European Plant Science Organisation
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Briefing on the Horizon 2020 Calls 2019-2020 for EPSO Members

Brussels, 19.11.2018

Horizon 2020 Work Programme (2019 – 2020) links

Horizon 2020 Work Programme 2018 - 2020 covers 2018, 2019 and 2020. The parts of the Work Programme that relate to 2019 (topics, dates, budget) have, with this revised version, been updated. The changes relating to this revised part are explained on the Participant Portal. The parts that relate to 2020 are provided at this stage on an indicative basis and will be decided during 2019.

Excellent Science

- **ERC** - European Research Council Work Programme 2019
- **FET** - Future and Emerging Technologies 2018-2020
- **MSCA** - Marie Skłodowska-Curie Actions 2018-2020
- **INFRA** - European Research Infrastructures (including e-Infrastructures) 2018-2020

Industrial Leadership

- **LEIT** - Leadership in Enabling and Industrial Technologies ii. Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing 2018-2020

Societal Challenges

- **SC1**: Health, demographic change and wellbeing 2018-2020
- **SC2**: Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy 2018-2020
- **SC3**: Secure, Clean and Efficient Energy 2018-2020
- **SC5**: Climate Action, Environment, Resource Efficiency and Raw Materials

Spreading Excellence and Widening Participation

- Spreading Excellence and Widening Participation 2018-2020

Further Work Programmes are available on this EC website.

EPSO Publications with relevance for European funding opportunities

Analyses

(31.08.2018) **Summary** of Analyses of **Horizon 2020 Calls** in **2014 - 2016**

(31.08.2018) Analysis of **Horizon 2020 Calls** in **2016** for Plant Scientists

(18.05.2018) Analysis of Horizon 2020 Calls in 2015 for Plant Scientists

(03.05.2016) Analysis of Horizon 2020 Calls in 2014 for Plant Scientists

Briefings

(09.11.2018) Briefing on **Horizon 2020** Work Pogramme for **2019-20**

(02.11.2017) Briefing on Horizon 2020 Work Pogramme for 2018-20

(23.08.2017) Briefing on the **COST** Programme

(18.07.2017) Briefing on the **LIFE** Programme **2017** Call

(10.07.2017) Briefing on **ESIF** - European Structural and Investment Funds

(24.08.2016) Briefing on Horizon 2020 Calls in 2017

(14.07.2016) Briefing on the LIFE Programme 2016 Call

(14.12.2015) *UPDATE* Briefing on Horizon 2020 Work Programme for 2016-17

(18.06.2015) Briefing on **ERASMUS+** programme focusing on opportunities for application from EPSO

(13.10.2014) *UPDATE* Briefing on the **EIP** on "Agricultural Productivity and Sustainability"

(27.01.2014) *UPDATE* Briefing on Horizon 2020 Work Programme for 2014-15

Other

The economic, social and environmental value of plant breeding in the European Union, March 2016

1. Horizon 2020 Overview

Horizon 2020 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. In early 2015 funds dedicated to the Horizon 2020 budget were threatened to be diverted to the European Fund for Strategic Investments (EFSI) financial stimulus package. However, the budgets for the European Research Council (ERC) and Marie Skłodowska-Curie Actions (MSCA) have been protected. Cuts will be introduced elsewhere in Horizon 2020, such as the European Institute of Innovation & Technology.

In December 2013 the EC published the Work Programmes for 2014-15 and a second two-year Work Programme for 2016-17 was published in 2015. EPSO previously published a detailed briefing on these Work Programmes. In addition, a detailed analysis of the outcome of 2014 - 2016 calls can be found in the Members section of the EPSO website. The following document summarizes the Work Programmes for the final two years of the programme from 2019-20. The 2020 details remain indicative.

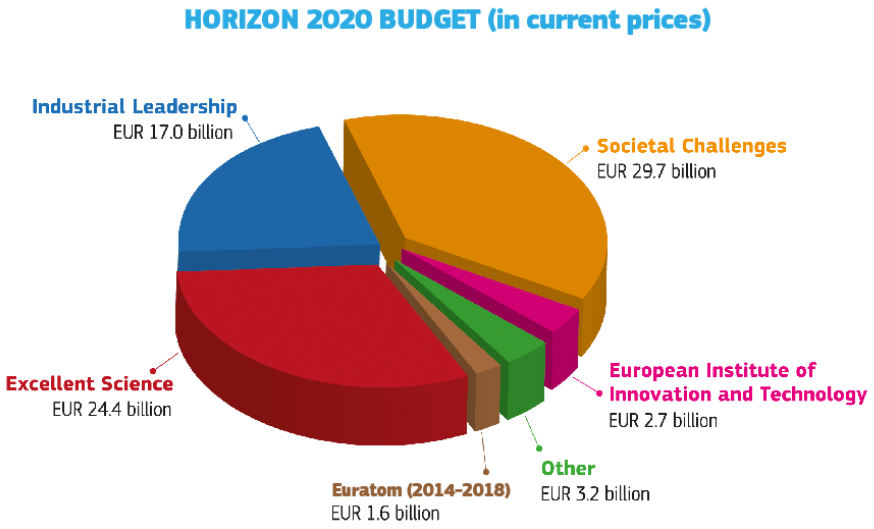
Disclaimer: *For this EPSO briefing we have consulted with EC staff and EPSO members to provide an updated overview of the parts of Horizon 2020 most relevant for plant scientists. This information is provided only as a support, the only legally binding version is the official EC Work Programme. We are not legally responsible for information contained within the document.*

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).

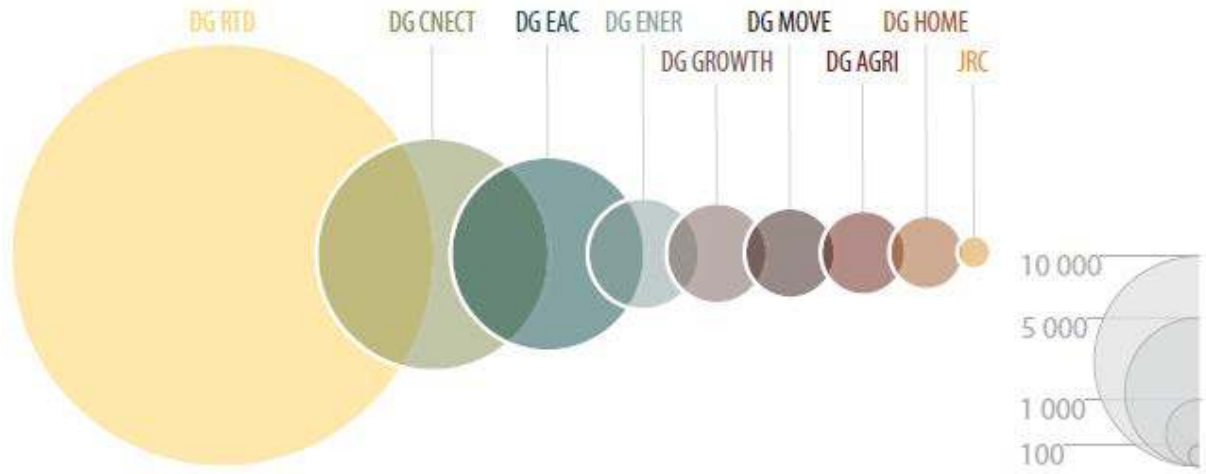
The majority of the Horizon 2020 budget is divided into 3 themes or "pillars"; Excellent Science, Industrial Leadership, and Societal Challenges.

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), including one on Climate change, and the formation of five new ones, of which EIT Health launched in 2014, and the call for EIT Food closed in July 2016. The Euratom nuclear research programme will receive approximately 1.6 billion euros. Please note that some of the budget has been reallocated in favour of European Fund for Strategic Investments (EFSI).



Source: European Commission

The Horizon 2020 budget per Commission Directorate-General (€ million)

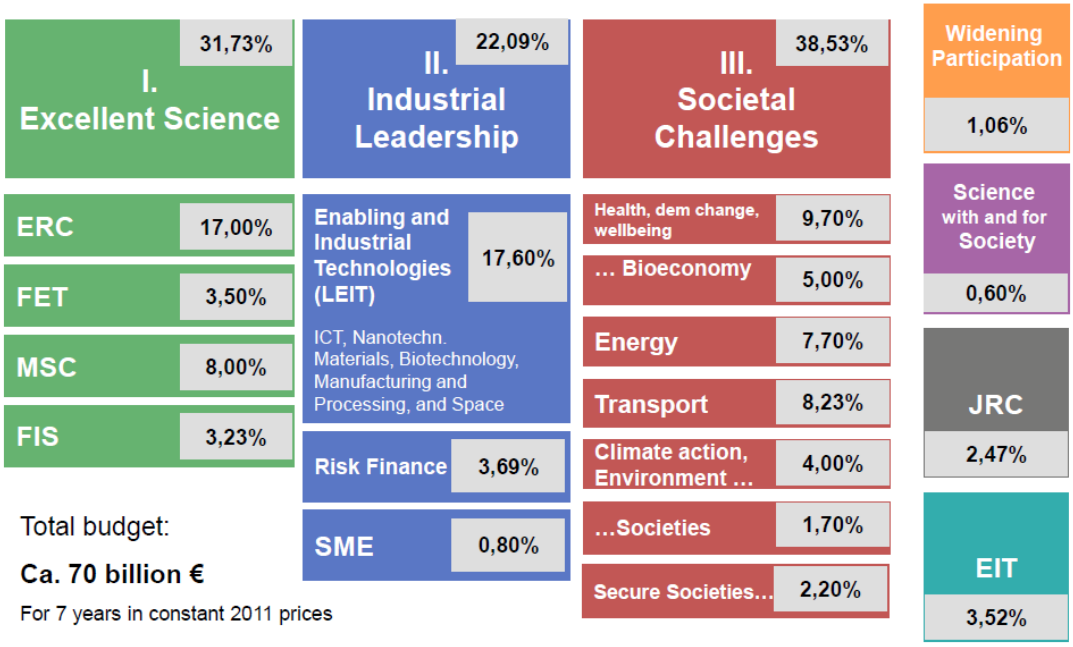


Source: European Parliament, Horizon 2020 budget and implementation

Abbreviations: DG RTD - DG Research and Innovation; DG CNECT - DG Communications Networks, Content and Technology; DG EAC - DG Education and Culture; DG ENER - DG Energy; DG GROWTH - DG Internal Markets, Industry, Entrepreneurship and SMEs; DG Mobility and Transport; DG MOVE - DG Migration and Home Affairs; DG Agriculture and Rural Development (DG AGRI); JRC - the Joint Research Centre.

1.2 The three pillars in Horizon 2020

Structure and Budget Allocation of Horizon 2020



Source: BMBF, Germany
Key: ERC - European Research Council; FET - Future and Emerging Technologies; MSC - Marie Skłodowska Curie Actions; FIS – Infrastructures; JRC – Joint Research Centre; EIT – European Institute of Innovation and Technology

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 Skłodowska 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 new in the 2019-2020 Work Programmes?

This update provides some alterations and additional details for the 2019 calls. The degree of changes varies across the Work Programme parts and while new topics have been added to some calls for proposals (e.g. in Societal Challenge 1), other parts will only see minor corrections and additional information provided (e.g. the European Innovation Council Pilot). The parts of the Work Programme that relate to 2020 are still indicative and will be finalised during 2019.

To help future applicants identify the changes easily, the Commission also published the official lists of changes made to each Work Programme part. These can be accessed by going to the Work Programmes within the 'Reference Documents' tab on the Participant Portal, expanding the relevant section (by clicking on the black arrow) and opening the "History of updates" document.

Source: Gateway to Europe

Source: Horizon 2020 Monitoring flash (September 2018)

1.4 How are projects evaluated?

Evaluation Criteria

The Standard Evaluation Criteria are:

- **Excellence** (E.g. Objectives, concept, progress beyond state-of-art…)
- **Impact** (Potential impact; including measures to maximise impact such as dissemination, communication, and exploitation)
- **Quality and Efficiency of the Action** (Including work packages descriptions)

Each criterion is scored out of 5, with an individual threshold of 3. The project has an overall combined threshold score of 10. For innovation actions and the SME instrument the Impact criterion is weighted by a factor of 1.5, and is considered first when scores are equal. In the first step of two stage proposals, only Excellence and Impact will be assessed. (In proposals to the ERC only excellence will be assessed.)
Source: Presentation of Evaluation in Horizon 2020 Elisabetta Balzi, EC Info Day, Brussels, 17/01/2014
Call for expression of interest for evaluators. Urgent reminder for you and your colleagues to answer the "Horizon 2020 Call for expression of interest for evaluators" and register in the Horizon 2020

database of evaluators. If you have experience in the multi-actor approach, please tick this and mention in the text. This may be used by DG-AGRI to select evaluators. If you registered already you should update your entry in this direction to ensure high level scientists in the evaluation panels.
Evaluation Process. The chain of individual, consensus and panel review from FP7 has been maintained, but there are changes in Horizon 2020. There are new expert profiles, more experts, and clear procedures for cases where experts disagree. The time to grant has been reduced to 8 months and the negotiation phase has been replaced by a grant preparation stage, with no recommendations for substantial changes.

Source: Presentation of Evaluation in Horizon 2020 Elisabetta Balzi, EC Info Day, Brussels, 17/01/2014

1.5 Who can participate? Which reimbursement rules apply?

Note about Status of UK Institutions after the Brexit Referendum. The UK remains a full member of the EU and Horizon 2020 until Brexit has been negotiated, as confirmed by a Statement of 29 June of the Heads of State or Government of 27 Member States, as well as the Presidents of the European Council and the European Commission. The post-Brexit agreement still has to be confirmed, but this does not affect the current funding call. In September 2017 the UK published "Collaboration on science and innovation, a future partnership paper", which outlines the benefit of collaboration between in the UK and EU, concluding that "the UK will seek to agree a far-reaching science and innovation agreement with the EU that establishes a framework for future collaboration."

The UK Treasury has guaranteed full funding of all Horizon 2020 projects submitted before the UK leaves EU. The statement says "where UK organisations bid directly to the European Commission on a competitive basis for EU funding projects while we are still a member of the EU, for example universities participating in Horizon 2020, the Treasury will underwrite the payments of such awards, even when specific projects continue beyond the UK's departure from the EU". In addition EPSO consulted BBSRC and received feedback clarifying that their understanding is "that the UK remains a member of the EU even while any exit is under negotiation. We only leave once negotiations are complete." Furthermore "the current understanding is that UK Government will support successful proposals submitted before exit, even if the actual contract is signed after exit. However these aspects may become points in any exit negotiations."

Eligibility for Funding - EU 28 and Associated Countries. As of 1 January 2017 the following countries are Associated to Horizon 2020: Iceland, Norway, Albania, Bosnia and Herzegovina, Republic of North Macedonia, Montenegro, Serbia, Turkey, Israel, Moldova, Switzerland, Faroe Islands, Ukraine, Tunisia, Georgia, Armenia. Legal entities from Associated Countries can participate under the same conditions as legal entities from the Member States.

Switzerland retrieved full association to the entire Horizon 2020 programme from 1 January 2017 on.
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.

Third Countries whose institutions are not automatically funded by the Horizon 2020 budget, are requested to support their researchers with matching funds for the participation in EU projects. Mexico and New Zealand have already announced their support by providing matching and co-funding mechanisms.

The European Commission initiated a priority setting process in order to agree on specific multiannual "roadmaps" with the following selected countries: Brazil, Canada, China, India, Japan, the Republic of Korea, Russia, South Africa, USA and the countries of the Eastern Partnership and the Southern Mediterranean. These roadmaps contain information on bilateral activities, statistics on the participation in the research framework programmes and current joint projects.

Presentation of International Cooperation at EU Info Day, 17th January 2014: here

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.

Model Grant Agreement. An updated version of the H2020 Annotated Model Grant Agreement was made available on 3 July 2018.

1.6 Hints for Success in Horizon 2020*

1. Do not expect the evaluator to be an expert in your particular field; therefore make sure to present your concept also in a more global context
2. Much of the Horizon 2020 funding has a strong economic and societal basis. Therefore it is important to stress the potential economic impact within proposals.
3. We approached EPSO members and experts for advice which we include under the programme guides on the following pages: ERC page 14; Marie Skłodowska-Curie Actions page 19; Societal Challenges page 41.
4. For those new to Horizon 2020 and its predecessors here are some general hints:
    - Use information published by the EC, such as the H2020 Online Manual, the National Contact Points and The Research Enquiry Service
    - Try to use the EC's evaluation services as a guide to improve your existing proposals for successful future submissions
    - Take advantage of the EC's pre-proposal service to ensure that you are within the scope of the call
    - Do not exceed any stated page limits
    - Submit a complete proposal on time. Call deadlines are absolute deadlines and even one minute after the deadline is too late
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**These points are not an exhaustive guide nor guaranteed to give you success. Sources such as the European Commission, the National Contact Points and The Research Enquiry Service produce a wealth of free information, and we also encourage you to contact colleagues and peers to talk through your proposals.*

2. Horizon 2020 instruments and Work Programme 2019-20 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 rise to €13 billion with the Horizon 2020 programme.

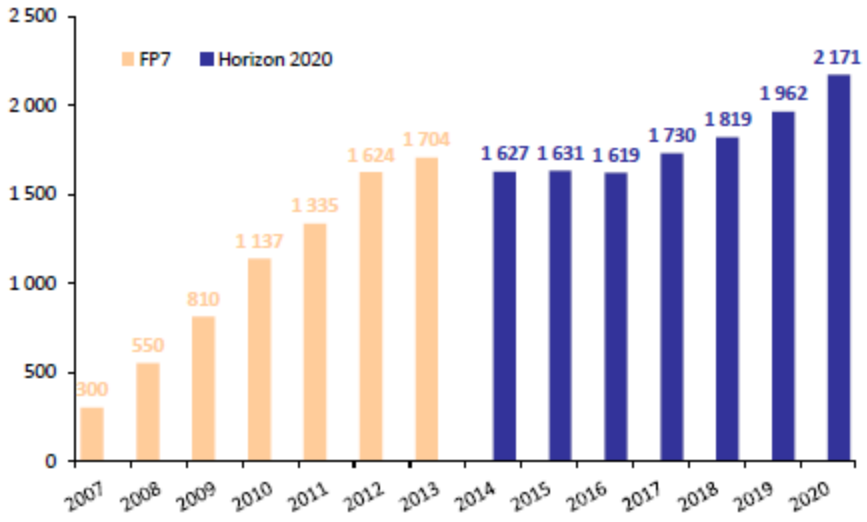
EPSO encourages plant scientists to submit more high level proposals to the ERC and to support your colleagues in doing so. EPSO already did such a campaign with the EC in 2012, upon which submission rates in 2013 went up and more plant scientists received ERC grants. Unfortunately in subsequent years submission rates reduced substantially, so please renew your efforts!

