

Research & Innovation - Horizon 2020

Questions & Answers

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(most recent FAQs displayed first; click on a question for a detailed answer)

- Q: What about traditional SMEs with limited innovation capacity? Will they have their place in H2020?
 A: SMEs will be encouraged to participate across the Horizon 2020 programme. The SME instrument is open to highly innovative SMEs showing a strong ambition to develop, grow and internationalise regardless of whether they are high-tech or not. The SME instrument will be competitive, business-oriented and focused on creating impact, bringing high-potential innovations closer to the market. Closer to the market activities under the rules of participation has a reimbursement rate of 70%. SMEs may still take part in collaborative R&D projects where the rules of participation state the reimbursement rate is 100%. A good chunk of the Horizon 2020 budgetary target for SMEs will be delivered through the dedicated SME instrument. The exact budget allocation is still to be decided.
- Q: EU International Strategy for Research and Innovation what are the next steps?
 A: As part of the preparation for the launch of Horizon 2020, the Commission services will start their work on identifying opportunities for international cooperation and developing the multi-annual roadmaps. These will subsequently be integrated in and implemented through Horizon 2020 and its work programmes.

There will be a strengthened steering, monitoring and evaluation of the strategy, and in particular of the international cooperation aspects of Horizon 2020, in order to ensure coherent implementation across the programme. The Commission will track progress through a set of indicators and will report every two years. ³

• **Q:** EU International Strategy for Research and Innovation - what will change for the growth economies?

A: As the Communication points out, countries such as China, Brazil, Russia, India and other economies that have grown strongly over the past years will continue to be important partners for the EU. This is reflected in the fact that all of these countries will still be able to participate in all parts of Horizon 2020, allowing their researchers to cooperate with their counterparts in the EU on topics of their choice.

Some of these countries, and in particular those where GDP is exceptionally large, will, however, no longer enjoy automatic access to EU funding, even if the country in question is classified as middleincome by the World Bank. This reflects the fact that these countries have over the past years made considerable efforts to invest in their research and innovation system and strengthen its quality. These countries are therefore now capable to cooperate with the EU on the basis of a partnership among equals. The new strategy foresees to complement this change in the approach to automatic funding by increased efforts to facilitate the funding of participants from these countries through their national channels.

It should also be noted that, as is the case with the high income countries, EU funding for these countries will be possible under exceptional circumstances, for example where there is a reciprocal agreement in place or where it is clear that the contribution of third country partner would be essential for the project to go ahead successfully.⁴

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Q: What instruments will be used to implement the EU International Strategy for Research and Innovation?

A: The ⁵Scientific and Technological Cooperation Agreements⁶ will be important vehicles for defining and implementing the roadmaps, as will the <u>policy dialogues which have been established at the</u> regional level⁷.

Horizon 2020 will be the main vehicle for implementing the Union's international cooperation actions, for instance through the following instruments:

- Research and innovation projects, where the participation of third country entities is required or preferentially evaluated;
- Networking between projects or project managers;
- Joint initiatives involving the Union and the international partners, such as joint calls, coordinated calls, contributions from the Union to funding programmes of third countries or international organisations, specific initiatives requiring joint funding from the Union, the third country and the Member States

The implementation of the strategy will be closely coordinated with the instruments of the Union's external policies, such as the Instrument for Pre-Accession, the Development Cooperation Instrument, the European Development Fund or the Partnership Instrument.

Q: How will priority areas and partners be selected for targeted activities under the EU International Strategy for Research and Innovation?

A: A cornerstone of the strategy is the development of multi-annual roadmaps for cooperation with key partner countries and regions. These roadmaps will provide information on the areas and partners identified for international cooperation and will therefore offer a clear programme for enhancing and focusing cooperation. They will be developed as part of the preparation for Horizon 2020.

The identification of areas for international cooperation will use the societal challenges and enabling and industrial technologies of the Horizon 2020 proposals as its starting point. The identification will be guided by making an analysis of the strengths and weaknesses of the Union versus the rest of the world using the following set of criteria:

- Research and innovation capacity (investment, output, human resources, infrastructure);
- Opportunities for and risks of getting access to new markets;
- Contribution made to meeting the Union's international commitments (e.g. Millennium Development Goals);
- Framework in place to engage in cooperation, including lessons learnt from previous cooperation

A differentiation of activities by country and/or region will help provide further focus to the activities. In this respect, the following groupings will be considered:

- EFTA countries, enlargement countries and countries covered by the European Neighbourhood Policy: where the focus will be on fostering the integration of these countries - of their alignment with - the European Research Area; these countries will be eligible for association to Horizon 2020;
- Industrialised countries and emerging economies: where the focus will be strongly on competitiveness and tackling global challenges;
- Developing countries: where the focus will be to assist these countries in their socio-economic development
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Q: Why is a new International Strategy for Research and Innovation needed?

A: The global research and innovation scene is changing rapidly. Emerging economies, such as China, Brazil, Russia or China, account for an increasing share of expenditure on research and innovation and are therefore gaining influence. Research and innovation in themselves are also increasingly globalised activities. The number of internationally co-authored publications is increasing, as is the international mobility of researchers. Companies are investing beyond their national borders, in particular in the emerging economies. Today's societal challenges, such as combatting climate change, securing a steady supply of energy or feeding a growing world population, can only be dealt with through global action.

The European Union is one of the world's leading regions in research and innovation. With 7% of the world's population, it accounts for 24% of the world expenditure on research, 32% of the high impact publications and 32% of the patent applications. However, as more and more knowledge is created in third countries, the Union must be in a position to access this knowledge, and the people creating it, in order to remain an attractive location for carrying out research and innovation and a partner of choice for engaging in international cooperation.

