University in Finland is an example.

11 Feasibility study for a multidimensional global ranking of universities, http://www.u-multirank.eu; Assessing Europe's University-Based Research, http://ec.europa.eu/research/sciencesociety/document_library/pdf_06/assessing-europe-university-based-research_en.pdf

curricula addressing innovation skills gaps (see also commitment 3 on e-skills). They will help universities to modernise towards inter-disciplinarity, entrepreneurship and stronger business partnerships.

3. 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.

2.2. Delivering the European Research Area

Given the need for value for money, it is more vital than ever to avoid costly overlaps and unnecessary duplication in national research. It is essential to create a genuinely unified European Research Area, in which all actors, both public and private, can operate freely, forge alliances and gather critical mass in order to compete and cooperate on a global scale. Groups of national representatives and the European Commission have been working on five main areas: human resources, research programmes, research infrastructures, knowledge sharing (see section 3.3) and international S&T cooperation (see section 6). But Europe's researchers, research institutions and funding agencies still face many legal and practical obstacles that prevent them from operating freely, particularly across borders. The completion of the European Research Area is a legal requirement. The Council and Parliament have called for it. Progress needs to be accelerated and steered through a common framework of principles and objectives. The Union should set a deadline of end 2014 for achieving a wellfunctioning European Research Area.

The whole system of support to R&D has become much too complex in Europe. Potential beneficiaries face a multitude of national and regional programmes and intergovernmental initiatives as well as EU funding procedures. The rules and time-tables of the myriad existing instruments are not aligned. This creates a huge administrative burden and can discourage participation, particularly by SMEs, and cross-border cooperation. Recent work, involving stakeholders and funding agencies, to simplify procedures and conditions and make them coherent with each other must be given high priority.

Ground-breaking research and innovation increasingly require world-class infrastructures. They attract global talent into innovative clusters and are an essential breeding ground for ICTs and key enabling technologies such as micro and nanoelectronics, biotechnologies, new materials and advanced manufacturing. Given their increasing complexity, scale and costs, the resources to build and operate them must be pooled across Europe and in some cases globally. Major progress has been made through the European Strategy Forum on Research Infrastructures (ESFRI), which has agreed priorities and catalysed investments in major infrastructures. In addition much progress has been made in the deployment of ICT infrastructures for research. In the context of scarce public resources, these investments should be given political priority and new funding mechanisms developed. Moreover, research infrastructures should continue their opening to, and partnership with, industrial researchers to help address societal challenges and to support EU competitiveness.

Innovation Union commitments

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

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

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

supplementary pension funds;

- cross-border operation of research performing organisations, funding agencies and foundations, including by ensuring simplicity and mutual coherence of funding rules and procedures, building on the work of stakeholders, funding agencies and their representative organisations;
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- dissemination, transfer and use of research results, including through open access to publications and data from publicly funded research;

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

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

5. 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)[12]. 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.

2.3. Focusing EU funding instruments on Innovation Union priorities

The EU research and innovation programmes have served the EU well by focusing on excellence at European level. The success of the European Research Council shows that this is the way forward. The priority setting process for the cooperation part of the Framework Programme, involving many stakeholders across Europe, provides a unique added value and a basis for priorities defined in many Member State programmes. Major progress has also been made in developing partnerships to jointly implement research funding with Member States and with industry[13].

Building on these developments, EU research and innovation funding instruments need to be streamlined and to focus on the objectives of Innovation Union. Support to the whole chain of research and innovation must be strengthened and made more coherent, from blue sky research to market uptake. Funding opportunities should meet the needs of different participants, in particular SMEs with the potential to turn the results into new products and services.

12 http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri-roadmap
13 Partnerships based on EU Treaty articles 185 and 187 (Joint Technology Initiatives).

Moreover, the integration of the research and innovation dimensions should be reflected in EU funding programmes, including the Framework Programme, the Competitiveness and Innovation Framework Programme and the Cohesion Funds. They also need to be better coordinated in design and implementation so as to maximise impact, user-friendliness and EU added value.

There is still much scope for simplification. Researchers and innovators should spend more time in the lab or doing business and less on paperwork. Quick progress is possible as regards the Framework Programme14 if rapid decisions on the Commission proposals for revising the Financial Regulations are taken.

While technologies such as air travel and telecommunications transformed economies in the 20th century, growth is also now being driven increasingly by other key enabling technologies, such as eco, nano, bio, and info. These technologies may affect all areas of our lives and regulatory frameworks must be based on scientific evidence with transparent information and involvement of citizens. In this way Europe can ensure public trust in scientific and technological breakthroughs and provide a favourable environment for investment. This should be underpinned by a reinforced forward-looking capacity (including foresight, forecasting, technology assessment and modelling). While such activities are ongoing at different levels, they need to be pulled together and used effectively in the policy making.

6. 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.

7. 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.

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

2.4. Promoting the European Institute of Innovation and Technology (EIT) as a model of innovation governance in Europe

The creation of the European Institute of Innovation and Technology (EIT) has provided a powerful new impetus to integrate the three sides of the "knowledge triangle" (education, research and innovation) for the first time at EU level by promoting new models of

14 Commission Communication "Simplifying the implementation of the research Framework Programmes", COM(2010) 187
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governance and financing. It is a pioneer and a role model for stimulating innovation in Europe. Covering the entire innovation chain, its Knowledge and Innovation Communities (KICs) aim to bring the world's best creative and innovative partners from research, business and academia to work together on major societal challenges. The EIT will thus foster innovation-driven research as well as business creation and development, including through entrepreneurial education, which will be recognised in multi-disciplinary "EIT-branded" degrees that partner universities within the KICs will award. New flexible financing of highrisk entrepreneurial activities and leveraging philanthropic funds in support of innovation will be developed by the EIT Foundation.

Innovation Union commitment 9. By mid-2011, the EIT should set out a Strategic Innovation Agenda to expand its activities as a showcase for Innovation in Europe. This should map out its long term development within the Innovation Union, including the creation of new KICs, close links with the private sector and a stronger role in entrepreneurship. It should also build on the EIT Foundation being set up in 2010 and on the introduction in 2011 of the "EIT degree" as an internationally recognised label of excellence.

3. GETTING GOOD IDEAS TO MARKET

Europe's entrepreneurs currently face multiple obstacles and adverse framework conditions in getting ideas to market. At European level, this chain of obstacles needs to be systematically removed and a single market for innovation created.

3.1. Enhancing access to finance for innovative companies

Europe must invest in the development of good ideas. This is primarily the role of the private sector. Yet Europe invests about €15 billion a year less in venture capital than in the US and a €100 billion more in business R&D investment is needed every year to reach the 3% of GDP target.15 Banks are reluctant to lend to knowledge-based companies that lack collateral. The financial crisis has made a bleak picture worse.

There are a number of major market gaps. During the technology transfer and start-up phase, new companies face a "valley of death" where public research grants stop and it is not possible to attract private finance. Public support aiming to leverage private seed and start-up funds to fill this gap is currently too fragmented and intermittent or its management lacks the necessary expertise.

Innovative companies with the potential to expand into international markets have limited access to growth finance from venture capital. Most venture capital funds in Europe are too small to support the continued growth of innovative companies and do not have the critical mass to specialise and operate trans-nationally. Europe needs to improve its venture capital market by creating incentives to invest and by improving regulation.

15 Latest available data from 2008, including Venture Capital at early stage and expansion.

Many established innovative companies – both large and small – face a shortage of higher risk loans. Banks lack the ability to value knowledge assets, such as intellectual property, and therefore are often unwilling to invest in knowledge-based companies. Loans are also needed to help fund major infrastructure projects.

Closing these gaps, and making Europe an attractive place to invest in innovation, requires the intelligent use of public private partnerships as well as changes to the regulatory framework. All of the remaining barriers to venture capital funds operating cross-border need to be removed. Listing of stock of innovative companies must be simplified to ease access to capital16. State aid Risk Capital guidelines allow Member States to cover gaps in finance available on the market. The size of the funding gap is being reassessed to ensure that it is adequate for current conditions..

At EU level, the current Risk Sharing Finance Facility under FP7 (RSFF) and the financial instruments of the Competitiveness and Innovation Framework Programme (CIP)17 have leveraged investments worth well over twenty times the contribution from the EU Budget18, and have been unable to keep up with demand. The expertise and market standing of the European Investment Bank (EIB) Group in managing these financial instruments has been a major factor in their success. The Commission proposals for changes in the Financial Regulations will make future schemes of this type much simpler to implement. As flagged in the Europe 2020 strategy, there may be opportunities to bring in further innovative incentive mechanisms linked to the carbon market, namely for fast-movers. The Commission will further explore this idea.

