



European Plant Science Organisation

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Horizon 2020 Briefing

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1. Horizon 2020 Overview

Horizon 2020, the successor to Framework Programme 7 (FP7), is the European Union joint effort to support research and development for the next seven years, from 2014 to 2020. It is intended to boost Europe's knowledge-driven economy, and tackle issues that will make a difference in people's lives. It provides a unique opportunity for researchers in Europe, and beyond, to undertake projects, improve international networks, strengthen interdisciplinary collaboration, widen their fields of expertise and open new areas of research and participate in pan-European consortia.

Horizon 2020 is part of the European Commissions (EC) wider Multiannual Financial Framework 2014-2020, the key challenge of which is to stabilise the financial and economic system while taking measures to create economic opportunities and respond to the economic crisis. It aims to help implement the Europe 2020 strategy, the Innovation Union, and the realization of the European Research Area which is the EC goal of creating a single market for knowledge research and innovation.

On the 11th of December 2013, the EC published the Work Programmes for the first two year period 2014-15 which detail the calls for applications. An exception is the European Research Council (ERC) part of Horizon 2020, which publishes separate annual Work Programmes, the first of which was also published at the same time.

Disclaimer: For this EPSO briefing we have consulted with EC staff and EPSO members to provide a first overview of the parts of Horizon 2020 most relevant for plant scientists. This information is provided only as a support, the only legally binding version is the official EC Work Programme. We are not legally responsible for information contained within the document. Information about 2015 Work Programmes is indicative only, such Work Programme parts will be decided during 2014.

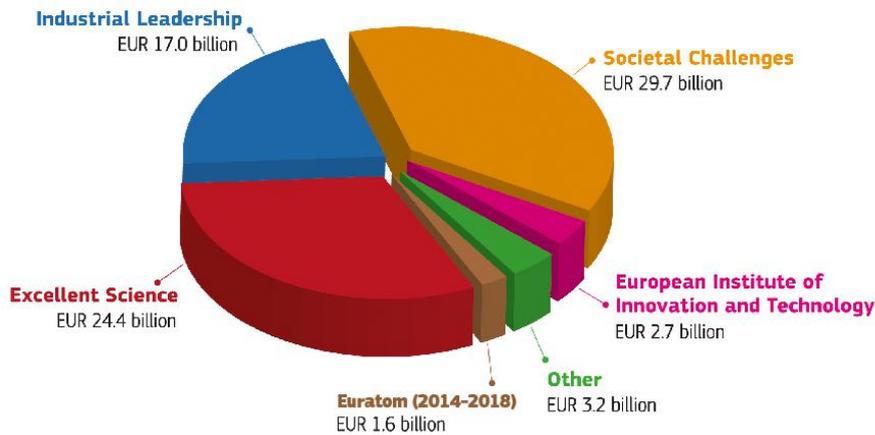
1.1 The Horizon 2020 Budget

Horizon 2020 combines three previously separate funding programmes for research and innovation; the 7th Research Framework Programme (FP7), innovation aspects of the Competitiveness and Innovation Framework Programme (CIP), and the EU contribution to the European Institute of Innovation and Technology (EIT).

The majority of the Horizon 2020 budget is divided into 3 themes or "pillars"; Excellent Science, Industrial Leadership, and Societal Challenges.

Outside of the three pillars, the European Institute of Innovation and Technology (EIT) will receive around €2.5 billion to fund its existing Knowledge and Innovation Communities (KICs) and the formation of five new ones, of which one on Healthy Living is due to launch in 2014, and another on Food in 2016. The Euratom nuclear research programme will receive approximately 1.6 billion euros.