The importance of the international dimension of research and innovation, as the ⁹<u>external dimension</u> of a vibrant European Research Area¹⁰, was explicitly recognised in the <u>Innovation Union</u>¹¹ flagship initiative and the proposals for <u>Horizon 2020</u>¹². This Communication therefore complements the Communication on <u>A Reinforced European Research Area</u> Partnership for Excellence and Growth¹³.

Fact sheet: International Participation in Horizon 2020 and FP7¹⁴

- Q: What are the core principles of the EU's new International Strategy for Research and Innovation?A: International cooperation in research and innovation is not an end in itself. It is a means for the Union to achieve its higher level objectives, in particular by:
 - strengthening the Union's excellence and attractiveness in research and innovation and its economic and industrial competitiveness;
 - tackling global societal challenges, such as food and energy security and climate change;
 - supporting the Union's external policies.

To achieve these objectives, the strategy will follow a dual approach:

- Horizon 2020 will be open to participation from entities from across the world, although the approach to providing funding from the Union budget to these entities will be revised. Through this general opening, European researchers will be free to cooperate with their third country counterparts on topics of their own choice;
- To complement the general opening, targeted activities will be developed where cooperation will be sought on particular topics and with well identified countries and/or regions

A number of cross-cutting issues will also be an integral part of the strategy: ¹⁵

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- The partnership with the Member States will be strengthened, building on the work of the ¹⁵<u>Strategy Forum for International S&T Cooperation</u>¹⁶;
- Common principles for the conduct of international research and innovation activities will be developed and promoted together with key international partners, in order to create a global level playing field;
- Research and innovation will make a stronger contribution to the Union's external policies.

Q: How can the EU emblem be used by beneficiaries of EU programmes and other third parties? **A:** The European Union has a range of programmes which have been set up to support projects and initiatives in various domains across the EU and beyond. From 2012, most of these programmes will phase out their existing logos and no new logos will be created for upcoming programmes.

FP7 is one of the exceptions and will continue to use its logo.

The names of these programmes, such as Horizon 2020, will be used as verbal brands, i.e. references to them will be made without a logo.

Commission services will apply the Commission's visual identity guidelines when communicating about EU programmes. Beneficiaries of EU funding will use the European emblem in their communication to acknowledge the support received under EU programmes.

The guidelines mentioned below are intended for beneficiaries of EU funding and other third parties who communicate about EU programmes to show how the European Union emblem can be used in conjunction with text which highlights the fact of EU funding.¹⁷

• **Q:** How will the rules for participation and dissemination change under Horizon 2020? And how will they be simplified?

A: The Horizon 2020 Framework Programme represents a radically new and comprehensive approach to the EU's research and innovation funding policies. The Rules for Participation and Dissemination are designed to implement this new approach in a way that means that researchers and businesses can benefit from it to the fullest extent.

The new provisions ensure that three key objectives of the new Framework Programme – integration of support to innovation, coherence of the rules and simplification for the benefit of participants – will be realised. ¹⁸

• **Q:** Where can I find out more about SME measures in Horizon 2020?

A: Small- and Medium-sized Enterprises (SMEs) will be encouraged to participate across Horizon 2020 programmes through a new dedicated SME instrument. It aims to fill gaps in funding for early-stage, high-risk research and innovation by SMEs as well as stimulating breakthrough innovations. It is expected that through this integrated strategy around 15%, or €6.8 billion, of the total combined budgets of the 'Tackling societal challenges' Specific Programme and the 'Leadership in enabling and industrial technologies' objective will be devoted to SMEs.¹⁹

- Q: What does the Commission propose for ICT funding in Horizon 2020?
 A: EU investments in ICTs are due to increase by 46% under Horizon 2020 compared to the current EU research programmes (FP7). This is in line with the Commission's proposed increase in funding across all themes. This EU investment will support the riskier ICT research and innovation that can deliver new business breakthroughs, often on the basis of emerging technologies. ²⁰
- Q: How will international cooperation will be promoted under Horizon 2020?
 A: International cooperation in EU research and innovation programmes is important in order to strengthen the EU's excellence in research, to tackle global challenges jointly and to support EU external policies. International cooperation will be promoted under Horizon 2020.

Many of our international partner countries are investing more and more in research and innovation and cooperation will help European research to reach full potential. Active and more strategic international cooperation on research will also contribute to achieving EU policy objectives.²¹

• **Q:** How will Horizon 2020 address the variation across Member States and regions in terms of participation?

A: The Framework Programmes for research and technology development (FP) have provided a vital contribution to the development of European competitiveness, growth and knowledge generation. There has however been considerable variation across Member States and regions in terms of FP participation. Horizon 2020 will continue to provide funding on the basis of excellence, regardless of geographical location. However, the European Commission will make a major effort under Horizon

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2020 to recognise and promote excellence across Europe. ²²

- Q: How can I find out more about industrial participation in Horizon 2020?
 A: Horizon 2020 is designed to bring business into the research and innovation chain throughout its various components. Some of the key opportunities for participation and support are highlighted in the fact sheet mentioned below.²³
- **Q:** How does Horizon 2020 implement the commitments made in the Innovation Union flagship initiative?

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

Horizon 2020 will implement a number of the specific commitments made in the Innovation Union, notably in: focusing on societal challenges, simplifying access, involving SMEs, strengthening the ERC, strengthening financial instruments, supporting public procurement of innovation, facilitating collaboration, and supporting research on public and social innovation.²⁴

Q: How is innovation defined in Horizon 2020 and how does Horizon 2020 strengthen the approach to innovation?

A: Horizon 2020 will support all forms of innovation. This includes innovation that results from research and development (R&D) activities. It also includes innovation that results from other activities, such as finding new uses or combinations of existing technologies or developing new business models or new ways of interacting with users. While innovation is generally understood as the commercial introduction of a new or significantly improved product or service, innovations can also be for non-commercial applications such as for better public services or for addressing social needs ('social innovation').