Innovation Union commitments

10 By 2014: on the basis of Commission proposals, the EU should put in place financial instruments to attract a major increase in private finance and close the market gaps in investing in research and innovation. Contributions from the EU budget should create a major leverage effect and expand on the success of FP7 and CIP. The Commission will work with the European Investment Bank Group, national financial intermediaries and private investors to develop proposals addressing the following critical gaps: (i) investment in knowledge transfer and start ups; (ii) venture capital for fast growing firms expanding on EU and global markets; (iii) risksharing finance for investments in R&D and innovation projects; and (iv) loans for innovative fast growing SMEs and midcaps. The proposals will ensure a high leverage effect, efficient management and simple access for businesses 16 See the forthcoming Commission Communication on a “Single Market Act” 17 The RSFF is an credit risk sharing scheme jointly set up by the EC and the EIB to improve access to debt financing for private companies or public institutions promoting activities with a higher financial risk profile in the fields of research, technological development, demonstration and innovation. The CIP financial instruments cover, loan guarantees and venture capital, and are managed by the EIF. 18 To date, contributions for the RSFF of €430 million from the EU budget and €800 million from the EIB, as risk-sharing partners, have supported over € 18 billion investments (15 times the combined contribution to the RSFF and 42 times the EU budget contribution). The €400 million contribution to the CIP financial instruments up to the end of 2009 has leveraged investments of €9 billion (22 times the budget contribution), benefiting some 68000 SMEs.

11. By 2012, the Commission will ensure that Venture Capital funds established in any Member State can function and invest freely in the EU (if necessary by adopting a new legislative regime). It will endeavour to eliminate any tax treatment unfavourable to cross-border activities.

12. 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.

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

3.2. Creating a single innovation market

The sheer size of the single market, supported by empowered consumers, should attract innovative investments and businesses, spur competition for the best innovations, and enable entrepreneurs to commercialise successful innovations and grow their businesses rapidly. However, the reality is too often one of fragmented national markets with costly procedures. A Single Market Act is being brought forward to address the remaining obstacles to the functioning of the internal market.

A critical issue for innovation investments in Europe is the cost and complexity of patenting. Obtaining a patent protection for all 27 EU Member States is currently at least 15 times more expensive than patent protection in the US19, largely due to translation and legal fees. The absence of a cheap and simple EU patent is a tax on innovation. The EU Patent has become a symbol for Europe's failure on innovation. It would save innovative businesses an estimated €250 million and must be adopted without delay, to show that the EU is serious about becoming an Innovation Union.

The potential of the single market should also be activated through policies that stimulate the demand for innovation, starting with an effective competition policy. Whereas most previous EU policy initiatives have focused on supply-side measures which tried to push innovation, demand-side measures give markets a greater role in "pulling" EU innovation by providing market opportunities. Initial steps have been taken under the EU Lead Market Initiative but a bolder approach associating the supply and demand sides is needed.

Smart and ambitious regulation can be a key driver for innovation, particularly when dynamic and market- based approaches are used. This is particularly important for eco-innovation. Stricter environmental targets and standards, for example on CO2 emissions from vehicles, which establish challenging objectives and provide long-term predictability, provide a major boost for eco-innovation. Harmonised rules for product approvals are often essential. For 19 Economic cost-benefit analysis of the Community patent", by Prof. Bruno van Pottelsberghe (2009). example, without rules ensuring type-approval, the introduction of green vehicles on Europe's roads will not work.

Standards play an important role for innovation. By codifying information on the state of the art of a particular technology, they enable dissemination of knowledge, interoperability between new products and services and provide a platform for further innovation. For example, the opening of the telecommunications market combined with the GSM standard laid the foundation for Europe's success in mobile phones. However, standards play this useful role only if they keep pace with the development of new technologies. The rapid shortening of innovation cycles and the convergence of technologies across the boundaries of the three European standardisation organisations are a particular challenge. If not able to adapt, the European standardisation system risks becoming irrelevant with companies turning instead to other instruments (as could be seen in the ICT sector) or worse could start to work as a brake on innovation. A dynamic standardisation system is also a pre-condition for the EU to maintain and further reinforce its impact on the setting of standards at global level, where other countries are increasingly seeking to set the rules.

Big customers play a crucial role in stimulating and funding high technology companies. The US spends at least 49 billion dollars/year20 on pre-commercial procurement (i.e. procurement of R & D), some of it via its Small Business Innovation Research (SBIR) programme. 21 It spends even more on procurements of innovation beyond R& D (new technologies, products and services).

Public procurement accounts for some 17% of the EU's GDP. It represents an important market, particularly in areas such as health, transport and energy. So, Europe has an enormous and overlooked opportunity to spur innovation using procurement.. Moreover, public procurement of innovative products and services is vital for improving the quality and efficiency of public services at a time of budget constraints. Yet little public procurement in Europe is aimed at innovation, despite the opportunities under the EU procurement directives. This is due to a range of factors, such as: incentives that favour low-risk solutions; a lack of knowledge and capabilities regarding successful procurement of new technologies and innovations; and a disconnection between public procurement and policy objectives. This can be better addressed through guidance and sharing of best practice, notably in the area of green public procurement. Moreover, because public procurement markets remain fragmented across Europe, procurements often fail to achieve the critical scale needed to trigger innovative investments.
Several Member States are pioneering ways to support innovation using pre-commercial procurement and approaches that adapt the successful US SBIR scheme to the EU context.22 The results have been encouraging, in particular for SMEs (although the procurements are not restricted to SMEs). If such an approach could be applied more widely and combined with joint procurement between different contracting entities, huge markets could be created that would boost innovation and new innovative businesses.

21 The US obliges its federal agencies by law to devote 2.5 % of their external R & D budgets to funding innovative projects by SMEs 22 Such as the UK SBRI and Dutch SBIR schemes that offer contracts to develop solutions to specific challenges identified in public services. These schemes follow the approach set out in the Commission Communication on Pre-Commercial Procurement. The US reserves part of its federal budget to support innovation through its SBIR programme with considerable success.

Innovation Union commitments

14. The European Parliament and Council should take the necessary steps to adopt the proposals on the EU patent, its linguistic regime and the unified system of dispute settlement. The objective is that the first EU patents are delivered in 2014. 15 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 (see next section). 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.

16. 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.

17. 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, see Section 5). 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 p procurements easier.

18. 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.

3.3. Promoting openness and capitalising on Europe's creative potential

Companies innovate in various ways. While some conduct R&D and develop new technologies, many base their innovations on existing technologies or develop new business models or services driven by users and suppliers, or within clusters or networks. Policies must therefore be designed to support all forms of innovation, not only technological innovation. Specific approaches may also be needed for innovative services with high growth potential, particularly in the cultural and creative industries.23

Design is of particular importance and is recognised as a key discipline and activity to bring ideas to the market, transforming them into user-friendly and appealing products. Although some European countries are world leaders in design, others lack a robust design infrastructure and design capability in companies and engineering schools. This systemic gap has largely gone unnoticed but must now be tackled.

As the problems grow more complex, and the costs of innovation increase, firms are increasingly being driven to collaborate. While they still carry out in-house development, this is often complemented with activities to identify, recognise and transfer ideas from external sources, such as universities or start ups. They sometimes co-innovate with users and consumers in order to better satisfy their needs or create new routes to market. This trend is being fuelled by social networking and cloud, mobile and collaborative computing and is spreading across manufacturing and service sectors. It also has major implications for research, science, education and government itself. These trends to open and collaborative innovation have major policy implications. While it is important to find the right balance between facilitating the diffusion of knowledge and providing sufficient incentives for innovation, the Commission believes that these trends will bring long-term economic and social benefits and should be supported.

It is therefore more important than ever to deliver the so-called "fifth freedom", which is not only the free movement of researchers but also the free movement of innovative ideas. Genuinely open innovation requires brokerage, intermediaries and networks in which all players can participate on an equal basis. Internationally competitive clusters play a vital role in bringing together – physically and virtually - large companies and SMEs, universities, research centres and communities of scientists and practitioners to exchange knowledge and ideas. Knowledge transfer between business and academia should be strengthened, and made to happen trans-nationally. The Enterprise Europe Network provides trans-national technology transfer, brokerage and other innovation and business-related support services and helps SMEs to operate internationally. This should be reinforced and further improved. The results of publicly-funded research should be made more accessible and available. Research information systems should be improved, linked up, and made more inter-operable, including with the Enterprise Europe technology transfer database BBS. Public Sector Information should be more available for research and innovation (as proposed under the Digital Agenda, where the Commission plans to adopt an ambitious revision of the Re-use of Public Sector Information Directive in 2012).

