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2. European Action programmes 2014-2020 per sector

2.7 Research and innovation

2.7.1 Horizon 2020

PROGRAMME/CALL	Horizon 2020 Programme 2014-2020
Programme	<p>Horizon 2020, the new EU program aimed at research, innovation and technological development for the period 2014-2020. It replaces and bring together into a single funding instrument all existing instruments to support research and innovation, namely the 7th RTD Framework Programme (FP7), innovation support provided by the CIP Programme and the support to the European Institute of Innovation and Technology (EIT).</p>
Objectives and pillars	<p>The general objective of Horizon 2020 is to contribute to building a society and an economy based on knowledge and innovation across the Union by leveraging additional research, development and innovation funding and by contributing to attaining research and development targets, including the target of 3 % of GDP for research and development across the Union by 2020. It shall thereby support the implementation of the Europe 2020 strategy and other Union policies, as well as the achievement and functioning of the European Research Area (ERA).</p> <p>Horizon 2020 is structured into 3 main pillars "Excellent science", "Industrial leadership" and "Societal Challenges" having specific objectives:</p> <ul style="list-style-type: none"> • Excellent Science – aims to reinforce and extend the excellence of the Union's science base and to consolidate the ERA in order to make the Union's research and innovation system more competitive on a global scale. It consists of four specific objectives: <ol style="list-style-type: none"> 1. "<u>The European Research Council (ERC)</u>" shall provide attractive and flexible funding to enable talented and creative individual researchers and their teams to pursue the most promising avenues at the frontier of science, on the basis of Union-wide competition; 2. "<u>Future and emerging technologies (FET)</u>" shall support collaborative research in order to extend Europe's capacity for advanced and paradigm-changing innovation. It shall foster scientific collaboration across disciplines on radically new, high-risk ideas and accelerate development of the most promising emerging areas of science and technology as well as the Union-wide structuring of the corresponding

	<p>scientific communities;</p> <ol style="list-style-type: none"> 3. "<u>Marie Skłodowska-Curie actions</u>" shall provide excellent and innovative research training as well as attractive career and knowledge-exchange opportunities through cross-border and cross-sector mobility of researchers to best prepare them to face current and future societal challenges; 4. "<u>Research infrastructures</u>" shall develop and support excellent European research infrastructures and assist them to contribute to the ERA by fostering their innovation potential, attracting world-level researchers and training human capital, and complement this with the related Union policy and international cooperation. <ul style="list-style-type: none"> • Industrial Leadership – aims to speed up development of the technologies and innovations that will underpin tomorrow's businesses and help innovative European SMEs to grow into world-leading companies. It consists of three specific objectives: <ol style="list-style-type: none"> 1. "<u>Leadership in enabling and industrial technologies</u>" shall provide dedicated support for research, development and demonstration and, where appropriate, for standardisation and certification on: <ul style="list-style-type: none"> - information and communications technology (ICT); - nanotechnology, advanced materials, biotechnology, advanced manufacturing and processing; - space. <p>Emphasis will be placed on interactions and convergence across and between the different technologies and their relations to societal challenges. User needs shall be taken into account in all these fields.</p> 2. "<u>Access to risk finance</u>" shall aim to overcome deficits in the availability of debt and equity finance for R&D and innovation-driven companies and projects at all stages of development. Together with the equity instrument of the Programme for the Competitiveness of Enterprises and small and medium-sized enterprises (COSME) (2014-2020) it shall support the development of Union-level venture capital. 3. "<u>Innovation in SMEs</u>" shall provide SME-tailored support to stimulate all forms of innovation in SMEs, targeting those with the potential to grow and internationalize across the single market and beyond. • Societal Challenges – responds directly to the policy priorities and societal challenges that are identified in the Europe 2020
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strategy and that aim to stimulate the critical mass of research and innovation efforts needed to achieve the Union's policy goals. Funding shall be focused on the following specific objectives:

1. Improving the health and well-being throughout life (Health, demographic change and well-being);
2. Ensuring sufficient supplies of food safe and high quality food and other bio-based products, developing systems of primary production and production-efficient resource (Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bioeconomy);
3. Making the transition to a reliable, sustainable and competitive energy system to face the increasing scarcity of resources (Secure, clean and efficient energy);
4. Making an efficient European transport system in terms of resources, environmental friendly, safe and continuous in favor of citizens, the economy and society (Smart, green and integrated transport);
5. Achieving efficient economy in terms of resources and climate resilient and sustainable supply of raw materials (Climate action, environment, resource efficiency and raw materials);
6. Promoting inclusive, innovative and secure European societies in a context of unprecedented transformations and growing global interdependencies (Europe in a changing world - Inclusive, innovative and reflective societies);
7. Ensuring safety of European society in all aspects, from the protection and support in the event of natural disasters to the field of digital protection or the European territory (Secure societies - Protecting freedom and security of Europe and its citizens).

Activities cover the entire cycle from research to market with a new focus on innovation-related activities, such as piloting, demonstration, test-beds, support for tendering, the user driven innovation, the 'social innovation and the commercialization of innovations.

