



HORIZON 2020

An introduction to the European Union's plans for research and innovation funding (2014 to 2020)

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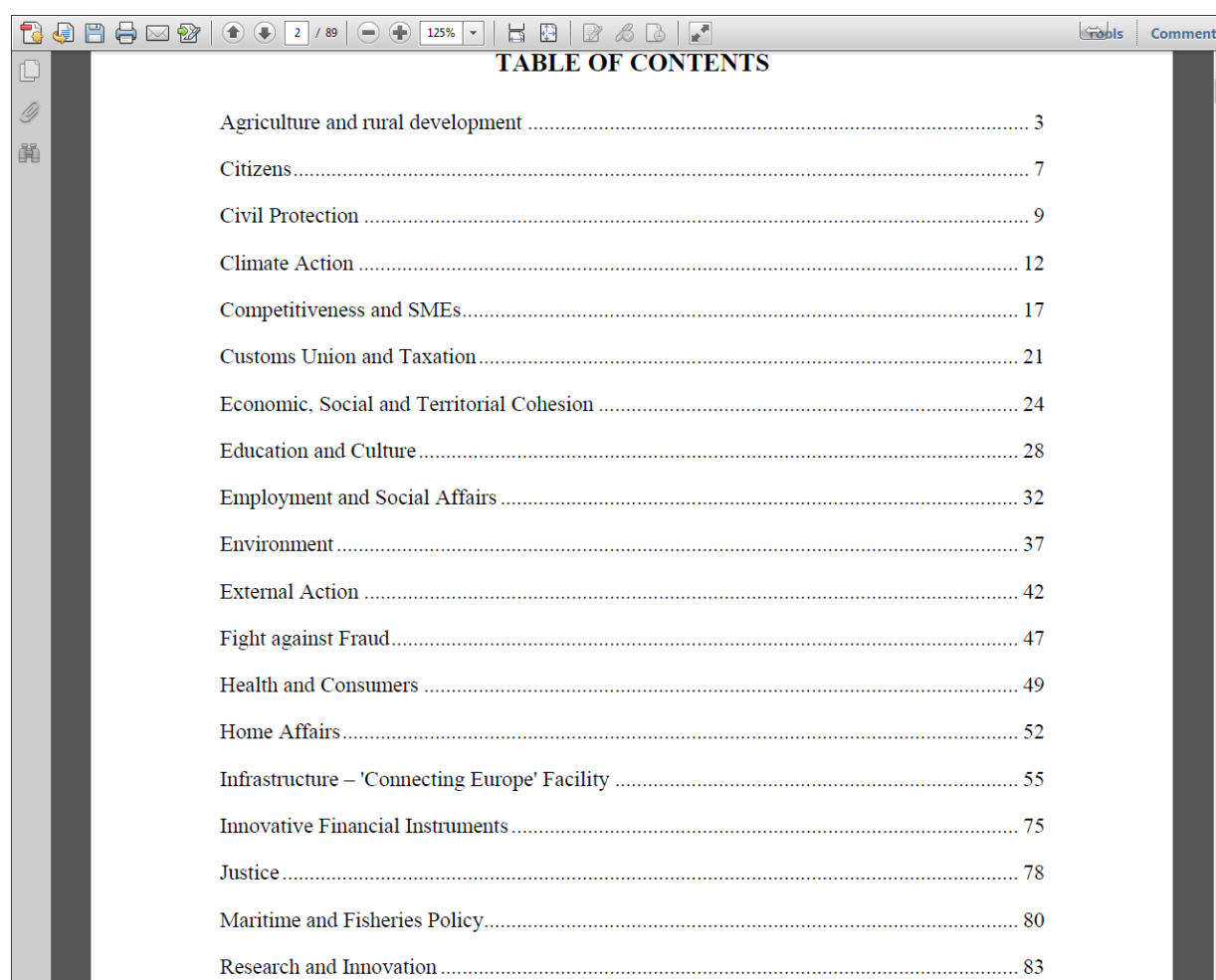
MULTI-ANNUAL FINANCIAL FRAMEWORK

The EU plans its spending within seven-year multi-annual financial frameworks (MFFs) and as the 2007 to 2013 MFF is drawing to a close, it is currently devising and agreeing the MFF for the period 2014 to 2020. To be concluded between the European Parliament, Council and European Commission, this sets the maximum amount of commitment appropriations in the EU budget for broad policy areas and fixes an overall annual ceiling on spending. The main details are set out in two documents:

- A Budget For Europe 2020 - Part I - Communication (<http://bit.ly/mhzbua>)

and

- A Budget For Europe 2020 - Part II - Policy Fiches (<http://bit.ly/iUPVUV>).