A key issue is how to increase the flows of, and therefore benefits from, Intellectual Property Rights (IPRs, including patents, design and copyrights). While the EU Patent should 23 See Commission Green Paper on "Unlocking the potential of cultural and creative industries", COM(2010) 183 final

dramatically reduce the cost of patenting in Europe, particularly for SMEs, the economic benefits will flow from the exploitation of IPRs in innovative products and services. This is critical in sectors such as semi-conductors and telecoms where companies need to bundle together many existing technologies and therefore require

access rights to a range of IPRs. The markets for trading IPRs need to become less opaque and fragmented so that IPR buyers and sellers can find each other efficiently, financial investments are made in IPR assets, and transactions take place on fair terms. Although a number of initiatives are emerging both at Member State level and internationally24, they should be developed on a European scale for maximum efficiency and to take advantage of economies of scale and scope. These knowledge markets should be open to new entrants and unlock the potential of IPRs that lie dormant in universities, research institutes and companies. This could generate major new revenue flows, which could be re-invested in research, thus creating a virtuous cycle. Beyond the IP support that is currently provided through the IPR-Helpdesk and co-operation with national patent offices, SMEs need stronger assistance for efficient use of intellectual and industrial property protection to have a level playing field with larger companies.

For knowledge markets to work effectively, the relationship between intellectual property and competition policy requires in-depth consideration. This has a number of facets. First, the scope of intellectual property protection and the high quality of patents granted in Europe should be maintained to ensure that legal rights are clearly defined. Second, although collaborative IPR arrangements (cross-licensing, patent pools, etc) generally have a positive impact, they also need to be examined to ensure they are not used anti-competitively. Third, standard setting processes require clear IPR rules to avoid situations where a company can gain unfair market power by incorporating proprietary IPRs in a standard.

Innovation Union commitments

19. In 2011, the Commission will set up a European Design Leadership Board which will be invited to make proposals within a year to enhance the role of design in innovation policy, for example through EU and/or national programmes, and a "European Design Excellence" label. As part of the follow up to the Green Paper on cultural and creative industries, the Commission will establish a European Creative Industries Alliance to develop new forms of support for these industries and promote the wider use of creativity by other sectors.

20. 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.

21. 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 24 Such as the intellectual property market place of the Danish Patent Office and the joint initiative of the French Caisse des Dépots and US Bank Ocean Tomo also needed to further strengthen knowledge transfer offices in public research organisations, in particular through trans-national collaboration.

22. 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. 23. 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.

4. MAXIMISING SOCIAL AND TERRITORIAL COHESION

4.1. Spreading the benefits of innovation across the Union

The Innovation Union must involve all regions. The financial crisis is having a disproportionate impact on some

less performing regions and hence risks undermining recent convergence.25 Europe must avoid an "innovation divide" between the strongest innovating regions and the others.

The Structural Funds have a critical role and already provide substantial investments in research and innovation. Some €86 bn has been programmed for the current financing period (2007-13). Much of these funds are still unspent and should be used more effectively for innovation and achieving the Europe 2020 objectives. Currently, too much funding is allocated to overlapping projects or to priorities where a region lacks relative strengths. Regions need to redirect funding based on a smart specialisation approach and focus on relative strengths where they can become excellent.

There are a number of other ways that Structural Funds can be used more effectively. Relatively little is spent in pooling resources and expertise through trans-national projects26, for example to support research infrastructures or the emergence of world-class clusters. Greater use can be made of financial instruments to leverage private finance for research and innovation. Public procurements co-financed by the Structural Funds should also be used to increase demand for innovative products and services. The European Social Funds could be deployed more effectively to train and retrain people with the skills needed for the Innovation Union. European level programmes to support trans-regional cooperation (e.g. FP7 Regions of Knowledge, CIP funded cluster initiatives and Enterprise Europe Network, and operations co-financed under the European Territorial Cooperation programmes) should be consolidated to better assist regions and increase impacts on regional development. Moreover, there should be incentives in future programmes for co-operation between leading innovation regions and those in catching-up Member States.

25 Conclusions of 2009 European Innovation Scoreboard

26 Using the possibility under Article 37 (6b) of Regulation EC No. 1083/2006.

Innovation Union commitments

24. 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.

25. 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.

4.2. Increasing social benefits

Social innovation is an important new field which should be nurtured. It is about tapping into the ingenuity of charities, associations and social entrepreneurs to find new ways of meeting social needs which are not adequately met by the market or the public sector. It can also be about tapping into this same ingenuity to bring about the behavioural changes which are needed to tackle the major societal challenges, such as climate change. As well as meeting social needs and tackling societal challenges, social innovations empower people and create new social relationships and models of collaboration. They are thus innovative in themselves and good for society's capacity to innovate.

Examples of social innovation in Europe range from coronary heart disease prevention schemes which target the whole community rather than just 'at risk' individuals, social networks of helpful neighbours for old people living on their own, urban Eco-maps which provide local communities with information on their progress towards meeting emissions reduction targets or ethical banks which provide financial products which seek to maximise social and environmental returns on investment.

However, while there is no shortage of good ideas, social innovations are not yet producing the impact that they should. There must be more support for experimentation. Approaches that have clear advantages over current practice then need to be scaled up and disseminated. To achieve this, competent intermediaries, effective incentives and networks speeding up and facilitating mutual learning are needed. Across Europe, infrastructures of this kind already exist for business innovation, yet there are currently no equivalents for social innovation. Better evaluation methods are needed to identify what works and what does not, and why, as well as what could and should be scaled up.

To meet the evolving needs and expectations of public service users against a backdrop of fiscal austerity, the public sector needs to innovate more than ever. More and more governments are embracing more citizen-centred approaches to service delivery. Many have launched e-government strategies aimed at moving existing services online, and beyond that to develop new internet-enabled services. At EU level it is important to develop a better understanding of public sector innovation, to give visibility to successful initiatives, and benchmark progress. Much will depend on creating a critical mass of public sector leaders who have the skills to manage innovation. This can be achieved through more sophisticated training, as well as opportunities to exchange good practice.

The shift to an innovative economy has major implications for the world of work. Employers need workers who actively and constantly seek out new and better ways of doing things. This requires not only higher skills levels, but a new, trust-based relationship between employer and employee. This kind of approach is needed at all occupational levels, and must extend to sectors not usually thought of as "knowledge sectors." A prime example is the caring sector, where a skilled, motivated and adaptable workforce is needed to provide a high standard of care to the increasing numbers of older Europeans.

26. 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

27. 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.

28. 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.

5. POOLING FORCES TO ACHIEVE BREAKTHROUGHS: EUROPEAN INNOVATION PARTNERSHIPS

Europe is faced with a number of major societal challenges such as an ageing population, the effects of climate

change, and reduced availability of resources. Breakthroughs must be found in new treatments for life-threatening diseases, new solutions to improve the lives of elder people, ways to radically cut CO2 emissions and other sources of pollution in particular in cities, alternative sources of energy and substitutes for increasingly scarce raw materials, reducing and recycling waste and ending landfill, improvements in the quality of our water supply, smart transport with less congestion, healthy or high-quality food stuffs using sustainable production methods and technologies for fast and secure information handling and sharing, communication and interfacing.

Successfully developing these breakthroughs will also boost our competitiveness, enable European companies to lead in the development of new technologies, to grow and assume global leadership in new growth markets, improve the quality and efficiency of public services and so contribute to creating large numbers of new quality jobs. Given the scale and urgency of the societal challenges and the scarcity of resources, Europe cannot afford any longer the current fragmentation of effort and slow pace of change. Efforts and expertise on research and innovation must be pooled and critical mass achieved. At the same time, we must from the outset put in place the conditions which allow breakthroughs quickly to find their way to the market, thereby bringing rapid benefits to citizens and competitiveness gains.

i) The new approach of European Innovation Partnerships For these reasons, the Commission in its Europe 2020 Strategy announced that it will launch, as part of the Innovation Union flagship initiative, European Innovation Partnerships. These Partnerships will test a new approach to EU research and innovation. First, they will be challenge-driven, focusing on societal benefits and a rapid modernisation of the associated sectors and markets. This means that they will go beyond the technology focus of existing instruments, such as Joint Technology Initiatives (JTIs). Second, they will act across the whole research and innovation chain. The Partnerships will bring together all relevant actors at EU, national and regional levels in order to: (i) step up research and development efforts; (ii) coordinate investments in demonstration and pilots; (iii) anticipate and fast-track any necessary regulation and standards; and (iv) mobilise ‘demand’ in particular through better coordinated public procurement to ensure that any breakthroughs are quickly brought to market. Rather than taking the above steps independently, as is currently the case, the aim of the innovation partnerships will be to design and implement them in parallel to cut lead times.