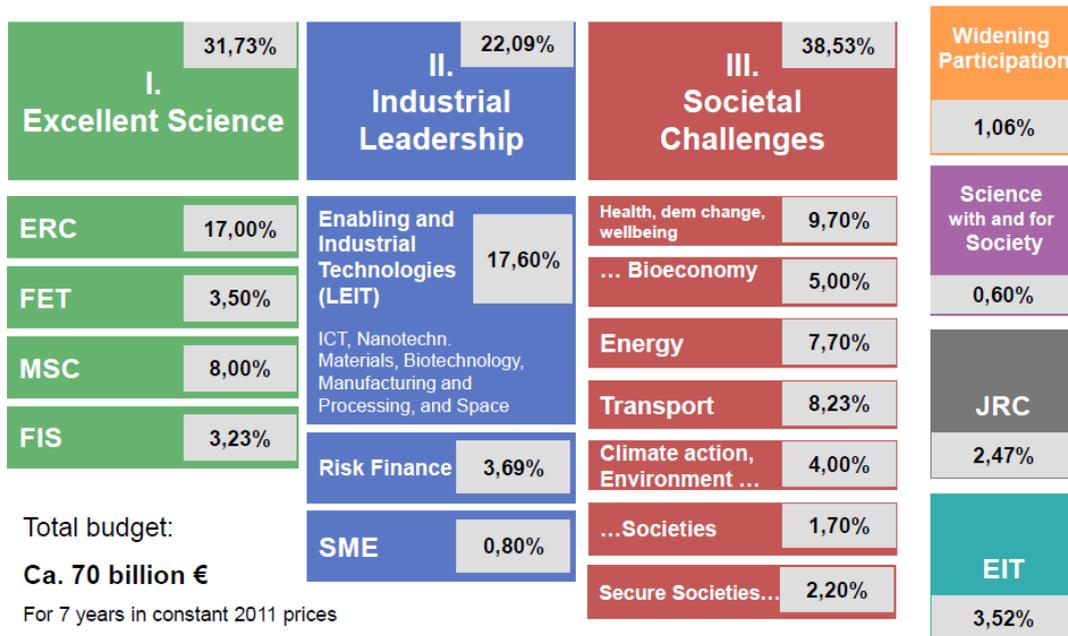
HORIZON 2020 BUDGET (in current prices)



Source: European Commission

1.2 The three pillars in Horizon 2020

Structure and Budget Allocation of Horizon 2020



Source: BMBF, Germany

Pillar 1: Excellent Science

Pillar 1 aims to promote world-class research in Europe, by developing, attracting and retaining research talent in Europe, and ensuring they have access to the best infrastructures. The major mechanisms of Pillar I, the ERC and Marie-Sklodowska Curie Actions (MCSA) remain largely similar to FP7, providing bottom-up funding through open competition. The ERC has received a significant increase in funding, and will finance individual researchers for frontier research projects chosen only

on the basis of excellence. MCSA funding levels remain roughly the same and will continue to provide mobility and career development opportunities throughout the career path.

Future and Emerging Technologies (FET) will fund collaborative research on high-risk projects to open up new and promising fields of research with potential for real technological and social impact. Research infrastructures aims to ensure world-class research infrastructures in Europe (including e-infrastructures) accessible to all researchers in Europe and beyond.

Pillar 2: Industrial Leadership

The Leadership in Enabling and Industrial Technologies (LEIT) programme aims to make strategic investments in key technologies, thus promoting innovation in existing and emerging sectors. There will be access to risk finance through loans and guarantees for high-risk projects available through a debt facility operated by the European Investment Bank and the European Investment Fund, and venture capital and business angel investment in early and growth stages will be supported through an equity facility. There is also dedicated support for innovative SMEs in three different stages covering the whole innovation cycle (feasibility, demonstration and testing, and commercialisation phases).

Pillar 3: Societal Challenges

Pillar Three has the largest share of the budget and is broken down into seven groups of policy driven challenges. It aims to address the concerns of citizens and society/EU policy objectives through interdisciplinary collaborations including social sciences and humanities, thus creating a critical mass of knowledge and resources in order to deal with the societal challenges. It encompasses the entire cycle from basic research to market uptake with a stronger output orientation compared to FP7.

1.3 What is different to FP7?

- **Stronger focus on innovation and close-to-market activities than FP7**, closing the gap between knowledge and market, stronger participation of SMEs. Often with a “multi-actor approach”.
- **Substantial increase** in funding for the ERC
- Orientation on **Societal Challenges** and on **socio-economic impact**
- Stronger linkage with [Technology Readiness Levels](#)
- **Topics in the Societal Challenges are described more openly than in FP7** and in general do not prescribe a certain approach. Allows freedom of choice regarding methodical approach but may mean higher chance of oversubscription. Therefore the budget for an individual proposal is indicative only. The total call budget is the maximum for all supported actions under that call.
- **Single IT Participant Portal:** <http://ec.europa.eu/research/participants/portal>. For calls, information, documents, and support covering the entire project cycle. Registration as potential evaluator. Login required for closed area with ECAS Account (*European Commission Authentication Service*).
- **Simple evaluation criteria:** Excellence – Impact – Implementation (Excellence only, for the ERC)
- **The time to grant will be shortened to eight months**, from an average of one year under FP7. The Commission has committed to inform applicants after five months and allow three more

months to sign a grant agreement. There is flexibility to exceed these time limits for the ERC, complex projects or where participants request more time for negotiations.