The screenshot shows a PDF viewer window with a toolbar at the top. The main content is a table of contents titled "TABLE OF CONTENTS". The table lists various policy areas and their corresponding page numbers. The items are: Agriculture and rural development (3), Citizens (7), Civil Protection (9), Climate Action (12), Competitiveness and SMEs (17), Customs Union and Taxation (21), Economic, Social and Territorial Cohesion (24), Education and Culture (28), Employment and Social Affairs (32), Environment (37), External Action (42), Fight against Fraud (47), Health and Consumers (49), Home Affairs (52), Infrastructure – 'Connecting Europe' Facility (55), Innovative Financial Instruments (75), Justice (78), Maritime and Fisheries Policy (80), and Research and Innovation (83).

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The former gives the main outline of the budget and explains that it is to focus on smart, sustainable and inclusive growth. The Commission is accordingly proposing to increase the amounts allocated to research and innovation, education and SME development and it stressed: "The EU budget we propose will not cost taxpayers more than at present. But it will give them more in return. We are modernising the European budget to make savings in some areas so we can spend more in the priority areas that really matter." In broad terms, the EU Budget spends about 1% of the Union's GDP.

In EU-speak the second document sets out the "fiches" (files) which explain the main policy areas where the Union will be committing resources during the 2014 to 2020 MFF. These are listed in the table of contents to the document, given above.

EUROPE 2020

Europe 2020 is the EU's growth strategy for the coming decade.

Europe 2020 targets
1. Employment <ul style="list-style-type: none">○ 75% of 20-64 year-olds to be employed
2. R&D/innovation <ul style="list-style-type: none">○ 3% of the EU's GDP (public and private combined) to be invested in R&D/innovation
3. Climate change/energy <ul style="list-style-type: none">○ greenhouse gas emissions 20% (or even 30%, if the conditions are right) lower than 1990○ 20% of energy from renewables○ 20% increase in energy efficiency
4. Education <ul style="list-style-type: none">○ Reducing school drop-out rates below 10%○ at least 40% of 30-34-year-olds completing third level education
5. Poverty / social exclusion <ul style="list-style-type: none">○ at least 20 million fewer people in or at risk of poverty and social exclusion

Flagship initiatives

Within each of the following seven flagship initiatives, the EU and national authorities plan to coordinate their efforts so they are mutually reinforcing:

Smart growth

- [Digital agenda for Europe](#)
- [Innovation Union](#)
- [Youth on the move](#)

Sustainable growth

- [Resource efficient Europe](#)
- [An industrial policy for the globalisation era](#)

Inclusive growth

- [An agenda for new skills and jobs](#)
- [European platform against poverty](#)

HORIZON 2020

The Commission has noted, when introducing previous MFFS, that the EU faces a significant innovation gap lagging behind Japan and the United States with regard to a number of key research and development (R&D) indicators including the number of patents registered, the number of medium-high and high-tech product exports and the percentage of GDP expenditure on R&D. It makes the same point again and stresses that the EU must improve its record of turning scientific knowledge into patented processes and products for use not only in high-tech industries but perhaps even more importantly in traditional sectors.


The Commission proposes that future research and innovation funding be based on three main areas that are firmly anchored in the Europe 2020 strategy:

- excellence in the science base;
- tackling societal challenges; and
- creating industrial leadership and boosting competitiveness.

European Commission
Research and Innovation
HORIZON 2020

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http://ec.europa.eu/research/horizon2020/index_en.cfm?pg=h2020

A common strategic framework ([Horizon 2020](#)) will aim to eliminate fragmentation and ensure more coherence, including with national research programmes. It will be closely linked to key sectoral policy priorities such as health, food security and the bio-economy, energy and climate change. Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. Running from 2014 to 2020 with an €80 billion budget, the EU's new programme for research and innovation is part of the drive to create new growth and jobs in Europe.

Horizon 2020 provides major simplification through a single set of rules. It will combine all research and innovation funding currently provided through the Framework Programmes for Research and Technical Development, the innovation related activities of the Competitiveness and Innovation Framework Programme (CIP) and the European Institute of Innovation and Technology (EIT).