Third, they will streamline, simplify and better coordinate existing instruments and initiatives and complement them with new actions where necessary. This should make it easier for partners to co-operate and achieve better and faster results compared to what exists already. Therefore, they will build upon relevant existing tools and actions and, where this makes sense (e.g. for joint programming, lead markets, joint pre-commercial and commercial procurement schemes, regulatory screening), integrate them into a single coherent policy framework. Flexibility is important; there will not be a 'one-size-fits-all' framework.

ii) Conditions for success

Partnerships should be launched only in areas – and consist only of activities – in which government intervention is clearly justified and where combining EU, national and regional efforts in R&D and demand-side measures will achieve the target quicker and more efficiently.

The choice of the 'right' partnerships will largely determine their success. In order for them to deliver on their promise, the following conditions, which are all interlinked, need to be fulfilled:

(1) Focus on a specific societal challenge that is shared across the EU, with clear, ambitious and measurable goals which will bring important benefits for citizens and the society as a whole before 2020, and where there is a large new market potential for EU businesses.

(2) Strong political and stakeholder commitment: partnerships will need to mobilise all key stakeholders behind a well-defined goal to be achieved by 2020, underpinned by a strong and sustained commitment over a longer period of time. They will also provide platforms for open innovation and citizen engagement, including through

the awarding of prizes for research. The Commission itself intends to play a driving role for development of the partnership.

(3) Clear EU-added value: Action at EU level should result in efficiency gains and large scale impact through critical mass (e.g. simplification and streamlining, pooling and more efficient use of scarce public resources, i.e. by aligning research or procurement programmes across Member States; better quality solutions, interoperability and more rapid deployment).

(4) Strong focus on results, outcomes and impacts: partnerships must be result-oriented and should therefore not be all-encompassing in scope. Societal challenges should be broken down into smaller “work packages” on which different groups of stakeholders with converging interests should define their own implementation plans, setting out what needs to be done, by whom and by when. Clear targets, milestones and deliverables should be defined in advance.

(5) Adequate financial support: whilst one of the key aims of innovation partnerships is to ensure that scarce financial resources are used to the best effect, avoiding costly duplication, there can be no doubt that additional financial support will be required to match the size of the challenge. All stakeholders will be expected to contribute; the Commission will seek to leverage the EU budget to raise further the overall level of funding. It will make available funding for the launch of the first partnerships under the current financial perspectives and evaluate the financial needs of the partnerships when preparing its proposals for the next financial perspectives.

iii) Governance and working methods

The best ideas can fail because of poor execution or weak monitoring. Putting in place effective, simple and sufficiently flexible structures to steer and monitor progress, arbitrate between diverging interests, and remedy any delays, will be critical to the success of the partnerships.

Governance arrangements should balance the need for high level commitment and functional coordination, with strong decentralised operational responsibilities to ensure effective ownership by practitioners and other key stakeholders. Membership needs to reflect the integrated approach so that stakeholders dealing with different elements of the supply-demand continuum are adequately represented. To reflect the importance of these different constituencies, each partnership should be led by a representative Steering Board, composed of a limited number of high level representatives of Member States (Ministers), members of Parliament, industry leaders, researchers and other key stakeholders, who will need to bring a major commitment to realise the aims of the partnership. The Board should be supported by operational groups, composed of private and public sector experts, practitioners and users, who will define and implement the contents of the "work packages". The Board will be chaired by the lead Commissioner(s) and supported by a secretariat which the Commission will provide. Its first task will be to draw up a multi-annual strategic work plan, containing concrete targets, allocating responsibilities and defining milestones to monitor progress. At EU level, the Commission will work closely with Council and Parliament, to secure strong political support both for the aims and direction of each partnership as well as to speed up the delivery of the necessary regulatory framework.

iv) Identification of the European Innovation Partnerships

With a view to achieve the EU 2020 objective of a smart, sustainable and inclusive growth, the Commission intends to launch innovation partnerships in key areas addressing major societal challenges, such as energy security, transport, climate change and resource efficiency, health and ageing, environmentally-friendly production methods and land management.

Examples of possible partnerships include areas such as:

• Tackling the major climate change & energy challenge coming from cities (which consume around 80% of the overall EU energy and are responsible for about the same share of greenhouse gases) by creating a representative platform of key stakeholders and boost the use of existing and future ICT to accelerate the deployment of smart grids, new systems for using energy from renewable source, smarter & cleaner urban mobility, increased energy efficiency of buildings;

• Ensuring higher quality and efficiency of our supply use of water;

• Ensuring a secure supply chain and achieve efficient and sustainable management and use of non-energy raw

materials along the entire value chain;
• Reducing emissions of greenhouse gases by higher emission efficiency of transport also beyond the urban dimension, notably through inter-operable and intelligent traffic management systems across all transport modes, leading to progress in logistics and behavioural changes.
• Promote EU's competitiveness in the digital society through faster access to information and new ways of trustworthy communication, interfacing and knowledge sharing enabled notably by the internet of the future.
• Improving the supply of foodstuffs produced in a resource-efficient, productive and lowemission way through improved agricultural and food-processing methods.
• Improving the quality of life of an ageing population e.g. by new innovative solutions, clinical tests, diagnostics and treatments for age-related diseases, deployment of new innovative ICT-based solutions and the development and introduction of novel products, appliances and services specifically suitable for the elderly. Preparatory work has been undertaken on launching specific partnerships in active and healthy ageing, water efficiency, non-energy raw materials, smart mobility, agricultural productivity and sustainability, and on smart, liveable cities, the latter combining energyefficiency, clean transport and fast internet (see Annex III).

However, Innovation Partnerships are a novel concept, which the Commission first wishes to test through a pilot partnership before launching a further set of partnerships. Such a pilot should help validate the added value of the concept, gauge the interest and commitment of all key stakeholders, provide insights into how best to develop work packages and assure effective governance.

Reflecting its societal importance, state of preparedness and representativeness of the partnership concept, the Commission proposes to launch a pilot project on active and healthy ageing. Its aims should be, by 2020, to enable citizens to live longer independently in good health by increasing the average number of healthy life years by 2, and, in achieving this target, to improve the sustainability and efficiency of our social and healthcare systems, and to create an EU and global market for innovative products and services with new opportunities for EU business. More details about the proposed Pilot Project on active and healthy ageing can be found in Annex III.

2011 will be a "test phase" for the Partnership approach. By the end of 2010, the Commission will develop a robust set of selection criteria and a rigorous and transparent selection process for future partnerships. These criteria and this selection process will be operational from January 2011. Based on this process, and the application of these criteria, and a confirmation of the readiness of the potential partnerships in areas such as energy, "smart cities", a sustainable supply of raw materials, water efficiency, smart mobility and agricultural productivity and sustainability, the Commission will present the proposals for partnerships which have met the criteria to the other institutions, during 2011, from February onwards, as part of the roll-out of the Europe 2020 Strategy, in line with the goal of developing a low carbon, energy efficient economy with a strong industrial basis.

The Commission will present in June 2011 a Communication formalising the proposals for partnerships and setting out in detail the governance, financing and implementation arrangements. At the end of the" test phase", i.e. before the end of 2011, the Commission will review and evaluate the effectiveness of the Partnership approach, and set out whether and how it intends to take it forward, in particular regarding support through the next Research Framework Programme.

Innovation Union commitments:

29. The Council, Parliament, Member States, industry and other stakeholders are invited to support the innovation partnership concept and to indicate the specific commitments they will undertake to make the concept work. The Commission invites all key stakeholders to commit themselves to pooling efforts and resources to achieve the partnership's intended objectives. The Commission would welcome views and ideas on the areas being considered for future partnerships and other possible candidates that meet the success criteria.
As a first concrete step, the Commission will start preparations to launch a pilot partnership on active and healthy ageing by the beginning of 2011. Taking into account the views of Parliament and Council and input

from other stakeholders, it will present proposals for further partnerships during 2011.

6. LEVERAGING OUR POLICIES EXTERNALLY

Competition for knowledge and markets is becoming ever more global. Private sector decisions on where to invest in R&D and innovation are taken on a global scale. Europe is losing ground in this global competition. The Innovation Union actions described above are designed to reverse this trend and make Europe more attractive to companies and investors. Europe's success depends on its ability to reverse several decades of a relative 'brain-drain' and to attract leading talent. European universities and research institutes award many thousands of degrees in science and engineering to foreign nationals every year. These people should be given the option of remaining in Europe, by exploiting the possibilities under the Scientific Visa Package27 and the Blue Card scheme. Beyond the necessary legal entitlements, they must be convinced that Europe's universities and research centres and the innovation clusters around them are places of global excellence, and that living and working conditions are attractive.