In addition, the structure of Horizon also consists of 5 transversal Programmes, which pose integrated approaches and basic strategies within it is possible to operate, in particular:

- the European Institute of Innovation and Technology (EIT), shall play a major role by bringing together excellent research, innovation and higher education thus integrating the knowledge triangle. The EIT shall do so primarily through the KICs. In addition it shall ensure that experiences are shared between and beyond the KICs through targeted dissemination and

	<p>knowledge sharing measures, thereby promoting a faster uptake of innovation models across the Union.</p> <ul style="list-style-type: none"> - <u>Spreading excellence and widening participation</u>, is to fully exploit the potential of Europe's talent pool and to ensure that the benefits of an innovation-led economy are both maximised and widely distributed across the Union in accordance with the principle of excellence. - <u>Science with and for society</u>, is to build effective cooperation between science and society, to recruit new talent for science and to pair scientific excellence with social awareness and responsibility. - <u>Non-nuclear direct actions of the Joint Research Centre (JRC)</u>, The JRC's activities shall be an integral part of Horizon 2020, in order to provide robust, evidence-based support for Union policies. This shall be driven by customer needs, complemented by forward-looking activities. - <u>Euratom</u>, Horizon 2020 initiative is also supported by a programme of research and training in the nuclear field with Euratom for the period 2014-2018 to strengthen the growth and development but also the control of nuclear power at European level. Euratom aims to pursue nuclear research and training activities with an emphasis on continually improving nuclear safety, security and radiation protection, notably to contribute to the long-term decarbonisation of the energy system in a safe, efficient and secure way.
<p>Main news</p>	<p>New characteristics:</p> <ul style="list-style-type: none"> ○ Challenge driven: a challenge is presented to candidates for them to propose solutions ○ Two-year work programme ○ ICT issue incorporated into other calls, where necessary ○ A unique funding rate is foreseen in the new Programme, without differences between beneficiaries. For the Research and Innovation Actions the rate will be fixed at 100% of direct costs, while for the Innovation Actions the rate will be 100% for no-profit organisations and 70% for profits. The Indirect Costs are calculated as the 25% of direct cost (except for subcontracting and third parties). This rate is the same for No-profit and profit. ○ Simplification: i.e. lower attention to the bureaucratic procedures but maximum verification of the results achieved by the project; electronic signature of the Grant Agreement through the ECAS system. <p>New funding schemes:</p> <ul style="list-style-type: none"> ○ SME Instrument ○ Innovation Actions ○ Prizes: both to acknowledge activities already implemented and

	<p>to stimulate innovation (inducement prizes)</p> <ul style="list-style-type: none"> ○ “Fast Track of Innovation (FTI)” - pilot from 2015 - as bottom-up actions, with the characteristic of being an open call with the possibility of having 3 cut off dates. In the call, maximum 5 legal entities within a partnership are allowed (mainly SMEs) and the grant amount may not exceed EUR 3 million. ○ “Public-private partnership” means a partnership where private sector partners, the Union and, where appropriate, other partners, such as public sector bodies, commit to jointly support the development and implementation of a research and innovation programme or activities <p>But also continuity with existing excellence initiatives eg the Knowledge and Innovation Communities (KICs) are the European Institute of Technology (EIT)'s operational units working in cross-disciplinary areas of strategic importance. In Horizon 2020 will be added 5 new KICs to the original ones (Energy, ICT, Climate Change). The new KICs for the period 2014-2020 will be launched in three different waves:</p> <p>First Wave 2014:</p> <ul style="list-style-type: none"> - “Healthy living and active ageing” - “Raw materials” <p>Second Wave 2016:</p> <ul style="list-style-type: none"> - “Food4Future” - “Added value manufacturing” <p>Third Wave 2018:</p> <ul style="list-style-type: none"> - “Urban mobility” <p>New countries:</p> <ul style="list-style-type: none"> ○ Industrialized countries and BRIC countries (Brazil, Russia, India, China) are not automatically eligible countries; <p>Vocabulary:</p> <p>CALL TOPIC: eg. PHC2-2015 any topic can be implemented into different types of actions such as (the more common schemes) research and innovation, innovation activities and actions of coordination and support;</p> <p>SPECIFIC CHALLENGE: specific challenge for which answers are sought;</p> <p>SCOPE: what the candidate has to submit as a solution;</p> <p>EXPECTED IMPACTS: all what is expected to result from the project;</p> <p>TYPE OF ACTION: the type of activity and funding schemes to be chosen: eg research and innovation actions, innovation actions and coordination and support actions.</p> <p>There is a INDICATIVE BUDGET but is only indicative, it is possible to ask for more or less as needed.</p>
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	<p>Recurrent and cross-cutting themes: In some cases it is required to cure transversal aspects of various types such as:</p> <ul style="list-style-type: none"> _gender dimension _international cooperation _attention to issues of social and human sciences inserted into the 3 pillars _ethical issues examined for each project _importance to make available the results of research products (open data access)
<p>Types of projects founded</p>	<p>Under Horizon 2020, it is possible to present projects with collaborative character proposed by several entities acting in partnerships and, on the contrary, also project submitted by a single entity/person such as researchers within the action "Marie Skłodowska-Curie" or the "European Research Council". In addition, the SME instrument allows both types since it can be activated both by a single enterprise and groups of companies.</p> <p>In particular, it is possible to realize the following type of project:</p> <ul style="list-style-type: none"> • <u>Research & innovation action</u>: promoted by 3 legal entities, each one of those shall be established in a different Member State or associated country. All 3 legal entities shall be independent of each other. • <u>Innovation action</u>: promoted by 3 legal entities, each one of the those shall be established in a different Member State or associated country. All 3 legal entities shall be independent of each other • <u>Coordination & support action</u>: promoted by 1 legal entity established in a Member State or associated country. • <u>SME instrument</u>: activated by One for-profit SME. Only applications from SMEs established in EU Member States or countries associated to Horizon 2020; No concurrent submission or implementation with another phase 1 or phase 2 project. • <u>ERA-NET Cofund</u>: activated by 3 legal entities, each one of the those shall be established in a different Member State or associated country. All 3 legal entities shall be independent of each other. Participants in ERA-NET Cofund actions must be research funders: legal entities owning or managing public research and innovation programmes. • <u>Pre-commercial procurement (PCP) Cofund & Public procurement of Innovative solutions (PPI) Cofund</u>: activated by 3 legal entities, each one of those shall be established in a different Member State or associated country. All 3 legal entities shall be independent of each other. <p>Furthermore, there must be a <u>minimum of 2 independent legal entities</u> which are public procurers from 2 different Member</p>