Details of ERC Calls from ERC Work Programme 2019

ERC	Starting Grant	Consolidator Grant	Advanced Grant	Synergy Grant	Proof of Concept Grant
Call identifier	ERC-2019-StG	ERC-2019-CoG	ERC-2019-AdG	ERC-2019-SyG	ERC-2019-POC
Opening date	10/09/2018	24/10/2018	21/05/2019	14/09/2018	16/10/2018
Deadline (s)	17/10/2018	07/02/2019	29/08/2019	08/11/2018	22/01/2019 25/04/2019 19/09/2019
Budget	EUR 580 million	EUR 602 million	EUR 391 million	EUR 400 million	EUR 25 million
Estimated number of grants	390	314	166	48	167
Planned dates to inform applicants (after each step or cut-off date)	22/05/2019 28/08/2019	23/07/2019 18/12/2019	30/01/2020 17/04/2020	12/04/2019 30/08/2019 31/10/2019	02/05/2019 25/07/2019 18/12/2019
Indicative date for signature of grant agreements	05/01/2020	26/04/2020	25/08/2020	09/03/2020	09/09/2019 02/12/2019 26/04/2020

Information on the ERC is available on the ERC website. See here ERC Work Programme 2019.

Projected ERC Annual Budget for 2007-20 (million euros)



Source: European Parliament, Horizon 2020 budget and implementation, November 2015

2.1.2 Hints for Success in the ERC

We approached EPSO members and experts for advice. Below are some tips we received*:

- The choice of the right panel is important.
    - If you are uncertain of the best panel you can now suggest a second alternative. This gives the panel chairs of both options the opportunity to judge and decide where your proposal fits best.
- Applications that are multidisciplinary do better, however that can involve linking different expertise within the life sciences.
- Use or development of novel methodology is an advantage in applications. Detailed descriptions of the methodology should be saved for the full application, although it is advantageous to give very brief descriptions of the types of methods to be used in the extended synopsis.
- Novelty in approach is important.
- As you get to the interview stage, keep to time in your presentation, and keep it simple. Very busy slides do not work well. The panel members have a broad range of expertise and need to be able to follow what you say in ten minutes. A mock interview with an evaluator is useful for Starting and Consolidator Grants.
- The ERC funds ambitious high risk/high gain projects, however, applicants should consider how the risk will be managed and include a risk analysis and contingency plan in your proposal.
- If you ask for extra money, it is important to stress in your proposal very clearly why.
- ERC is supporting "Frontier" research in the "Fundamental" and "Applied" scientific domains
    - In the applied domain, a proposal should address both domains and should be explicitly breakthrough in both domains, compared to the current state of the art in the world and the previous research of the applicant.
- Always stick to the template and fill in all requested information especially in Part A. Panellists have to assess dozens of proposals and it is immediately obvious where information has been omitted. If you don't have a track record in one area – be honest and try to give a legitimate reason rather than delete mention of that part.
- For Part A, help the panellists by giving useful data such as H Index and average citation rate. For your 10 best publications provide the Impact Factor of the journals and numbers of citations per paper. This saves them time having to look them up.
- Never list more than 10 papers. If you are not first / last author state a clear reason why you consider it important for the publication to be included.
- Failure to deliver a clear and detailed description of budgeting in Part B (especially number of staff employed and for how many years) regularly results in a lower score.

- LS2:
  - LS2 regularly funds plant proposals, but competition is tough as there are always many proposals from the medical / cancer areas
  - Bear in mind that the majority of the panel will know practically nothing about plant science. They will understand perfectly the technology but little of the biology. Therefore, give particular emphasis to the novelty and potential impact of your proposal compared to the current field.
  - Proposals based strongly on number crunching (number of genomes sequenced, more genes analysed , database construction, or developing a data resource for the future) generally score (very) badly. This also applies to so-called 'fishing expeditions'. Biological relevance and tackling well-defined knowledge challenges must be the central concept to the main proposal.
  - Proposals which directly continue the PIs long-standing career activities tend to score less well than those where the PI aims to use ERC funding to go beyond their state-of-the-art and break new ground.
  - Over ambitiousness and over selling are frequent causes of lower scores. Be realistic.
- LS9:
  - Work on Arabidopsis is possible in LS9, however consider including at least one translational work package linking to a crop plant.
  - LS9 does not judge the importance of the applications the proposals address. However, proposals where the applications of the work are over-claimed, often do not fare so well.
  - While the CV of the applicant must be very strong, successful applicants to the LS9 consolidator panel may be publishing in the best journals in their field, and are not limited to those publishing in the highest ranking general journals.

**These points are not designed to be an exhaustive guide nor guaranteed to give you success. Sources such as the European Commission, the National Contact Points and The Research Enquiry Service produce a wealth of free information, and we also encourage you to contact colleagues and peers to talk through your proposals.*

2.1.3 Marie Skłodowska-Curie Actions (MSCA)

For the period of 2013-2020 Marie Skłodowska-Curie Actions (MSCA) has been allocated a budget of 6.2billion 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 Horizon 2020 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 a 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 2019 Calls

2019 Call for Marie Skłodowska-Curie Innovative Training Networks (ITN)

Call identifier	MSCA-ITN-2019
Opening Date	13 Sep 2018
Deadline (s)	15 Jan 2019
Budget	EUR 470 million (incl. 400 million for ETN, 35 million for EID, and 35 million for EJD)

2019 Call for Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE)

Call identifier	MSCA-RISE-2019
Opening Date	04 Dec 2018
Deadline (s)	02 Apr 2019 at 17.00.00 Brussels time
Budget	EUR 80 million

2019 Call for Marie Skłodowska-Curie Individual Fellowships (IF)

Call identifier	MSCA-IF-2019
Opening Date	11 Apr 2019
Deadline (s)	11 Sep 2019
Budget	EUR 294.49 million (Of this amount, 236.49 million is allocated to EF St+CAR+RI, EUR 50 million to Global Fellowships, 8 million for EF IP)

2019 Call for Marie Skłodowska-Curie Co-funding of regional, national and international programmes (COFUND)

Call identifier	MSCA-COFUND-2019
Opening Date	04 Apr 2019
Deadline (s)	26 Sep 2019
Budget	EUR 90.00 million (Of this amount, 55 million is for Fellowship Programmes and 35 million is allocated to Doctoral Programmes)

For other actions see here, starting from page 51.

MSCA 2020 Indicative Calls

2020 Call for Marie Skłodowska-Curie Innovative Training Networks (ITN)

Call identifier	MSCA-ITN-2020
Opening Date	12 Oct 2019
Deadline (s)	9 Jan 2020
Budget	EUR 525 million (incl. MSCA-ITN-ETN/EID/EJD)

2020 Call for Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE)

Call identifier	MSCA-RISE-2020
Opening Date	05 Dec 2019
Deadline (s)	07 Apr 2020
Budget	EUR 80 million

2020 Call for Marie Skłodowska-Curie Individual Fellowships (IF)

Call identifier	MSCA-IF-2020
Opening Date	08 Apr 2020
Deadline (s)	09 Sep 2020
Budget	EUR 324 million (incl. MSCA-IF-EF-CAR/RI/ST/SE & MSCA-IF-GF)

2020 Call for Marie Skłodowska-Curie Co-funding of regional, national and international programmes (COFUND)

Call identifier	MSCA-COFUND-2020
Opening Date	08 Apr 2020
Deadline (s)	29 Sep 2020
Budget	EUR 100 million (incl. MSCA-COFUND-DP/FP)

2020 Call for Marie Skłodowska-Curie European Researchers' Night (NIGHT)

Call identifier	MSCA-NIGHT-2020
Opening Date	08 Oct 2019
Deadline (s)	08 Jan 2020
Budget	EUR 8 million (incl. MSCA-NIGHT-2020 (CSA))

For other actions see here, starting from page 59.

2.1.4 Hints for Success in the MCSA Programme

We approached EPSO members and experts for advice. Below are some tips we received*:

Innovative Training Networks

- The ITN proposals are very competitive and the training and career development of the PhD students is key. Therefore you need a very concrete and detailed training programme in the proposal. This should identify courses that will benefit all students.
- It is essential to have involvement from an industrial partner, and this is high on the agenda when preparing the proposal. This can be incorporated in different ways. Three or four industrial partners may be included, each offering an aspect of technical training. They may not want to have a full time student in their company. They could offer every student 2-3 weeks at the company or they could offer 3-4 longer internships to students who want them.
- Under Horizon 2020 it is now not possible to include 'Experienced Researchers' within the network, therefore postdocs are no longer permitted.
- The contribution to European excellence and European competitiveness should be convincingly illustrated and must be specific to your project.

Individual Fellowships

- The quality of the planned research and the applicant's credentials are key factors for success.
- Use keywords to demonstrate that you are familiar with the programme's rationale and objectives, such as "the development of the researcher's career", "the development of leadership skills", "the mutually beneficial relationship between the host organisation and the researcher" or "citizen engagement".
- Evaluators will give high marks to proposals which are complete, coherent and detailed.
- Emphasise how your high-quality, novel research is likely to open up the best career possibilities for you, as well as new collaboration opportunities for the host organization.
- The project should account for a two-way knowledge transfer: the applicant should gain new knowledge from the hosting organisation(s) and the hosting organisations may also benefit from the previous experience of the researcher.
- Elaborate on the quality of the supervision and the hosting arrangements. What are the qualifications and experience of the supervisor(s)?
- IFs funds research training projects, researchers with innovation projects focusing on market applications should consider submitting their project to other programmes of Horizon 2020; however, where relevant, cooperation with the private sector can give the proposal an important edge.
- Multi- and inter- disciplinarity is encouraged.
- Include a contingency plan if you meet problems and an Intellectual Property plan if necessary.
- Include public outreach activities.
- For Global Fellowships, the fellow should work closely with his/her return host organization in order to manage the outgoing and return phases.

References: How to Write a Winning Proposal for Individual Fellowships (IF), Horizon 2020 National Contact Point Luxembourg; EU Horizon 2020 Marie Curie Program Individual fellowships (IF) tips, a blog article with over 7,000 comments

**These points are not designed to be an exhaustive guide nor guaranteed to give you success. Sources such as the EC, the National Contact Points and The Research Enquiry Service produce a wealth of free information, and we also encourage you to contact colleagues and peers to talk through your proposals.*

2.1.5 Research Infrastructures

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

This Work Programme is closely tied to the European Strategy Forum on Research Infrastructures (ESFRI), which invites proposals for infrastructures projects for inclusion in its roadmap separately from the Horizon2020 deadlines. The next opportunity for proposals will be for the 2020 Roadmap, for which the deadline can be expected in 2019. The EMPHASIS project, co-ordinated by EPSO member Forschungszentrum Jülich, provides an example of an ESFRI in plant science (see text box below).

INFRADEV-01-2019-2020: Design Studies

Design studies should tackle all the key questions concerning the technical and conceptual feasibility of new or upgraded fully fledged user facilities (proposals considering just a component for research infrastructures are not targeted by this topic). A design study proposal should demonstrate the relevance and the advancement with respect to the state-of art of the proposed infrastructure. It should indicate the gaps in the research infrastructure landscape the new facility will cover as well as the research challenges it will make possible to address. All fields of research are considered.

Call identifier	INFRADEV-01-2019-2020
Opening Date	25 Jul 2019
Type of Call	Research and Innovation action
Deadline (s)	12 Nov 2019
Budget	EUR 20 million in 2019, EUR 10 million in 2020
Indicated Proposal Range	EUR 1-3 million

INFRADEV-02-2019-2020: Preparatory Phase of new ESFRI projects

The preparatory phase aims to bring the project for the new or upgraded research infrastructure identified in the ESFRI roadmap to the level of legal, financial, and, where applicable, technical maturity required for implementing it.

Call identifier	INFRADEV-02-2019-2020
Opening Date	14 Nov 2018
Type of Call	Coordination and support action
Deadline (s)	29 Mar 2019
Budget	EUR 20 million
Indicated Proposal Range	Up to EUR 4 million

INFRADEV-03-2018-2019: Individual support to ESFRI and other world-class research infrastructures

This topic targets the long-term sustainability of new research infrastructures, ESFRI and other world-class research infrastructures of European Interest, with established governance and legal structure, notably on the basis of the European Research Infrastructure Consortium (ERIC) or any other suitable structure with international membership.

Call identifier	INFRADEV-03-2018-2019
Opening Date	14 Nov 2018
Type of Call	Research and Innovation action

Deadline (s)	20 Mar 2019
Budget	EUR 40 million
Indicated Proposal Range	EUR 2-5 million

INFRAIA-01-2018-2019: Integrating Activities for Advanced Communities

An Integrating Activity will mobilise a comprehensive consortium of several key research infrastructures in a given field as well as other stakeholders (e.g. public authorities, technological partners, research institutions) from different Member States, Associated Countries and other third countries when appropriate, in particular when they offer complementary or more advanced services than those available in Europe.

An Integrating Activity shall combine, in a closely co-ordinated manner:

(i) Networking activities, to foster a culture of co-operation between research infrastructures, scientific communities, industries and other stakeholders as appropriate, and to help develop a more efficient and attractive European Research Area;

(ii) Trans-national access or virtual access activities, to support scientific communities in their access to the identified key research infrastructures;

(iii) Joint research activities, to improve, in quality and/or quantity, the integrated services provided at European level by the infrastructures.

The topics include: Research infrastructures for forest ecosystem and resources research

Call identifier	INFRAIA-01-2018-2019
Opening Date	14 Nov 2018
Type of Call	Research and Innovation action
Deadline (s)	20 Mar 2019
Budget	EUR 110 million
Indicated Proposal Range	Up to EUR 10 million

The EMPHASIS project, an example of an ESFRI infrastructure project in plant science

Multi-scale plant phenotyping for analysing genotype performance under diverse environmental conditions is at the centre of the EMPHASIS project, a large-scale European project coordinated by researchers at the Forschungszentrum Jülich. EMPHASIS is part of the 2016 ESFRI roadmap, in which the member states of the ESFRI Forums (European Strategy Forum for Research Infrastructures) coordinate pan-European research strategies.

The project EMPHASIS – European Multi-Environment Plant Phenomics and Simulation Infrastructure – aims to create an integrated, European network of unique infrastructures for plant phenotyping. This includes research infrastructures bridging four dimensions (1) deep and high throughput research infrastructure in controlled environments (2) intense field site installations such as FACE facilities, field labs, etc., (3) lean phenotyping approaches with field sites across European climate zones and diverse soil conditions and (4) modelling platforms. The installations will be connected with common data management and standards and establish the competence to link the phenotypic with the genotypic data. EMPHASIS links national plant phenotyping platforms, such as the German Plant Phenotyping Network (DPPN, http://www.dppn.de/dppn/EN) and the French Plant Phenomic Network PHENOME (FPPN, https://www.phenome-fppn.fr/phenome_eng/) as well as the platforms in Great Britain (http://www.ukppn.org.uk/) and Belgium. EMPHASIS will also establish links with institutions, and include other European countries. The project will cooperate with users from industry such as technology developers and breeders and other international research organisations. After a preparatory phase funded by the European Union, EMPHASIS will be implemented and fully operational in the next few years with the goal to enable access to the key plant phenotyping facilities in Europe. Forschungszentrum Jülich will coordinate EMPHASIS in close cooperation with partners in France.

Contact: Ulrich Schurr

2.2 Pillar 2: Industrial Leadership

The "Leadership in enabling and industrial technologies" (LEIT) contains a Call for Biotechnology, containing topics which may be relevant to plant science. The Biotechnology Call follows the challenge based approach of Pillar 3, displaying complementarity with Societal Challenge 2. It covers the whole innovation chain, from RTD to close-to-market actions. Topics in the Work Programmes are linked to Technology Readiness Level (TRLs), defined in annex 3.

BIOTEC-02-2019: Boosting the efficiency of photosynthesis

Call identifier	BIOTEC-02-2019
Opening Date	16 Oct 2018
Type of Call	Research and Innovation action
Deadline (s)	22 Jan 2019 (First Stage) 03 Sep 2019 (Second Stage)
Budget	EUR 31 million
Indicated Proposal Range	EUR 6-8 million
TRL	Activities should start at TRL 3 and achieve TRL 5 at the end of the project.

2.3 Pillar 3: Societal Challenges

The largest proportion, 38.5%, of the Horizon 2020 budget is 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. 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 “Rural Renaissance” and “Bio-based innovation for sustainable goods and services” which consists of all topics tackling this societal challenge beyond the focus areas.

Source: A. Schneegans, European Commission

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).

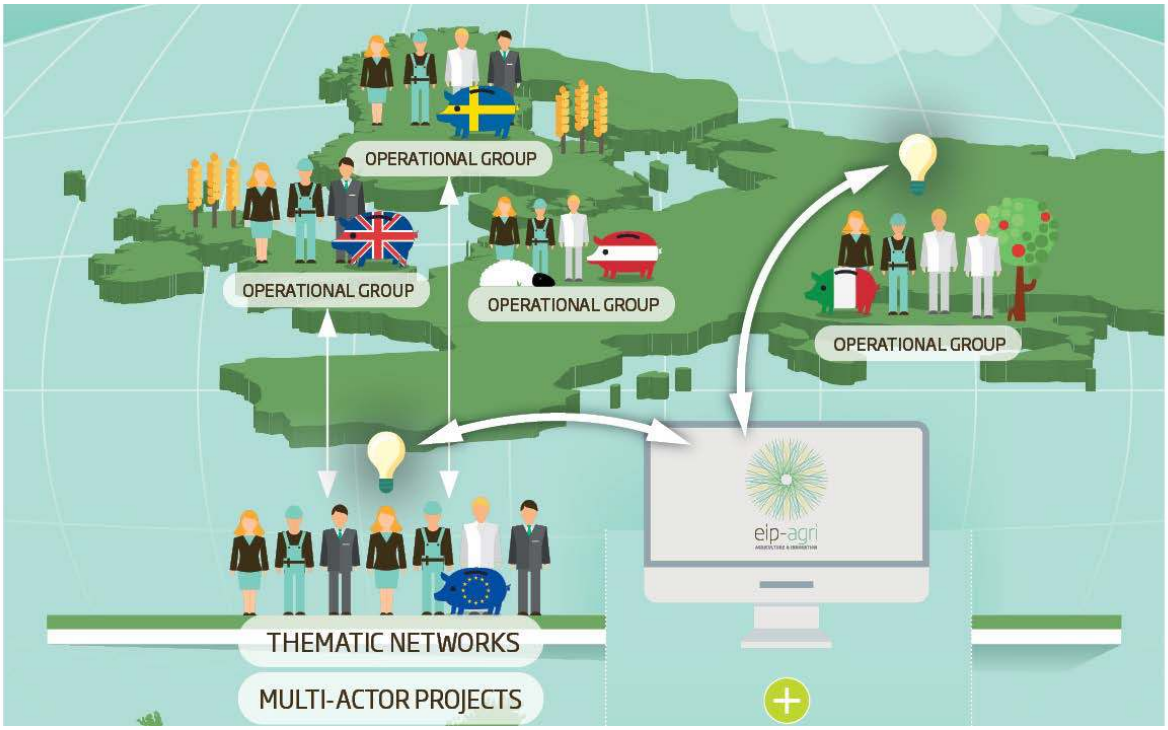
The topics in the work programme flagged with the multi-actor approach should follow the "interactive innovation model" of the European Innovation Partnership on Agricultural Productivity and Sustainability (EIP-AGRI).