The adoption of Horizon 2020 is intended to:

- Strengthen the EU's position in science with a dedicated budget of € 24,598 million. This will provide a boost to top-level research in Europe, including an increase in funding of 77% for the very successful European Research Council (ERC).
- Strengthen industrial leadership in innovation (€17,938 million). This includes major investment in key technologies, greater access to capital and support for SMEs.
- Provide €31,748 million to help address major concerns shared by all Europeans such as climate change, developing sustainable transport and mobility, making renewable energy more affordable, ensuring food safety and security, or coping with the challenge of an ageing population.

It will tackle societal challenges by helping to bridge the gap between research and the market by, for example, helping innovative enterprise to develop their technological breakthroughs into viable products with real commercial potential. This market-driven approach will include creating partnerships with the private sector and Member States to bring together the resources needed.

Q&As

More information about Horizon 2020 can be found in the [Questions & Answers](#) pages of the above portal. They include:

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.

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 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.

Excellent Science

Horizon 2020 intends to raise the level of excellence in Europe's science base and to ensure a steady stream of world-class research to secure Europe's long-term competitiveness. It will support the best ideas, develop talent within Europe, provide researchers with access to priority research infrastructure, and make Europe an attractive location for the world's best researchers.

Horizon 2020 will:

- support the most talented and creative individuals and their teams to carry out frontier research of the highest quality by building on the success of the ERC;
- fund collaborative research to open up new and promising fields of research and innovation through support for Future and Emerging Technologies (FET);
- provide researchers with excellent training and career development opportunities through the Marie Curie Actions; and
- ensure Europe has world-class research infrastructures (including e-infrastructures) accessible to all researchers in Europe and beyond.

Competitive Industries

The Competitive Industries objective aims at making Europe a more attractive location to invest in research and innovation, by promoting activities where businesses set the agenda. It will provide major investment in key industrial technologies, maximise the growth potential of European companies by providing them with adequate levels of finance and help innovative SMEs to grow into world-leading companies. Horizon 2020 will aim to build leadership in enabling and industrial technologies, with dedicated support for ICT, nanotechnologies, advanced materials, biotechnology, advanced manufacturing and processing, and space, while also providing support for cross-cutting actions to capture the accumulated benefits from combining several Key Enabling Technologies (KETs) with a budget of €5894 million in constant 2011 prices.

Better Society

Under Horizon 2020 a challenge-based approach will bring together knowledge across different fields, technologies and disciplines, including social sciences and the humanities.


Funding will be focused on the following challenges:

- Health, demographic change and wellbeing;
- Food security, sustainable agriculture, marine and maritime research, and the bio-economy;
- Secure, clean and efficient energy;
- Smart, green and integrated transport;
- Inclusive, innovative and secure societies; and
- Climate action, resource efficiency and raw materials.

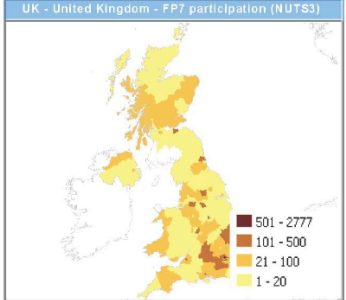
Country profiles

[Country profiles](#) are available for all the Member States. This is the one for the UK.

UNITED KINGDOM



UK - United Kingdom - FP7 participation (NUTS3)



The UK has high degree of economic specialisation with strengths in pharmaceuticals and financial services of which the latter may lead it to have a naturally relatively low level of R&D intensity. It also has a strategic view of innovation, a well developed policy mix of instruments and leads the debate and practice in many areas. These include procurement of innovation, tax incentives for R&D and university knowledge exchange income.

Despite a healthy economy until the onset of the crisis in 2008, UK R&D intensity had been stagnant and now risks falling with business investments likely to follow falling public spending on R&D. While undertaking a necessary fiscal consolidation and core science budget is maintained in cash terms, with other department R&D budget's cut the future growth potential of the UK economy would benefit of limiting overall public R&D spending cuts and providing multi-annual perspective on support to public and private R&D investment.