Horizon 2020 will strengthen the approach to innovation in a number of ways. First, it will increase support for testing, piloting, and demonstrations of new technologies, such that their potential in real world environments can be better understood.

Second, Horizon 2020 will support the market demand for innovation, including through the development of specifications for new standards and through supporting public bodies to procure R&D services or innovative products and services. New approaches are also foreseen, such as inducement prizes that reward the achievement of specific goals, encouraging a wider range of innovators to become involved. Furthermore, bottom-up activities will be strengthened, and call topic descriptions will be less prescriptive, allowing Europe's brightest and most creative minds to propose their own solutions.

Third, Horizon 2020 introduces a new SME instrument specifically designed to support SMEs to innovate.

Fourth, Horizon 2020 will scale up financial instruments in which the public sector shares the risk with the private sector in make investments available for the development of innovative companies or projects.²⁵

Q: How will the seamless and integrated approach across the different specific objectives of Horizon 2020 be put in practice?

A: There needs to be a strong interaction between the different specific objectives of Horizon 2020. For example, a European Research Council frontier research project could be result in new knowledge that can be applied commercially and/or is directly relevant to a societal challenge. Similarly, the development of enabling technologies may lead to new applications which are useful for tackling the societal challenges, or vice versa.

Horizon 2020 will stimulate these interactions in a number of ways:

- The same set of rules will apply to all parts, making it easier for participants who have experience in one part of the programme to apply to other parts;

- In setting the priorities for calls for proposals, the Commission will seek advice widely from external and internal sources such that developments in one area can be captured in the priorities established in other areas;

- Support will be provided to actions that have the explicit purpose of bringing together projects funded in different parts of Horizon 2020 in order to foster cross-fertilisation;

- Flexible mechanisms have been included to allow joint actions that are co-funded between different

specific objectives of Horizon 2020 where there is a need for a major action that serves different specific objectives. 26

- 0 Q: How does Horizon 2020 cover issues like non-technological innovation and social innovation? A: The activities cover both technological and non-technological innovation, corresponding to the broad approach to innovation taken in the Innovation Union. This approach recognises the need for Europe to develop a distinctive approach to innovation to be able to compete on the global scene. This includes building on EU strengths in design, creativity, services and social innovation. Funding for these activities is brought together with the support for research and technological development, allowing a full set of activities to be implemented in a strategic manner. Non-technological innovation can take place in all parts of the programme. In complement, regarding social innovation, the 'Inclusive, innovative and secure societies' challenge contains a specific objective on 'social innovation and creativity'. 27
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Q: What are the main novelties of Horizon 2020?

A: Horizon 2020 will represent a clear break with the past in order have a stronger impact on Europe's priority policy objectives.

Important novelties include:

- A single programme for all EU managed research and innovation funding, with a single set of participation rules.

- Full integration of innovation in the programme, meaning more support that is closer to market application (e.g. demonstration, support for SMEs, innovation services, venture capital).

- A focus on the major societal challenges Europe and the world face. This will mean bringing together different technologies, sectors, scientific disciplines, social sciences and humanities, and innovation actors to find new solutions to these challenges.

- Radically simplified access for participants, including a single web portal for all information and projects, less paper work to make applications, and fewer controls and audits.

 A more inclusive approach with specific actions to ensure excellent researchers and innovators from all European regions can participate, and reinforced support for partnerships with the private sector and with the public sector in order to pool resources and build more effective programmes. At the same time, successful elements in the current programmes are being scaled up, such as the

European Research Council and trans-national collaborative projects. 28

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Q: What are main elements of continuity with regards to FP7, CIP and EIT? A: While Horizon 2020 represents a clear break with the past in terms of its approach, the Commission has also taken great care in providing continuity, and in many cases even a strengthening, of those elements of the current programmes which have shown to be very successful. This includes in particular:

- The European Research Council, which has in a few years time become the point of reference for excellent frontier research in Europe and which has therefore been significantly strengthened; - The Marie Curie actions for training, mobility and career development of researchers and the

research infrastructure actions;

- The collaborative research actions which have been at the heart of the successive Framework Programmes for Research and will now be extended to innovation aspects such as marketreplication, demonstration, involvement of users, design, IP and standardisation issues;

- The financial instruments of both FP7 and the CIP which have been met with great demand and which have been shown to be particular valuable in a time in which debt and equity financing have been severely constrained;

- Demand side measures to stimulate innovation (in particular public procurement of innovative solutions), support through clusters, IPR management and exploitation, SME innovation capacity support, stemming from the CIP.

While fully aligning with the strategy of Horizon 2020, the EIT will maintain its mission: integrating the knowledge triangle and experimenting with new approaches for innovation, notably involving the business community. It will also provide a stable base for its Knowledge and Innovation Communities (KICs). The EIT will consolidate existing KICs and will expand their number gradually. In order to fulfil its role as a test bed for new, simplified governance and funding innovation models, the EIT's current flexibility is to be preserved. 29

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How will Horizon 2020 be able to adapt to developments and unforeseen circumstances during its
etime?

A: Horizon 2020 will enter into force on 1 January 2014. It will last until end 2020 and many of the projects it will fund in its final years will most likely go on until 2025. As some of its actions are aimed at the long term, the impact of Horizon 2020 will probably last until well beyond 2030.

Given thise timescale, it is vital that Horizon 2020 retains an adequate amount of flexibility as to the priorities it sets and the areas of research and innovation it aims to fund. Prescribing in great detail technological priorities for Horizon 2020 would entail a grave risk of rendering the programme irrelevant or unable to cope with changes in the broader economic and policy context during its implementation.