	<p>States or associated countries.</p> <p>In many cases, given the interdisciplinary nature of the Programme, Horizon 2020 projects provide maximum cooperation among partners through the creation of complementary partnerships made up of organizations having different skills where each partner works on its own sphere of competence, especially in some actions of the third pillar "Societal Challenges", where often the issues inquired into go beyond scientific research in the strict sense.</p>
<p>Eligible activities</p>	<p>Within the Horizon 2020 initiative, each project foresees the realization of the following actions, to be developed on the basis of what is specified in the specific call/topic:</p> <ul style="list-style-type: none"> • <u>Research and innovation activities</u> → the whole spectrum of activities of research, technological development, demonstration and innovation, including the promotion of cooperation with third countries and international organisations, the dissemination and optimisation of results and the stimulation of high quality training and mobility of researchers in the Union. These actions primarily consist of activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. For this purpose they may include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment. Projects may contain closely connected but limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment. • <u>Innovation Actions</u> → Action primarily consisting of activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose they may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication. A 'demonstration or pilot' aims to validate the technical and economic viability of a new or improved technology, product, process, service or solution in an operational (or near to operational) environment, whether industrial or otherwise, involving where appropriate a larger scale prototype or demonstrator. A 'market replication' aims to support the first application/deployment in the market of an innovation that has already been demonstrated but not yet applied/deployed in the market due to market failures/barriers to uptake. 'Market replication' does not cover multiple applications in the market of an innovation that has already been applied successfully once in the market. 'First' means new at least to Europe or new at least to the application sector in question. Often such projects

involve a validation of technical and economic performance at system level in real life operating conditions provided by the market. Projects may include limited research and development activities.

- **Coordination and support actions** → Actions consisting primarily of accompanying measures such as standardisation, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogues and mutual learning exercises and studies, including design studies for new infrastructure and may also include complementary activities of strategic planning, networking and coordination between programmes in different countries.

- **SME Instrument** → targeted at all types of innovative SMEs that demonstrate high level of ambition in the development, growth and internationalization. The access to the instrument can also take place by an individual enterprise or in a group of companies in one of the three planned phases, starting from the first stage or even inserting in the other one. Transition from one phase to the next will be seamless provided the SME project proves to be worth further support in a further evaluation.
 - **Phase 1:** it is foreseen for companies that want to develop an innovative idea/concept and carry out research activities on its feasibility thanks to a lump sum of EUR 50 000 for a period of 6 months. Activities could, for example, include risk assessment, market studies, the involvement of users, the management of intellectual property , development of innovative strategies , partner search , the feasibility of an innovative idea and the like to create an innovative project high potential, aligned with the business strategy and a strong European dimension. Bottlenecks in the ability to increase profitability of the enterprise through innovation shall be detected and analysed during phase 1 and addressed during phase 2 to increase the return in investment in innovation activities.
 - **Phase 2:** innovation projects that address a specific challenge and demonstrate high potential in terms of company competitiveness and growth underpinned by a strategic business plan. Activities should focus on innovation activities such as demonstration, testing, prototyping, piloting, scaling-up, miniaturisation, design, market replication and the like aiming to bring an innovation idea (product, process, service etc) to industrial readiness and maturity for market introduction, but may also include some research.