EIP Agricultural Productivity and Sustainability

The EIP-AGRI is an umbrella activity and acts as a bridge from research and innovation to agricultural practice, and is funded through two existing EU policies:

- Societal Challenge 2 of Horizon 2020 (for EU-wide actions through "Thematic Networks" and "Multi-actor Projects")

- The Rural Development Policy (for national or regional activities through "Operational Groups" see EPSO Briefing on the EIP, 13.10.2014



EIP-AGRI in Horizon 2020

Horizon 2020 provides for partnership oriented formats such as "multi-actor approach (see Annex 1)" and "thematic networks" which will "ensure interactions between researchers, businesses, farmers/producers, advisors and end-users".

The SC2 Work Programme for 2018-2020 contains 500 million Euros of funding for multi-actor projects spread over 31 topics, and a call of 10 million Euros for thematic networks. This will involve projects integrating a continuum from basic to applied research and demonstration, multi-actor approaches, cross-border initiatives such as thematic networks, as well as supporting innovation brokers and innovation centres as intermediates to connect farmers and other actors with research.

During a workshop held on 14/01/2014 in Brussels : EIP-AGRI Workshop on the first call of Horizon 2020 the EIP-AGRI concept in Horizon2020 was explained. All presentations are recorded and can be found here.

For more information about the EIP in Horizon 2020 contact Inge Van Oost: Inge.VAN-OOST@ec.europa.eu

EIP in Rural Development Programmes

This allows scientists to work with agricultural and forestry practitioners at the local level, each region will implement this part of the EIP differently, with varying priorities and criteria.

The EIP-AGRI has been integrated into 94 of 118 Rural Development Programmes, therefore check with the national Managing Authority in your country or region for information on open calls to find out if there are specific requirements for building an Operational Group project, an updated list is available here. Your country's National Rural Network (NRN) can also provide more detailed information on setting up Operational Groups and finding partners. A fully updated guide to Operational Groups has been published here.

Rural Development Programmes can provide financial support for setting up an Operational Group project through Article 35, the Cooperation Measure. Through this measure support can be sought for both the creation and running of Operational Groups. The funding of the setting up and running of Operational Groups may be combined with support under other rural development measures, which may allow for the funding of direct project costs. See page 6 of the EPSO briefing for more information.

Multi-actor approach

All multi-actor projects have the following sentence in the description of the topic: "Proposals should fall under the concept of multi-actor approach".

A clear role for the different actors in the work plan is required, from the participation in the planning of work and experiments, their execution up until the dissemination of results and the possible demonstration phase. Project proposals should illustrate sufficient quantity and quality of knowledge exchange activities.

A multi-actor project needs to take into account:

• how the project proposal's objectives and planning are targeted to needs / problems and opportunities of end-users

• the composition of the project consortium must get sufficient involvement of key actors with complementary types of knowledge (scientific and practical) to reach the project objectives and make its results broadly implemented. (Be sure to read the evaluation criteria on ambitions, expected impact, etc.)

Source: Presentation of The European Innovation Partnership (EIP) "Agricultural Productivity and Sustainability" and Demand driven innovation in Horizon 2020: Multi-actor projects Inge Van Oost, EC Info Day, Brussels, 17/01/2014.

See updated information here.

Please use our networking form in Annex I, or in urgent cases contact Karin Metzlaff: Karin.Metzlaff@epsomail.org.

Links:

Presentation of The European Innovation Partnership (EIP) "Interactive Innovation in Action – Multi-Actor projects learning from each other - Cross-fertilisation event for multi-actor projects" Inge Van Oost (DG AGRI – R&I), Lara Passante (REA – B.2), Brussels, 08/03/2018

Horizon 2020 Info Day on Societal Challenge 2 calls for proposals of 2019

EIP-AGRI brochure 'Horizon 2020 multi-actor projects

EIP-AGRI Brochure on Thematic Networks under Horizon 2020

EIP-AGRI Brochure on Funding opportunities under Horizon 2020 - 2019 calls

Horizon 2020 Monitoring flash (September 2018)

Evaluation Procedure of Societal Challenge 2

Due to the low success rate at the 2nd stage of 2014-15 calls (See Annex III), approximately 3 times the expected number of funded proposals are invited to the 2nd stage in order to improve the success rate. (A request for lower number of projects invited to 2nd stage was among the inputs provided by EPSO after feedback from our members at the 2015 General Meeting.)

Features introduced for the 2016/17 evaluation:

- Shorter first stage proposal (10 pages)
- Evaluation in 5 months for 2nd stage and single stage projects
- There is no negotiation; the proposals must be ready to become grants. Proposals are evaluated as submitted, not on their potential if certain changes were to be made. Shortcomings will be reflected in lower scores.

RELEVANT CALLS WITHIN SOCIETAL CHALLENGE

2.3.2 Societal Challenge 2

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

(Key: RIA=Research and Innovation Action; IA=Innovation Action; CSA=Coordination and Support Action; COFUND EJP=COFUND European Joint Programme)

Call - Sustainable Food Security

From functional ecosystems to healthy food

SFS-01-2018-**2019**-2020: Biodiversity in action: across farmland and the value chain (RIA)
SFS-04-**2019**-2020: Integrated health approaches and alternatives to pesticide use (RIA; IA)
SFS-05-2018-**2019**-2020: New and emerging risks to plant health (RIA)
LC-SFS-17-**2019**: Alternative proteins for food and feed (IA)

Environment and climate-smart food production and consumption

LC-SFS-19-2018-**2019**: Climate-smart and resilient farming (RIA)
LC-SFS-20-**2019**: European Joint Programme on agricultural soil management (COFUND EJP)
LC-SFS-22-2020: Forest soils Research and Innovation Action (COFUND EJP)
SFS-23-2019: Integrated water management in small agricultural catchments (RIA)
CE-SFS-24-2019: Innovative and citizen-driven food system approaches in cities (IA)

Building capacities

DT-SFS-26-2019: Food Cloud demonstrators (IA)
SFS-28-2018-**2019**-2020: Genetic resources and pre-breeding communities (CSA; RIA; IA)
SFS-30-2018-**2019**-2020: Agri-Aqua Labs (RIA)
SFS-31-**2019**: ERANETs in agri-food (ERA-NET COFUND)

- A) [2019] ICT-enabled agri-food systems;
- B) [2019] Climate change and food systems;
- C) [2019] International coordination of research on infectious animal diseases

Targeted international cooperation

EU-Africa Partnership on Food and Nutrition Security and Sustainable Agriculture (FNSSA)
LC-SFS-34-**2019**: Food Systems Africa (RIA)
SFS-35-**2019**-2020: Sustainable Intensification in Africa (RIA)
CE-SFS-36-2020 - Diversifying farmers' income through small bio-based concepts (RIA)

EU-China FAB Flagship initiative
SFS-37-2019: Integrated approaches to food safety controls across the food chain (RIA)
CE-SFS-39-2019: High-quality organic fertilisers from biogas digestate (IA)

Call - Blue Growth

DT-BG-04-2018-**2019**: Sustainable European aquaculture 4.0: nutrition and breeding (IA)

BG-05-2019: Multi-use of the marine space, offshore and near-shore: pilot demonstrators (IA)
CE-BG-06-2019: Sustainable solutions for bio-based plastics on land and sea (IA)
BG-07-2019-2020: The Future of Seas and Oceans Flagship Initiative (IA)
BG-08-2018-2019: All Atlantic Ocean Research Alliance Flagship (RIA; RIA; CSA)
LC-BG-09-2019: Coordination of marine and maritime research and innovation in the Black Sea (CSA)

Call - Rural Renaissance

From farm to society: understanding dynamics and modernising policies

RUR-01-2018-**2019**: Building modern rural policies on long-term visions and societal engagement (RIA; CSA; CSA; RIA)

Organising sustainable food and non-food value chains under changing conditions

CE-RUR-08-2018-**2019**-2020: Closing nutrient cycles (RIA; IA; IA)
CE-RUR-10-2019: Circular bio-based business models for rural communities (IA)
LC-RUR-11-**2019**-2020: Sustainable wood value chains (IA)

Boosting innovation and enhancing the human and social capital in rural areas

RUR-15-2018-**2019**-2020: Thematic networks compiling knowledge ready for practice (CSA)
RUR-16-2019: Fuelling the potential of advisors for innovation (CSA)
RUR-17-2019: Reinforcing the EU agricultural knowledge base (CSA)

Call - Sustainable Food Security

From functional ecosystems to healthy food

SFS-01-2018-2019-2020: Biodiversity in action: across farmland and the value chain

Call identifier	SFS-01-2018-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage) *The 2020 indicative deadlines are not yet available*
Budget	EUR 16 million *The 2020 indicative budget is not yet available*
Indicated Proposal Range	8 million for Part B. [2019] Capitalising on native biodiversity in farmland landscape

SFS-04-2019-2020: Integrated health approaches and alternatives to pesticide use

Call identifier	SFS-04-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage) *The 2020 deadlines are not yet available*
Budget	EUR 15.100.574 million *The 2020 budget is not yet available*
Indicated Proposal Range	Up to EUR 15 million

SFS-05-2018-2019-2020: New and emerging risks to plant health

Call identifier	SFS-05-2018-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage) *The 2020 deadlines are not yet available*
Budget	EUR 7 million *The 2020 budget is not yet available*
Indicated Proposal Range	Up to EUR 7 million

LC-SFS-17-2019: Alternative proteins for food and feed

Call identifier	LC-SFS-17-2019
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 32 million
Indicated Proposal Range	EUR 8 million

Environment and climate-smart food production and consumption

LC-SFS-19-2018-2019: Climate-smart and resilient farming

Call identifier	LC-SFS-19-2018-2019
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage)
Budget	EUR 14 million
Indicated Proposal Range	EUR 7 million

LC-SFS-20-2019: European Joint Programme on agricultural soil management

Call identifier	LC-SFS-20-2019
Type of Call	COFUND European Joint Programme
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 40 million
Indicated Proposal Range	EUR 40 million

LC-SFS-22-2020 - Forest soils Research and Innovation Action

No information available yet.

SFS-23-2019: Integrated water management in small agricultural catchments

Call identifier	SFS-23-2019
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage)
Budget	EUR 14 million
Indicated Proposal Range	Up to EUR 7 million

CE-SFS-24-2019: Innovative and citizen-driven food system approaches in cities

Call identifier	CE-SFS-24-2019
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 15 million
Indicated Proposal Range	EUR 7.5 million

Building capacities

DT-SFS-26-2019: Food Cloud demonstrators

Call identifier	DT-SFS-26-2019
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019

Budget	EUR 10 million
Indicated Proposal Range	EUR 10 million

SFS-28-2018-2019-2020: Genetic resources and pre-breeding communities

Call identifier	SFS-28-2018-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 January 2019 04 September 2019 *The 2020 indicative deadlines are not yet available*
Budget	EUR 14 million *The 2020 indicative budget is not yet available*
Indicated Proposal Range	EUR 7 million for sub-topic B in 2019: Adding value to plant GenRes

SFS-30-2018-2019-2020: Agri-Aqua Labs

Call identifier	SFS-30-2018-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage) *The 2020 indicative deadlines are not yet available*
Budget	EUR 10 million in 2019 *The 2020 indicative budget is not yet available*
Indicated Proposal Range	EUR 5 million for sub-topic B

SFS-31-2019: ERANETs in agri-food

Call identifier	SFS-31-2019
Type of Call	ERA-NET-Cofund
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 15 million
Indicated Proposal Range	EUR 6 million for sub-topic A and 5 million for sub-topics B and C Subtopics: A. [2019] ICT-enabled agri-food systems B. [2019] Climate change and food systems C. [2019] International coordination of research on infectious animal diseases

Targeted international cooperation

EU-Africa Partnership on Food and Nutrition Security and Sustainable Agriculture (FNSSA)

LC-SFS-34-2019: Food Systems Africa

Call identifier	LC-SFS-34-2019
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage)

	04 Sep 2019 (Second Stage)
Budget	EUR 21 million
Indicated Proposal Range	EUR 7 million

SFS-35-2019-2020: Sustainable Intensification in Africa

Call identifier	SFS-35-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage) *The 2020 indicative deadlines are not yet available*
Budget	EUR 35 million *The 2020 indicative budgets are not yet available*
Indicated Proposal Range	EUR 7.5 million for sub-topic A and EUR 5 million for sub-topic B Sub-topics: A. [2019]: African Farming Systems, sustainable intensification pathways B. [2019]: Soil system for Africa

CE-SFS-36-2020 - Diversifying farmers' income through small bio-based concepts
No information available yet.

EU-China FAB Flagship initiative

SFS-37-2019: Integrated approaches to food safety controls across the food chain

Call identifier	SFS-37-2019
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage)
Budget	EUR 8 million
Indicated Proposal Range	Up to EUR 4 million

CE-SFS-39-2019: High-quality organic fertilisers from biogas digestate

Call identifier	CE-SFS-39-2019
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 5 million
Indicated Proposal Range	Up to EUR 5 million

Call - Blue Growth

DT-BG-04-2018-2019: Sustainable European aquaculture 4.0: nutrition and breeding

Call identifier	DT-BG-04-2018-2019
Type of Call	Innovation action
Opening Date	16 Oct 2018

Deadline (s)	23 Jan 2019
Budget	EUR 6 million
Indicated Proposal Range	EUR 6 million

BG-05-2019: Multi-use of the marine space, offshore and near-shore: pilot demonstrators

Call identifier	BG-05-2019
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 18 million
Indicated Proposal Range	EUR 9 million

CE-BG-06-2019: Sustainable solutions for bio-based plastics on land and sea

Call identifier	CE-BG-06-2019
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 18 million
Indicated Proposal Range	EUR 9 million

BG-07-2019-2020: The Future of Seas and Oceans Flagship Initiative

Call identifier	BG-07-2019-2020
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 18 million
Indicated Proposal Range	EUR 6 million for sub-topic [A] and EUR 12 million for sub-topic [B]

BG-08-2018-2019: All Atlantic Ocean Research Alliance Flagship

Call identifier	BG-08-2018-2019
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 4 Sep 2019 (Second Stage)
Budget	EUR 27 million
Indicated Proposal Range	EUR 9 million for sub-topic [B] (RIA) and EUR 8 million for sub-topic [C] (RIA)

LC-BG-09-2019: Coordination of marine and maritime research and innovation in the Black Sea

Call identifier	LC-BG-09-2019
Type of Call	Co-ordination and support action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 2 million
Indicated Proposal Range	EUR 2 million

Call - Rural Renaissance

From farm to society: understanding dynamics and modernising policies

RUR-01-2018-2019: Building modern rural policies on long-term visions and societal engagement

Call identifier	RUR-01-2018-2019
Type of Call	Research and Innovation action (Two-stage) Coordination and support action (Single Stage)
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) RIA, CSA 04 Sep 2019 (Second Stage) RIA
Budget	EUR 6 million
Indicated Proposal Range	EUR 6 million for C and 5 million for D Sub-topics: C. [2019] Building resilient mountain value chains delivering private and public goods (RIA) D. [2019] Rural society-science-policy hub (CSA)

Organising sustainable food and non-food value chains under changing conditions

CE-RUR-08-2018-2019-2020: Closing nutrient cycles

Call identifier	CE-RUR-08-2018-2019-2020
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 *The 2020 indicative deadlines are not yet available*
Budget	EUR 8 million
Indicated Proposal Range	EUR 8 million for sub-topics B and C in 2019 and 2020 respectively Sub-topics: B.[2019] Bio-based fertilisers from animal manure C.[2020] Bio-based fertilisers from other by-products of the agro-food, fisheries, aquaculture or forestry sectors (IA)

CE-RUR-10-2019: Circular bio-based business models for rural communities

Call identifier	CE-RUR-10-2019
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 20 million
Indicated Proposal Range	Up to EUR 10 million

LC-RUR-11-2019-2020: Sustainable wood value chains

Call identifier	LC-RUR-11-2019-2020
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 *The 2020 indicative deadlines are not yet available*

Budget	EUR 20 million
Indicated Proposal Range	EUR 10 million for sub-topic A and 5 million for sub-topic B Sub-topics: A. [2019] Building with wood B. [2020] Resilient forest systems

RUR-18-2019: Support to the BIOEAST initiative: boosting knowledge and innovation-based bioeconomies

Call identifier	RUR-18-2019
Type of Call	Coordination and support action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 3 million
Indicated Proposal Range	EUR 3 million

Boosting innovation and enhancing the human and social capital in rural areas

RUR-15-2018-2019-2020: Thematic networks compiling knowledge ready for practice

Call identifier	RUR-15-2018-2019-2020
Type of Call	Coordination and support action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 10 million
Indicated Proposal Range	EUR 2 million

RUR-16-2019: Fuelling the potential of advisors for innovation

Call identifier	RUR-16-2019
Type of Call	Coordination and support action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 5 million
Indicated Proposal Range	EUR 5 million

RUR-17-2019: Reinforcing the EU agricultural knowledge base

Call identifier	RUR-17-2019
Type of Call	Coordination and support action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 2.5 million
Indicated Proposal Range	EUR 2.5 million

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

Call - Greening the economy in line with the Sustainable Development Goals (SDGs)

SC5-13-2018-2019: Strengthening international cooperation on sustainable urbanisation: nature-based solutions for restoration and rehabilitation of urban ecosystems (RIA)
SC5-14-2019: Visionary and integrated solutions to improve well-being and health in cities (IA)
SC5-23-2019: Multi-stakeholder dialogue platform to promote nature-based solutions to societal challenges: follow-up project (CSA)

Call - Building a low-carbon, climate resilient future: climate action in support of the paris agreement

LC-CLA-06-2019: Inter-relations between climate change, biodiversity and ecosystem services (RIA)
LC-CLA-09-**2019**: ERA-NET Cofund action on biodiversity and climate change: Impacts, feedbacks, and nature-based solutions for climate change adaptation and mitigation (ERA-NET-Cofund)

Call topics:

Call - Greening the economy in line with the Sustainable Development Goals (SDGs)

SC5-13-2018-2019: Strengthening international cooperation on sustainable urbanisation: nature-based solutions for restoration and rehabilitation of urban ecosystems

Call identifier	SC5-13-2018-2019
Type of Call	Research and Innovation action
Opening Date	14 Nov 2018
Deadline (s)	19 Feb 2019 (First Stage) 04 Sep 2019 (Second Stage)
Budget	EUR 10 million
Indicated Proposal Range	EUR 5 million

SC5-14-2019: Visionary and integrated solutions to improve well-being and health in cities

Call identifier	SC5-14-2019
Type of Call	Innovation action
Opening Date	14 Nov 2018
Deadline (s)	19 Feb 2019 (First Stage) 04 Sep 2019 (Second Stage)
Budget	EUR 43 million
Indicated Proposal Range	EUR 10 milion

SC5-23-2019: Multi-stakeholder dialogue platform to promote nature-based solutions to societal challenges: follow-up project

Call identifier	SC5-23-2019
Type of Call	Coordination and support action
Opening Date	14 Nov 2018
Deadline (s)	04 Sep 2019
Budget	EUR 2 million
Indicated Proposal Range	EUR 2 million

LC-CLA-06-2019: Inter-relations between climate change, biodiversity and ecosystem services

Call identifier	LC-CLA-06-2019
Type of Call	Research and Innovation action
Opening Date	14 Nov 2018
Deadline (s)	19 Feb 2019 (First Stage) 04 Sep 2019 (Second Stage)
Budget	EUR 25 million
Indicated Proposal Range	EUR 5 - 7 million

Call - Building a low-carbon, climate resilient future: climate action in support of the paris agreement

LC-CLA-09-2019: ERA-NET Cofund action on biodiversity and climate change: Impacts, feedbacks, and nature-based solutions for climate change adaptation and mitigation

Call identifier	LC-CLA-09-2019
Type of Call	ERA-NET-Cofund
Opening Date	14 Nov 2018
Deadline (s)	19 Feb 2019
Budget	EUR 5 million
Indicated Proposal Range	EUR 5 million

Indicative topics for 2020**:**

LC-CLA-14-2020: Understanding water-energy-food nexus and streamlining waterrelated policies

LC-CLA-15-2020: Nature based solutions for forest fires risk reduction and multihazard risk management in the E.U.