The proposals for Horizon 2020 have therefore been drafted to include a large element of flexibility by:

- Including more bottom-up elements where researchers and innovators can propose breakthrough solutions of their choice, on the basis of their assessment of what is needed at a particular point in time. This will not be restricted to strengthening typical bottom-up instruments such as the ERC, Marie Curie or the SME actions, but also leaving more room for open calls in the societal challenges and enabling and industrial technologies;

- Formulating priorities in terms of problems and challenges rather than on the basis of technologies and sectors, leaving the choice of solution up to the participants;

- Including specific provisions for actions which cut across the different specific objectives of Horizon 2020, also through a pooling of the respective budgets, as solutions to today's and future challenges will increasingly be interdisciplinary;

- Including a specific flexibility clause on the budget distribution within Horizon 2020, which makes it possible to shift budget between the different specific objectives to respond to unforeseen situations or new developments and needs. ³⁰

Q: What are the key features of Horizon 2020 and its Rules which will make it simpler to participate in?

A: Simplification in Horizon 2020 will target three overarching goals: reducing the administrative costs of the participants; accelerating all processes of proposal and grant management and decreasing the financial error rate.

These general objectives will be achieved along several dimensions:

- Structural simplification, which is provided through a simpler programme architecture, bringing together all research and innovation funding in one programme. This includes a single set of participation rules covering all components of the programme.

- Simpler funding rules, which will make the preparation of proposals and the management of projects easier. At the same time, they will reduce the number of financial errors.

The following approach is proposed:

• Simplified reimbursement of real direct costs, with a broader acceptance of beneficiaries' usual accounting practices;

• The possibility of using unit personnel costs (average personnel costs) for beneficiaries for which this is their usual accounting method, and for SME owners without a salary;

 Simplification of time-recording by providing a clear and simple set of minimum conditions, in particular abolition of time-recording obligations for staff working full time on the EU project;

 Only two reimbursement rates for all types of participants: 100% for research activities, 70% for piloting and demonstration;

 One single flat rate of 20% to cover indirect costs, instead of the current four methods for calculation:

• Continuation of the system of unit costs and flat rates for mobility and training actions (Marie Curie);

Output-based funding with lump sums for whole projects in specific areas.

- Revised control strategy, which takes into account the policy objective of achieving a new balance between trust and control and reducing the administrative burden:

• On the ex-ante side, the guarantee fund will cover all actions under Horizon 2020, leading to fewer ex-ante financial capacity checks and a reduced number of certificates on financial statements;

• Ex-ante financial capacity checks in Horizon 2020 will be required only for coordinators (i.e. abolition of the threshold of EUR 500000 for other partners), reducing thus further the number of ex-ante checks:

 Voluntary ex-ante certification of accounting methodologies of organisations using unit personnel costs will be offered, as means for preventing errors and for providing ex-ante assurance;

The focus of the ex-post audits will shift from a minimisation of the residual error rate towards

risk-based audit and fraud detection. The overall number of ex-post audits will be limited with the Commission considering that as general guidance, a maximum of 7% of participants in Horizon 2020 would be subject to audit over the whole programming period.

As a result, the Commission deems it possible to reduce the average time to grant in Horizon 2020 with 100 days as compared to the current situation.

Further simplification of research and innovation funding will result from the revision of the Financial Regulation (e.g. no declaration of interest on pre-financing, eligibility of VAT, limitation of extrapolation of systematic errors).

The whole set of practical arrangements for proposal and project implementation will also be revisited and streamlined. This includes the detailed provisions on the content and shape of proposals, the processes for turning proposals into projects, the requirements for reporting and monitoring, as well as the related guidance documents and support services. A major contribution to reduced administrative costs for participation will come from a single user-friendly IT platform for all

interactions with participants, based on the FP7 Participant Portal. ³¹

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- **Q:** What will the role of the EIT be in Horizon 2020?

A: Within Horizon 2020, the EIT will contribute to all priorities (excellent science, industrial leadership and societal challenges) by stimulating results-driven research, incentivising the creation of high growth innovative SMEs and fostering mobility across boundaries of disciplines, sectors and countries. The EIT will act in a complementary way to other Horizon 2020 initiatives in these areas. Moreover, the EIT will bring a fully fledged education dimension to the EU's research and innovation policy. Notably through new, trans- and inter-disciplinary EIT-labelled degrees the EIT is leading a collaborative effort towards education for innovation and entrepreneurship with clear spill over effects on the broader European agenda for the modernisation of higher education institutions thereby promoting the European Higher Education Area. ³²

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Q: What are the links between Horizon 2020 and the Programme for the Competitiveness of Enterprises and SMEs?

A: Both Horizon 2020 and the Programme for the Competitiveness of Enterprises and SMEs aim at creating growth and jobs in a complementary manner. Horizon 2020 activities will generate the scientific and technological breakthroughs to develop the innovative products, services and processes needed to tackle the urgent challenges society faces. These innovations will at the same time lead to huge business opportunities for European companies.

The Programme for the Competitiveness of Enterprises and SMEs will further develop the actions in favour of competitiveness and entrepreneurship, with a special focus on SMEs, such as access to finance for their growth and the Enterprise Europe Network. It will aim at improving the sustainability of EU enterprises and at improving their access to markets, within the EU and internationally.³³

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Q: What are the links between Horizon 2020 and the Cohesion policy funds?
A: Horizon 2020 will promote excellence across the European Research Area, with projects selected in open competition and following an independent evaluation process. The purpose of the Cohesion Policy funds (also known as the Structural Funds) is to support capacity building and hereby reduce the significant economic, social and territorial disparities that still exist between Europe's regions.

Cohesion policy funds are distributed based on pre-allocated global envelopes to the Member States and regions. This funding is implemented through a series of Operational Programmes and individual projects, including those supporting research and innovation.

There are already substantial interactions between the EU's research and innovation policy and its Cohesion policy. In FP7, investments in building excellence and innovation capacity are made through the 'Regions of Knowledge', 'Research Potential' and 'Research Infrastructures' actions. At the same time, the Member States and regions have committed some EUR 86 billion from the EU's cohesion budget in the current programming period for actions supporting research and innovation.