	<p>Proposals should be based on a strategic business plan either developed through phase 1 or another means. If the SMEs already have an innovative idea in which want to invest, it will entry directly in step 2 activating the project and bypassing the Phase 1 for the development of the scientific concept.</p> <p>The duration of phase 2 is from 1 to 2 years.</p> <ul style="list-style-type: none">- <u>Phase 3</u>: support to commercialization promotes the wider implementation of innovative solutions and customers and supports financing of growth by facilitating access to public and private risk capital. This stage will not provide for direct funding, but SMEs can benefit from indirect support measures and services as well as access to the financial facilities supported under Horizon 2020. <ul style="list-style-type: none">• <u>ERA-NET Cofund</u> → an ERA-NET instrument using grants to support public-public partnerships in their preparation, establishment of networking structures, design, implementation and coordination of joint activities, as well as Union topping-up of no more than one joint call a year, and of actions of a transnational nature. For these purposes, top-up funding shall be conditional on the demonstration of the added value of the action at Union level and on prior indicative financial commitments in cash or in kind of the participating entities to the joint calls and actions. One of the objectives of the ERA-NET instrument may, where possible, be to harmonise rules and implementation modalities of the joint calls and actions.• <u>Pre-Commercial Procurement (PCP) Cofund actions</u> → The PCP is a procurement of research and development services involving risk-benefit sharing under market conditions, and competitive development in phases, where there is a clear separation of the research and development services procured from the deployment of commercial volumes of end-products. It aim to encourage public procurement of research, development and validation of new solutions that can bring significant quality and efficiency improvements in areas of public interest, whilst opening market opportunities for industry and researchers active in Europe. A PCP cofund action provides Union cofunding for a group of procurers ('buyers group') to undertake together one joint PCP procurement, so that there is one joint call for tender, one joint evaluation of offers, and a lead procurer awarding the R&D service contracts in the name and on behalf of the buyers group.• <u>Public Procurement of Innovative Solutions (PPI) Cofund actions</u> → The PPI is where contracting authorities act as a
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	<p>launch customer for innovative goods or services which are not yet available on a large-scale commercial basis, and may include conformance testing. The objective of PPI cofund actions is to enable groups of procurers to share the risks of acting as early adopters of innovative solutions, whilst opening market opportunities for industry. A PPI Cofund action provides Union cofunding for a group of procurers ('buyers group') to undertake together one joint PPI procurement, so that there is one joint PPI call for tender launched by the "lead procurer" and one joint evaluation of offers.</p> <p>It is possible to enable the finance groups with similar characteristics to the contract PCP, according to certain procedures to verify in the call.</p> <p>Furthermore, the research activities are divided according to the TRL indicator, i.e. Technology Readiness Levels by which are classified the various types of research attributing a value from 1 to 9. According to this scale, the level of closeness to the product commercialization is assessed.</p> <p>The reference scale is as follows:</p> <ul style="list-style-type: none"> ➤ <i>TRL 1 – basic principles observed;</i> ➤ <i>TRL 2 – technology concept formulated;</i> ➤ <i>TRL 3 – experimental proof of concept;</i> ➤ <i>TRL 4 – technology validated in lab;</i> ➤ <i>TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies);</i> ➤ <i>TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies);</i> ➤ <i>TRL 7 – system prototype demonstration in operational environment;</i> ➤ <i>TRL 8 – system complete and qualified;</i> ➤ <i>TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space).</i> <p>The lower TRL belongs to the FET, the "Future and Emerging Technologies" in the first pillar "Excellent Science" having a 1-4 value of TRL, this means that the product or the research need to be fully developed or validated in laboratory. On the contrary, the category with a bigger absolute TRL is ICT which are part of the second pillar "Industrial leadership". It is possible to find the value of TRL within each call to evaluate the level of research to be implemented based on the different call.</p>
Eligible organizations	<p>Public or private legal entities established in the following countries and territories will be eligible to receive funding through Horizon 2020:</p> <ul style="list-style-type: none"> – 28 Member States of the European Union, including their

	<p>overseas departments;</p> <ul style="list-style-type: none"> - the Overseas Countries and Territories (OCT) linked to the Member States; - acceding countries, candidate countries and potential candidates, in accordance with the general principles and general terms and conditions for the participation of those countries in Union programmes established in the respective framework agreements and decisions of association councils or similar agreements; - European Free Trade Association (EFTA) members, or countries or territories covered by the European Neighbourhood Policy that fulfil all of the following criteria: <ul style="list-style-type: none"> • a good capacity in science, technology and innovation; • a good track record of participation in Union research and innovation programmes; • fair and equitable dealing with intellectual property rights; - countries or territories associated to the Seventh Framework Programme – Albania, Bosnia and Herzegovina, Former Yugoslav Republic of Macedonia, Iceland, Israel, Moldova, Montenegro, Norway, Serbia and Turkey (separate conditions apply to the Faroe Islands, Liechtenstein and Switzerland** which are currently considered as “third countries”). - International organizations and non-EU countries or “third countries” in the world, divided into automatically eligible for funding and those not automatically eligible for funding***. It is possible to check the list of countries and the necessary specifications by consulting the official document. <p>This situation is constantly changing, therefore it is necessary to consult the Programme website for updates.</p> <p>**At the moment (February 2014), the Faroe Islands, Switzerland and Liechtenstein have not yet completed the process of the agreement negotiation so they will be treated as "third country" until further official communication.</p> <p>*** Countries that are not automatically eligible for funding can participate to the Programme only within bilateral agreements or specific calls that specify their eligibility.</p>
Duration	<p>The Programme has a duration of 7 years, starting from 1st January 2014 to 31st December 2020.</p> <p>Within the Horizon 2020 Programme, the projects have a variable duration depending on the specific call of interest and the type of action to be implemented.</p>
Budget	<p>The financial envelope for the implementation of Horizon 2020 is set at 77.028,3 million EUR for the programming period 2014/2020.</p> <p>On the basis of each priority, the funds are allocated as follows:</p> <ul style="list-style-type: none"> - Excellent science, EUR 24 441,1 million; - Industrial leadership, EUR 17 015,5 million;

- Societal challenges, EUR 29 679 million;

In addition, it foresees for the transversal Programmes:

- European Institute of Innovation and Technology (EIT): EUR 2.711,4 million;
- Spreading excellence and widening participation: EUR 816,5 million;
- Science with and for society: EUR 462,2 million;
- Non-nuclear direct actions of the JRC: EUR 1 902,6 million;
- Euratom: EUR 1.780 million (for the work programme 2014-2018).

The allocation for the biennium 2014/2015 corresponds to approximately 15 billion EUR.

The budget of the new calls for proposals for 2014 amounted to 7.8 billion EUR divided by the 3 pillars of Horizon 2020 as follows:

- Excellent science: allocation of 3 billion EUR, of which 1.7 billion EUR aimed at high-level researchers and 800 million EUR for young researchers with scholarships Marie Skłodowska-Curie.
- Industrial leadership: 1.8 billion EUR to promote European industrial leadership through ICT, nanotechnology, robotics, biotechnology and space research.
- Societal challenges: 2.8 billion EUR to support innovative projects in seven areas of action.