2.3.4 Hints for Success in Societal Challenges (SCs)

We approached EPSO members and experts for advice. Below are some tips we received*:

1. The SCs set out strategic policy objectives, and it is important to demonstrate engagement with the European Union's policies, indicating in your application how you will contribute to the EU's political goals.

2. SCs funding has a strong economic and societal basis. There is an expectation that research is being funded to support economic growth, boost jobs and investment, Europe's competitiveness globally as well as a sustainable economy / society. Therefore it is important to explain the potential economic impact within the proposal.

For 1+2: EPSO is now developing a Fact and EU Policy Document Collection to help you achieve this. See Annex IV for more details.

- Very broad topics have contributed to oversubscription and low success rates compared to FP6 and FP7 have been observed. Be sure that your project is within the scope of the call, do not try to fit into an inappropriate funding call.

- Clear problem and solution orientation is key: make clear and well balanced references to the specific call text of your call topic, including the challenge, the scope and the expected impact and explain how you achieve these.

- Selection of partners is key, having a consortium with good relationships throughout Europe is important, every partner on a project should add value. Last minute participation in proposal writing is not recommended except in the case that proposal is really excellent.

- Follow and stick to the evaluation criteria in the guide for applicants for your call. Write your proposal in a way that makes it easy for the Evaluator to fill out their evaluation forms. Also see the Guidance for evaluators of Horizon 2020 proposals (version dated 26/09/14) and Grants Manual - Section on: Proposal submission and evaluation.

- Ethics is important (for single & second stage proposals) see guidance on ethics issues identification. If your proposal is not given ethics clearance, it is not eligible for funding and will be rejected.

- Communication and dissemination guide.

Hints for Success in Multi-Actor Projects

- Multi-actor project should be targeted to needs, problems or opportunities of end users. Successful projects put science at service of end-users.

- The project should be complementarity with existing research and best practices, and state the project's added value. Avoid recycling, repetition and continuation of former projects.

- There should be sufficient involvement of key actors with complementary types of scientific and practical knowledge in the composition of the project consortium to reach the project objectives and make its results broadly implemented. Include partners beyond scientists, such as farmers, farmers' groups, advisors, enterprises, education, NGOs, administration, regulatory bodies, and EIP project groups. Don't forget to think about involving multipliers to strengthen impacts, for example EPSO (and via this ESA and Copa-Cogeca).

- You can expand your network through groups such as Copa Cogeca (farmers), EUFRAS (extention services), the Enterprise Europe Network, LinkedIn groups, National Rural Networks, and the EIP Service Point.

- Projects should result in substantial easily understandable practical knowledge for broad dissemination in the common EIP format (Focus on concrete and concisely written results in a practitioners/farmers' language, best practices resulting from the projects' work, some qualitative audio-visual material, etc. Do not reinvent the wheel, use existing long term available dissemination channels for practitioners, lasting beyond the project period).

- Facilitation/mediation between actors, for instance involving operational groups from the Rural Development part of the EIP, is strongly recommended.

- There should be a clear role for the different actors in the work plan, from the participation in the planning of work and experiments, their execution up until the dissemination of results and the possible demonstration phase.

- Language barrier is a problem in multi-actor networks; you can either involve farmers who speak English or use translators at extra cost.

- Don't mix up actors and stakeholders; an actor is a partner taking part in project activities, and a stakeholder is someone expressing a view/stake at a certain moment during the project.

► Do you have hints or comments to add? Please send them to us.

**These points are not designed to be an exhaustive guide nor guaranteed to give you success. Sources such as the EC, the National Contact Points and The Research Enquiry Service produce a wealth of free information, and we also encourage you to contact colleagues and peers to talk through your proposals.*

2.4 Spreading Excellence and Widening Participation

The Spreading Excellence and Widening Participation budget of Horizon 2020 aims to build a more balanced and integrated European Research area.

The programme targets countries identified as low performing in terms of research excellence. A composite set of indicators was used to select the following nations as "low R&I performing" or "Widening" countries. These are:

Member States: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia and Slovenia.

Associated Countries (subject to valid association agreements of third countries with Horizon 2020): Albania; Bosnia and Herzegovina; Faroe Islands; Republic of Northern Macedonia; Moldova; Montenegro; Serbia; Turkey; and Ukraine. (Horizon 2020 WP 2018-20)

Teaming

Teaming supports the creation of new (or upgrading of existing) Centres of Excellence in low R&I performing Member States and Associated Countries on the basis of partnerships with internationally leading institutions.

Phase 2 Call: This call for proposals is open only for those applicants successful in the topic WIDESPREAD-04-2017: Teaming Phase 1 or H2020-WIDESPREAD-2014 but have not concluded a Specific Grant Agreement under the topic WIDESPREAD-01-2016-2017.

ERA Chairs

ERA Chairs will bring outstanding researchers to universities and other research organisations, in those countries, that have high potential for research excellence to help them attract and maintain high quality human resources and implement the structural changes necessary to achieve excellence on a sustainable basis.

WIDESPREAD-04-2019: ERA Chairs

Call identifier	WIDESPREAD-04-2019
Type of Call	Coordination and support action
Publication Date	26 Jul 2018
Deadline (s)	15 Nov 2018
Indicative Budget	EUR 30 million
Indicated Proposal Range	EUR 2.5 million

Widening Fellowships

The results from the first years of Marie Skłodowska-Curie actions (MSCA) in Horizon 2020 revealed the existence of a mobility gap across Europe and discrepancies between European countries in their ability to attract funding. To specifically address this gap in participation Widening Fellowships will provide an additional opportunity to researchers of any nationality to acquire and transfer new knowledge and to work on research and innovation in Widening countries.

WF-02-2019: Widening Fellowships

Call identifier	WF-02-2019
Type of Call	MSCA Career Restart panel, Reintegration panel, Society and Enterprise panel, Standard European Fellowships
Publication Date	11 Apr 2019
Deadline (s)	11 Sep 2019
Indicative Budget	EUR 6 million

COST

The Work Programme dedicates EUR 20.28 million from the 2019 budget in support for COST.

COST provides bottom-up networking opportunities for European scientists.

Current COST members are: Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Montenegro, The Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, the former Yugoslav Republic of Macedonia. Israel is a Cooperating State, non-voting member of COST Committee of Senior Officials (CSO).

For more information about COST see our briefing **Opportunities for Plant Scientists in the COST Programme**, 23.8.2017.

The briefing includes a description of the programme, the proposal procedure, a list of ongoing plant related projects which may be joined by relevant researchers, examples of successful plant science networks and statistics from previous calls.

ANNEX

Annex I – Multi-actor approach and Plant ETP Partnering Form

EC definition of the Multi-actor approach in Societal Challenge 2:

The multi-actor approach aims at more demand-driven innovation through the genuine and sufficient involvement of various actors (end-users such as farmers/farmers' groups, fishers/fisher's groups, advisors, enterprises, etc.) all along the project: from the participation in the planning of work and experiments, their execution up until the dissemination of results and a possible demonstration phase. The adequate choice of key actors with complementary types of knowledge (scientific and practical) should be reflected in the consortium and in the description of the project concept, and result in a broad implementation of project results. The multi-actor approach is more than a strong dissemination requirement or than what a broad stakeholders' board can deliver: it should be illustrated in the project proposal with sufficient quantity and quality of knowledge exchange activities and a clear role for the different actors in the work. This should generate innovative solutions that are more likely to be applied thanks to cross-fertilisation of ideas between actors, co-creation and generation of co-ownership for eventual results. A multi-actor project proposal needs to demonstrate how the project proposal's objectives and planning are targeted to needs / problems and opportunities of end-users, and its complementarity with existing research and best practices. The project should result in some practical knowledge which is easily understandable and accessible, and substantial in qualitative and quantitative terms. As a minimum, this material should feed into the European Innovation Partnership (EIP) 'Agricultural Productivity and Sustainability' for broad dissemination as 'practice abstracts' in the common EIP format for practitioners. Facilitation/mediation between the different types of actors and involvement of relevant interactive innovation groups operating in the EIP context, such as EIP Operational Groups funded under Rural Development Programmes, are strongly recommended. For projects on fisheries, aquaculture, marine and inland water issues or other areas not covered by the EIP-AGRI, other similarly effective solutions for dissemination should be explored.

The EIP common format for "practice abstracts"

On the following page please find the EPSO partner search network form.

EPSO PARTNER SEARCH NETWORK:

Partner search to collaborate with companies, farmers, extension services, academia in Horizon 2020 and beyond:

Please contact:

Karin.Metzlaff@epsomail.org

Partner Search template

Project title	
Looking for	
Project idea	
Which role should this partner in the project take?	
Call reference	
Deadline	
Comments (if needed)	
Own contact details	Name; Email; Tel; Institution:

Expression of Interest template

Keywords	
Technology (or other) offer	
Participation in relevant projects (at European or national level)	
Contact	Name; Email; Tel:
Institute / univ data	Name; Established in; Number of staff:
Comments (if needed)	

Annex II – Call for experts; Technology Readiness Level

Call for Experts for Horizon 2020 evaluation of proposals ongoing – update your profile

The European Commission has launched a call for independent experts to evaluate proposals for EU funding and for activities such as monitoring, programme evaluation and policy development. Candidates can fill out their application on an online participant portal. EPSO very much encourages scientists to register in the portal to ensure high quality proposal evaluation and to update your profile highlighting multi-actor experience as this is an important feature for evaluators to societal challenge proposals in H2020 Societal Challenge 2.

The experts' work will different from and complementary to the tasks of the Horizon 2020 Advisory Groups, who are instead responsible for high-quality advice to the European Commission when preparing the Horizon 2020 work programmes.

The call for expression of interest will remain open for the lifetime of Horizon 2020. The support services (FAQ as well as the Research Enquiry Service for general enquiries and the IT helpdesk for technical matters) are accessible from the online registration platform. Further details on the type of expertise sought are set out in the Participant Portal.

Technology Readiness Levels (TRLs) in Horizon 2020

Introduction by Innovation Seeds (EU funded project)

The Technology Readiness Level (TRL) scale is a metric for describing the maturity of a technology. The scale consists of 9 levels. Each level characterises the progress in the development of a technology, from the idea (level 1) to the full deployment of the product in the marketplace (level 9).

This scale was developed by NASA in the 70s to assess the maturity of a technology prior to integrating this technology into a system. It contained 7 levels at that time. Nowadays, 9 levels compose the scale. These levels are detailed below.

Source 1: European Commission

HORIZON 2020 – WORK PROGRAMME 2014-2015

General Annexes

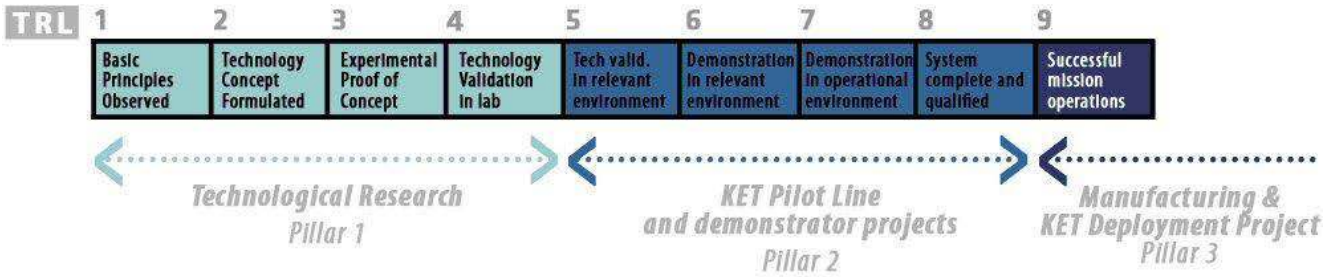
G. Technology readiness levels (TRL)

Where a topic description refers to a TRL, the following definitions apply, unless otherwise specified:

- TRL 1 - basic principles observed
- TRL 2 - technology concept formulated
- TRL 3 - experimental proof of concept
- TRL 4 - technology validated in lab
- TRL 5 - technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)

- TRL 6 - technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 7 - system prototype demonstration in operational environment
- TRL 8 - system complete and qualified
- TRL 9 - actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

Source 2: European Commission: Presentation of José-Lorenzo Vallés, EC, at EC Info Day 17.1.2014



Source 3: Innovation Seeds (EU funded project)

The TRL descriptions from Innovation Seeds relate closely to the EC descriptions and expand with examples you can find on via that website to clarify each level. They provide a good information source.

Level 1 - Basic Research: basic principles are observed and reported

Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include fundamental investigations and paper studies.

Level 2 – Applied Research: technology concept and/or application formulated

Once basic principles are observed, practical applications can be formulated. Examples are limited to analytic studies and experimentation.

Level 3 – Critical function, proof of concept established

Active research and development is initiated. Laboratory studies aim to validate analytical predictions of separate components of the technology. Examples include components that are not yet integrated or representative.

Level 4 – Laboratory testing of prototype component or process
Design, development and lab testing of technological components are performed. Here, basic technological components are integrated to establish that they will work together. This is a relatively "low fidelity" prototype in comparison with the eventual system.

Level 5 – Laboratory testing of integrated system

The basic technological components are integrated together with realistic supporting elements to be tested in a simulated environment. This is a "high fidelity" prototype compared to the eventual system.

Level 6 – Prototype system verified

The prototype, which is well beyond that of level 5, is tested in a relevant environment. The system or process demonstration is carried out in an operational environment.

Level 7 – Integrated pilot system demonstrated

Prototype is near, or at, planned operational system level. The final design is virtually complete. The goal of this stage is to remove engineering and manufacturing risk.

Level 8 – System incorporated in commercial design

Technology has been proven to work in its final form under the expected conditions. In most of the cases, this level represents the end of true system development.

Level 9 – System ready for full scale deployment

Here, the technology in its final form is ready for commercial deployment.

Annex III: Selected topics descritpions

Pillar 1: Excellent Science

2019 Calls for ERC

Details of ERC Calls from ERC Work Programme 2019

ERC	Starting Grant	Consolidator Grant	Advanced Grant	Synergy Grant	Proof of Concept Grant
Call identifier	ERC-2019-StG	ERC-2019-CoG	ERC-2019-AdG	ERC-2019-SyG	ERC-2019-POC
Opening date	10/09/2018	24/10/2018	21/05/2019	14/09/2018	16/10/2018
Deadline (s)	17/10/2018	07/02/2019	29/08/2019	08/11/2018	22/01/2019 25/04/2019 19/09/2019
Budget	EUR 580 million	EUR 602 million	EUR 391 million	EUR 400 million	EUR 25 million
Estimated number of grants	390	314	166	48	167
Planned dates to inform applicants (after each step or cut-off date)	22/05/2019 28/08/2019	23/07/2019 18/12/2019	30/01/2020 17/04/2020	12/04/2019 30/08/2019 31/10/2019	02/05/2019 25/07/2019 18/12/2019
Indicative date for signature of grant agreements	05/01/2020	26/04/2020	25/08/2020	09/03/2020	09/09/2019 02/12/2019 26/04/2020

Grants:

ERC Starting Grant

Scope:

Objectives

ERC Starting Grants are designed to support excellent Principal Investigators at the career stage at which they are starting their own independent research team or programme. Applicant Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal.

Size of ERC Starting Grants

Starting Grants may be awarded up to a maximum of **EUR 1 500 000** for a period of **5 years** (The maximum award is reduced pro rata temporis for projects of a shorter duration. This does not apply to ongoing projects).

However, up to an **additional EUR 500 000** can be requested in the proposal to cover (a) eligible "start-up" costs for Principal Investigators moving to the EU or an Associated Country from elsewhere as a consequence of receiving the ERC grant and/or (b) the purchase of major equipment and/or (c) access

to large facilities (As any additional funding is to cover major one-off costs it is not subject to pro-rata temporis reduction for projects of shorter duration. All funding requested is assessed during evaluation).

Profile of the ERC Starting Grant Principal Investigator

The Principal Investigator shall have been awarded their first PhD **at least 2 and up to 7 years prior to 1 January 2019**. The effective elapsed time since the award of the first PhD can be reduced in certain properly documented circumstances.

A competitive Starting Grant Principal Investigator must have already shown the potential for research independence and evidence of maturity, for example by having produced **at least one important publication as main author or without the participation of their PhD supervisor**. Applicant Principal Investigators should also be able to demonstrate a promising track record of early achievements appropriate to their research field and career stage, including significant publications (as main author) in major international peer-reviewed multidisciplinary scientific journals, or in the leading international peer-reviewed journals of their respective field. They may also demonstrate a record of invited presentations in well-established international conferences, granted patents, awards, prizes etc.

For further information please see the ERC Work Programme 2019.

ERC Consolidator Grant

Scope:

Objectives

ERC Consolidator Grants are designed to support excellent Principal Investigators at the career stage at which they may still be consolidating their own independent research team or programme. Applicant Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal.

Size of ERC Consolidator Grants

Consolidator Grants may be awarded up to a maximum of **EUR 2 000 000** for a period of **5 years** (The maximum award is reduced pro rata temporis for projects of a shorter duration. This does not apply to ongoing projects).

However, up to an **additional EUR 750 000** can be requested in the proposal to cover (a) eligible "start-up" costs for Principal Investigators moving to the EU or an Associated Country from elsewhere as a consequence of receiving the ERC grant and/or (b) the purchase of major equipment and/or (c) access to large facilities (As any additional funding is to cover major one-off costs it is not subject to pro-rata temporis reduction for projects of shorter duration. All funding requested is assessed during evaluation).