- **Open access will be mandatory** for published papers based on research funded under Horizon 2020. The costs of publication will be considered as eligible costs.

1.4 Who can participate? Which reimbursement rules apply?

Eligibility for Funding - EU 28 and Associated Countries: Turkey, Macedonia (FYR), Serbia, Montenegro, Bosnia & Herzegovina, Switzerland, Israel, Liechtenstein, Albania, Republic of Moldova, Iceland, Norway, Faroe Islands.

Requirements for participation: Consortium of three independent legal entities - each of these shall be established in a *different* Member State or associated country. **Exceptions:** Calls of the European Research Council (ERC), Marie-Skłodowska-Curie Actions, Coordination and support Actions, the SME-Instrument (when the action has a clear European added value), programme co-fund actions, in justified cases provided for in the Work Programme or work plan.

International Cooperation is cooperation with researchers and organisations from third countries and international organisations. Third countries are neither a **member state of the EU**, nor an **associated country**. There are various chances for international cooperation in all parts of Horizon 2020. Participants from international organisations or industrialised countries and emerging economies are eligible for funding if:

- provision is made in the call text
- provided for under a bilateral scientific and technological agreement or any other arrangement
- the participation is deemed essential for carrying out the action by the Commission.

Reimbursement

The reimbursement model has been simplified in Horizon 2020. Reimbursement on the basis of actual costs (personnel costs, subcontracting, travel costs, equipment, etc). Reimbursement is variable:

- **Universities and research and technology organisations** will receive one hundred per cent of **direct eligible costs with a 25% flat rate of direct costs for their indirect costs**.
- Industry participants and SMEs will receive 100% reimbursement for direct eligible costs of R&D activities and 25% of direct cost for their indirect costs, but only 70% of direct eligible costs for close to market or co-funded activities, plus a flat rate of 25% of these [70%] direct eligible costs for indirect costs.

There is a broader acceptance of participants accounting practices for direct costs with the lowest possible level of requirements for submission of audit certificates without undermining sound financial management. There will be no time-sheets for personnel working full time on a project.

2. Horizon 2020 instruments and Work Programme 2014/15 call topics relevant to plant science

2.1 Pillar 1 Excellent Science

2.1.1 European Research Council (ERC)

The [ERC](#) is supporting the highest quality frontier research in Europe on the basis of the only criteria of scientific excellence of applications from individual researchers with no specific required topics. It is done through three main calls covering three stages of the career of researchers: called "Starters" (2 to 7 years after the PhD) with up to € 1.5 Mio for 5 years; Mid-career researchers called "Consolidators" (over 7 to 12 years after the PhD) with up to € 2 Mio for 5 years; Senior researchers called "Advanced" with up to € 2.5 Mio for 5 years. Additional funding can be requested if the Principal Investigator is moving from a third country to EU or needs to purchase major equipment and/or access large facilities (€ 0.5 Mio for the Starters; € 0.75 Mio for Consolidators; € 1 Mio for Advanced). This needs to be justified in the call proposal. ERC Principal Investigators will also continue to be able to apply for the Proof of Concept Grant, first introduced under the revised Work Programme 2011.

Twenty five scientific panels composed of top European and international scientists select the applications for each call, covering all the fields of science.

The life science panels are (those most relevant to plant scientists are indicated in bold):

- LS1 Molecular and Structural Biology and Biochemistry
- **LS2 Genetics, Genomics, Bioinformatics and Systems Biology**
- **LS3 Cellular and Developmental Biology**
- LS4 Physiology, Pathophysiology and Endocrinology
- LS5 Neurosciences and neural disorders
- LS6 Immunity and infection
- LS7 Diagnostic tools, therapies and public health
- **LS8 Evolutionary, population and environmental biology**
- **LS9 Applied life sciences and biotechnology**

LS9 in particular may be of interest to plant scientists, for example, having funded more than 100 projects including topics such as modelling and management of forests related to climate change, new approaches of plant breeding, plant development and plant immunity.