The grants provided is different according to the various type of project:

- Research and innovation actions → funding rate: 100%
- Innovation actions → funding rate: 70% - except for non-profit legal entities, where a rate of 100% applies.
- Coordination and support actions → funding rate: 100%
- SME Instrument → funding rate is diversified as follows:
 - Phase 1: funding will be provided in the form of a lump sum of maximum EUR 50,000;
 - Phase 2: the funding rate corresponds to 70% - exceptionally 100% where the research component is strongly present. The single applicable rate is specified under the relevant topic.
 - Phase 3: this stage will not provide for direct funding, but SMEs can benefit from indirect support measures and services as well as access to the financial facilities supported under Horizon 2020.
- ERA-NET Cofund → funding rate: the Union contribution will be limited to a maximum of 33% of the total eligible costs of the action (however, there are due specification to be verified in the call)

	<ul style="list-style-type: none"> - <u>Pre-commercial procurement (PCP) Cofund</u> → funding rate: maximum 70% of the total eligible costs. - <u>Public procurement of Innovative solutions (PPI) Cofund</u> → finding rate: maximum 20% of the total eligible costs.
Deadlines	<p>The Programme will last up to 31st December 2020.</p> <p>The deadlines of the calls are different, at the moment the deadlines known are related to the two year work programme (2014-2015) approved.</p>
How to apply	<p>Registration into in the Authentication Service of the European Commission (ECAS) on the Participant Portal and PIC code required.</p>
Evaluation criteria	<p>For all type of actions the evaluation criteria are:</p> <ul style="list-style-type: none"> - <u>Excellence</u> The following aspects will be taken into account, to the extent that the proposed work corresponds to the topic description in the work programme: <ul style="list-style-type: none"> o Clarity and pertinence of the objectives; o Credibility of the proposed approach. - <u>Impact</u> The extent to which the outputs of the project should contribute at the European and/or International level to: the expected impacts listed in the work programme under the relevant topic. - <u>Quality and efficiency of the implementation</u> The following aspects will be taken into account: <ul style="list-style-type: none"> o Coherence and effectiveness of the work plan, including appropriateness of the allocation of tasks and resources; o Complementarity of the participants within the consortium (when relevant); o Appropriateness of the management structures and procedures, including risk and innovation management. <p>The aspects to be considered in each case depend on the types of action to be implemented, unless stated otherwise in the call conditions.</p>
Link	<p>Horizon 2020 Regulation No 1291/2013 Horizon 2020 Rules for Participation – Regulation No 1290/2013 Horizon 2020 General Annexes</p> <p>Horizon 2020 Official website Horizon 2020 Participant Portal</p>

4. Open calls 2014 on European Action programmes

4.6 Horizon 2020

4.6.1 Societal Challenges

Secure, clean and efficient energy (3)

Call for Competitive low-carbon energy (3.1)

LCE 11 – 2014/2015: Developing next generation technologies for biofuels and sustainable alternative fuels

PROGRAMME/CALL	Horizon 2020 Programme 2014-2020 “Societal Challenges” 3. Secure, clean and efficient energy (3) Call for competitive low-carbon energy (3.1) Topic: Developing next generation technologies for biofuels and sustainable alternative fuels (LCE-11-2015)
Programme	Horizon 2020, the new EU program aimed at research, innovation and technological development for the period 2014-2020. It replaces and bring together into a single funding instrument all existing instruments to support research and innovation, namely the 7th RTD Framework Programme (FP7), innovation support provided by the CIP Programme and the support to the European Institute of Innovation and Technology (EIT).
Objectives and pillars	<p>The general objective of Horizon 2020 is to contribute to building a society and an economy based on knowledge and innovation across the Union by leveraging additional research, development and innovation funding and by contributing to attaining research and development targets, including the target of 3 % of GDP for research and development across the Union by 2020. It shall thereby support the implementation of the Europe 2020 strategy and other Union policies, as well as the achievement and functioning of the European Research Area (ERA).</p> <p>Horizon 2020 is structured into 3 main pillars "Excellent science", "Industrial leadership" and "Societal Challenges" having specific objectives.</p> <ul style="list-style-type: none"> • Societal challenges – responds directly to the policy priorities and societal challenges that are identified in the Europe 2020 strategy and that aim to stimulate the critical mass of research and innovation efforts needed to achieve the Union's policy goals. <p>Funding shall be focused on the following specific</p>