Profile of the ERC Consolidator Grant Principal Investigator

The Principal Investigator shall have been awarded their first PhD **over 7 and up to 12 years prior to 1 January 2018.** The effective elapsed time since the award of the first PhD can be reduced in certain properly documented circumstances.

A competitive Consolidator Grant Principal Investigator must have already shown research independence and evidence of maturity, for example by having produced **several important publications as main author or without the participation of their PhD supervisor**. Applicant Principal Investigators should also be able to demonstrate a promising track record of early achievements appropriate to their research field and career stage, including significant publications (as main author) in major international peer-reviewed multidisciplinary scientific journals, or in the leading international peer-reviewed journals of their respective field. They may also demonstrate a record of invited presentations in well-established international conferences, granted patents, awards, prizes etc.

For further information please see the ERC Work Programme 2019.

ERC Synergy Grant profile

Scope:

Objectives

ERC Synergy Grants are intended to enable **minimum two to maximum four Principal Investigators** and their teams to bring together complementary skills, knowledge, and resources in new ways, in order to jointly address **ambitious** research problems.

The aim is to promote substantial advances at the frontiers of knowledge, to cross-fertilize scientific fields, and to encourage new productive lines of enquiry and new methods and techniques, including unconventional approaches and investigations at the interface between established disciplines. This should enable transformative research not only at the forefront of European science but also to become a benchmark on a global scale.

Applicants Principal Investigators must demonstrate the synergies, complementarities and added value that could lead to **breakthroughs that would not be possible by the individual Principal Investigators working alone**.

Size of ERC Synergy Grants

Synergy Grants may be awarded up to a maximum of **EUR 10 000 000** for a period of **6 years**. The maximum award is reduced pro rata temporis for projects of a shorter duration. This does not apply to ongoing projects.

However, up to an **additional EUR 4 000 000** in total can be requested in the proposal to cover (a) eligible "start-up" costs for Principal Investigators moving to the EU or an Associated Country from elsewhere as a consequence of receiving the ERC grant and/or (b) the purchase of major equipment and/or (c) access to large facilities. As any additional funding is to cover major one-off costs it is not subject to pro-rata temporis reduction for projects of shorter duration. All funding requested is assessed during evaluation.

Profile of the ERC Synergy Grant Principal Investigators

Groups applying for the ERC Synergy Grant must be made up of a minimum of two and a maximum of four Principal Investigators and, as necessary, their teams. One of the Principal Investigators must be designated as the Corresponding Principal Investigator.

Applications are expected from a group of innovative and active Principal Investigators and must present **an early achievement track-record or a 10-year track-record whichever is most appropriate for their career stage** (see Starting, Consolidator and Advanced Grant profiles in the ERC Work Programme 2018). There is little prospect of an application succeeding in the absence of such a record.

ERC Proof of Concept Grant profile

Scope:

Objectives

Frontier research often generates unexpected or new opportunities for commercial or societal application. The ERC Proof of Concept Grants aim to maximise the value of the excellent research that the ERC funds, by funding further work (i.e. activities which were not scheduled to be funded by the original ERC frontier research grant) to verify the innovation potential of ideas arising from ERC funded projects. Proof of Concept Grants are therefore on offer only to Principal Investigators whose proposals draw substantially on their ERC funded research.

Ethical Principles

All proposals will be subject to ethics review as with proposals for the ERC's frontier research grants.

Maximum size of grant and grant assessment

The financial contribution will be up to a maximum of **EUR 150 000** for a period of **18 months**. The ERC expects that normally, proof of concept projects should be completed within 12 months. However, to allow for those projects that require more preparation time, projects will be signed for 18 months. Given this initial flexibility, extensions of the duration of proof of concept projects may be granted only exceptionally.

The overall level of the funding offered will be assessed during the evaluation. The funding requested by the applicant will be judged against the needs of the proposed activity before award. The funding requested by the Principal Investigator must be fully justified by an estimation of the actual costs for the proposed activities.

The Union financial contribution will take the form of the reimbursement of up to 100% of the total eligible and approved direct costs and of flat-rate financing of indirect costs on the basis of 25% of the total eligible direct costs (excluding the direct costs for subcontracting and the costs of resources made available by third parties which are not used on the premises of the host institution.). The level of the awarded grant represents a maximum overall figure – the final amount to be paid must be justified on the basis of the costs actually incurred for the project.

The indicative budget for this call for 2018 is **EUR 20 000 000** (approximately one-third of which will be for each of the three evaluation rounds following three specific cut-off dates - proposals submitted before each cut-off date will be evaluated with the proposals submitted before the same cut-off date).

Profile of the ERC Proof of Concept Grant Principal Investigator

All Principal Investigators in an ERC frontier research project, that is either on going or has ended (where the duration of the project fixed in the ERC Grant Agreement has ended) less than 12 months before 1 January 2018, are eligible to participate and apply for an ERC Proof of Concept Grant.

2019 Calls for Marie Skłodowska-Curie Actions

2019 Call for Marie Skłodowska-Curie Innovative Training Networks (ITN)

Call identifier	MSCA-ITN-2019
Opening Date	13 Sep 2018
Deadline (s)	15 Jan 2019
Budget	EUR 470 million (incl. 400 million for ETN, 35 million for EID, and 35 million for EJD)

Objective:

The Innovative Training Networks (ITN) aim to train a new generation of creative, entrepreneurial and innovative early-stage researchers, able to face current and future challenges and to convert knowledge and ideas into products and services for economic and social benefit.

ITN will raise excellence and structure research and doctoral training in Europe, extending the traditional academic research training setting, incorporating elements of Open Science and equipping researchers with the right combination of research-related and transferable competences. It will provide enhanced career perspectives in both the academic and non-academic sectors through international, interdisciplinary and intersectoral mobility combined with an innovation-oriented mind-set.

Scope:

ITN supports competitively selected 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.
Partnerships take the form of collaborative European Training Networks (ETN), European Industrial Doctorates (EID) or European Joint Doctorates (EJD).

Each programme should have a clearly identified supervisory board co-ordinating network-wide training and establishing active and continuous communication and exchange of best practice among the participating organisations to maximise the benefits of the partnership.

The programme should exploit complementary competences of the participating organisations, and enable sharing of knowledge, networking activities, the organisation of workshops and conferences.
Training responds to well identified needs in defined research areas, with appropriate references to inter- and multidisciplinary fields and follows the EU Principles for Innovative Doctoral Training. It should be primarily focused on scientific and technological knowledge through research on individual, personalised projects.
In order to increase the employability of the researchers, the research training should be complemented by the meaningful exposure of each researcher to the non-academic sector. Secondments of the researcher to other beneficiaries and partner organisations are encouraged, but should be relevant, feasible, beneficial for the researchers and in line with the project objectives.

Substantial training modules, including digital ones, addressing key transferable skills common to all fields and fostering the culture of Open Science, innovation and entrepreneurship will be supported.

In order to reflect the new modus operandi of research supporting the development of open science, training should prepare early-stage researchers for increased research collaborations and information-

sharing made possible by new (digital) technologies (e.g. collaborative tools, opening access to publications and to research data, FAIR[1] data management, public engagement and citizen science, etc.).

A Career Development Plan should be established jointly by the supervisor(s) and each early-stage researcher recruited by the selected network. In addition to research objectives, this plan comprises the researcher's training and career needs, including training on transferable skills, teaching, planning for publications and participation in conferences.

Attention is paid to the quality of supervision and mentoring arrangements as well as career guidance. Joint supervision of the researchers is mandatory for EJD and for EID, and encouraged in ETN. In EID, the joint supervision of the researcher must be ensured by at least one supervisor from the academic sector and one supervisor from the non-academic sector. These arrangements will be taken into account during the evaluation of the proposal.

In EID and EJD, fellowships offered to early-stage researchers should lead to a doctoral degree. EJD result in joint[2], double or multiple doctoral degrees[3] awarded by institutions from at least two different countries, primarily within Europe.

In EID and EJD, enrolment in a doctoral programme and the creation of a joint governance structure - with joint admission (EJD only), selection, supervision, monitoring and assessment procedures - is mandatory. These arrangements will be taken into account during the evaluation of the proposal.

Expected Impact:

At researcher level:

- Increased set of skills, both research-related and transferable ones, leading to improved employability and career prospects both in and outside academia (leading in the longer-term to more successful careers)
- Increase in higher impact R&I output and more knowledge and ideas converted into products and services
- Greater contribution to the knowledge-based economy and society

At organisation level:

- Enhanced cooperation and better transfer of knowledge between sectors and disciplines
- Improvement in the quality of training programmes and supervision arrangements
- Creation of new networks and enhanced quality of existing ones
- Boosting R&I capacity among participating organisations
- Increased internationalisation of participating organisations

At system level:

- Increase in international, interdisciplinary and intersectoral mobility of researchers in Europe
- More structured and innovative doctoral training, enhanced implementation of the European Charter and Code and the EU Principles for Innovative Doctoral Training
- Stronger links between the European Research Area (ERA) and the European Higher Education Area (EHEA), notably through supporting the knowledge triangle between research, innovation and education
- Improvement in the working and employment conditions for doctoral candidates in Europe
- Increased societal and economic relevance of European higher education

- Strengthening Europe's human capital base in R&I with a new generation of more entrepreneurial and highly-skilled early career researchers
- Increase in Europe's attractiveness as a leading research destination, accompanied by a rise in the numbers of talented researchers attracted and retained from abroad
- Better quality research and innovation contributing to Europe's competitiveness and growth

Cross-cutting Priorities:

RRI
Open Science
[1] FAIR: Findable, Accessible, Interoperable and Re-usable.
[2] Joint degree – a single diploma issued by at least two higher education institutions offering an integrated programme and recognised officially in the countries where the degree-awarding institutions are established.
[3] Double or multiple degree - two or more national diplomas issued by two or more higher education institutions and recognised officially in the countries where the degree-awarding institutions are established.

2019 Call for Marie Skłodowska-Curie Research and Innovation Staff Exchange (RISE)

Call identifier	MSCA-RISE-2019
Opening Date	04 Dec 2018
Deadline (s)	02 Apr 2019
Budget	EUR 80 million

Objective:

The RISE scheme promotes international and cross-sector collaboration through exchanging research and innovation staff, and sharing knowledge and ideas from research to market (and vice-versa).

The scheme fosters a shared culture of research and innovation that welcomes and rewards creativity and entrepreneurship and helps to turn creative ideas into innovative products, services or processes.

Scope:

RISE involves organisations from the academic and non-academic sectors (in particular SMEs), based in Europe (EU Member States and Horizon 2020 Associated Countries) and outside Europe (third countries).

Support is provided for the development of partnerships in the form of a joint research and innovation project. This is aimed at knowledge sharing via international as well as intersectoral mobility, based on secondments of research and innovation staff (exchanges) with an in-built return mechanism.

The organisations constituting the partnership contribute directly to the implementation of a joint research and innovation project by seconding and/or hosting eligible staff members. Secondments shall always take place between legal entities independent from each other[1].

RISE should exploit complementary competences of the participating organisations, as well as other synergies, and enable networking activities, organisation of workshops and conferences to facilitate

sharing of knowledge, new skills acquisition and career development for research and innovation staff members.

RISE proposals can focus either on one dimension of mobility (intersectoral / international), or include a combination of both.

Exchanges can be for both early-stage and experienced researchers and can also include administrative, managerial and technical staff directly involved in the research and innovation activities of the proposal.

Support for the exchanges between institutions within Europe (EU Member States and Horizon 2020 Associated Countries) covers only intersectoral secondments.

Exchanges with institutions from and to third countries can be intersectoral as well as within the same sector.

Secondments between institutions established in third countries or within the same EU Member State or Horizon 2020 Associated Country will not be supported.

Expected Impact:

At staff member level:

- Increased set of skills, both research-related and transferable ones, leading to improved employability and career prospects both in and outside academia
- Increase in higher impact R&I output, more knowledge and ideas converted into products and services
- Greater contribution to the knowledge-based economy and society

At organisation level:

- Enhanced cooperation and transfer of knowledge between sectors and disciplines
- Strengthening of international and intersectoral collaborative networks
- Boosting of R&I capacity among participating organisations

At system level:

- Increase in international, interdisciplinary and intersectoral mobility of researchers in Europe
- Strengthening of Europe's human capital base in R&I
- Increase in Europe's attractiveness as a leading destination for R&I
- Better quality R&I contributing to Europe's competitiveness and growth

Cross-cutting Priorities:

Open Science
RRI
[1] Independence in the meaning of Article 8 of the Horizon 2020 Rules for Participation.

2019 Call for Marie Skłodowska-Curie Individual Fellowships (IF)

Call identifier	MSCA-IF-2019
Opening Date	11 Apr 2019
Deadline (s)	11 Sep 2019
Budget	EUR 294.49 million (Of this amount, 236.49 million is allocated to EF St+CAR+RI, EUR 50 million to Global Fellowships, 8 million for EF IP)

Information not available yet.

2019 Call for Marie Skłodowska-Curie Co-funding of regional, national and international programmes (COFUND)

Call identifier	MSCA-COFUND-2019
Opening Date	04 Apr 2019
Deadline (s)	26 Sep 2019
Budget	EUR 90.00 million (Of this amount, 55 million is for Fellowship Programmes and 35 million is allocated to Doctoral Programmes)

Objective:

The COFUND scheme aims to stimulate regional, national or international programmes to foster excellence in researchers' training, mobility and career development, spreading the best practices of the Marie Skłodowska-Curie actions.

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

Scope:

Each proposal funded under the COFUND scheme must have a sole beneficiary that will be responsible for the availability of the necessary complementary funds to execute the proposal.

Applicants submit multi-annual proposals for new or existing doctoral programmes or fellowship programmes which are expected to have an impact on enhancing research- and innovation related human resources on regional, national or international level.

Applicants having benefited from COFUND under previous calls (under the Seventh Framework Programme or under Horizon 2020) must explain how their proposal adds value in relation to the excellence and/or the impact award criteria, compared to their previous grant(s). As an example, added value could take the form of increased networking with organisations in less represented countries or capacity building measures there to further structure the European Research Area.

Researchers supported under this scheme shall comply with the mobility rules of the Marie Skłodowska-Curie actions.

Limitations regarding the researchers' origin and destination should be avoided. Support cannot be awarded to researchers who are already permanently employed by the organisation hosting them.

Proposed programmes are encouraged to cover all research disciplines ("bottom-up"), but can also focus on specific disciplines. In this case the range of covered disciplines should allow reasonable flexibility for the researchers.

Programmes that prioritise specific research disciplines based on national or regional Research and Innovation Strategies for Smart Specialisation (RIS3 strategies) can also be supported. Synergies with the European Structural & Investment Funds (ESIF) are encouraged[1].

COFUND takes the form of:

A) Doctoral programmes

Doctoral programmes address the development and broadening of the research competencies of early-stage researchers. The training follows the EU Principles on Innovative Doctoral Training. Substantial training modules, including digital ones, addressing key transferable skills common to all fields and fostering the culture of Open Science, innovation and entrepreneurship will be supported. Collaboration with a wider set of partner organisations, including from the non-academic sector, which may provide hosting or secondment opportunities or training in research or transferable skills, as well as innovative and interdisciplinary elements of the proposed programme, will be positively taken into account during the evaluation.

Each researcher must be enrolled in a doctoral programme. Attention is paid to the quality of supervision and mentoring arrangements as well as career guidance. The selection procedure for doctoral candidates must be open, transparent and merit-based. The vacancy notice must include the minimum gross salary offered to the researcher, as set out in the proposal.

B) Fellowship programmes

Fellowship programmes fund individual research training and career development fellowships for experienced researchers. The programmes supported should have regular selection rounds following fixed deadlines or regular cut-off dates, allowing fair competition between the researchers applying. The selections should be based on open, widely advertised competition (the vacancy notice must include the minimum gross salary offered to the researcher, as set out in the proposal), with transparent international peer review and the selection of candidates on merit. Mobility types supported by fellowship programmes may be similar to the ones supported under Marie Skłodowska-Curie Individual Fellowships. On top of transnational mobility, applicants are encouraged to include elements of cross-sectoral mobility and interdisciplinarity into their programmes. Fellowship programmes should be based on individual-driven mobility, i.e., researchers should be able to freely choose a research topic and the appropriate organisation to host them, fitting their individual needs. Given that the aim of the co-funded fellowship programmes is the support of individual fellows, research teams will not be funded.

Expected Impact:

At researcher level:

- Augment and diversify the set of skills, both research-related and transferable ones, that will lead to improved employability and career prospects both in and outside academia
- Forge new mind sets and approaches to research and innovation work through interdisciplinary and intersectoral experience
- Enhance networking and communication capacities with scientific peers, as well as with the general public, that will increase and broaden the research and innovation impact

At organisation level:

- Increasing the attractiveness of the participating organisation(s) towards talented researchers
- Boosting research and innovation output among participating organisations
- Strengthening of international, intersectoral and interdisciplinary collaborative networks that will reinforce the organisation's position and visibility at a global level, but also at a regional/national level by helping them become key actors and partners in the local socio-economic ecosystems

At system level:

- Aligning of practices and policies in the context of the EU Human Resources Strategy for Researchers (HRS4R), enhanced implementation of the Charter and Code and the EU Principles for Innovative Doctoral Training at regional, national or international level
- Supporting the practice of Open Science through targeted training activities
- Increase in international, interdisciplinary and intersectoral mobility of researchers in Europe
- Improvement in the working and employment conditions for researchers in Europe at all levels of their career, starting from the doctoral stage
- Strengthening of Europe's human capital base in research and innovation and structuring of a stronger European Research Area
- Increase in Europe's attractiveness as a leading destination for research and innovation
- Better quality research and innovation contributing to Europe's competitiveness and growth, including by supporting regional or national smart specialisation strategies when appropriate.

Cross-cutting Priorities:

Open Science
RRI
[1] Spreading Excellence and Widening Participation

2019 Calls for European research infrastructures (including e-Infrastructures)

INFRADEV-01-2019-2020: Design Studies

Call identifier	INFRADEV-01-2019-2020
Opening Date	25 Jul 2019
Type of Call	Research and Innovation action
Deadline (s)	12 Nov 2019
Budget	EUR 20 million in 2019, EUR 10 million in 2020
Indicated Proposal Range	EUR 1-3 million

Specific Challenge:

New leading-edge research infrastructures in all fields of science and technology are needed by the European scientific community in order to remain at the forefront of the advancement of research, and to be able to help industry strengthen its base of knowledge and its technological know-how. The aim of this activity is to support the conceptual and technical design for new research infrastructures which are of a clear European dimension and interest. Major upgrades of existing infrastructures may also be considered if the end result is intended to be equivalent to a new infrastructure.

Scope:

Design studies should tackle all the key questions concerning the technical and conceptual feasibility of new or upgraded fully fledged user facilities (proposals considering just a component for research infrastructures are not targeted by this topic). A design study proposal should demonstrate the relevance and the advancement with respect to the state-of-art of the proposed infrastructure. It should indicate the gaps in the research infrastructure landscape the new facility will cover as well as the research challenges it will make possible to address. All fields of research are considered.