Innovation Union Scoreboard position	5 out of 27
R&D intensity target	1.87%
Number of eligible proposals	26.889 in response to 294 FP7 calls for proposals
Number of applicants	42.604 (13.59% of EU-27)
Success rate (EU-27 =21,5%)	23.8%
Rank in number of participants signed contracts (EU-27):	2
Rank in budget share (EU-27)	2
Top collaborative links	DE, FR, IT, ES, NL
Total Population & EU 27 Population Share	62435709 (12.4% of EU-27)

What next?

A time line for Horizon 2020:

- From 30 November 2011: Parliament and Council negotiations on the basis of the Commission proposals
- Ongoing: Parliament and Council negotiations on EU budget 2014-20 (including overall budget for Horizon 2020)
- Mid-2012: Final calls under 7th Framework Programme (FP7) to bridge gap towards Horizon 2020
- By end 2013: Adoption of legislative acts by Parliament and Council for Horizon 2020 (see HORIZON 2020 - THE LEGISLATION below)
- 1 January 2014: Horizon 2020 starts; launch of first calls for proposals.

What's in a name?

"Horizon 2020" was the winner in a competition to find a name for the next research and innovation Framework Programme: it beat "Imagine 2020" and "Discover 2020".

State of the Innovation Union

Innovation Union, one of the flagship initiatives under the Europe 2020 strategy, is an integrated innovation strategy built around 34 specific commitments. Based on a broad concept of innovation, encompassing the private, public and third2 sectors, it aims at ensuring that innovative ideas are translated into new goods and services that create growth and jobs.

A [report](#) on the first year of Innovation Union notes that the economic and financial crisis has reached a new phase. The recovery is at risk, the European Commission argues, and public confidence has deteriorated across different sectors of the economy. "The pressure to cut investments in future sources of economic growth is huge."

The Horizon 2020 proposal enacts many of the Innovation Union commitments including

- more focus on societal challenges;
- a strengthened approach to SMEs; and
- stronger support to market uptake of innovation, including by means of procurements, standard-setting and loan and equity financing.

It is important to note that the existing EU research and innovation funding is already being focused on Innovation Union priorities. The Commission is piloting new approaches with Horizon 2020 in mind, to gain experience and facilitate a smooth roll-out. This is the case, for example, for a new SME targeted instrument (see the welcome from the Department for Business, Innovation and Skills (BIS) in [this report](#)) that would fill the funding gap for early-stage high-risk research and innovation, stimulate break-through innovations and increase exploitation of R&D results.

Under the Marie Curie Industry-Academia Partnerships and Pathways, aiming explicitly at creating bridges between the academic world and enterprises, 50% of businesses participating in the projects are SMEs. Another example is support for pre-commercial procurement and public procurement of innovative products and services. The two years leading up to the new programme will therefore see significant experimentation and fine-tuning of activities.

Putting some KICs into innovation

Aiming to better integrate the innovation cycle, the [European Institute of Innovation and Technology](#) (EIT) brings together higher education institutions, research organisations and businesses in new types of partnerships - Knowledge and Innovation Communities (KICs) - operating in the areas of:

- sustainable energy (KIC InnoEnergy);
- climate change adaptation and mitigation (Climate-KIC); and
- future information and communication society (EIT ICT Labs).

The first results are already visible in terms of business creation (five start-ups since January 2011) and a first EIT-backed Masters' course organised by KIC InnoEnergy, with 155 students. The Commission has recently adopted the EIT's Strategic Innovation Agenda. This focuses on consolidating the three existing KICs and gradually setting up new ones, which will address major societal challenges in line with the Horizon 2020 objectives.

The Commission plans to set up new KICs in two phases. The first wave, to be set up in 2014, will have the following themes:

- innovation for healthy living and active ageing (improving the quality of life and well-being of citizens of all ages);
- food4future (sustainable food supply chain, from farm to fork); and
- raw materials (sustainable exploration, extraction, processing, recycling and substitution of raw materials).

The next wave of KICs, to be established in 2018, will focus on:

- added value manufacturing (developing more competitive, sustainable and environmentally-friendly manufacturing processes);
- smart secure societies (addressing Europe's security gaps through the development and deployment of innovative ICT solutions); and
- urban mobility (delivering a greener, more inclusive, safer and smarter urban mobility system).