	<p>objectives: Making the transition to a reliable, sustainable and competitive energy system to face the increasing scarcity of resources (3. <u>Secure, clean and efficient energy</u>).</p>
<p>Challenge of the topic</p>	<p>Europe has limited biomass and land resources to cope with an increased demand for fuels and other uses. Thus, in the long-term perspective, new technologies of sustainable biofuels and alternative fuels need to be developed that radically improve the state-of-art, notably in regards to the following sub-challenges:</p> <ul style="list-style-type: none"> a) Improving conversion efficiency and/or enlargement of the biomass feedstock basis. b) Developing alternative fuels through use of new and sustainable resources from non-biomass non-fossil sources. c) Improving the economic, environmental and social benefits relative to fossil fuels and currently available biofuels, notably regarding cost reduction, minimisation of demand on natural resources (land and water in particular), enhanced energy balance, reduced GHG emissions (including carbon stock changes) and development of rural areas.
<p>Scope of the topic</p>	<p>Proposals focusing on the long-term perspective should aim at developing the next wave of alternative and sustainable fuels by moving technologies from TRL 3-4 or to TRL 4-5 (please see part G of the General Annexes). In each case, they should address the c) sub-challenge described above.</p> <p>Environment, health and safety issues, regional and social dimension, shall be considered in all developments and appropriately addressed. An assessment of alternative uses of the used feedstocks outside the bioenergy sector should also be done.</p> <p>Biofuels produced from starch, sugar and oil fractions of food/feed crops are excluded.</p> <p>An important element will be an increased understanding of risks (whether technological, in business processes, for particular business cases, or otherwise in each area), risk ownership, and possible risk mitigation. Proposals shall therefore include appropriate work packages on this matter.</p> <p>Proposals shall explicitly address performance and cost targets together with relevant performance indicators, expected impacts, as well as provide explicit exploitation plans. Proposals should also indicate the current Manufacturing Readiness Level (MRL, see Annex to this work programme) and the activities needed to keep the MRL aligned with the advances in the TRL that will be undertaken in the proposal to ensure the potential for exploitation.</p>
<p>Expected impact of the topic</p>	<p>The new developed technology pathways should permit the use of new feedstock sources that do not compete directly or indirectly with</p>

	<p>food or feed production for resources, or a more efficient conversion of the current ones. A favourable energy balance is expected, as well as a significant potential for cost reduction, which would permit these fuels to eventually compete favourably with fossil or older-generation equivalent fuels. The development of new technologies will permit robust and reliable assessment of the environmental and social benefits with respect to current technologies, notably in terms of GHG performance, energy balance, efficient use of natural resources, decentralised energy production, and job creation in rural areas, as well as secure and affordable energy supply in Europe or worldwide.</p>
Types of actions of the topic	<p>Under this specific call, it will be developed:</p> <ul style="list-style-type: none"> • <u>Research & innovation action</u>: promoted by 3 legal entities, each one of those shall be established in a different Member State or associated country. All 3 legal entities shall be independent of each other.
Eligible activities	<p>The call foresees the following activities:</p> <ul style="list-style-type: none"> • <u>Research and innovation activities</u> → the whole spectrum of activities of research, technological development, demonstration and innovation, including the promotion of cooperation with third countries and international organisations, the dissemination and optimisation of results and the stimulation of high quality training and mobility of researchers in the Union. These actions primarily consist of activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. For this purpose they may include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment. Projects may contain closely connected but limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment.
Eligible organizations	<p>Public or private legal entities established in the following countries and territories will be eligible to receive funding through Horizon 2020:</p> <ul style="list-style-type: none"> – 28 Member States of the European Union, including their overseas departments; – the Overseas Countries and Territories (OCT) linked to the Member States; – acceding countries, candidate countries and potential candidates, in accordance with the general principles and general terms and conditions for the participation of those countries in Union programmes established in the respective framework agreements and decisions of association councils or similar agreements; – European Free Trade Association (EFTA) members, or countries or territories covered by the European Neighbourhood Policy that fulfil all of the following criteria: <ul style="list-style-type: none"> • a good capacity in science, technology and innovation; • a good track record of participation in Union research and innovation programmes;

	<ul style="list-style-type: none"> • fair and equitable dealing with intellectual property rights; – countries or territories associated to the Seventh Framework Programme – Albania, Bosnia and Herzegovina, Former Yugoslav Republic of Macedonia, Iceland, Israel, Moldova, Montenegro, Norway, Serbia and Turkey (separate conditions apply to the Faroe Islands, Liechtenstein and Switzerland** which are currently considered as “third countries”). – International organizations and non-EU countries or “third countries” in the world, divided into automatically eligible for funding and those not automatically eligible for funding. It is possible to check the list of countries and the necessary specifications by consulting the official document. <p>This situation is constantly changing, therefore it is necessary to consult the Programme website for updates.</p> <p>**At the moment (February 2014), the Faroe Islands, Switzerland and Liechtenstein have not yet completed the process of the agreement negotiation so they will be treated as "third country" until further official communication.</p>
Duration	<p>Within the Horizon 2020 Programme, the projects have a variable duration depending on the specific call of interest and the type of action to be implemented between 2 and 4 years.</p>
Budget	<p>The total call budget amounts to 94 million EUR.</p> <p>The funding rate for Research and Innovation actions corresponds to 100%.</p> <p>The Commission considers that proposals requesting a contribution from the EU of between EUR 3 to 6 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.</p> <p>Note: In order to ensure that a balanced portfolio of activities covering different renewable energy technology areas will be supported, it is expected that the share of the EU contribution benefitting one single technology area from topic LCE 11 shall not exceed 25% of the total budget dedicated to these topics. An area in this context is considered one of the following: 1) photovoltaics, 2) concentrated solar power, 3) wind energy, 4) ocean energy, 5) hydropower, 6) deep geothermal energy, 7) renewable heating and cooling, 8) biofuels, 9) alternative fuels.</p>
Deadlines	<p>03-09-2014 h.17:00:00 (Brussels local time) - CLOSED</p> <p>For Stage2 the deadline is: 03-03-2015 h.17:00:00 (Brussels local time)</p>
How to apply	<p>Registration into in the Authentication Service of the European Commission (ECAS) on the Participant Portal and PIC code required.</p> <p>To start the submission, it is necessary to follow the indications in the</p>