The main output of a design study will be the 'conceptual design report' for a new or upgraded research infrastructure, showing the maturity of the concept and forming the basis for identifying and constructing the next generation of Europe's and the world's leading research infrastructures. Conceptual design reports will present major choices for design alternatives and associated cost ranges, both in terms of their strategic relevance for meeting today's and tomorrow's societal challenges, and (where applicable) in terms of the technical work underpinning the development of new or upgraded research infrastructures of strategic importance for Europe.

The activities to be performed in a Design Study proposal should include both:

- Scientific and technical work, i.e. (1) the drafting of concepts, architecture and engineering plans for the construction, taking into due account resource efficiency and environmental (including climate-related) impacts, as well as, when relevant, the creation of prototypes; (2) scientific and technical work to ensure that the scientific user communities exploit the new facility from the start with the highest efficiency; (3) plans to organise the efficient curation, preservation and provision of access to data collected or produced by the future infrastructure, in line with the FAIR principles.
- Conceptual work, i.e. (1) plans to coherently integrate the new infrastructure into the European landscape of related facilities in accordance, whenever appropriate, with the EU objective of a balanced territorial development; (2) the estimated budget for construction and operation, and initial ideas on how to achieve long-term sustainability; (3) plans for an

international governance structure; (4) the planning of research services to be provided at international level, (5) procedure and criteria to choose the site of the infrastructure.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

Conceptual and technical designs of new leading edge research infrastructures are crucial to keep the European scientific community at the forefront of the advancement of research and to trigger the process leading to their establishment.

- Funding bodies for research infrastructures become aware of the strategic and funding needs of the scientific community.
- Policy bodies at the national level (e.g. funding bodies, governments), at European level (e.g. ESFRI) and internationally (e.g. the Group of Senior Officials on Research Infrastructures – GSO) have a sound decision basis to establish long-range plans for new research infrastructures of pan-European or global interest.
- The technical work carried out under this topic will contribute to strengthening the technological development capacity and effectiveness as well as the scientific performance, efficiency and attractiveness of the European Research Area.
- When relevant, the improvement of the environmental (including climate-related) impact as well as the optimisation of resource and energy use are integrated in the very early phase of development of new research infrastructures.

Cross-cutting Priorities:

Socio-economic science and humanities

INFRADEV-02-2019-2020: Preparatory Phase of new ESFRI projects

Call identifier	INFRADEV-02-2019-2020
Opening Date	16 Oct 2018
Type of Call	Research and Innovation action
Deadline (s)	29 Jan 2019
Budget	EUR 20 million
Indicated Proposal Range	Up to EUR 4 million

Specific Challenge:

The ESFRI roadmap, updated periodically, identifies the needs of the European scientific community in terms of research infrastructures. However, inclusion in the ESFRI roadmap does not guarantee that these needed infrastructures will be built. Before proceeding with the construction and/or implementation of the identified infrastructures, many preliminary decisions need to be taken with respect to issues such as the identification of funders, the financial plan for sustainability, the governance by involved stakeholders, the site and legal form of the managing organisation (and of the research infrastructure, if different), the architecture and the service policies. The aim of this activity is to provide catalytic and leveraging support for the preparatory phase of ESFRI projects leading to the construction of new research infrastructures or major upgrades of existing ones.

Scope:

The preparatory phase aims to bring the project for the new or upgraded research infrastructure identified in the ESFRI roadmap to the level of legal, financial, and, where applicable, technical maturity required for implementing it.

Proposal consortia should involve all the stakeholders necessary to move the project forward, to take the decisions, and to make the financial commitments, before construction can start (including, but not limited to, national/regional ministries/governments, research councils or funding agencies from the countries that have already declared their commitment in the application to ESFRI). Appropriate contacts with ministries and decision-makers should be continuously reinforced, thus further strengthening the consortia. Operators of research facilities, research centres, universities, and industry may also be involved whenever appropriate. Technical work should be carried out when necessary to complete the final technical design, providing a sound technical base for establishing a cost baseline and detailed financial planning. The financial needs of the project should be mapped out to the extent necessary for funding agencies to establish their own medium- and long-term financial planning. Societal and economic benefits of the infrastructure should be analysed to carry out a Cost-benefit analysis[1].

The preparation of the legal and financial agreements (including site, governance, internal rules, financing of the new research infrastructures) is one of the main activities and deliverables and should be finalised before the end of the project (e.g., through the signature of a Memorandum of Understanding).

The detailed list of activities that can be included in a preparatory phase proposal is given in part A of the section "Specific features for Research Infrastructures". Proposals should explain any synergies and complementarities with previous or current EU grants.

(a) 2019 deadline: Preparatory Phase of the new projects in the 2018 ESFRI Roadmap

Following the update of the ESFRI Roadmap in 2018, support under this work programme will be provided to the *Preparatory Phase* for research infrastructure projects which enter the ESFRI roadmap in 2018.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 4 million would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

This topic triggers the decision making processes leading to the construction and/or implementation of the research infrastructures identified in the ESFRI Roadmap.

- A landscape of first-class sustainable RIs and services, open to researchers, industry, and other interested groups such as policy makers and the public, is progressively established, which will impact on the acceleration of scientific discovery as well as on innovation and competitiveness.
- Funding bodies are able to take funding decisions and to conclude the legal agreements necessary for the construction of new research infrastructures.
- The technical work carried out under this topic will contribute to strengthening the technological development capacity and effectiveness as well as the scientific performance, efficiency and attractiveness of the European Research Area.

- Synergies and complementarity between the new and existing research infrastructures are developed, thus contributing to the development of a consistent European research infrastructures ecosystem.

Delegation Exception Footnote:

It is expected that this topic will continue in 2020.

Cross-cutting Priorities:

Clean Energy
Socio-economic science and humanities
[1] See for instance Guide to Cost-Benefit Analysis of Investment Projects for Cohesion Policy 2014-2020 (http://ec.europa.eu/regional_policy/en/information/publications/guides/2014/guide-to-cost-benefit-analysis-of-investment-projects-for-cohesion-policy-2014-2020)

INFRADEV-03-2018-2019: Individual support to ESFRI and other world-class research infrastructures

Call identifier	INFRADEV-03-2018-2019
Opening Date	14 Nov 2018
Type of Call	Research and Innovation action
Deadline (s)	20 Mar 2019
Budget	EUR 40 million
Indicated Proposal Range	EUR 2-5 million

Specific Challenge:

The implementation phase of new pan-European research infrastructures, such as those identified in the ESFRI roadmap, is the most delicate and difficult as financial sustainability must be proved and the trust and awareness of users must be earned.

Scope:

This topic targets the long-term sustainability of new research infrastructures, ESFRI and other world-class research infrastructures of European Interest, with established governance and legal structure, notably on the basis of the European Research Infrastructure Consortium (ERIC) or any other suitable structure with international membership. Infrastructures having submitted a first step application to the Commission for establishing an ERIC may also apply to this topic. Support will be provided to activities aimed at ensuring long-term sustainability, including enlargement of the membership, European coverage, international cooperation[1], limited pilots of access provision for testing and improving user services to increase reliability and create trust, definition of service level agreements and business/funding plan, outreach, and technology transfer activities. Proposals should explain any synergies and complementarities with previous or current EU grants.

Specific attention should be given to the interaction with industry and SMEs and the fostering of the innovation potential of the infrastructures. Activities may also facilitate the development of Regional Partner Facilities and their integration in the European research infrastructure landscape. The detailed list of activities that can be supported under this topic is given in part B of the section “Specific features for Research Infrastructures”.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 and 5 million would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

This activity will:

- contribute to providing Europe with a comprehensive landscape of sustainable Research Infrastructures helping to respond to challenges in science, industry and society;
- strengthen the ERA position and role in the global research environment;
- reinforce the partnership between the Commission, Member States, Associated Countries and relevant stakeholders in establishing pan-European research infrastructures;
- enhance the role of the Union in international organisations and multilateral fora;
- support progress towards the development of global research infrastructures;
- enable researchers to address societal challenges with a global dimension;
- foster capacity-building and Research Infrastructure human capital development in targeted/relevant regions.

Cross-cutting Priorities:

International cooperation
[1] In line with the strategy for EU international cooperation in research and innovation (COM(2012)497)

INFRAIA-01-2018-2019: Integrating Activities for Advanced Communities

Call identifier	INFRAIA-01-2018-2019
Opening Date	14 Nov 2018
Type of Call	Research and Innovation action
Deadline (s)	20 Mar 2019
Budget	EUR 110 million
Indicated Proposal Range	Up to EUR 10 million

Specific Challenge:

European researchers need effective and convenient access to the best research infrastructures in order to conduct research for the advancement of knowledge and technology. The aim of this action is to bring together, integrate on European scale, and open up key national and regional research infrastructures to all European researchers, from both academia and industry, ensuring their optimal use and joint development.

Scope:

'Advanced Communities' are scientific communities whose research infrastructures show an advanced degree of coordination and networking at present, attained, in particular, through Integrating Activities awarded under FP7 or previous Horizon 2020 calls.

An Integrating Activity will mobilise a comprehensive consortium of several key research infrastructures in a given field as well as other stakeholders (e.g. public authorities, technological

partners, research institutions) from different Member States, Associated Countries and other third countries[1] when appropriate, in particular when they offer complementary or more advanced services than those available in Europe.

Funding will be provided to support, in particular, the trans-national and virtual access provided to European researchers (and to researchers from Third Countries under certain conditions[2]), the cooperation between research infrastructures, scientific communities, industry and other stakeholders, the improvement of the services the infrastructures provide, the harmonisation, optimisation and improvement of access procedures and interfaces. Proposals should adopt the guidelines and principles of the European Charter for Access to Research Infrastructures.

To this extent, an Integrating Activity shall combine, in a closely co-ordinated manner:

(i) Networking activities, to foster a culture of co-operation between research infrastructures, scientific communities, industries and other stakeholders as appropriate, and to help develop a more efficient and attractive European Research Area;

(ii) Trans-national access or virtual access activities, to support scientific communities in their access to the identified key research infrastructures;

(iii) Joint research activities, to improve, in quality and/or quantity, the integrated services provided at European level by the infrastructures.

All three categories of activities are mandatory as synergistic effects are expected from these different components.

Access should be provided only to key research infrastructures of European interest, i.e., those infrastructures able to attract significant numbers of users from countries other than the country where they are located. Other national and regional infrastructures in Europe can be involved, in particular in the networking activities, for the exchange of best practices, without necessarily being beneficiaries in the proposal.

Proposals from advanced communities will have to clearly demonstrate the added value and the progress beyond current achievements in terms of integration and services, of a new grant. The strongest impact for advanced communities is expected typically to arise from focusing on innovation aspects and widening trans-national and virtual access provision, both in terms of wider and more advanced offer of scientific services, than in terms of number of users and domains served. Furthermore, in particular for communities supported in the past under three or more integrating activities, the creation of strategic roadmaps for future research infrastructure developments as well as the long-term sustainability of the integrated research infrastructure services provided at European level, need to be properly addressed. The latter requires the preparation of a sustainability plan beyond the grant lifecycle as well as, where appropriate, the involvement of funders.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), Integrating Activities should, whenever appropriate, pay due attention to any related international initiative (i.e. outside the EU) and foster the use and deployment of global standards.

Integrating Activities should also organise the efficient curation, preservation and provision of access to the data collected or produced under the project, defining a data management plan, even when they opt out of the extended Pilot on Open Research Data. Data management (including ethics and privacy issues), interoperability, as well as advanced data and computing services should be addressed where relevant. To this extent, proposals should build upon the state of the art in ICT and e-

infrastructures for data, computing and networking, and ensure connection to the European Open Science Cloud.

Integrating Activities should in particular contribute to fostering the potential for innovation, including social innovation, of research infrastructures by reinforcing the partnership with industry, through e.g. transfer of knowledge and other dissemination activities, activities to promote the use of research infrastructures by industrial researchers, involvement of industrial associations in consortia or in advisory bodies.

Integrating Activities are expected to duly take into account all relevant ESFRI and other world-class research infrastructures to exploit synergies, to reflect on sustainability and to ensure complementarity and coherence with the existing European Infrastructures landscape.

Proposals should include clear indicators allowing the assessment of the progress towards the general and specific objectives, other than the access provision.

As the scope of an integrating activity is to ensure coordination and integration between all the key European infrastructures in a given field and to avoid duplication of effort, advanced communities are expected to submit one proposal per area.

Further conditions and requirements that applicants should fulfil when drafting a proposal are given in part D of the section "Specific features for Research Infrastructures". Compliance with these provisions will be taken into account during evaluation.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 10 million would allow this topic to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

On the basis of a multiannual plan drafted taking into account the assessment and the timing of previous grants as well as strategic priorities and needs, in term of research infrastructures services, emerging from other parts of Horizon 2020, this work programme invites proposals addressing the following areas listed under the different domains. A balanced coverage of the various domains, in line with the distribution of areas per domain, is expected as outcome of this topic.

(b) 2019 deadline

Biological and Medical Sciences

Virus collections including for high-risk animal/human/plant pathogens. This activity aims at improving the access to high-quality authenticated collections of both human, animal and plant viruses including those requiring high-biosafety level laboratories (BSL 3 and 4), to support upstream virology, microbiology and immunology research as well as translational internationally-driven research aiming at drug and vaccine development, and to support epidemiological studies targeting disease and epidemics control in order to enhance the preparedness of countries to control their own emerging viral outbreaks.

Structural biology research infrastructures for health and food research. This activity should expand the availability of structural biology services (such as X-ray and neutron scattering, advanced NMR and advanced imaging technologies) to new communities of users, and in particular to scientists with backgrounds other than structural biology, including from SMEs, to benefit translational research in drugs discovery, informed drugs design and other fields like biotechnology and biomaterials for health and food.

Nanomedicine characterisation infrastructures. This activity aims at further integrating and opening key reference facilities for characterisation and engineering of nanoparticles for medical applications. It should offer access to a coherent set of tools, resources and expertise to support academic research teams and industry in their chemical, physical and biological research and innovation on medical applications. Emphasis should be on widening the user base and the services, ensuring long term sustainability to their integration.

Research infrastructures in aquaculture. This activity aims at further integrating highly diverse aquaculture research facilities and providing to research teams easy access to them. Specific attention should be given to dedicated facilities for new species, disease aspects and contribution to sustainable aquaculture. Emphasis should be on widening the user base, enlarging and strengthening the offered services, and fostering the innovation role of such infrastructures.

Energy

European smart grids research infrastructure. High shares of renewable energy and more decentralised energy supply require a grid with sufficient hosting capacity and the ability to manage the power fluctuation of the renewable sources. This activity should further integrate and open laboratory environments that enable the development and testing of different smart grid configurations without influencing end-customers of the electrical power supply. Emphasis should be on widening the user base, enlarging the offered services, fostering the innovation role of such facilities and ensuring long term sustainability to their integration.

Environmental and Earth Sciences[5]

Research infrastructures for long-term ecosystem and socio-ecological research. This activity should further integrate and open LTER (Long Term Ecological Research) facilities and critical zone observatories, in different terrestrial and aquatic environments. It should include relevant socio-ecological research platforms as well as integrate research field sites, associated data management and numerical simulation tools to address ecosystem and socio-ecological research issues such as biodiversity loss, climate change adaptation and mitigation, land use and management, food security and threats to soil and water.

Coastal and shelf seas observing research infrastructures. This activity aims at integrating and improving access to coastal observatories as well as developing innovative monitoring strategies to address better the complexity of coastal seas (such as the coupling of physics, biogeochemistry and biology). It should also promote harmonisation and seamless interface with open seas observing systems notably the relevant ESFRI infrastructures. It should foster innovation and societal impact including through effective synergies with European and global initiatives such as COPERNICUS, EMODNET, GEO/GEOSS.

Multidisciplinary Marine Data Centres for ocean and marine data management. This activity aims to further integrate in a cloud environment and open key data centres for in-situ and remote sensing data for marine (including coastal) research. It must present a long-term sustainable perspective on the facilities and related resources integration, and develop appropriate connection to the EOSC. It should enhance and innovate the services offered to an expanded multidisciplinary community and promote the adoption of the developed protocols and standards for interoperability to other key downstream initiatives in the field.

Mesocosms facilities for research on marine and freshwater ecosystems. This activity aims at further integrating and opening leading mesocosm infrastructures in Europe enabling in particular research on impact of climate change, pollution and other disturbance on ecosystems, from Mediterranean to

Arctic. Emphasis should be on widening the user base, and on enlarging and strengthening the offered services.

Research infrastructures for terrestrial research in the Arctic. As an international network for terrestrial research and monitoring in the Arctic, this activity should further integrate and open key research stations and large research field sites throughout the circumpolar Arctic and adjacent northern countries, to provide capacity for research, monitoring and education. The project should include work on best practises for managing stations, and (international) logistics and establish links with relevant ESFRI infrastructures.

Research Infrastructures for earthquake hazard. This activity aims at further integrating and opening the key research infrastructures in Europe for natural and anthropogenic earthquake risk assessment and mitigation. More integrated services from seismic and engineering infrastructures would contribute to supporting the reduction of vulnerability of European citizens and constructions to earthquakes. International collaboration activities and the further integration of the research field are encouraged.

Research infrastructures for environmental hydraulic research. This activity aims at further integrating and opening the key hydraulic infrastructures in Europe in order to optimise their use to help solve climate change adaptation problems. Particular attention to harmonising and organising the flux of data is expected. Emphasis should be on widening the user base, and on enlarging and strengthening the offered services including through synergies with relevant (emerging) ESFRI infrastructures.

Mathematics and ICT

Distributed, multidisciplinary European infrastructure on Big Data and social data mining. This activity should further integrate and open large social data repositories, social data mining methods and tools, and supercomputing facilities for conducting large-scale analytical processing. This integrated infrastructure should enable performing complex processes to extract social knowledge. Emphasis should be on enlarging and strengthening the offered services, widening the user base, fostering the innovation role of such facilities and ensuring long term sustainability to their integration as well as connection to the EOSC.

Material Sciences and Analytical facilities

Research infrastructures for advanced research in nanoelectronics. This activity aims at further integrating and opening key infrastructures in the field to enable a smooth and consistent transition of the European industry to a new era of nanoelectronics. Emphasis should be on enlarging and strengthening the offered services, widening the user base, fostering the innovation role of such facilities and ensuring long term sustainability to their integration.

Advanced laser sources for leading-edge research. This activity aims at further integrating and opening key laser infrastructures enabling a wide range of novel applications with high industrial and social impact, such as nanoscience, bio- and nanophotonics, (bio)material analyses, (bio)medical diagnosis and treatment, advanced imaging, communication and data processing. It should widen the user base, enlarge the offered services, foster the innovation role of such facilities, ensure long term sustainability to their integration, stimulate international cooperation and new scientific activities exploiting new possibilities offered by relevant ESFRI infrastructures.