For the next programming period, Horizon 2020 will also contribute to research and innovation in the regions mainly by improving policy support, in order to build efficient smart specialisation strategies in full cooperation with Cohesion policy. An increased effort will also be made in the new Cohesion policy funds where support for research and innovation will be one of the top investment priorities, in full accordance with the Europe 2020 Strategy and the Innovation Union flagship initiative in order to assist the less developed Member States and regions to climb the 'staircase to excellence'. ³⁴

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A: The Joint Research Centre is the in-house science service of the European Commission. Its mission is to provide scientific and technical support to EU policy making, thus operating at the interface between research and EU policy. It provides input throughout the whole policy cycle from conception to implementation and evaluation.

The direct actions of the JRC funded through Horizon 2020 will focus on the EU's policy priorities and the societal challenges as spelled out in Europe 2020 and reflected in Horizon 2020. The JRC will provide independent and sound scientific input to evidence-based policy making and thus underpin Europe's development towards smart, sustainable and inclusive growth.

The JRC's key competence areas are energy and transport, environment and climate change, agriculture and food security, health and consumer protection, information and communication technologies, reference materials, and all aspects of safety and security, including nuclear. JRC research will complement other Horizon 2020 funded research activities in finding answers to the challenges faced by Europe today.

Examples of JRC activities include pre-normative research and contribution to standard-setting for e.g. electric cars or toxicological tests, thus strengthening Europe's competitiveness and innovation and health and consumer protection. The JRC will contribute to maintain a high level of safety of operating nuclear power plants and relevant nuclear expertise in the EU. It will contribute to safety and security of EU citizens through e.g. nuclear forensics in the fight against illicit trafficking, and through early warning systems to enhance Europe's capacity to manage crises and disasters. Its work on the measurement and risk analysis of nanomaterials will contribute to a responsible approach to their use and enabling the potential benefits of this technology to be reaped. ³⁵

Q: Why has there been a shift towards a challenge based approach and what are the implications of this on the current FP7 Themes?

A: A challenge based approach will be implemented in the priority "Societal challenges" of Horizon 2020. A challenge based approach makes sense at European level, because the challenges we are facing (e.g. climate change, energy, resource efficiency) requires a critical scale and scope of effort that is not possible for individual countries. This approach will also link directly to EU policy goals in areas such as agriculture, energy, environment, transport and security.

Compared to FP7, this approach will emphasise funding for projects that solve specified challenges (or particular aspects of those), as opposed to prescribing the specific topics that must be addressed. In many cases, it will mean multi-disciplinary, multi-actor actions that bring together different competences across Europe and beyond. The challenges proposed for Horizon 2020 will take up the various FP7 themes broadly as follows:

- FP7 Health: integrated in 'Health, demographic change and wellbeing challenge';

- FP7 Food, Agriculture and Fisheries, and Biotechnology: integrated in the 'Food security,

sustainable agriculture and the bio-economy' challenge, although enabling biotechnologies will be supported under 'Leadership in enabling and industrial technologies';

- FP7 Information and communication technologies: support for enabling ICTs under 'Leadership in enabling and industrial technologies' and ICT applications within the relevant societal challenges; - FP7 Nanosciences, nanotechnologies, materials and new production technologies: support for

enabling technologies under 'Leadership in enabling and industrial technologies' and applications within the relevant societal challenges;

- FP7 Energy theme: in the 'Secure, clean and efficient energy' challenge (which also includes follow-up to CIP intelligent energy programme);

- FP7 Environment (including Climate Change): integrated in 'Climate action, resource efficiency and raw materials' challenge (which also includes the CIP eco-innovation actions);

- FP7 Transport (including Aeronautics): integrated in 'Smart, green and integrated transport' challenge;

- FP7 Socio-economic Sciences and the Humanities: underpinning socio-economic and humanities in the 'Inclusive, innovative and secure societies' challenge; application of socio-economic sciences and humanities within all the societal challenges;

- FP7 Space: integrated under 'Leadership in enabling and industrial technologies';

- FP7 Security: integrated within the 'Inclusive, innovative and secure societies' challenge. In addition, some elements of the current Themes cut across several of the Horizon 2020 challenges and the enabling and industrial technologies and will also be supported through the Future and Emerging Technologies objective. 36

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Q: What is the approach taken to stimulate SME participation and what is the role of the new

dedicated SME instrument?

A: SME participation will be promoted across Horizon 2020 based on an integrated strategy that aims to fill gaps in funding for early-stage, high-risk research and innovation by SMEs as well as stimulating breakthrough innovations. It is expected that through this integrated strategy around 15% of the total combined budgets of the priority 'Societal challenges' and the specific objective 'Leadership in enabling and industrial technologies' will be go to SMEs.

A new dedicated SME instrument will provide an easily accessible SME window, with simple rules and procedures. It will be used across all societal challenges and the enabling and industrial technologies. The new instrument will encourage SMEs to put forward, in a bottom-up manner, their most innovative ideas with an EU dimension. It will address highly innovative SMEs showing a strong ambition to develop, grow and internationalise, regardless of whether they are high-tech and research-driven or non-research conducting, social or service companies. Only SMEs will be able to apply for funding, even single company support will be possible so as to ensure market relevance and to increase commercialisation of project results. SMEs can decide how best to organise the project and with whom to collaborate, including subcontracting tasks where they lack in-house capabilities.

Support will be provided in three different phases covering the whole innovation cycle (similar to the ³⁷SBIR model³⁸). A feasibility phase will allow an assessment of the technological and commercial potential of a project; a main grant will be provided to undertake research and development with the emphasis on demonstration and market replication; and the commercialisation phase will be supported indirectly through simplified access to debt and equity financial instruments as well as various other measures, for example regarding IPR protection. While successful completion of one stage will allow an SME to move on to the next, each stage will be open to all SMEs.