<p>Evaluation criteria</p>	<p>official website of the call</p> <p>For all type of actions the evaluation criteria are:</p> <ul style="list-style-type: none"> - <u>Excellence</u> The following aspects will be taken into account, to the extent that the proposed work corresponds to the topic description in the work programme: <ul style="list-style-type: none"> o Clarity and pertinence of the objectives: credibility of the proposed approach. <p>Moreover, the following criteria are considered:</p> <ul style="list-style-type: none"> o Soundness of the concept, including trans-disciplinary considerations, where relevant; o Extent that proposed work is ambitious, has innovation potential, and is beyond the state of the art (e.g. ground-breaking objectives, novel concepts and approaches) - <u>Impact</u> The extent to which the outputs of the project should contribute at the European and/or International level to: the expected impacts listed above in the relevant part. Moreover, the following criteria are considered: <ul style="list-style-type: none"> o Enhancing innovation capacity and integration of new knowledge; o Strengthening the competitiveness and growth of companies by developing innovations meeting the needs of European and global markets; and, where relevant, by delivering such innovations to the markets; o Any other environmental and socially important impacts (not already covered above); o Effectiveness of the proposed measures to exploit and disseminate the project results (including management of IPR), to communicate the project, and to manage research data where relevant. - <u>Quality and efficiency of the implementation</u> The following aspects will be taken into account: <ul style="list-style-type: none"> o Coherence and effectiveness of the work plan, including appropriateness of the allocation of tasks and resources; o Complementarity of the participants within the consortium (when relevant); o Appropriateness of the management structures and procedures, including risk and innovation management.
<p>Link</p>	<p>Developing next generation technologies for biofuels and sustainable alternative fuels - LCE 11 – 2014/2015 – Call official website</p> <p>Horizon 2020 General Annexes Horizon 2020 Official website Horizon 2020 Participant Portal</p>

LCE 14 – 2014/2015: Market uptake of existing and emerging sustainable bioenergy

<p>PROGRAMME/CALL</p>	<p>Horizon 2020 Programme 2014-2020 “Societal Challenges” 3.Secure, clean and efficient energy (3) Call for competitive low-carbon energy (3.1) Topic: Market uptake of existing and emerging sustainable bioenergy (LCE-14-2014)</p>
<p>Programme</p>	<p>Horizon 2020, the new EU program aimed at research, innovation and technological development for the period 2014-2020. It replaces and bring together into a single funding instrument all existing instruments to support research and innovation, namely the 7th RTD Framework Programme (FP7), innovation support provided by the CIP Programme and the support to the European Institute of Innovation and Technology (EIT).</p>
<p>Objectives and pillars</p>	<p>The general objective of Horizon 2020 is to contribute to building a society and an economy based on knowledge and innovation across the Union by leveraging additional research, development and innovation funding and by contributing to attaining research and development targets, including the target of 3 % of GDP for research and development across the Union by 2020. It shall thereby support the implementation of the Europe 2020 strategy and other Union policies, as well as the achievement and functioning of the European Research Area (ERA).</p> <p>Horizon 2020 is structured into 3 main pillars "Excellent science", "Industrial leadership" and "Societal Challenges" having specific objectives.</p> <ul style="list-style-type: none"> • Societal challenges – responds directly to the policy priorities and societal challenges that are identified in the Europe 2020 strategy and that aim to stimulate the critical mass of research and innovation efforts needed to achieve the Union's policy goals. Funding shall be focused on the following specific objectives: Making the transition to a reliable, sustainable and competitive energy system to face the increasing scarcity of resources (3. <u>Secure, clean and efficient energy</u>).
<p>Challenge of the topic</p>	<p>Actions are still needed to foster the development of the bioenergy sector and to ensure its sustainability (Renewable Energy Progress Report [COM(2013)175]). One way to do it is to use more and sustainable bioenergy. However, the EU needs to expand the supply of bioenergy produced in the EU, by encouraging the EU farmers and</p>

	<p>foresters to produce also energy and energy intermediaries.</p> <p>In the short- and medium-term perspective, sustainable bioenergy in all its forms is expected to be the main contributor to the de-carbonisation. In order to achieve the EU targets set out in the RES and Fuel Quality Directives, and to address concerns regarding indirect and direct environmental impacts, sustainable bioenergy technologies (both existing and emerging) need to further penetrate the market.</p>
<p>Scope of the topic</p>	<p>Proposals should address one or several of the following bullet points using technologies and systems which are already at TRL 7-9 (please see part G of the General Annexes):</p> <ul style="list-style-type: none"> • Setting up or strengthening sustainable local bioenergy supply chains that meet highest environmental criteria and quality standards, including consideration for indirect impacts and energy balances; • Ensuring development and / or implementation of quality and sustainability standards for bioenergy in all its forms; • Creating a market for sustainable intermediate bioenergy carriers to enable better technology competitiveness through economies of scale; • Encouraging European farmers and foresters to produce non-food bioenergy or bioenergy carriers alongside food, feed and other products; • Development of methodologies for the traceability of biomass feedstocks from which bioenergy is produced (e.g. to distinguish first-generation from advanced biofuels); • Removing non-technical barriers to widespread production and use of biogas/biomethane from manure and other wastes as one of the most sustainable fuels available today for use in transport and for incorporation into the grid; • Ensuring sustained public acceptance of sustainable advanced biofuels; • Exchange of information on best practices for bioenergy policy, regulations and support schemes to allow the most sustainable and energy efficient use of bio-resources. • Cooperation between different policy areas at national / regional level (e.g. energy, agriculture, environment, waste, transport, etc.) needs to be increased to optimise the regulatory framework and implementing measures for the bioeconomy through exchange of information and best practices; • All Member States must possess the necessary capacity to enact the EU legislation, while the businesses must make full use of the opportunities that these new markets create for them. Therefore specific capacity building activities targeting the main stakeholders (e.g. biomass suppliers and users, decision makers, financial institutions, auditors and verification bodies) are needed. • Tailored financing schemes for supporting investments in innovative and established bioenergy technologies must be