For Europe to be successful in this global push for excellence, it must further deepen its international scientific and technological cooperation. The EU's research programmes are already among the most open in the world. Europe's markets are also the most open in the world, giving investors access to an integrated and competitive internal market of 500 million customers based on clear, predictable and fair rules.

This openness should be reciprocated through our science and technology cooperation with third countries. International cooperation must go hand-in-hand with an integrated approach to bringing the results of common R&D or innovation projects to the market. This means, in particular, offering equivalent protection of IPRs, open access to interoperable standards, nondiscriminatory public procurements, and removing other non-physical barriers to trade, in line with international requirements.

Europe must act as one to achieve such a global level-playing field for research and innovation. Currently, our Member States, regions or even local authorities appear to compete with each other on scientific cooperation agreements, activities and offices in other economies. This leads to dispersion and fragmentation of efforts. It also serves to weaken Europe's leverage in negotiating market access with our major partners worldwide on a levelplaying field. The recent progress made with the European framework for international S&T cooperation and the Strategic Forum for International Cooperation must therefore be accelerated.

Finally, many if not all of the societal challenges on which Europe's research and innovation efforts must focus are also global. Overcoming many of these challenges calls for the sharing of efforts worldwide.28 In particular, many major research infrastructures require massive investments that can only be raised through global cooperation.

Innovation Union commitments

30. By 2012, the European Union and its Member States should put into place integrated policies to ensure that leading academics, researchers and innovators reside and 27 Council Directive O.J. L289/15 of 3/11/2005 (2005/71/EC, including the EC Recommendation on short –term visas for researchers) 28 In this context, the role of EU development policy is important. work in Europe and to attract a sufficient number of highly skilled third country nationals to stay in Europe.

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

engaging in S&T agreements and activities with third countries. The potential scope for "umbrella" agreements between the EU and Member States with third countries will be explored.

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

7. MAKING IT HAPPEN

Transforming the EU into a genuine Innovation Union requires sustained effort, close cooperation and effective implementation at all levels (EU, national, regional) over a considerable number of years. The roles and responsibilities of each actor in the Innovation Union must therefore be clearly defined and strong monitoring mechanisms put in place to avoid slippage.

7.1. Reforming research and innovation systems

While action at EU level is important, the quality of national research and innovation systems – and their interaction between themselves and with the EU level – remains crucial for promoting business and citizens' capacity and willingness to invest. Significant reforms to national and regional policies are required.

In order to help the Member States design these reforms in a context of tight budgetary constraints, the Commission has brought together the available evidence and identified a set of policy features which are typically found in systems that perform strongly. They are presented in Annex I. Many of these features are already reflected in the policy commitments proposed in this Communication. Member States are invited to use the policy features identified to carry out a comprehensive "self-assessment" of their research and innovation systems and subsequently define the key reforms in their Europe 2020 National Reform Programmes, which are due by April 2011. These policy features may also be relevant for the candidate and potential candidate countries.

The Commission will use the policy features identified as the basis for supporting further exchanges of best practice among Member States and for improving policy reporting tools (e.g. Trendchart and ERA-WATCH). It also stands ready to support country specific reviews involving international expertise. In particular, the Commission will seek a new strategic relationship with the OECD.

The Commission considers that the (Competitiveness) Council could play a new role in monitoring Member States progress on their innovation reforms as part of the overall economic co-ordination under the Europe 2020 Strategy ('European semester').

33. Member States are invited to carry out self assessments based on the policy features identified in Annex 1 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').

7.2. Measuring Progress

Progress towards the Innovation Union should be measured at European Council level by two headline indicators: the R&D investment target and a new Innovation indicator, as requested by the European Council.29
To assist the Commission to respond to the European Council's request, a High-Level panel of leading business innovators and economists was set up to identify possible indicators which would best reflect R&D and innovation intensity avoiding duplication with the 3% R&D investment target focusing on outputs and impacts and ensuring international comparability.

The Panel concluded30 that there is an urgent need to improve data availability and the breadth and quality of indicators to measure and monitor innovation performance, ranging from technological innovation to other forms of innovation (e.g. public sector innovation). It explored two options: a list of three immediately available indicators (based on patent applications, the contribution of medium-high-tech and high-tech products to the trade balance, and employment in knowledge-intensive activities) and a single indicator (reflecting the successful development and dynamism of innovative entrepreneurial activities). While business demographics data are, in principle, available, the development of such indicator to measure the share of fast-growing, innovative companies in the economy would require further work, which could take two years.

Having studied the Panel's conclusions, the Commission has decided to propose the single indicator, defined as fast growing, innovative firms, which best responds to the European Council's request, even though its development will require around two years. This indicator provides a good measure of the dynamism of the economy; captures an important part of our economy where growth and jobs will need to come from; it is output-orientated and reflects the impact of the framework conditions on innovation, which policy-makers both at EU and national level can influence. It also focuses on a critical gap which the EU needs to close if it is to catch up with innovation leaders worldwide.

The Commission is also convinced that, because innovation is a multi-faceted phenomenon, a full monitoring of progress requires a broader set of indicators. Building on the European Innovation Scoreboard, it has therefore developed a Research and Innovation Union 29 Conclusions of the European Council of 25/26 March 2010 (EUCO 7/10) 30 http://ec.europa.eu/commission_2010-2014/geoghegan-quinn/hlp/index_en.htmscoreboard to provide comparative benchmarking of EU and Member State performance against a broad set of indicators, including those identified by the High-Level Panel. The list of indicators is set out in Annex II. While it makes use of best available statistical sources, further work is needed to develop indicators on aspects such as non-technological innovation, design, service innovation, and performance at regional level.

34. 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 (see Annex II).

7.3. A commitment by all to turn Innovation Union into reality

The collective effort of the EU Institutions and other stakeholders will be the key to the success of the Innovation Union.

The European Council should provide a steer and a political impetus as part of the Europe 2020 Strategy.

The Council should play a leading role in adopting the necessary measures to improve the EU's framework conditions. Following the launch of the European Innovation Partnerships, it should ensure that the conditions are in place to allow them to come to fruition. The Commission suggests that the Council should meet once every semester as an "Innovation Council", bringing together the relevant ministers– to take stock of progress and identify areas where fresh impetus may be required.

The European Parliament is invited to give priority to Innovation Union proposals and initiatives, including the identification and success of the European Innovation Partnerships. The Commission would welcome the Parliament holding once a year a major policy debate on progress with representatives of national parliaments and stakeholders, to identify key messages and to keep the Innovation Union high on the political agenda.

The European Commission will develop the initiatives set out in Innovation Union. It will assist Member States with the reform of their systems and take initiatives to promote the exchange of good practice at all levels. The Commission will expand the remit of the European Research Area Board (ERAB) and include prominent leaders from business, finance and young researchers and innovators, to evaluate the Innovation Union on a continuous basis, reflect on new trends, and provide recommendations on priorities and actions. The Commission will systematically monitor progress and report once a year on progress achieved. Where appropriate, it will make use of its prerogatives under the Treaty to propose country-specific recommendations in this field to assist Member States with their reform process.

The Member States (and their regions) should ensure that the necessary governance structures are put in place where these do not yet exist. They should conduct thorough self assessments, and look for ways to reform their systems to promote excellence, foster closer co-operation and pursue smart specialisation from an EU perspective. They should review their operational programmes co-financed by the Structural Funds, in line with priorities fixed under Europe 2020, and seek to allocate additional resources to research and innovation. The National Reform Programmes, which are due by April 2011, should identify what specific steps they will take, by when and if expenditure is involved how this will be accounted for. The new European Research Area Committee (ERAC) should take responsibility for fostering progress by Member States in implementing the Innovation Union, ensuring the necessary participation from industry ministries and coordination with the Enterprise Policy Group.

Stakeholders – business, local authorities, social partners, foundations, NGOs – are invited to support the Innovation Union. The European Economic and Social Committee and the Committee of the Regions are invited to work with the organisations and bodies they represent to mobilise support, encourage initiatives and help disseminate best practices. The Commission will facilitate debate and exchanges of ideas and best practice through online exchanges and social networking focusing on the Innovation Union. To further encourage this process of change and to promote an innovation mind-set, the Commission will convene an annual Innovation Convention to discuss the state of the Innovation Union, in conjunction with the proposed European Parliament debate. This should involve Ministers, Members of the European Parliament, business leaders, deans of universities and research centres, bankers and venture capitalists, top researchers, innovators and, last but not least, citizens of Europe.