A specific action will promote market-oriented innovation of R&D-performing SMEs, building on the Eurostars initiative. Furthermore, SMEs will be encouraged to participate in other parts of Horizon 2020, such as the Marie Curie actions or the activity on Future and Emerging Technologies. The 'Access to risk finance' specific objective will also have a strong SME focus. Measures assisting the implementation of the instrument and complementing support for SMEs across Horizon 2020 will also be undertaken, notably to build SME innovation capacity. Reinforcing the innovation support, information and advice activities of the Enterprise Europe Network will further facilitate SMEs' access to Horizon 2020.

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Q: How have the current SME specific activities been taken up in Horizon 2020?

A: The new dedicated SME instrument will integrate the specific SME measures of FP7 and the SME market replication projects of the CIP in one comprehensive, simple and easily accessible scheme. It will fully cover the possibility to outsource research and development critical to the innovation projects of non-research intensive SMEs, as currently supported under the FP7 activity 'Research for the Benefit of SMEs', with demonstration and market replication projects also being eligible. The dedicated SME instrument will also facilitate the collaboration of different types of SMEs along the value-chain and will foster complex innovation processes and forms of cooperation by supporting all forms of innovation. Furthermore, it will not distinguish between the research intensity of companies. SME associations or other organisations providing services to their SME members may continue to assist and to support their member companies in a European project as part of an SME-led consortium formed under the dedicated SME instrument.

It is the Commission's intention to continue supporting the Eurostars initiative, provided it meets the criteria laid down in the Horizon 2020 Regulation and taking into account the recommendations made in its interim evaluation report.

Strengthening SMEs innovation capacity will be achieved by providing national and regional innovation support agents with room to experiment and develop new approaches and instruments for SME innovation support. In specific, well justified cases European level support services might be maintained or established. The IPR helpdesk is the most well known example of this. Also in this context the role of the Enterprise Europe Network, financed through the Programme for the Competitiveness of Enterprises and SMEs, will be strengthened. 39

Q: What is meant by a societal challenge and how have they been selected? 0 A: A societal challenge corresponds to a concern which is shared by citizens across Europe and where a solution can not be found within in an acceptable timeframe without major technological breakthroughs. Societal challenges share a number of elements, including the complexity involved in finding a solution, the need for an interdisciplinary approach or the fact that the solution itself not only addresses the challenge, but at the same time generates huge business opportunities.

The challenges selected for Horizon 2020 were chosen on the basis of a variety of sources of evidence on the state of the economy and society in Europe and worldwide, Europe's performance in the related scientific and technological domains and the need for an approach coordinated at the EU level. Further information can be found in the ex-ante impact assessment which accompanies the Horizon 2020 proposal. 40

Q: How will socio-economic sciences and humanities be funded? 0

A: Within the three priorities of Horizon 2020 - excellent science; industrial leadership and societal challenges - the social sciences and humanities will be fully integrated.

They will be included as an integral part of the activities to address all societal challenges, working beyond the 'silos' of distinct disciplines. This includes: understanding the determinants of health and optimising the effectiveness of healthcare systems, support to policies empowering rural areas and promoting informed consumer choices, robust decision making on energy policy and in ensuring a consumer friendly European electricity grid, supporting evidence based transport policy and foresight, support to climate change mitigation and adaptation strategies, resource efficiency initiatives and measures towards a green and sustainable economy.

In addition, the 'Inclusive, Innovative and Secure Societies' challenge will allow the social sciences and humanities scientific community to study issues such as smart and sustainable growth, social transformations in European societies, social innovation and creativity, the position of Europe as a global actor as well as the social dimension of a secure society.

Finally, there will be ample bottom-up opportunities for social sciences and humanities researchers to receive funding via the European Research Council, Marie Curie actions and initiatives under the Research Infrastructures Programme. 41

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Q: Why does Horizon 2020 put more emphasis on using financial instruments (equity and debt) to support SMEs and other participants?

A: The two main EU financial instruments currently supporting research and innovation have been very successful. For debt, the Risk-Sharing Finance Facility (RSFF) combines EU budgetary resources and EIB funding to share the risks associated with investing in projects: EUR 1 billion comes from the FP7 budget, and another EUR 1 billion from the resources of the European Investment Bank. RSFF loans are available to public and private sector promoters of any size and ownership from the Member States and the countries associated to FP7. By mid-2011, funding for 91 projects worth over EUR 9 billion had been approved. A specific facility for SMEs will start up in early 2012. For equity, the High-Growth and Innovative SME Facility (GIF) under the CIP invests in specialised funds that provide venture capital for SME financing. Managed by the EIF, the GIF covers both early and growth-stage investments. By the end of 2010, some EUR 222 million had been committed to 19 funds supporting a target fund size of some EUR 1.5 billion.

Greater use of financial instruments will help leverage yet further private research and innovation investments, including venture capital investments for innovative, high-tech companies, and in particular SMEs. In Horizon 2020, financial instruments will be expanded in both scope and scale. A debt facility will provide loans and guarantees, and an equity facility will provide finance for early and growth stage investments. Their aim will be to support the achievement of the R&I objectives of all sectors and policy areas crucial for tackling societal challenges, enhancing competitiveness and fostering sustainable growth. They will be implemented via a mandate to, or a partnership with, the European Investment Bank group and/or other international financial institutions and national intermediaries. 42

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Q: What is the rationale for applying the same funding rate for all types of participants? A: The current situation under FP7 is defined by a complex matrix of funding rates, methods for determining indirect costs, activities and categories of legal entities (according to the legal status granted after validation by the services of the Unique Registration Facility). This complexity is difficult to explain, leads to long delays (in particular in the grant negotiation phase), hampers the expected flexibility in project implementation, and requires permanent maintenance of the legal status information, with a complex system for handling amendments.