The ERC opportunity is going to increase since the budget of ERC, which was €7.5 billion in the Framework Programme 7, will raise to €13 billion with the Horizon 2020 programme. The first ERC calls were launched in December 2013 and the deadlines for proposal submissions are:

- Starting Grant : 25 March 2014
- Consolidators Grant : 20 May 2014
- Advanced Grant : 21 October 2014 (to be published 17.6.2014)
- Proof of Concept: 1 April 2014, and 1 October 2014

The Scientific Council will analyse the pilot phase of the ERC Synergy Grant (calls were made under Work Programmes 2012 and 2013) before deciding on the scope and timing of future calls. There will be no call under Work Programme 2014.

Information on the ERC is available on the ERC Website: <http://erc.europa.eu>

Details of 2014 ERC Calls from [2014 ERC Work Programme](#)

	Starting Grant	Consolidator Grant	Advanced Grant	Proof of Concept Grant
Call identifier	ERC-2014-StG	ERC-2014-CoG	ERC-2014-AdG	ERC-2014-PoC
Publication date	11/12/13	11/12/13	17/06/13	11/12/13
Deadline (s)	25/03/14	20/05/14	21/10/14	01/04/2014 & 01/10/2014
Budget	EUR 485 million	EUR 713 million	EUR 450 million	EUR 15 million
Estimated number of grants	370	400	200	100
Planned dates to inform applicants	21/07/14 & 21/11/14	31/10/14 & 15/01/15	10/03/15 & 28/04/15	31/07/14 & 13/01/15
Indicative date for signature of grant agreements	21/03/15	15/05/15	28/08/15	31/11/14 & 13/05/15

2.1.2 Marie Skłodowska Curie Actions (MSCA)

The Marie Skłodowska-Curie Actions (MSCA) has been allocated a budget of 6.2 billion euros (at current prices), a budget increase of 30% compared to 2007-2013 which is expected to fund 65,000 researchers, including 25,000 PhD candidates.

MSCA aims to help foster a new European culture of dynamic mobile researchers, and collaboration between countries, disciplines and sectors. Of the European funding mechanisms it is the most diverse, having financed over 50,000 researchers from 130 countries till now, including funding of 10,000 PhD students in the last seven years. It is also the most gender equal, with nearly 40% of grants going to women. Funding is open to all research fields of basic research and innovation and mobility is a key requirement, researchers only receive funding if they move from one country to another according to the MSCA mobility rule.

The funding levels and key features of the predecessor programme in FP7 are maintained in the MSCA. Therefore it remains a bottom up initiative **focused on mobility and career development**.

In Horizon2020 the MSCA is simplified from 8 funding schemes to 4 major components:

- Innovative Training Networks (ITN)
- The Individual Fellowship (IF)
- Research and Innovation Staff Exchange (RISE)
- Co-funding of regional, national and international programmes (COFUND)

Innovative Training Networks (ITN)

ITN is the main EU programme for structured PhD training, and is proposed by international networks of at least 3 organisations from public and/or private sectors.

The aim of the Innovative Training Networks (ITN) is to train a new generation of creative, entrepreneurial and innovative early-stage researchers. ITN supports joint research training and/or doctoral programmes, implemented by partnerships of universities, research institutions, research

infrastructures, businesses, SMEs, and other socio-economic actors from different countries across Europe and beyond.

The ITNs have three subcategories:

- European Training Networks (ETN)
- European Industrial Doctorates (EID)
- European Joint Doctorates (EJD)

Support is for early stage researchers only through fellowships of 3-36 months, with a maximum of 540 researcher months per consortium (180 for EID between 2 partners).

Individual Fellowship (IF)

For post-docs and more experienced researchers, the Individual Fellowship (IF) scheme will combine European Fellowships for Career Development, International Incoming Fellowships, International Outgoing Fellowships and Career Integration Grants programmes.

The fellowships are designed to create opportunities for experienced researchers, enhancing their creative and innovative potential through international and inter-sector mobility, and helping facilitate career moves.