ANNEX I Self assessment tool:

Features of well performing national and regional research and innovation systems 1. Promoting research and innovation is considered as a key policy instrument to enhance competitiveness and job creation, address major societal challenges and improve quality of life and is communicated as such to the public – Public action in all relevant policy areas including education and skills, the functioning of product and service markets, financial markets, labour markets, entrepreneurship and the business environment, industrial policy, cohesion/spatial planning, infrastructure/ICT as well as taxation and at all levels, is designed and implemented in a strategic, coherent and integrated framework geared towards fostering innovation and strengthening the knowledge base and fundamental research.
– Where policies and funding are focused on specific priorities, these are increasingly oriented towards addressing major societal challenges, such as resource efficiency, climate change, and health and ageing, and towards deriving competitive advantage from finding new solutions to tackle them.

2. Design and implementation of research and innovation policies is steered at the highest political level and based on a multi-annual strategy. Policies and instruments are targeted at exploiting current or emerging national/regional strengths within an EU context ("smart specialisation")
– An effective and stable centre-of-government structure, typically steered by the top political level, defines broad policy orientations on a multi-annual basis and ensures sustained and properly coordinated implementation. This structure is backed up by networks involving all relevant stakeholders, such as industry, regional and local authorities, parliaments and citizens, thereby stimulating an innovation culture and building

mutual trust between science and society.
– A multi-annual strategy defines a limited number of priorities, preceded by an international analysis of strengths and weaknesses at national and regional level and of emerging opportunities ('smart specialisation') and market developments, and provides a predictable policy and budgetary framework. The strategy duly reflects EU priorities, avoiding unnecessary duplication and fragmentation of efforts, and actively seeks to exploit opportunities for joint programming, cross-border co-operation and exploiting the leverage effects of EU instruments. Bilateral co-operation with non-EU countries is based on a clear strategy and, where possible, is co-ordinated with the other EU Member States.
– An effective monitoring and review system is in place, which makes full use of output indicators, international benchmarking and ex-post evaluation tools.

3. Innovation policy is pursued in a broad sense going beyond technological research and its applications

– A broad concept of innovation - including innovation in services, improvements of processes and organisational change, business models, marketing, branding and design - is actively promoted, inter alia through more interdisciplinary work involving groups of users or consumers as important constituencies of open innovation.
– Supply and demand-side policies are developed in a consistent manner, building on and increasing the absorptive capacity of the Single Market.
4. There is adequate and predictable public investment in research and innovation focused in particular on stimulating private investment
– It is recognised that public funding assumes an important role in providing a high quality knowledge infrastructure and as an incentive for maintaining excellence in education and research including access to world-class research infrastructures, building regional S&T capacity and supporting innovation activity especially during periods of economic recessions. As a consequence, public investments in education, research and innovation are prioritised and budgeted in the framework of multi-annual plans to ensure predictability and long term impact, and drawing on the Structural Funds where appropriate.
– Public funding aims at leveraging greater private sector investments. Innovative financing solutions (e.g. public-private partnerships) and the use of tax incentives are explored and adopted. Reforms are implemented to reflect changing conditions and ensure optimal returns on investments.
5. Excellence is a key criterion for research and education policy – Research funding is increasingly allocated on a competitive basis and the balance between institutional and project-based funding of research has a clear rationale. Institutes are evaluated on the basis of internationally recognised criteria and projects are selected on the basis of the quality of proposals and expected results, subject to external peer review. Funding to researchers is portable across borders and institutes. Results of publicly funded research are protected and published in a way that encourages their exploitation.
– Higher education and research institutes enjoy the necessary autonomy to organise their activities in the areas of education, research, and innovation, apply open recruitment methods and to draw on alternative sources of funding such as philanthropy.
– The legal, financial and social frameworks for research careers, including doctoral studies, offer sufficiently attractive conditions to both men and women in comparison to international standards, especially those in the US. This includes favourable conditions for reconciling private and professional life and for professional development and training. There are incentives in place to attract leading international talent.
6. Education and training systems provide the right mix of skills
– Policies and incentives are in place to ensure a sufficient supply of
(post)graduates in science, technology, engineering and mathematics and an appropriate mix of skills among the population (including through strong vocational and education and training systems) in the medium-to-longer term.
– Education and training curricula focus on equipping people with the capacity to learn and to develop transversal competences such as critical thinking, problem solving, creativity, teamwork, and intercultural and communication skills. Special attention is paid to address innovation skills gaps. Entrepreneurship education and training is widely available or included in curricula. Partnerships between formal education and other sectors are actively promoted to that end.

7. Partnerships between higher education institutes, research centres and businesses, at regional, national and international level, are actively promoted
– Where possible, research efforts are accompanied by instruments to support the commercialisation of innovative ideas. Policies and instruments such as innovation/knowledge clusters, knowledge transfer platforms, and voucher systems, are in place to encourage co-operation and knowledge sharing and at creating a more favourable business environment for SMEs.
– Researchers and innovators are able to move easily between public and private institutes. There are clear rules on the ownership of intellectual property rights and sharing and support systems are in place to facilitate knowledge transfer and the creation of university spin-offs and to attract (venture) capital and business angels.
– There are no obstacles to setting up and operating transnational partnerships and collaborations.
8. Framework conditions promote business investment in R&D, entrepreneurship and innovation
– Policies to promote innovation, entrepreneurship and enhance the quality of the business environment are closely interconnected.
– Favourable conditions are in place to foster a growing and robust venture capital market, especially for early stage investments.
– Consistent with the Small Business Act for Europe31, the rules for starting up and running a business are simple and designed from an SME perspective. The legal framework is transparent and up-to-date. Rules are properly enforced. Markets are dynamic and competitive. Willingness to take risks is promoted. Insolvency regulations support the financial reorganisation of enterprises. There is no discrimination against entrepreneurs who may have failed the first time around.
– An efficient, affordable and effective system for the protection of intellectual property is in place, which fosters innovation and preserves investment incentives. The market for innovative products and services is kept constantly up to date by means of an efficient standard-setting system.
31 "Think small first". A "Small Business Act" for Europe. COM (2008)374

9. Public support to research and innovation in businesses is simple, easy to access, and high quality
– There is a limited number of well targeted, clearly differentiated, and easy to access support schemes consistent with support available at EU level and that address well identified market failures in the provision of private funding for innovation.
– Funding support is tailored to the needs of companies, particularly SMEs. The emphasis is placed on outputs rather than on inputs and controls. Bureaucracy is kept to a minimum, selection criteria are straightforward and time to contract and to payment are as short as possible. Funding schemes are regularly evaluated and benchmarked against comparable schemes in other countries.
– National funding is allocated through international evaluation procedures and encourages trans-national cooperation. Rules, procedures and time-tables are aligned in order to facilitate participation in EU programmes and co-operation with other Member States.
– Specific support is often available to young innovative companies to help them commercialise ideas rapidly and promote internationalisation.

10. The public sector itself is a driver of innovation
– The public sector provides incentives to stimulate innovation within its organisations and in the delivery of public services.
– Active use is made of public procurement of innovative solutions in order to improve public services, including through dedicated budgets. Tenders are based on output-based performance specifications and contracts are awarded on the basis of qualitative criteria which favour innovative solutions such as life-cycle analysis, rather than lowest price only. Opportunities for joint procurement are exploited.
– Where possible, government-owned data is made freely available as a resource for innovation.

ANNEX II

Performance Scoreboard for Research and Innovation

The below list of indicators will provide the basis for an annual performance scoreboard as part of the

monitoring of the Innovation Union. The data, using the latest available statistics, will be presented for each Member State, for the European Union, and for main non-EU countries. Efforts will be made to make data available at regional (i.e. sub national) level for EU Member States. The Scoreboard will be maintained until 2020 and will be subject to review periodically depending on the availability of new data sources and/ or new policy orientations. The Commission will look for an additional performance indicator reflecting gender for inclusion in the Scoreboard.