Having a single reimbursement rate for all types of participants (together with a single flat rate for indirect costs) will considerably reduce:

- the length and complexity of guidance documents and the number of requests addressed to the help-desks;

- the administrative costs, in particular for coordinators having to manage the previous complex

system (as changes to consortium composition, distribution of work packages etc. will not entail difficult budget operations as it was now the case due to the variety of reimbursement rates and indirect cost methods applied by different organisations in the consortium);

- the time-to-grant, as the validation of legal entities (particularly SMEs) and establishment of budgets of collaborative projects by the consortia will be simpler;

- the number of financial errors (an analysis of errors identified during audits of FP7 suggests that around 25-35% of them would be avoided by the simplification measures proposed, and the error rate can then be expected to fall by 1.5%, i.e. from close to current 5% to around 3.5%) 43

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Q: What approach does Horizon 2020 take towards international cooperation? A: International cooperation in research and innovation is an essential element for meeting the objectives of Europe 2020. Recognising the global nature of producing and using knowledge, Horizon 2020 builds on the success of international cooperation in previous framework programmes and is fully open to participation from third countries. While being open to participation to the world, funding will be more focused, allowing participants who bring exceptional cooperation skills and resources, and those from less wealthy countries, to benefit. There will be further emphasis on mutual access to research programmes. The association of countries to the programme, where participants have identical rights to those from Member States, will continue to include some of EU's closest partner countries.

A key part of international cooperation in Horizon 2020 will be developing partnerships with Member States through coordinated or joint ventures with third country partners and international organisations. As all the funding schemes allow the participation of international partners in consortia, and can be tailored to the specific requirements of the research and innovation being supported, no specific international cooperation funding schemes are foreseen in Horizon 2020. There will, however, be a mechanism for supporting joint calls and the possibility of programme co-funding with third countries or international organisations. 44

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Q: How will the different parts of Horizon 2020 target international cooperation? A: While Horizon 2020 is open to participants from around the world, a new international cooperation strategy, currently being developed, will foresee targeting through three major country groupings: industrialised and emerging economies; the enlargement and neighbourhood countries; and developing countries. Horizon 2020 will continue to have bi-lateral agreements with major research players, but there will be increased emphasis on mutual access to programmes with these countries. There will be a priority towards bi-regional cooperation for other third countries. Each challenge within Horizon 2020 outlines the major areas seen as particularly relevant for international cooperation. Given the fully mainstreamed approach, and the recognition of the importance of international cooperation for delivering Horizon 2020, no specific budget for research activities is foreseen. There will, however, be a budget for specific coordination activities for international cooperation. 45

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Q: Will the existing Joint Technology Initiatives, Recovery Package PPPs and Article 185 initiatives continue to receive funding under Horizon 2020?

A: There is great value in combining EU funding with other public and private sources of funding in order to achieve critical mass in addressing EU level challenges. This was demonstrated clearly in the Commission's Communication on partnering in research and innovation.

This is why both public public and public private partnerhips have been explicitly included as implementation options in the Horizon 2020 proposal with a clear set of criteria guiding the selection of which initiatives to fund. As far as public private partnerships are concerned, the structure of the recovery package public private partnerships set up in the context of the European Economic Recovery Package has been formalised in the Horizon 2020 legislation, with the option of institutionalised public private partnerships (Joint Technology Initiatives) only being used in very limited cases.

The Commission has the intention to continue supporting the existing partnering initiatives, where these meet the criteria laid down in the Horizon 2020 proposal and where these have been shown to make substantial progress during FP7. 46

Q: What role will the European Innovation Partnerships play in implementing Horizon 2020? A: As part of the Innovation Union Flagship initiative, European Innovation Partnerships were proposed as new fora for joining up resources to speed-up breakthrough innovations for societal challenges where there is also a new market potential for EU business. EIPs are not funding instruments of Horizon 2020, nor do they substitute the existing institutional decision mechanisms. However, the objectives developed in the EIPs' Strategic Implementation Plans are key contributions to the definition of priorities in the annual work programmes of Horizon 2020, with obligations on both sides (the Commission and the EIP) to ensure dialogue and follow-up on proposed priorities. 47

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Q: Will Joint Programming Initiatives receive funding through Horizon 2020? A: The Commission will support Joint Programming Initiatives (JPIs) during the development of their Strategic Research Agendas through co-ordination and support measures, where appropriate. Where the areas being addressed by a JPI fit with Horizon 2020 priorities, their instruments may be used to support JPIs where appropriate. In general, JPI joint actions will be evaluated on a case-by-case basis to assess whether the EU value-added justifies funding via the ERA-NET scheme or co-funding via thematic research calls.

The Commission will only consider making a proposal for an Article 185 Initiative where a JPI has demonstrated in its Strategic Research Agenda that it has the capacity for significant collaboration and the necessary scale and scope to support full integration of national programmes. 48

Q: How will Horizon 2020 contribute to completing the European Research Area? A: The idea behind the European Research Area (ERA) is to reduce fragmentation of research in Europe and to create an environment in which researchers can work in laboratories and research settings in other Member States just as easily as they can move within their own countries, without facing difficulties, and get access to important scientific knowledge, and taking their acquired pension rights and social benefits with them. Horizon 2020 will also provide incentives to unify Europe's research and innovation systems and support more collaboration between research programmes at all levels.

Horizon 2020 will foster excellence in research by making grants available for the best young scientists of any nationality or researchers who have already established themselves as being independent research leaders in their own right and who would like to pursue frontier research of their choice (ERC grants), as well as long term research stays in Europe for young and experienced post-docs (Marie-Curie fellowships).