This is achieved through the following means:

- European Fellowships of 12-24 months
- Global Fellowships of 12-24 months, plus a mandatory return phase of 12 months
- Career Restart Panel and Integration Panel and Reintegration Panel
- Secondments, most notably in the non-academic sector

Research and Innovation Staff Exchange (RISE)

The RISE action aims to promote international and inter-sectoral collaboration through research and innovation staff exchanges, sharing of knowledge and sustainable collaborations among the participants.

RISE involves organisations from the academic and non-academic sectors (in particular SMEs), based in Europe (EU Member States and Associated Countries) and outside Europe (third countries). Support is provided for the development of partnerships in the form of joint research and innovation project between the participants. This is aimed at knowledge sharing via international as well as inter-sectoral mobility, based on secondments of research and innovation staff of 1-12 months (exchanges).

Co-funding of regional, national and international programmes (COFUND)

The fourth action, COFUND, aims to integrate the principles of MSCA – international mobility, training and career development – into existing regional, national, and international programmes .

This is achieved by co-funding new or existing programmes to open up to, and provide for, international, inter-sectoral and interdisciplinary research training, as well as transnational and cross-sectoral mobility of researchers at all stages of their career.

Doctoral programmes are funded for early stage researchers and fellowship programmes for experienced researchers, who should comply with the mobility rules of MSCA. The actions are implemented to a sole beneficiary for minimum period of three months, with EU contributions covering the living allowance and management costs, and 50% co-funding of established unit costs.

Funding

All the EU contributions of the MSCA are based on unit costs calculated on the basis of person-months. There are unit costs for research, training and networking as well as for management and overheads.

MSCA website

<http://ec.europa.eu/programmes/horizon2020/en/h2020-section/marie-sk%C5%82odowska-curie-actions>

MSCA 2014 Calls

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-msca_en.pdf

As of 11th December 2013, calls for both ITN and RISE are open, IF and COFUND calls will be published on 12th March and 10th April respectively.

- 2014 Call for Marie Skłodowska-Curie Innovative Training Networks (ITN)
- 2014 Call for Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE)
- 2014 Call for Marie Skłodowska-Curie Individual Fellowships (IF)
- 2014 Call for Marie Skłodowska-Curie Co-funding of regional, national and international programmes (COFUND)

2.1.3 Research Infrastructures

The [Research infrastructures](#) programme aims to ensure Europe has world-class research infrastructures (including e-infrastructure) accessible to all researchers in Europe and beyond, promoting cooperation within Europe and internationally.

- INFRADEV-4-2014/2015: Implementation and operation of cross-cutting services and solutions for clusters of ESFRI and other relevant research infrastructure initiatives
- INFRAIA-1-2014/2015: Integrating and opening existing national and regional research infrastructures of European interest

Research Infrastructures website

<http://ec.europa.eu/programmes/horizon2020/en/h2020-section/european-research-infrastructures-including-e-infrastructure>

Research Infrastructures 2014 Calls

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-infrastructure_en.pdf

2.2 Pillar 2: Industrial Leadership

The “[Leadership in enabling and industrial technologies](#)” contains a [Call for Biotechnology](#), containing topics which may be relevant to plant science.

- BIOTEC 1 – 2014: Synthetic biology – construction of organisms for new products and processes
- BIOTEC 2 – 2015: New bioinformatics approaches in service of biotechnology
- BIOTEC 5 – 2014/2015: SME-boosting biotechnology-based industrial processes driving competitiveness and sustainability
- BIOTEC 6 – 2015: Metagenomics as innovation driver

Industrial Leadership website

<http://ec.europa.eu/programmes/horizon2020/en/h2020-section/industrial-leadership>

Industrial Leadership 2014 Calls

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-leit-nmp_en.pdf

2.3 Pillar 3: Societal Challenges

The largest proportion, 38.5%, of the Horizon 2020 budget will be dedicated to research on societal challenges, reflecting the policy priorities of the [Europe 2020](#) strategy. A challenge-based approach will bring together resources and knowledge across different fields, technologies and disciplines, including social sciences and the humanities. This will cover activities from research to market with a new focus on innovation-related activities, such as piloting, demonstration, test-beds, and support for public procurement and market uptake. It will include establishing links with the activities of the European Innovation Partnerships (EIPs).