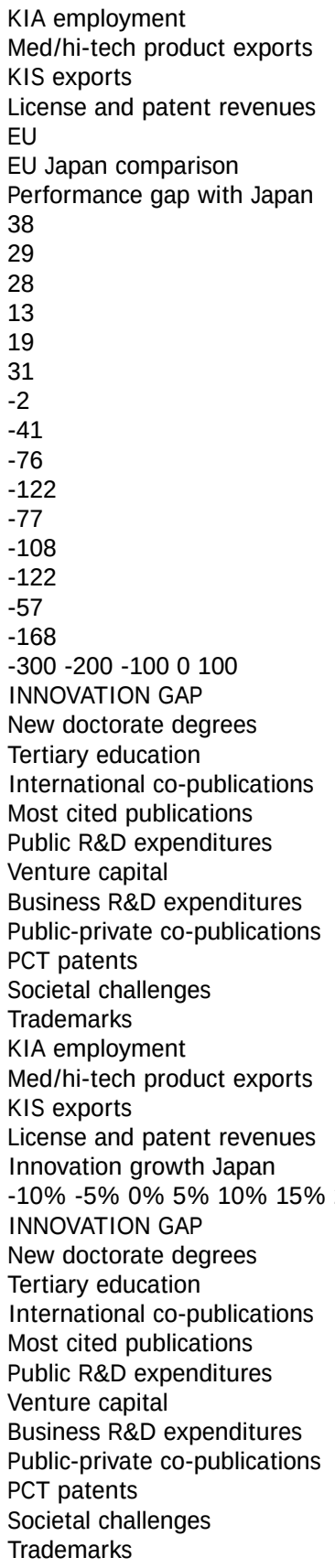
Indicator Data source

ENABLERS

Human resources
1.1.1 New doctorate graduates (ISCED 6) per 1000 population aged 25-34* Eurostat
1.1.2 Percentage population aged 30-34 having completed tertiary education * Eurostat
1.1.3 Percentage youth aged 20-24 having attained at least upper secondary level education*
Eurostat
Open, excellent and attractive research systems
1.2.1 International scientific co-publications per million population Thomson/Scopus
1.2.2 Scientific publications among the top 10% most cited publications worldwide as % of total scientific publications of the country
Thomson/Scopus
1.2.3 Non-EU doctorate students32 per million population Eurostat/OECD Finance and support
1.3.1 Public R&D expenditures as % of GDP Eurostat
1.3.2 Venture capital (early stage, expansion and replacement) as % of GDP EVCA/Eurostat
FIRM ACTIVITIES
Firm investments
2.1.1 Business R&D expenditures as % of GDP Eurostat
2.1.2 Non-R&D innovation expenditures as % of turnover Eurostat Linkages & entrepreneurship
2.2.1 SMEs innovating in-house as % of SMEs Eurostat
32 Non-domestic doctoral students for non-European countries.

2.2.2 Innovative SMEs collaborating with others as % of SMEs Eurostat
2.2.3 Public-private co-publications per million population Thomson/Scopus Intellectual Assets
2.3.1 PCT patents applications per billion GDP (in PPS€) Eurostat
2.3.2 PCT patent applications in societal challenges per billion GDP (in PPS€)
(climate change mitigation; health)
OECD
2.3.3 Community trademarks per billion GDP (in PPS€) OHIM/Eurostat
2.3.4 Community designs per billion GDP (in PPS€) OHIM/Eurostat
OUTPUTS
Innovators
3.1.1SMEs (more than 10 employees) introducing product or process innovations as % of SMEs
Eurostat
3.1.2 SMEs (more than 10 employees) introducing marketing or organisational innovations as % of SMEs
Eurostat
3.1.3 High-growth enterprises (with more than 10 employees) as % of all enterprises33
Eurostat
Economic effects
3.2.1 Employment in Knowledge-Intensive Activities (manufacturing and services) as % of total employment
Eurostat
3.2.2 Medium and High-tech manufacturing exports as % total product exports UN/Eurostat
3.2.3 Knowledge-Intensive Services exports as % total service exports UN/Eurostat
3.2.4 Sales of new to market and new to firm innovations as % of turnover Eurostat

3.2.5 Licence and patent revenues from abroad as % of GDP Eurostat
*Breakdowns by sex to be provided for these indicators.
33 Subject to verification of data availability by 2011


KIA employment
Med/hi-tech product exports
KIS exports
License and patent revenues
EU
EU Japan comparison
Performance gap with Japan
38
29
28
13
19
31
-2
-41
-76
-122
-77
-108
-122
-57
-168
-300 -200 -100 0 100
INNOVATION GAP
New doctorate degrees
Tertiary education
International co-publications
Most cited publications
Public R&D expenditures
Venture capital
Business R&D expenditures
Public-private co-publications
PCT patents
Societal challenges
Trademarks
KIA employment
Med/hi-tech product exports
KIS exports
License and patent revenues
Innovation growth Japan
-10% -5% 0% 5% 10% 15% 20%
INNOVATION GAP
New doctorate degrees
Tertiary education
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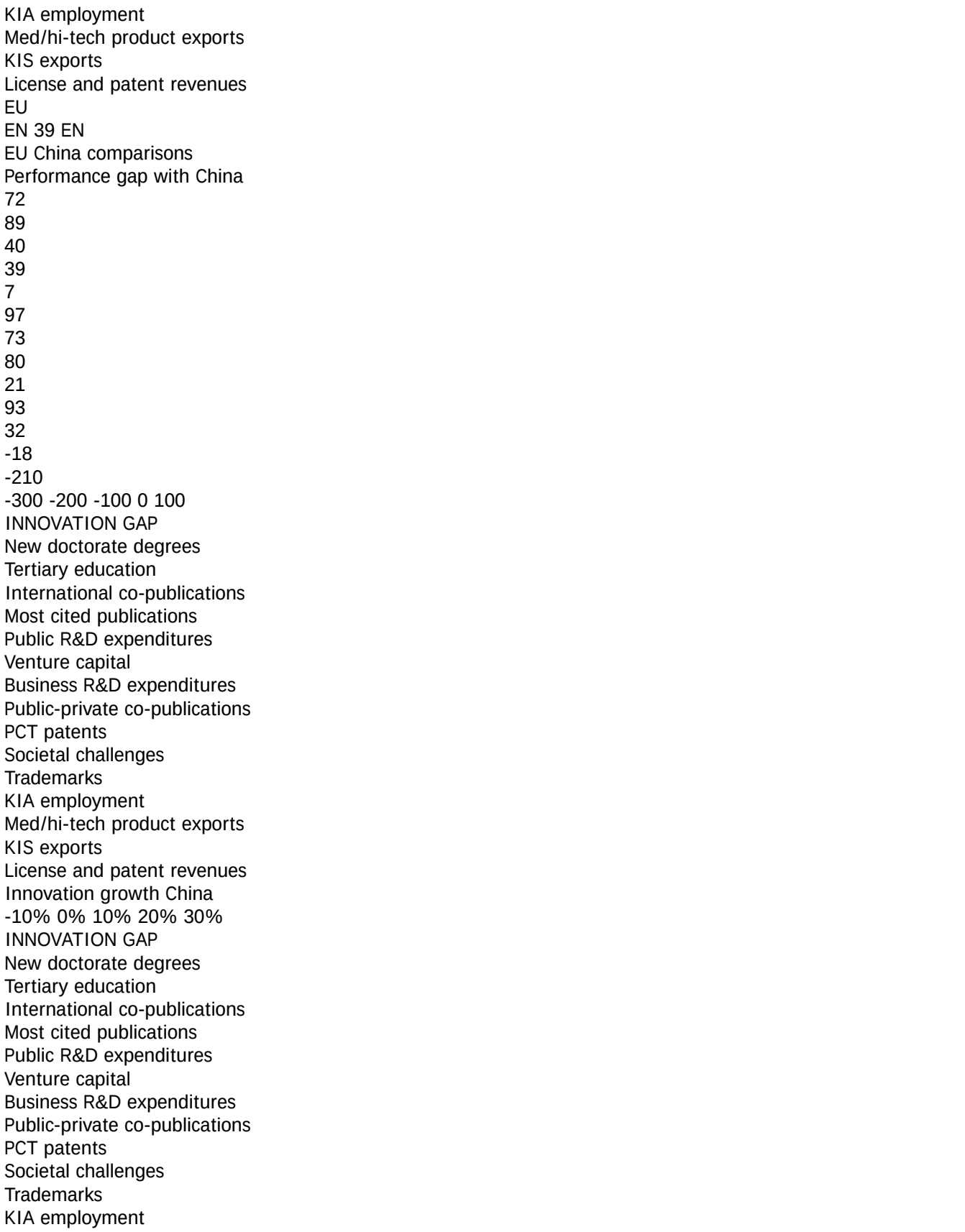
PCT patents
Societal challenges
Trademarks


KIA employment
Med/hi-tech product exports
KIS exports
License and patent revenues
EU
EN 39 EN
EU China comparisons
Performance gap with China
72
89
40
39
7
97
73
80
21
93
32
-18
-210
-300 -200 -100 0 100
INNOVATION GAP
New doctorate degrees
Tertiary education
International co-publications
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Public R&D expenditures
Venture capital
Business R&D expenditures
Public-private co-publications
PCT patents
Societal challenges
Trademarks
KIA employment
Med/hi-tech product exports
KIS exports
License and patent revenues
Innovation growth China
-10% 0% 10% 20% 30%
INNOVATION GAP
New doctorate degrees
Tertiary education
International co-publications
Most cited publications
Public R&D expenditures
Venture capital
Business R&D expenditures
Public-private co-publications
PCT patents
Societal challenges
Trademarks
KIA employment

Med/hi-tech product exports
KIS exports
License and patent revenues
EU
Note: comparisons based on latest available data: 2008 for all indicators except: international co-publications (2009); most cited publications (2007); public private co-publications (2007); PCT patents (2007); KIA employment (2007). For Japan: data not available for venture capital and most recent data on KIA employment is 2005. For China: data not available for new doctorate degrees, venture capital, cost of patents, KIA employment.