Physical Sciences

Research Infrastructures for Nuclear Physics. This activity aims at further integrating the key research infrastructures for studying the properties of nuclear matter at extreme conditions, using advances in nuclear physics experimentation to open new scenarios for fundamental research and employ them for new societal and industrial applications. It must present a long-term sustainable perspective on the integration of relevant facilities and related resources. Furthermore, it should also target new users and stimulate new scientific activities to take full advantage of new possibilities offered by relevant ESFRI infrastructures.

Research infrastructures for high-energy astrophysics. This activity aims at further integrating and opening facilities for developing, calibrating and testing technologies and individual instruments developed for supporting ground and space based experiments and missions in an environment representative of space conditions. In order to foster the creation of a European multi-messenger astrophysics platform, emphasis should be on enlarging the offered services, including in particular gravitational wave, electromagnetic wave and other high energy particle (e.g. neutrinos) observatories. Access to the infrastructures and data needs to be optimised in order to develop a wider multi-disciplinary community and foster a better exploitation of the results.

Research Infrastructures for planetary science. This activity aims at furthering the integration and opening of the key research infrastructures in Europe for studying planetary science by drawing in new partners and by providing access to the facilities to a larger number of users, taking into account the multi- and trans-disciplinary nature of the field. Emphasis should be on enlarging and strengthening the offered services, widening the user base, and ensuring long term sustainability to their integration.

Social Sciences and Humanities

European research infrastructures for cultural heritage restoration and conservation. This activity aims at further integrating and opening facilities, located in research centres, universities and important culture institutions, for advanced diagnostics, restoration and conservation of cultural heritage. Emphasis should be on strengthening and enlarging the offered services to cover restoration and conservation in fields such as palaeontology, widening the user base, and fostering the innovation role of such facilities.

Contemporary European history: European Holocaust research infrastructure. This activity aims at further integrating and opening existing research infrastructures for research on Holocaust and expanding their services to include new material and new techniques in order to offer distributed and harmonised access of researchers to scattered material. Emphasis should be on enlarging and strengthening the offered services, widening the user base and ensuring long term sustainability to their integration.

Expected Impact:

- Researchers will have wider, simplified, and more efficient access to the best research infrastructures they require to conduct their research, irrespective of location. They benefit from an increased focus on user needs.
- New or more advanced research infrastructure services, enabling leading-edge or multidisciplinary research, are made available to a wider user community.
- Operators of related infrastructures develop synergies and complementary capabilities, leading to improved and harmonised services. There is less duplication of services, leading to an improved use of resources across Europe. Economies of scale and saving of resources are also realised due to common development and the optimisation of operations.

- Innovation is fostered through a reinforced partnership of research organisations with industry.
- A new generation of researchers is educated that is ready to optimally exploit all the essential tools for their research.
- Closer interactions between larger number of researchers active in and around a number of infrastructures facilitate cross-disciplinary fertilisations and a wider sharing of information, knowledge and technologies across fields and between academia and industry.
- For communities which have received three or more grants in the past, the sustainability of the integrated research infrastructure services they provide at European level is improved.
- The integration of major scientific equipment or sets of instruments and of knowledge-based resources (collections, archives, structured scientific information, data infrastructures, etc.) leads to a better management of the continuous flow of data collected or produced by these facilities and resources.
- When applicable, the integrated and harmonised access to resources at European level can facilitate the use beyond research and contribute to evidence-based policy making.
- When applicable, the socio-economic impact of past investments in research infrastructures from the European Structural and Investment Funds is enhanced.
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Cross-cutting Priorities:

Clean Energy
Open Science
Gender
Socio-economic science and humanities
International cooperation
[1]See the Eligibility and admissibility conditions for this call.
[2]See part D of the section "Specific features for Research Infrastructures".
[3] As framed by the directive 86/609/EEC, and by the Commission proposal for its revision, COM(2008)543
[4]When appropriate, proposals addressing areas under this domain are encouraged to develop synergies with Copernicus data and information as well as with GEO/GEOSS.
[5]When appropriate, proposals addressing areas under this domain are encouraged to develop synergies with Copernicus data and information as well as with relevant global initiatives such as GEO/GEOSS and ILTER.

2019 Call for Industrial Leadership

Call: Leadership in enabling and industrial technologies (LEIT)

Nanotechnologies, Advanced Materials, Advanced Manufacturing and Processing, and Biotechnology

BIOTEC-02-2019: Boosting the efficiency of photosynthesis

Call identifier	BIOTEC-02-2019
Opening Date	16 Oct 2018
Type of Call	Research and Innovation action
Deadline (s)	22 Jan 2019 (First Stage) 03 Sep 2019 (Second Stage)
Budget	EUR 31 million
Indicated Proposal Range	EUR 6-8 million
TRL	Activities should start at TRL 3 and achieve TRL 5 at the end of the project.

Specific Challenge:

Agricultural productivity that does not keep up with the current population increase, the growing demand for biomass production (as feedstock for biofuels) and the nonstop rise of global CO_2 emissions with its consequences for climate change, are all circumstances that make it urgent to increase the yield of biomass. Indeed, increased agricultural yield efficiency can have huge impacts in a society driven by the bio-economy.

Plants use photosynthesis to grow, converting energy from the sun into storable carbohydrates. Chloroplasts are the minute energy factories in the plant leaves that absorb the sun's energy, release oxygen into the air and use hydrogen plus CO_2 to make the compounds that plants need to grow. Biotechnology has succeeded in the engineering of nuclear and chloroplasts genomes for the production of enzymes, raw materials and building blocks for the chemical industry. However, research to increase the efficiency of the enzymes that drive photosynthesis has not yet produced the desired results. Currently available ground-breaking and disruptive technologies coupled with the integration of knowledge from diverse scientific disciplines have the potential to propose new solutions to boost the efficiency of photosynthesis.

Scope:

Proposals should work towards the optimisation of photosynthesis by capitalising on multidisciplinary approaches, such as functional genomics, systems biology, metabolic modelling, enzyme engineering, computational biology, synthetic biology, directed evolution and gene editing techniques.

Proposals should work with plants or algae and deal with any of the biological components underlying the diversity of photosynthesis. Proposals can involve new strategies to engineer the chloroplast genome, new strategies to engineer relevant enzymes, the development of metabolic models that contribute to a higher understanding of the properties of photosynthesis, among others.

Proposals should cover at least one of the following:

- new tools improving the performance of the catalytic enzymes involved in photosynthesis;
- new tools to increase the rate of CO_2-fixation;

- engineered enzymes for novel CO_2-fixation pathways.

Proposals should include Social Sciences and Humanities (SSH) elements regarding the technologies used and the environmental and socio-economic impact of the expected output.

Proposals submitted under this topic should include actions designed to facilitate cooperation with other projects; to enhance user involvement; and to ensure the accessibility and reusability of data produced in the course of the project.

Activities should start at TRL 3 and achieve TRL 5 at the end of the project.

The Commission considers that proposals requesting a contribution from the EU between EUR 6 and 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- A strategy based on the new resources to obtain an enhanced photosynthetic efficiency of at least 10% under diverse environmental conditions;
- A detailed and accurate research and innovation roadmap to attain higher photosynthetic performance for applicable results in the field by 2030.

Relevant indicators and metrics, with baseline values, should be clearly stated in the proposal.

Cross-cutting Priorities:

Blue Growth
Open Innovation
Socio-economic science and humanities

2019 Calls for Societal Challenges

Societal Challenge 2

SFS-01-2018-2019-2020: Biodiversity in action: across farmland and the value chain

Call identifier	SFS-01-2018-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage) *The 2020 indicative deadlines are not yet available*
Budget	EUR 16 million *The 2020 indicative budget is not yet available*
Indicated Proposal Range	8 million for Part B. [2019] Capitalising on native biodiversity in farmland landscape

Specific Challenge:

Agricultural biodiversity is understood to comprise all components of biological diversity that (i) are of relevance for food and agriculture and all components of biological diversity that (ii) constitute agro-ecosystems. It is the result of highly dynamic interactions between the environment, genetic resources, agricultural practices and historical land management. The various dimensions of agricultural biodiversity play a significant role in conferring stability, resilience and adaptability to farming systems. Below ground biodiversity for example plays a major role in soil nutrient and water cycling, nutrient uptake by plants and in the control of plant diseases. Genetic diversity within species is at the origin of plant development, adaptation to different environments (including climate) and a wide range of properties which cater for diverse needs. The native biodiversity on and around farms is associated with the provision of important ecosystem services beyond farm level.

The way farmers manage their land has immediate effects on domesticated and native biodiversity. Specialised, intensive agriculture has generally resulted in higher productivity at the expense of decreasing levels of biodiversity, partly due to a lack of incentives for farmers to safeguard biodiversity. Ambitions to make diversity a more integral part of farming are reflected in a number of European policies and global commitments[1]. Translating these ambitions into practice will require the necessary know-how and a range of options for optimising the joint delivery of economic, environmental and social services by farming.

Scope:

Activities will tackle biodiversity from various angles ranging from its supporting functions in agro-ecosystems (e.g. through activities of plant and soil biota), the integration of diversity into farming practices and incentives for wider biodiversity management including native biodiversity. Proposals will consider various temporal and spatial scales when assessing the dynamics of biodiversity and its relationship with farming systems, the surrounding landscapes and throughout value chains.

Proposals should address only one of the following sub-topics:

A. [2018] Small organisms, big effects for plants[2] - Belowground biodiversity interaction with plants (RIA)

B. [2019] Capitalising on native biodiversity in farmland landscape (RIA)

Proposals will enhance the understanding of the relationship between farm management and native biodiversity in the surrounding landscape, together with the associated ecosystem services. Activities will be developed at different scales and cover different habitats, as well as a diverse range of species (flora and fauna) from having beneficial to adverse effects on agriculture (i.e. from wild plants and wild pollinators to large carnivores). Work will consider both of the contrasting dynamics threatening farmland biodiversity (namely specialisation/intensification and marginalisation/abandonment).

Proposals will support the definition of biodiversity targets at the appropriate scale and design result-based incentives at policy and/or market level taking into account the current regulatory framework. Proposals will look at the synergies between increasing biodiversity awareness/acceptance by farmers and their involvement in the monitoring. They shall develop, test and scale-up existing and new biodiversity indicators taking into account the perspectives of stakeholders and provide integrated information platforms and improved methods.

Work shall build on existing initiatives, provide support for the setting-up of new networks that address biodiversity in farmland landscapes and liaise with relevant European Research Infrastructures such as ANAEE. Proposals should build on the system proposed for *in-situ* observatories ("Citizen Observatories") and the effective transfer of biodiversity knowledge to farming, research, policy and society. Proposals should fall under the concept of 'multi-actor approach'[3] engaging key stakeholders and experts and ensuring adequate involvement of the farming sector in open source collaboration and data collection covering a wide range of agri-ecosystems. This will include enabling networking on similar issues across Europe. They should also seek contributions from social and economic sciences to cover the broader economic, social, behavioural and environmental issues. Proposals may involve financial support to third parties, particularly for supporting regional/local networks. The proposal will define the process of selecting entities for which financial support will be granted up to EUR 100.000 per party[5] over the project duration.

C. [2020] From agrobiodiversity to dynamic value chains

All scopes (A), (B): The Commission considers that proposals requesting a contribution from the EU of up to EUR 7 million for A and 8 million for B would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Proposals should include a task to cluster with other projects financed under the same sub-topic.

Expected Impact:

Funded activities will showcase the benefits of agro-biodiversity at various levels and develop solutions and approaches to embed these benefits more effectively into farming practices and policy measures. In the short to medium term work will

- expand the agro-ecological knowledge base on the links and dynamics between biodiversity and agricultural production;
- deliver best practices based on production systems (both conventional and organic) that combine support for biodiversity with value creation;
- result in improved methods and tools to assess, evaluate and monitor different levels of diversity (genetic, species and ecosystem) as well as the linkages between agro-biodiversity and ecosystem services;
- define operational biodiversity targets from the field to regional level;
- deliver strategies and tools for biodiversity focused soil management (scope A);

- reduce the dependence on external inputs in plant management through effective plant-soil interactions and the use of soil organisms (scope A);
- develop private and public incentives to foster farmer's delivery of biodiversity as a public good (scope B);
- generate news sets of harmonised data on native biodiversity in farmland landscapes and contribute to foster a European biodiversity platform and network involving farmers (scope B).

In the longer term funded activities will help to foster the synergies between agricultural production, biodiversity and the delivery of ecosystem services of local, regional and global relevance. They will allow the farming sector to continue fulfilling its multiple functions under more challenging biotic and abiotic conditions expected in the future, mostly as a result of climate change effects.

Delegation Exception Footnote:

It is expected that this topic will continue in 2020

Cross-cutting Priorities:

RRI
Socio-economic science and humanities

[1]See e.g. Common Agricultural Policy, EU Biodiversity Strategy, Convention on Biological Diversity, Sustainable Development Goals and COP 21 Paris Agreement[1] See e.g. Common Agricultural Policy, EU Biodiversity Strategy, Convention on Biological Diversity, Sustainable Development Goals and COP 21 Paris Agreement[1] See e.g. Common Agricultural Policy, EU Biodiversity Strategy, Convention on Biological Diversity, Sustainable Development Goals and COP 21 Paris Agreement
[2]This sub-topic is part of a microbiome cluster. For complementary activities see also SC2 topics SFS-02-2019/20, SFS-03-2018, CE-BG-05-2018/2019 and BG-06-2018 on Marine Microbiomes as SC1 topic SC1-BHC-03-2018
[3]See definition of the 'multi-actor approach' in the introduction of this Work Programme part
[4]See definition of the 'multi-actor approach' in the introduction of this Work Programme part
[5]In line with Article 23 (7) of the Rules for Participation the amount referred to in Article 137 of the Financial Regulation may be exceeded, since this is necessary to achieve the objectives of the action.

SFS-04-2019-2020: Integrated health approaches and alternatives to pesticide use

Call identifier	SFS-04-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage) *The 2020 deadlines are not yet available*
Budget	EUR 15.100.574 million *The 2020 budget is not yet available*
Indicated Proposal Range	Up to EUR 15 million

Plant protection and biocidal products (both covered under the term "pesticides") are used in agriculture in order to secure yield and food safety in plant production and animal husbandry. At the same time, pesticides may have effects on the environment, non-target organisms, animal and human

health. In the EU they are regulated[1] and assessed for pre-market approval but tools and methods need to be further developed to better understand the overall risks and impacts associated with their individual and combined use and possible side effects. Member States and EU policies seek to reduce reliance on pesticides by designing and implementing more integrated approaches towards the use of pesticides while at the same time safeguarding the competitiveness of EU's agriculture. Significant efforts are required to develop alternatives to critical active substances used in plant protection and/or biocidal products. It is also necessary to carry out an overall assessment in order to gauge the complexity and trade-offs inherent to the sustainable use of pesticides and related impacts at various scales, in line with a global health approach.

Scope:

Proposals should address only one of the following sub-topics:

A. [2019]: Integration of plant protection in a global health approach (RIA)

Activities will test and deliver integrated approaches to advance in the assessment of the impacts of plant protection products and their metabolites (PPPs) on plant, human, animal and ecosystem health. Activities will build on existing data, validated models of PPPs fluxes/concentrations, models for economic analysis, integrated risk assessment tools, running projects and the European Food Safety Authority's (EFSA) activities. Activities will support new measurements and observations and further develop more comprehensive and reliable models. A synthesis of risks, cost and benefit analysis of PPPs' use at different spatial and temporal scales and their distribution between different stakeholders should be performed (including damages caused by pests, product quality and regulatory costs). Activities will build on representative case studies covering different agricultural products.

In terms of human health, both direct and indirect exposures to PPPs will be taken into account with a particular focus on direct exposure of farmers and the rural population and the exposure of consumers to PPP residues in food. Animal health risk assessment should take into account the exposure to residues of PPPs in feed (aggregating EU uses and residues in imported feed). Work on environmental risks and impacts should consider the diversity of European agricultural landscapes, as well as ecological and environmental variability. It should make it possible to gauge the spatial dimension of impacts and map risks at regional, national, European and global levels while considering other regulatory initiatives, in particular the Common Agricultural Policy, the protection of European biodiversity and the Water Framework Directive.

Proposals will identify lock-ins, develop transition paths towards a sustainable use of PPPs, taking a transdisciplinary approach, and should consider the needs of risk managers for the authorisation/restriction of PPPs as well as of farmers for selecting more appropriate and sustainable products and their optimal use avoiding side effects. Activities will include the development of a research agenda on plant protection in the context of a global health approach.
The Commission considers that proposals requesting a contribution from the EU of up to EUR 15 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

B. [2020] Biocidal and plant protection products (IA)

All sub-topics (A), (B): Projects should fall under the concept of the 'multi-actor approach'[2] bringing together contributions from a wide range of stakeholders including research, farming, advisory services, industry as well as consumers and civil society. They should also seek contributions from social and economic sciences to cover the broader economic, social, behavioural and environmental

issues associated with the adoption of novel management strategies. This will include looking at gender aspects, as appropriate.

Expected Impact:

Activities will contribute to a better understanding of complex, interlinked issues and reduce the reliance on the use of pesticides by helping to:

- establish the impacts of the use or non-use of pesticides on the environment and human health (consumers, operators, farm workers and residents in agricultural areas);
- improve farmer, consumer and citizen awareness of and trust in global health approaches through clear and transparent and integrated assessments, plant health protection strategies and related communication;
- contribute to the ongoing collection of harmonised EU-wide datasets in open source collaboration and of indicators to assess and monitor trends over time and support risk management measures (scope A);
- improve monitoring of pesticide uses and pressures on human and animal health and the environment, by developing appropriate tools and integrated approaches considering various pathways (scope A);
- foster lasting transdisciplinary cooperation in the fields of life sciences, human, plant and animal health and environmental sciences and strengthen the European scientific community on global health approaches (scope A);
- support relevant EU plant health policies and/or European risk assessments in relation to EFSA's activities.

In the longer-term results will strengthen an integrated health approach and foster the sustainable use of pesticides thereby reducing the exposure of human and animals, terrestrial and aquatic ecosystems, drinking water and the food chain to pesticides.

Delegation Exception Footnote:

It is expected that this topic will continue in 2020

Cross-cutting Priorities:

Socio-economic science and humanities
RRI
Gender
[1]Regulations (EC) No 1107/2009 and (EU) No 528/2012
[2]See definition of the 'multi-actor approach' in the introduction of this Work Programme part

SFS-05-2018-2019-2020: New and emerging risks to plant health

Call identifier	SFS-05-2018-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage) *The 2020 deadlines are not yet available*
Budget	EUR 7 million

	The 2020 budget is not yet available
Indicated Proposal Range	Up to EUR 7 million

Specific Challenge:

Trade and the movement of goods and people have facilitated the introduction, spread and establishment of plant pests and diseases. While new pests and diseases are likely to arise, existing ones might become more severe as a result of intensification, climatic variations and changes in agricultural and forest management practices. They can have a significant impact on agricultural and forest productivity. Appropriate and rapid responses from decision-makers need to be informed by scientific knowledge which addresses pest and disease management in a comprehensive manner.