The seven societal challenges are:

- **SC1:** Health, demographic change and well-being;
- **SC2:** Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the bioeconomy;
- **SC3:** Secure, clean and efficient energy;
- **SC4:** Smart, green and integrated transport;
- **SC5:** Climate action, environment, resource efficiency and raw materials;
- **SC6:** Europe in a changing world - inclusive, innovative and reflective societies;
- **SC7:** Secure societies - protecting freedom and security of Europe and its citizens

Focus Areas

In addition to the societal challenges the EC developed focus areas for the Work Programmes for the years 2014-16. Each focus area should be addressed by several societal challenges jointly. Therefore

in each Societal Challenge Work Programme you will find calls named after a focus area and calls named after the societal challenge itself.

For example in SC2 there are calls on “Sustainable Food Security” and “Blue Growth, unlocking the power of the oceans”, both focus areas, and “Innovative, Sustainable and Inclusive Bioeconomy” which consists of all topics tackling this societal challenge beyond the focus areas.

2.3.1 Societal Challenge 2: Food Security, sustainable agriculture and forestry, marine and maritime resources & the bioeconomy

The second societal challenge provides the most opportunities for plant scientists. The specific objective of SC2 is to secure 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, alongside competitive and low carbon supply chains. This will accelerate the transition to a sustainable European bio-economy.

The involvement of end-users including farmers, fishers, consumers, public authorities (including at local and regional levels), and society at large will be key to contributing to possible changes in our society, economy and environment. Often this involves “multi-sector approaches” (e.g. European Innovation Partnership Operational Groups).

We identified the following calls as potentially relevant for plant scientists (details of the calls are listed in the following pages):

- SFS-1-2014/2015: Sustainable terrestrial livestock production
- SFS-2-2014/2015: Sustainable crop production
- SFS-3-2014: Practical solutions for native and alien pests affecting plants
- SFS-4-2014: Soil quality and function
- SFS-5-2015: Strategies for crop productivity, stability and quality
- SFS-6-2014: Sustainable intensification pathways of agro-food systems in Africa
- SFS-7-2014/2015: Genetic resources and agricultural diversity for food security, productivity and resilience
- SFS-13-2015: Biological contamination of crops and the food chain
- SFS-14-2014/2015: Authentication of food products
- SFS-15-2014: Proteins of the future
- SFS-16-2015: Tackling malnutrition in the elderly
- SFS-17-2014: Innovative solutions for sustainable novel food processing
- SFS-18-2015: Small farms but global markets: the role of small and family farms in food and nutrition security
- SFS-19-2014: Sustainable food and nutrition security through evidence based EU agro-food policies
- SFS-20-2015: Sustainable food chains through public policies: the cases of the EU quality policy and of public sector food procurement
- BG-1-2015: Improving the preservation and sustainable exploitation of Atlantic marine ecosystems
- BG-3-2014: Novel marine derived biomolecules and industrial biomaterials
- BG-9-2014: Acoustic and imaging technologies
- BG-15-2014: European polar research cooperation

- ISIB-1-2014: Provision of public goods by EU agriculture and forestry: Putting the concept into practice
- ISIB-2-2014/2015: Closing the research and innovation divide: the crucial role of innovation support services and knowledge exchange
- ISIB-3-2015: Unlocking the growth potential of rural areas through enhanced governance and social innovation
- ISIB-4-2014/2015: Improved data and management models for sustainable forestry
- ISIB-5-2014: Renewable oil crops as a source of bio-based products
- ISIB-6-2015: Converting CO2 into chemicals
- ISIB-8-2014: Towards an innovative and responsible bioeconomy
- ISIB-12-2015: Public-Public Partnerships in the bioeconomy

Societal Challenge 2 2014 Calls

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-food_en.pdf

2.3.2 Societal Challenge 1: Health, demographic change and well-being

There appear to be few opportunities for plant science within SC1, below are some topics in which plant science may play a small role:

- PHC 8 – 2014: Vaccine development for poverty-related and neglected infectious diseases: Tuberculosis
- PHC 9 – 2015: Vaccine development for poverty-related and neglected infectious diseases: HIV/AIDS
- PHC 13 – 2014: New therapies for chronic non-communicable diseases
- PHC 14 – 2015: New therapies for rare diseases

Societal Challenge 1 2014 Calls

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-health_en.pdf

2.3.3 Societal Challenge 5: Climate action, environment, resource efficiency and raw materials

- SC5-6-2014: Biodiversity and ecosystem services: drivers of change and causalities

Societal Challenge 5 2014 Calls

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-climate_en.pdf