HORIZON 2020 - THE LEGISLATION

All EU funding programmes have their basis in legislation which provides the framework within which policies, strategies and action plans are crystallised into specific projects. This final section introduces the proposals which will lead to the legislation intended to shape the EU's research and innovation agenda for the next decade. The first document is included for completeness as, although not legislative in nature, it introduces the main themes of Horizon 2020 and links into the set of proposals which follow.

[Commission Communication on Horizon 2020](#) - The Framework Programme for Research and Innovation

This explains why the Commission has felt the need to depart from the structure of the Seventh Framework Programme (FP7) in putting its forward its plans for the 2014 to 2020 period: the economic context has changed dramatically. The key challenge is now seen as stabilising the financial and economic system in the short term while also taking measures to create the economic opportunities of tomorrow. Research and innovation have therefore been placed at the centre of the Europe 2020 strategy to promote smart, sustainable and inclusive growth. This includes the headline objective of increasing spending on R&D to 3% of GDP by 2020.

The name of the new funding programme for research and innovation therefore reflects the ambition to deliver ideas, growth and jobs for the future. Horizon 2020 will be a key tool in implementing the Innovation Union flagship initiative, bringing together all existing EU research and innovation funding, including the Framework Programme for Research, the innovation-related activities of the Competitiveness and Innovation Framework Programme and the EIT.

Horizon 2020 has a number of new features intended to promote growth and tackle societal challenges. These include:

- Major simplification through a simpler programme architecture, a single set of rules, less red tape through an easy to use cost reimbursement model, a single point of access for participants, less paperwork in preparing proposals, fewer controls and audits, with the overall aim to reduce the average time to grant by 100 days;
- An inclusive approach open to new participants, including those with ideas outside of the mainstream, ensuring that excellent researchers and innovators from across Europe and beyond can and do participate;
- The integration of research and innovation by providing seamless and coherent funding from idea to market;
- More support for innovation and activities close to the market, leading to a direct economic stimulus;
- A strong focus on creating business opportunities out of our response to the major concerns common to people in Europe and beyond, i.e. "societal challenges"; and
- More possibilities for new entrants and young, promising scientists to put forward their ideas and obtain funding.

Proposal for a Council Decision establishing the Specific Programme Implementing Horizon 2020

This Decision establishes the specific programme implementing Horizon 2020 for the period from 1 January 2014 to 31 December 2020. It confirms that, under the heading "Excellent science", the programme will pursue the following specific objectives:

- strengthening frontier research, through the activities of the European Research Council (ERC);
- strengthening research in Future and Emerging Technologies;
- strengthening skills, training and career development, through the Marie Skłodowska-Curie actions; and
- strengthening European research infrastructures, including e-infrastructures.

Under the heading "Industrial leadership", it will pursue the following:

- boosting Europe's industrial leadership through research, technological development, demonstration and innovation;
- enhancing access to risk finance for investing in research and innovation; and
- increasing innovation in SMEs.