Horizon 2020 will moreover fund the infrastructures to carry out advanced research, and to address the major challenges that we are facing in our time, give financial backing to joint programming of national research policies, and support activities that bring together European and government bodies of the Member States in public-public partnerships and between these bodies and private players in public-private partnerships.

Finally, to inform us whether the projects that we fund reach the goals that we have set ourselves, Horizon 2020 will fund monitoring, evaluation and similar policy support actions under the specific objective 'Inclusive, innovative and secure societies'. 49

Q: What will the role of programme committees be under Horizon 2020? A: Programme committees will continue to be asked to provide a formal opinion on the adoption of work programmes. The Horizon 2020 proposal does, however, not foresee a committee opinion on individual projects. Apart from having a positive effect on time to grant, this will allow the committee to free up time to engage in strategic discussions on priorities and budget allocations, within a clear multi-annual perspective. The programme committees will also assume a new role in ensuring vital links between EU funding and national funding, where there is a new provision to include explicit information on this aspect in the work programmes. ⁵⁰

Q: How does Horizon 2020 promote gender equality and the gender dimension in research and innovation content?

A: As requested in all EU activities, Horizon 2020 encompasses the aim to eliminate inequalities and to promote equality between men and women. In research and innovation, this implies the following dual approach:

- To correct the imbalances in the participation of female scientists at all stages of research careers and in the various fields of research;

- To consider gender as a dimension of research by taking into account the biological, social and

economic differences between women and men all through the research process. Gender is, therefore, set in Horizon 2020 as a cross-cutting issue for all its research programmes. Work programmes will contain information on how imbalances between women and men will be addressed, and how a gender dimension will integrated. This will also be reflected at project level within the provisions of grant agreements. 51

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Q: How will the construction of ITER be financed?

A: When the Council capped the budget for ITER construction at EUR 6.6 billion in July 2010 it did not prescribe the modalities by which this funding would be provided. The Commission's proposals for these modalities have now been presented in its Communication 'A Budget for Europe 2020' (COM(2011)500).

The Commission's view is that experience of large projects in the EU shows that they tend to be expensive in relation to the EU budget, and cost overruns trigger a need to redeploy funds that had already been earmarked for other priority needs. Recent examples of such redeployments (Galileo, the Food Facility and the European Economic Recovery Plan) show that reaching an agreement requires complex and time-consuming negotiations and can drastically compress the margins available for other headings. This needs to be addressed in the coming MFF, which does not have provisions for a mid-term review.

To ensure flexibility when it comes to adjusting to unexpected events and new priorities a sustainable solution is required. The Commission is therefore proposing to fund ITER outside the MFF. This approach should ensure the success of the project at acceptable cost and with reasonable financial and technical risks, enabling the EU to fully meet its international commitments.

The practical implementation for funding ITER construction is currently under discussion at the Commission level. In any case, all solutions under consideration imply the adoption of a separate legal basis, which means that ITER could not be included in the Horizon 2020 package adopted on 30 November 2011. 52

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Q: How will Horizon 2020 contribute to achieving the objectives of the Europe 2020 strategy? A: Europe 2020, with its triple objectives of smart, sustainable and inclusive growth, is the Union's strategy for succesfully exiting the financial and economic crisis and re-taking the path towards sustainable growth. In this respect, fiscal consolidation and structural reform measures are needed for short term stabilisation of the economy, but they are not sufficient to ensure long-term growth. This requires strong investment in research and innovation, which is also needed to address pressing societal challenges such as climate change, an ageing population, or the move towards a resource efficient society. Such investment offers direct stimulus to the economy, as well as being vital to securing an excellent knowledge base and a competitive industry. It is the only way for Europe to remain competitive in a globalised world and sustain high standards of wellbeing.

This is why research and innovation are at the centre of the Europe 2020 strategy, which includes the headline objective of increasing spending on R&D to 3% GDP by 2020. It is also why its Innovation Union flagship initiative provides a comprehensive set of actions to step up research and innovation performance. Within this policy context, the Commission's proposals for the post-2013 EU Budget, including the proposals for Horizon 2020, reflect its ambition to invest in Europe's future while ensuring that EU funding benefits citizens even more than today, through a shift in resources to areas such as research and innovation. 53

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Q: What will improving the way the EU funds research and innovation do for ordinary Europeans? A: In line with the Innovation Union, the Green Paper proposes an approach focused more directly on tackling today's most pressing societal challenges and therefore the concerns of Europe's citizens.

Successful research and innovation are prerequisites for improving quality of life, enhancing social welfare and boosting economic competitiveness. Indeed, using research and innovation to tackle key challenges such as climate change and health not only has intrinsic value, it can also give Europe a technological lead in the world markets of the future and create growth and jobs in Europe.

EU funding for research and innovation will have more impact if procedures are simplified and access widened. This will make things easier for participants, attract new applicants and drive up the already high quality of projects and of results. That in turn will help create new products and services – including better public services - that people want and will help Europe to create sustainable growth

and jobs and be more resilient against crises.

These positive effects will be all the stronger if another aspect of the Green Paper – better cooperation between Member States themselves – is also realised. 54

Q: What is Horizon 2020?

A: Horizon 2020 is the future Framework Programme for Research and Innovation.

The proposed Framework Programme for Research and Innovation, which will be introduced post-2013, will build upon the successes of the current Framework Programme for Research (FP7), the Competitiveness and Innovation Framework Programme (CIP) and the European Institute of Innovation and Technology (EIT).

The ultimate aim is to maximise the contribution of EU-funded research and innovation to sustainable growth and jobs and to tackling the grand challenges facing Europe – for example climate change, energy and food security, health and our ageing population. This will be achieved by creating a coherent set of instruments, along the whole "innovation chain" starting from basic research, culminating in bringing innovative products and services to market; and also to support non-technological innovation, for example in design and marketing.⁵⁵

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Links

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