ANNEX III

European Innovation Partnerships

Aims and scope of a pilot European Innovation Partnership in the field of active and healthy ageing

1. The objective of the partnership
As the baby-boom generation retires, the population of over 60 is increasing twice as fast as before 2007, i.e. by some two million people a year. By 2050, the number of people over 50 will rise by 35% and that over 85 will triple. If the current level of diseases in these age groups would remain, many millions more Europeans would suffer from disorders such as neuro-degenerative diseases (Alzheimer/Parkinson) and others such as cancer and cardiovascular diseases which are prevalent at an older age. This calls for stepping up the discovery and deployment of screening, detection and (non-invasive) diagnosis, of medicines and treatments to prevent and address these diseases. In addition, innovative solutions, including ICT and other technologies have the potential to provide high-quality, personalised medicine and health/social care while increasing the efficiency of our care systems. The combination of a smaller working age population and a higher share of retired people with health problems will place considerable strain on welfare systems starting in the next few years. At the same time, addressing specific needs of elder people opens up new market opportunities for those who manage to come up with smart and innovative solutions to the challenges an ageing population will be facing such as social isolation, increased incidence of falls and reduced mobility. Finding breakthroughs and allowing older people to live healthier and independently for longer would not only bring significant societal, but also important economic benefits. The aims of the innovation partnership are, by 2020, to enable our citizens to live longer independently in good health by increasing the average number of healthy life years by 2, and, in achieving this target, to improve the sustainability and efficiency of our social and healthcare systems, and to create an EU and global market for innovative products and services with new opportunities for EU business.
2. Delivery and deployment of instruments
The active and healthy ageing partnership will have:
A strong research component, where possible, resulting in new medicines for the elderly, new treatments or diagnostic tools, new institutional or organisational approaches and new solutions allowing for a better life quality for the elderly. The research can be done either through launching new research programmes/projects (notably using pre-commercial procurement) or through coordination of existing research programmes (as is already the case for Alzheimer's or ageing as part of the EU joint programming initiative). Demonstration, pilots and large scale trials involving the elderly, patients, carers, health care facilities, community and home care facilities, ICT infrastructure, etc. to test out solutions of sufficiently large scale in a coordinated way across countries and different contexts. Such demonstrations will need to take place across different localities, while ensuring comparability and interoperability. This can be supported by EU and national instruments such as structural funds, European Investment Bank and national or European innovation funds.

Accelerating the creation of the necessary framework conditions and demand, which will need to include improving rules for clinical trials and testing, fast-tracking assessment procedures of new medicines by the European Medicines Agency, patenting and patent protection, regulatory requirements such as measures to protect medical and personal data, reimbursement through national health insurance schemes and co-ordinated procurements by the public sector (networks of public authorities), ensuring interoperability and setting

standards and reference specifications for new equipment and services for telemedicine and independent living, setting up a fund for care innovation and for “orphan diseases”, and tackling possible market access obstacles in third countries. Areas should also be identified (both in R&D and related issues such as standardisation) in which cooperating with third countries would be necessary or desirable.

This would translate into a limited number of work packages proposing actions that aim to achieve the strategic objectives:
– Finding and deploying innovative solutions, clinical tests, medicines and treatments, to combat and address age-related chronic diseases (such as Alzheimer's, Parkinson's as well as cancer, diabetes, cardiovascular diseases and other chronic diseases), whilst at the same time providing public support for research on less-frequent, rare or orphan age-related diseases (that do not attract sufficient attention from private research funding);
– Developing new innovative policies and business models for more integrated health and social care systems for the elderly, improving home-based and self-care; as well as tailoring and deploying on a large scale new innovative (including ICT-based) solutions for long-term care of the elderly such as chronic disease management. This work package will also include fostering public procurement and HTA EU cooperation would also contribute to this objective. Promoting the development and introduction of innovative solutions, including ICT- based and other technologies, for products, devices and services specifically suitable for the elderly, to help them lead more active and independent lives, such as alarm and safety systems, daily living support, fall prevention, social interaction services and home robotics, and specific access to the internet.
3. Actors and governance
To be successful, the Commission through the Innovation Partnership intends to bring together and forge an active and sustained commitment of all Europe's major players in this field. This includes not only EU and Member States' authorities and regulators, standardsetters and procurement professionals but also representatives from public health and social care authorities, from the medical profession and from health and ageing research institutes. Private sector involvement will include the pharmaceuticals and biotechnology industries, medical and assistive equipment manufacturers, ICT industry, the health and social insurance sector and the providers of (venture) capital. Representatives from elderly user groups and care organisations will also have to play an important role in the partnership. Responsibility for the successful implementation of the active and healthy ageing partnership will rest with the Commissioners for Health and for the Digital Agenda in the overall context of the Innovation Union flagship governance. The Commission will invite stakeholders from the groups set out above to participate in the partnership. A steering board will be set up, including high-level representatives from Member States, industry and elderly care professionals, to ensure effective and timely implementation. The steering board will oversee the work of three task forces, composed of experts, practitioners and users, who will each focus on the development and implementation of the work packages.

The partnership should produce efficiency gains for all participants. The Commission, for its part, will streamline and simplify existing initiatives in this area. For example, relevant technology platforms, joint programming, lead market initiatives and other relevant projects financed by the EU framework programmes will be integrated into the partnership. The first task of the steering board will be – with the assistance of the task forces - to draw up, within six months, a strategic work programme defining a research agenda, and priorities for demonstrations and large scale deployment, identifying ways to pool expertise, assessing the level of funding required and its sources and specifying the deployment of instruments and policies to fast-track research and innovation results and get products and services to market without unnecessary delays. This should include an in-depth analysis of research needs and work already undertaken to avoid duplication and ensure that the partnership can build on the most recently available knowledge and expertise. Milestones and monitoring instruments for implementation shall be defined. A specific working group will support the steering board in developing monitoring indicators and data collection.

Further potential Innovation Partnerships so far examined by the Commission

Smart Cities

By 2020, and taking 2010 as a baseline, the aim is to support a number of pioneering European cities (with a total population of at least 20 million) in reducing their carbon emissions by more than 20%, increasing the share of renewable energy in the energy used for electricity supply, heating and cooling by 20%, and increasing end-use energy efficiency by 20%. The Partnership will demonstrate the feasibility of rapid progress towards the EU's energy and climate objectives at local level while showing citizens that their quality of life and local economies can be improved through investments in energy efficiency, renewable energy sources and energy system management solutions, including smart metering and use of ICT innovations as well as more efficient urban transport.

Water-Efficient Europe

The aim of the Partnership is to promote actions that can speed-up innovation in the water sector and remove barriers to innovation. The actions are intended to achieve the EU water policy objectives while reducing the EU water footprint, improving water security and promoting the worldwide leadership of the European water industry.

Sustainable supply of non-energy raw materials for a Modern Society

The aim is to ensure a secure supply and achieve efficient and sustainable management and use of non-energy materials along the entire value chain in Europe. This is all the more necessary to provide an answer to the various societal challenges at stake. Demonstrating ten innovative pilot plants for raw materials extraction, processing and recycling, and finding substitutes for at least three key applications of critical raw materials underpin this Partnership.

Smart mobility for Europe's citizens and businesses

The aim of the Partnership is to equip Europe with seamless door-to-door travel and effective logistics by promoting the broad and coordinated development and deployment of Intelligent Transport Systems (ITS). The Innovation Partnership will build on available results from research and development and take them further to innovation and concrete operational deployment, combined with further research, policy and legislative measures.

Agricultural productivity and sustainability

World food demand will increase massively over the next two decades. The aim of this Partnership is to promote a resource-efficient, productive and low-emission agricultural sector
– which works in harmony with the essential natural resources on which farming depends, such as soil and water. The objective is to deliver a safe and steady supply of food, feed and biomaterials – both existing products and new ones. There is a need to improve processes to preserve our environment, adapt to climate change and mitigate it. The Partnerships would build a bridge between cutting-edge research and technology and the farmers, businesses and advisory services which need them.