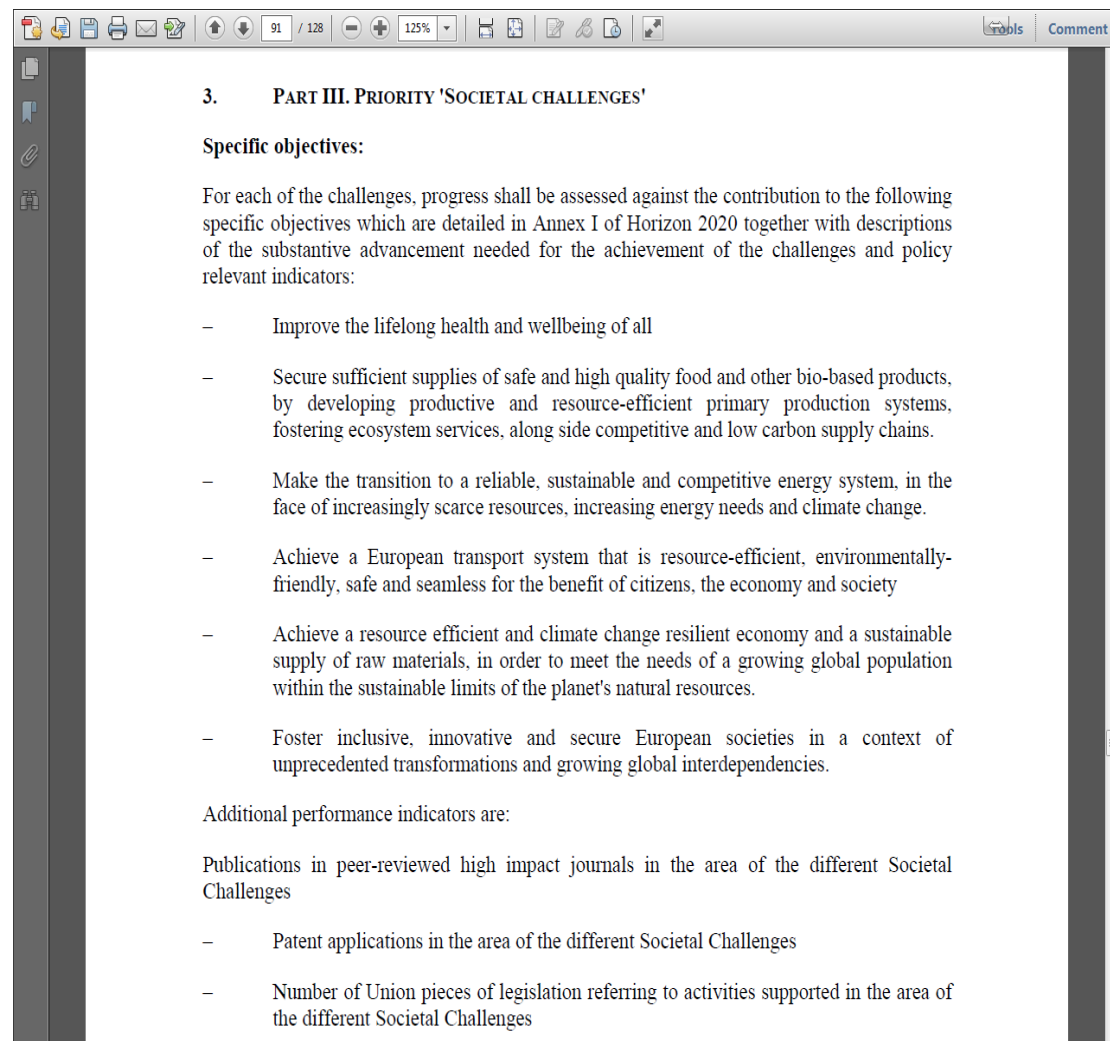
Finally, under "Societal challenges", the main aims will be:

- improving lifelong health and wellbeing;
- securing sufficient supplies of safe and high quality food and other bio-based products, by developing productive and resource-efficient primary production systems, fostering related ecosystem services, along side competitive and low carbon supply chains;
- making the transition to a reliable, sustainable and competitive energy system, in the face of increasing resource scarcity, increasing energy needs and climate change;
- achieving a European transport system that is resource-efficient, environmentally-friendly, safe and seamless for the benefit of citizens, the economy and society;
- achieving a resource-efficient and climate change resilient economy and a sustainable supply of raw materials, in order to meet the needs of a growing global population within the sustainable limits of the planet's natural resources; and
- fostering inclusive, innovative and secure European societies in a context of unprecedented transformations and growing global interdependencies.

The bulk of the +120 page document is taken up with annexes that explain in detail how the programme will contribute to the EU's policy priorities in the above areas. The Commission stresses that, as Horizon 2020 is a programme for seven years, the economic, societal and policy context in which it will operate may change significantly during its life-time. Horizon 2020 needs to be able to adapt to these changes. Under each of the specific objectives, there will therefore be the possibility to include support for activities beyond the descriptions set out below, where this is duly justified to address major developments, policy needs or unforeseen events.

Far more detail is included in this document with regard to many of the concepts mentioned elsewhere in this guide including the European Research Council, Marie Curie Actions, the space industry, access to risk finance, KETs and the various items listed elsewhere under

the heading "Societal challenges". Annex II is devoted to performance indicators with regard to assessing results and impacts of some of the specific objectives of Horizon 2020. See below for an example:



The image is a screenshot of a PDF document viewer. The top toolbar shows various icons for navigation and editing, with a page number of 91 / 128 and a zoom level of 125%. The document content is as follows:

3. PART III. PRIORITY 'SOCIETAL CHALLENGES'

Specific objectives:

For each of the challenges, progress shall be assessed against the contribution to the following specific objectives which are detailed in Annex I of Horizon 2020 together with descriptions of the substantive advancement needed for the achievement of the challenges and policy relevant indicators:

- Improve the lifelong health and wellbeing of all
- Secure sufficient supplies of safe and high quality food and other bio-based products, by developing productive and resource-efficient primary production systems, fostering ecosystem services, along side competitive and low carbon supply chains.
- Make the transition to a reliable, sustainable and competitive energy system, in the face of increasingly scarce resources, increasing energy needs and climate change.
- Achieve a European transport system that is resource-efficient, environmentally-friendly, safe and seamless for the benefit of citizens, the economy and society
- Achieve a resource efficient and climate change resilient economy and a sustainable supply of raw materials, in order to meet the needs of a growing global population within the sustainable limits of the planet's natural resources.
- Foster inclusive, innovative and secure European societies in a context of unprecedented transformations and growing global interdependencies.

Additional performance indicators are:

Publications in peer-reviewed high impact journals in the area of the different Societal Challenges

- Patent applications in the area of the different Societal Challenges
- Number of Union pieces of legislation referring to activities supported in the area of the different Societal Challenges

Proposal for a Regulation of the European Parliament and of the Council laying down the rules for the participation and dissemination in Horizon 2020.

This emphasises that, within a clear and stable framework, participants will enjoy further flexibility to determine the most appropriate internal arrangements for the implementation of their actions. This should encourage and facilitate the participation of all research stakeholders, including small research units, particularly SMEs.

Funding

This proposal gives more information about the Commission's plans to simplify funding arrangements. The financial provisions relating to EU funding in the form of grants have been clarified and simplified. Thus, a single funding rate is to be established depending for each type of action funded under "Horizon 2020" with no differentiation among participants. Enhanced use of lump sums, flat rates and scale of unit costs is also proposed.

"For direct costs, these rules provide for a broad acceptance of the usual accounting practices of grant beneficiaries, subject to a minimum number of boundary conditions. The grant agreement will include further simplification provisions allowing beneficiaries to gain legal certainty on the eligibility of the costs charged to actions under "Horizon 2020". Those simplification provisions will include, among others, a clear definition of the time recording requirements and objective references regarding the annual productive hours."

For indirect costs, the calculation is radically simplified; the reimbursement foresees a flat rate based on total direct eligible costs of participants with a possibility to declare costs actually incurred which is limited to non-profit legal entities.

Intellectual property

The rules regarding intellectual property, exploitation and dissemination have been modelled on the "widely acknowledged" FP7 provisions with further improvements and clarifications. Specific new emphasis has been put on open access to research publications and an opening made for experiments with open access to other results. The enlarged scope and new forms of funding as well as the need for flexibility in this area of the rules has been taken into account by the possibility to lay down additional or specific provisions where appropriate. Access rights for the EU, and in the field of security research also for Member States, have been foreseen.

Dissemination

The Commission confirms that it will, upon request, make available to the EU institutions and bodies, to any Member State or associated country, any useful information in its possession on results of a participant that has received Union funding, provided that both the following conditions are met:

- the information concerned is relevant to public policy; and
- the participants have not provided sound and sufficient reasons for withholding the information concerned.

Award of grants

Conditions for participation

The following minimum conditions shall apply:

- at least three legal entities shall participate in an action;
- each of the three shall be established in a Member State or associated country;
- no two of the three may be established in the same Member State or associated country; and
- all three legal entities shall be independent of each other.

However, in the case of coordination and support actions and training and mobility actions, the minimum condition shall be the participation of one legal entity.

Selection and award criteria

The proposals submitted shall be evaluated on the basis of the following award criteria:

- excellence;
- impact; and
- quality and efficiency of the implementation.