	<p>implemented, and the most successful schemes replicated.</p> <p>Regional specificities, socio-economic and environmental aspects from a life-cycle perspective shall be considered.</p>
Expected impact of the topic	<p>The expected impact of the call is: increasing the share of sustainable bioenergy in the final energy consumption. Substantial and measurable reductions in the transaction costs for project developers as well as for the permitting authorities, whilst still fully addressing the needs for environmental impact assessments, including considerations for indirect impacts and energy balance, and public engagement. Development of better policy, market support and financial frameworks, notably at national, regional and local level.</p>
Types of actions of the topic	<p>Under this specific call, it will be developed:</p> <ul style="list-style-type: none"> • <u>Coordination & support action</u>, promoted by at least 1 legal entity established in a Member State or associated country.
Eligible activities	<p>The call foresees the following activities:</p> <ul style="list-style-type: none"> • <u>Coordination and support actions</u> → Actions consisting primarily of accompanying measures such as standardisation, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogues and mutual learning exercises and studies, including design studies for new infrastructure and may also include complementary activities of strategic planning, networking and coordination between programmes in different countries.
Eligible organizations	<p>Public or private legal entities established in the following countries and territories will be eligible to receive funding through Horizon 2020:</p> <ul style="list-style-type: none"> – 28 Member States of the European Union, including their overseas departments; – the Overseas Countries and Territories (OCT) linked to the Member States; – acceding countries, candidate countries and potential candidates, in accordance with the general principles and general terms and conditions for the participation of those countries in Union programmes established in the respective framework agreements and decisions of association councils or similar agreements; – European Free Trade Association (EFTA) members, or countries or territories covered by the European Neighbourhood Policy that fulfil all of the following criteria: <ul style="list-style-type: none"> • a good capacity in science, technology and innovation; • a good track record of participation in Union research and innovation programmes; • fair and equitable dealing with intellectual property rights; – countries or territories associated to the Seventh Framework Programme – Albania, Bosnia and Herzegovina, Former Yugoslav Republic of Macedonia, Iceland, Israel, Moldova, Montenegro, Norway, Serbia and Turkey (separate conditions

	<p>apply to the Faroe Islands, Liechtenstein and Switzerland** which are currently considered as “third countries”).</p> <ul style="list-style-type: none"> - International organizations and non-EU countries or “third countries” in the world, divided into automatically eligible for funding and those not automatically eligible for funding. It is possible to check the list of countries and the necessary specifications by consulting the official document. <p>This situation is constantly changing, therefore it is necessary to consult the Programme website for updates.</p> <p>**At the moment (February 2014), the Faroe Islands, Switzerland and Liechtenstein have not yet completed the process of the agreement negotiation so they will be treated as "third country" until further official communication.</p>
Duration	<p>Within the Horizon 2020 Programme, the projects have a variable duration depending on the specific call of interest and the type of action to be implemented between 2 and 4 years.</p>
Budget	<p>The total call budget amounts to 158,4 million EUR.</p> <p>The funding rate for Coordination and support actions corresponds to 100%.</p> <p>The Commission considers that proposals requesting a contribution from the EU of between EUR 1 to 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.</p>
Deadlines	<p>1st Call: 07-05-2014 h.17:00:00 (Brussels local time)</p> <p>2nd Call: 03-03-2015 h.17:00:00 (Brussels local time)</p>
How to apply	<p>Registration into the Authentication Service of the European Commission (ECAS) on the Participant Portal and PIC code required.</p> <p>To start the submission, it is necessary to follow the indications in the official website of the call (submission system not opened yet)</p>
Evaluation criteria	<p>For all type of actions the evaluation criteria are:</p> <ul style="list-style-type: none"> - <u>Excellence</u> The following aspects will be taken into account, to the extent that the proposed work corresponds to the topic description in the work programme: <ul style="list-style-type: none"> o Clarity and pertinence of the objectives: credibility of the proposed approach. <p>Moreover, the following criteria are considered:</p> <ul style="list-style-type: none"> o Soundness of the concept; o Quality of the proposed coordination and/or support measures. - <u>Impact</u> The extent to which the outputs of the project should contribute

	<p>at the European and/or International level to: the expected impacts listed above in the relevant part.</p> <p>Moreover, the following criterion is considered:</p> <ul style="list-style-type: none"> ○ Effectiveness of the proposed measures to exploit and disseminate the project results (including management of IPR), to communicate the project, and to manage research data where relevant. <p>- <u>Quality and efficiency of the implementation</u></p> <p>The following aspects will be taken into account:</p> <ul style="list-style-type: none"> ○ Coherence and effectiveness of the work plan, including appropriateness of the allocation of tasks and resources; ○ Complementarity of the participants within the consortium (when relevant); ○ Appropriateness of the management structures and procedures, including risk and innovation management.
Link	<p>Market uptake of existing and emerging sustainable bioenergy – LCE 14 – 2014/2015 - Call official website</p> <p>Horizon 2020 General Annexes</p> <p>Horizon 2020 Official website</p> <p>Horizon 2020 Participant Portal</p>