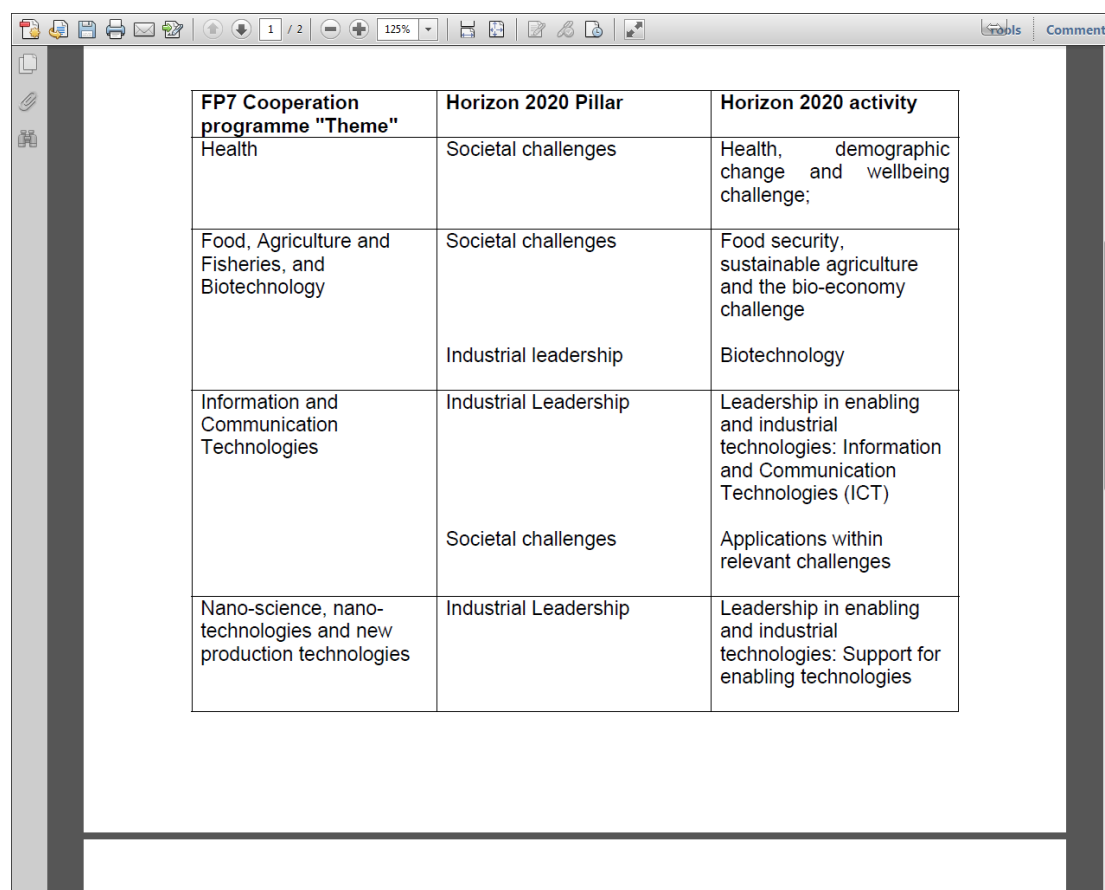
Proposals will be ranked according to the evaluation results. The selection will be made on the basis of this ranking. The work programme or work plan will lay down further details of the application of the award criteria, and specify weightings and thresholds.

HORIZON 2020 AND FP7

While Horizon 2020 is intended to go beyond FP7 in scope and ambition, the latter is already tackling many of the challenges that Horizon 2020 will address, and the themes it focuses on will be integrated into the Horizon 2020 programmes. Compared with FP7, the new approach will emphasise funding for projects that solve specified challenges (or particular aspects of them), as opposed to prescribing the specific research topics that must be addressed. In many cases, this will mean multidisciplinary, multi-actor actions that bring together different competences across Europe and beyond.

Despite this change in approach, the societal challenges and KETs identified for Horizon 2020 will provide a measure of continuity with the 10 FP7 themes in the Cooperation programme. Furthermore, the FP7 Work Programmes for 2012 and 2013 have been specifically tailored to prepare the ground for Horizon 2020.

Available at <http://bit.ly/u63oXG>, a factsheet looks at how some FP7 Cooperation themes will transfer to the new programme. See below for some examples.



FP7 Cooperation programme "Theme"	Horizon 2020 Pillar	Horizon 2020 activity
Health	Societal challenges	Health, demographic change and wellbeing challenge;
Food, Agriculture and Fisheries, and Biotechnology	Societal challenges	Food security, sustainable agriculture and the bio-economy challenge
	Industrial leadership	Biotechnology
Information and Communication Technologies	Industrial Leadership	Leadership in enabling and industrial technologies: Information and Communication Technologies (ICT)
	Societal challenges	Applications within relevant challenges
Nano-science, nano-technologies and new production technologies	Industrial Leadership	Leadership in enabling and industrial technologies: Support for enabling technologies