Scope:

Proposals will target one or more new or emerging plant pests and/or diseases (regulated or non-regulated, introduced or native) that are causing, or likely to cause, significant (socio-)economic and/or environmental losses to EU agriculture/forestry. The choice of target pest and/or disease will consider the potential threat in terms of development and spread, its potential exacerbation under climate change as well as the potential impact on agricultural production, forestry, trade and the wider environment. Proposals will increase knowledge of the biology, pathways of entry and spread of pests/diseases. They will improve methods and strategies for early detection, prevention and control as well as enlarge the range of tools for integrated, sustainable and effective pest/disease management. International cooperation with countries affected or threatened by the same pest(s)/disease(s) is encouraged. Proposals should fall under the concept of the 'multi-actor approach'[1] including a range of actors to ensure that knowledge and needs from various sectors such as research, plant health services and the farming/forestry sector are brought together.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 7 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

Activities will contribute to finding adequate responses to new and/or emerging plant pests/diseases. More specifically knowledge and solutions generated by these actions will contribute to:

- the understanding of drivers of plant pest/disease emergence including the influence of climate change;
- the development of efficient tools for the prevention, detection and control of pests/diseases;
- the development of environmentally sound solutions for effective pest/disease management in farming and forestry in line with the principles of Integrated Pest Management;
- the reduction of economic, social and/or environmental losses for the EU;
- support for relevant EU plant health policies.

In the longer term, project outputs will help the agricultural/forestry sector to remain productive and contribute to sustainable agriculture and/or forest health.

Delegation Exception Footnote:

It is expected that this topic will continue in 2020

Cross-cutting Priorities:

RRI
International cooperation
[1]See definition of the 'multi-actor approach' in the introduction of this Work Programme part.

LC-SFS-17-2019: Alternative proteins for food and feed

Call identifier	LC-SFS-17-2019
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 32 million
Indicated Proposal Range	EUR 8 million

Specific Challenge:

While facing climate change and natural resource scarcity, ensuring sufficient, nutritious, safe and affordable food to a fast growing world population with changing dietary habits becomes increasingly challenging. The protein supply is in this respect most critical, both for human consumption and animal feed. Integration of a variety of new or alternative protein sources from both terrestrial and aquatic origin into new and/or existing processes or products needs to be explored, in order to develop and ensure more sustainable, resilient supply chains, featuring high consumer acceptability by a clean labelling approach and attractive market opportunities.

Scope:

Proposals shall identify and assess new or alternative protein sources for food and/or feed and develop/validate efficient production and processing approaches to convert/integrate them into high quality, safe, healthy, and sustainable products or ingredients. Proposals shall focus on the characterisation of nutritional values, functional and sensory properties of new and alternative proteins, as well as on the deepening of the understanding of protein-protein interactions for knowledge-based (re)formulations of protein blends that partly or fully could substitute traditional sources. To ensure complementarity with the activities of other projects and initiatives at the EU level, proposals could include one or more of the following sources, for food: plant-based proteins, micro-organisms, terrestrial non-chordate phyla, algae and plankton or sources not deploying natural resources; and for terrestrial and aquatic animal feed: algae, insects and other terrestrial non-chordate phyla, micro-organisms, plankton and possibly other sources whose production is not in direct competition with food production. Synergies in applications for both food and feed are encouraged, in particular for aspects linked to logistical and safety aspects of production and processing, as well as value chains. Activities shall comprise testing, demonstrating and/or piloting in a (near to) operational environment, as well as experimental production, all with a view to paving the way for subsequent commercialisation. When applicable, proposals should address requirements from relevant EU regulatory frameworks, including pre-market approval. Proposals may include limited research activities. Following the RRI principles, proposals will ensure that societal actors work together during the whole research and innovation process in order to better align both the process and its outcomes with the values, needs and expectations of society[1].

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 8 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

In the framework of SDG no 2, 9, 12, 13 and 15, The EU's Bioeconomy Strategy 2012 and the Food 2030 SWD, proposals should explain how the activities included will contribute to:

In the short run,

- Far-reaching progress in providing, processing and production of high quality proteins for food and/or feed from terrestrial and/or aquatic origin, moving available solutions from TRL 5 to TRL 6;
- New market opportunities for novel products, exclusively or partly derived from non-traditional proteins;
- Future-proofed protein supply chains based on the principles of diversity, sustainability and resilience;
- Increased trust and consumer acceptability for alternative protein sources and processes.

In the longer run, a sustainable food sector that significantly reduced its footprint in terms of land use, greenhouse gas emissions, energy, water and other relevant indicators.

Cross-cutting Priorities:

RRI
Blue Growth
Socio-economic science and humanities
[1]In case of proposals applying the 'multi-actor approach', see also its definition in the introduction to this Work Programme part.

LC-SFS-19-2018-2019: Climate-smart and resilient farming

Call identifier	LC-SFS-19-2018-2019
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage)
Budget	EUR 14 million
Indicated Proposal Range	EUR 7 million

Specific Challenge:

Evidence on climate change is solid and reveals that it will affect the EU with European farming first in line through changes to rainfall regimes, rising temperatures, the variability and seasonality of the climate and the occurrence of more frequent extreme events (heatwaves, droughts, storms and floods). In addition to finding effective solutions for greenhouse gas (GHG) mitigation such as reducing GHG emissions and sequestering carbon below and above ground, farmers will need to adapt to climate change and develop farming systems resilient to fluctuating environmental and socio-economic conditions.

Scope:
Proposals should address only one of the following sub-topics (A) or (B).

A. [2018] Microclimate management: from field to landscape (RIA)

B. [2019] Efficiency and resilience of mixed farming and agroforestry systems (RIA)

Activities will develop further mixed farming systems and show how the integration of crops, livestock and forestry activities can improve the resilience of agriculture in combination with the related climate change mitigation potential (e.g. carbon sequestration, nutrient recycling). Proposals should enable the participative design of mixed farming and agroforestry systems not only focusing on technical and agronomic aspects but also taking on board socio-economic aspects of mixed farming modes, the related value chains and necessary infrastructures as well as the environmental and climate mitigation and adaptation potential. Proposals will contribute to increase synergies between crops and livestock by defining optimal combinations of production to increase income stability at farm level and sustainability of the relevant value chains. They shall develop models and tools adapted to real farm management to grasp the inherent complexity of mixed farming and agroforestry systems. Proposed work shall benefit both the conventional and organic sectors. Activities will use transdisciplinary research methods and proposals should fall under the concept of the 'multi-actor approach'[2].

All sub-topics- The proposals funded under this topic (sub-topics A and B) will contribute to the development of a conceptual framework on resilience and mitigation at different levels (farm, community, region, national and EU) and its policy implications. Proposals should include a task to cluster with other projects financed under the same topic. The Commission considers that proposals requesting a contribution from the EU of up to EUR 7 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

Funded activities will improve the climate and socio-economic resilience of the agricultural sector. In the short to medium term work will:

- Deliver effective solutions for ensuring the highest level of implementation on the farm and landscape scale regarding climate-smart and resilient systems and provide decision support systems adapted to mixed farming and agroforestry systems in heterogeneous landscapes;
- Unlock and improve viability and replicability of efficient and resilient farming systems and propose different transition scenarios leading to the development of modern land use systems, value chains and infrastructures;
- Reduce the environmental impact of farming and contribute towards mitigation and adaptation to climate change;
- Provide ecosystem services through integrated and small-scale land management.

In the longer term funded activities will help to foster the synergies between agricultural production, climate change mitigation and adaptation. They will allow the farming sector to continue fulfilling its multiple functions under predicted, more challenging abiotic conditions.

Cross-cutting Priorities:

Socio-economic science and humanities
RRI

[1] See definition of the 'multi-actor approach' in the introduction to this Work Programme part.
[2]See definition of the 'multi-actor approach' in the introduction to this Work Programme part.

LC-SFS-20-2019: European Joint Programme on agricultural soil management

Call identifier	LC-SFS-20-2019
Type of Call	COFUND European Joint Programme
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 40 million
Indicated Proposal Range	EUR 40 million

Specific Challenge:

Good agriculture soil management[1] contributes to food security, climate change mitigation/adaptation and ecosystem services. Preserving and increasing fertility of soils, not least through their organic content and water retaining capacity, increases agricultural production. Soils and their carbon, nitrogen and phosphorus content are also important for climate change mitigation. A number of good soil management practices have been developed to deal with some of the challenges; however serious knowledge gaps exist, e.g. on the characteristics of soils in various regions of Europe, the factors influencing their fertility functions including their capacity to store carbon, depending on different climate and environment conditions. The European Union is committed to addressing climate change with ambitious targets. An integrated framework for soil research in Europe is required to overcome current fragmentation and unleash the potential of agricultural soils to contribute to climate change mitigation/adaptation, while preserving or increasing agricultural functions.

Scope:

The European Joint Programme will boost soil research with main emphasis on agricultural soil management and its contribution to climate change mitigation and adaptation. The aim is to construct a sustainable framework for an integrated community of research groups working on related aspects of agricultural soil management[2]. The activities should look at how management of agricultural soils can reduce degradation of land and soils (in particular soil erosion and loss of organic matter), preserve and increase fertility of soils and how the processes related to organic content and water retaining capacity can support mitigation and adaptation to climate change. The EJP will evaluate and foster implementation of novel technologies for soil management and carbon sequestration. The aim of the EJP is also to look for synergies between different approaches used in Europe for farm level accounting of emissions and removals from agricultural activities and particularly of carbon storage. In doing so, activities will contribute to improving inventories, measurements, reporting and accounting activities at different scales. Sustainable agricultural productivity and environmental aspects will also be targeted in connection with climate change mitigation and adaptation, so that optimisation of land management is ensured.

The European Joint Programme will include joint programming and execution of research and other joint integrative activities such as education and training (e.g. short-term missions, workshops), knowledge management, access to experimental facilities and databases, including also harmonisation, standardisation. Farmers, landowners and other stakeholders should be included in research activities as appropriate in the spirit with the multi-actor approach[3].

State-of-art technologies for mapping and soil sampling and analysis (physical, chemical and biological parameters) should be explored for wider and simple use at various levels. In return, by e.g. developing new ICT tools, this could help farmers to protect and manage soils in line with current scientific understanding of processes. The EJP should also facilitate sampling and further development of LUCAS[4] –European Soil Database as well support EU contribution to global soil mapping activities.

Participating legal entities must have research funding and/or management responsibilities in the field of agriculture soil management.

The proposal should include a five-year roadmap describing the key priorities and governance processes as well as the first annual work plan.

The acquired knowledge should support policy making in the domain of agricultural soil management and related areas, such as agriculture, climate and environment, and when feasible and appropriate knowledge exchange between science and practice for better agricultural soil management by farmers should be envisaged.

The activities will need to be coordinated as appropriate with other international soil related activities under the United Nations umbrella among them the Global Soil Partnership and more particularly with European Soil Partnership node; with the Global Research Alliance on agricultural greenhouse gases; Horizon 2020 project CIRCASA[5]; 4‰ Initiative: soils for food security and climate; Joint Programming Initiatives (FACCE, CLIMATE); the Belmont Forum and soil activities coordinated by the European Commission Joint Research Centre [6] when relevant and appropriate. The work of the EJP will also support a number of policies: the Common Agricultural Policy, Climate Change related policy and relevant environmental policies, in particular the implementation of the EU Soil Thematic Strategy[7]. Financial support provided by the participants to third parties is one of the aims of this action and, in order to achieve the objectives of the action, the 60 000 EUR threshold provided for in Article 137(1)(c) of the Financial Regulation N°966/2012 and Article 210(a) of the Rules of Application Regulation N°1268/2012 can be exceeded.

Considering the budget available, the scope covered and the potential entities for the EJP, the Commission considers that an EU contribution to a maximum 50% of the total eligible costs of the action or up to 40 million EUR would allow this specific challenge to be addressed appropriately.

Expected Impact:

The project will lead to significant long term alignment and implementation of soil-related research strategies and activities at national and EU level by:

- fostering understanding of soil management and its influence on climate mitigation and adaptation, sustainable agricultural production and environment;
- understanding how soil carbon sequestration can contribute to climate change mitigation at regional level including accounting for carbon;
- strengthening scientific capacities and cooperation across Europe including training of young soil scientists;
- Supporting harmonised European soil information, including for international reporting;
- fostering the uptake of soil management practices which are conducive to climate change adaptation and mitigation;
- developing region-specific fertilisation practices considering the local soil, water and pedo-climatic conditions;

In the long term, the programme will strengthen the role of the farming sector as a steward of land and soil resources. It will increase its capacity to adapt to climate change and contribute to mitigation and carbon sequestration.

Cross-cutting Priorities:

[1]Soil management includes: soil conservation, soil fertility and soil biodiversity.

[2]Agro-forestry is included in the topic.
[3]See definition of the 'multi-actor approach' in the introduction of this Work Programme part.
[4]**Land use/cover area frame statistical survey**, abbreviated as **LUCAS**, is a European field survey program funded and executed by Eurostat http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Land_use/cover_area_frame_survey_%28LUCAS%29
[5]Project selected under SFS-50-2017 topic
[6]European Soil Data Centre; EIONET - European Environment Information and Observation Network – soil network
[7]COM(2006)231

SFS-28-2018-2019-2020: Genetic resources and pre-breeding communities

Call identifier	SFS-28-2018-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 January 2019 04 September 2019 *The 2020 indicative deadlines are not yet available*
Budget	EUR 14 million *The 2020 indicative budget is not yet available*
Indicated Proposal Range	EUR 7 million for sub-topic B in 2019: Adding value to plant GenRes

Specific Challenge:

Genetic resources (GenRes) play a crucial role in agricultural activities and sustainable forest management in Europe. They hold the key to the adaptation of plants and animals to a changing and more variable climate, yet their diversity remains largely underused in current breeding, farming and forest management. Conservation efforts (in-situ, ex-situ) aim to capture, preserve and make available a substantial share of these global assets. However, access to resources is often limited by the quality of the material and the information provided by the various conservation sites. With increasing concerns over biodiversity loss and genetic erosion, there is a need to step up collaborative efforts to expand and improve the preservation as well as the use of plant and animal GenRes in farming and forestry.

Scope:

A range of activities implemented by a wide range of stakeholders will seek to enhance management and use of GenRes and implement global commitments in this area. While the focus of activities is on Europe, international resources and activities shall be taken into account.

Proposals should address only one of the following sub-topics:

A. [2018]: Joining forces for GenRes and biodiversity management (CSA)

B. [2019]: Adding value to plant GenRes (RIA)

Activities will improve processes, tools and know-how associated with a dynamic management and documentation of GenRes collections (both ex-situ and in-situ, as appropriate). They will add value to the preserved germplasm to promote its use in breeding, farming, forestry and by consumers. Work will enable the development and testing of solutions to enhance quality and efficiency of operations

and services across collections. Major efforts should go into capturing and characterising the genetic diversity in germplasm and revealing novel information to users. This will include acquiring comprehensive and more precise genotypic and phenotypic information on GenRes material, understanding the connections between the two, how they vary in different environmental contexts and having in place appropriate (bioinformatic) tools for data processing, exchange and visualisation. Due account shall be given to disclosing the potential of less adapted material from genebanks/in-situ conservation sites in relation to valuable traits associated with resilience, adaptability and quality of crops.

Proposals should foresee a task for joint activities with other projects financed under this topic.

C. [2020]: The GenRes-user interface and pre-breeding activities (IA)

The Commission considers that proposals requesting a contribution from the EU of up to EUR 3 million for sub-topic A and EUR 7 million for sub-topic B would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

Activities will enhance the status of genetic resources and increase effectiveness of conservation efforts, in particular in Europe.

In the short to medium term work will:

- result in the development and/or implementation of integrated strategies for conservation and use of crop, forest and animal GenRes as well as for wider biodiversity (sub-topic A);
- enhance user oriented services provided by networks involved in plant (agriculture and forestry), and animal GenRes management (sub-topic A);
- help establishing high quality, harmonised standards for the management and description of GenRes across Europe (and beyond) (sub-topics A and B);
- increase the quantity and quality of data in established information systems for crop, forest and animal GenRes (sub-topics A and B);
- promote innovative ways of sharing resources and services between genebanks/in-situ conservation sites in Europe and beyond (sub-topics A and B);
- develop methods and tools for greater insight into the characteristics and the value of collections (sub-topic B);
- create novel services for users within and outside the conservation communities (sub-topic B).

In the long term activities will allow tapping into the vast potential of GenRes more effectively in order to meet current and future needs of food security, the delivery of non-food products from primary production and support the different functions of forestry.

Delegation Exception Footnote:

It is expected that this topic will continue in 2020

Cross-cutting Priorities:

International cooperation
Open Science

SFS-30-2018-2019-2020: Agri-Aqua Labs

Call identifier	SFS-30-2018-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage) *The 2020 indicative deadlines are not yet available*
Budget	EUR 10 million in 2019 *The 2020 indicative budget is not yet available*
Indicated Proposal Range	EUR 5 million for sub-topic B

Specific Challenge:

Agriculture and aquaculture are increasingly knowledge-intensive sectors that need to be supported by advances in basic science domains in tandem with translational research. This nexus between basic and applied research requires specific openings for testing ideas and their potential application in plant and animal production, both terrestrial and aquatic.

Recent developments in genomic selection have revolutionised **animal breeding** and resulted in significant gains in production efficiency of animals. However, our understanding of the biological mechanisms underpinning traits remains limited. Most phenotypes, in particular for traits related to health, biological efficiency and robustness, are complex and a major goal of biological research is to use genome information to predict such complex outcomes.

In the area of **crop production**, there is a fundamental interest in deciphering the dynamic responses of plants as they (pre)adapt to local conditions or adjust their growth and development to changes in the environment within their plasticity range. These adaptive traits are all the more important as plants are sessile and therefore require effective strategies to deal with uncertainty and to tolerate rather than avoid stress. Understanding the different adaptation strategies, and the circumstances that favour one strategy over another, is vital for understanding how annual or perennial crops perform in a given environment or under changing conditions. It will also help to assess how plants may respond to future environmental changes.

Scope:

Proposals should address only one of the following sub-topics:

A. [2018]: Understanding the genome of farmed animals, its expression and translation into traits (RIA)

B. [2019]: Looking behind plant adaptation (RIA)

Proposals shall advance our understanding of the ability of plants to (pre)adapt to specific – often extreme - conditions or to react to sudden changes in their environment.

They will look into the specific mechanisms (genetic, epigenetic, physiological, morphological, metabolic…) and dynamics that underlie adaptive processes of crops and how these responses are modulated by the type and severity of conditions/stresses. In studying adaptation of crops to single or multiple abiotic conditions, work shall also establish potential fitness trade-offs. Proposals are expected to improve capacities for modelling plant adaptation responses in order to better predict

changes in plant performance and inform crop improvement and crop management strategies. While taking advantage of findings from (semi) model crops, work shall focus on crop plants and relevant agronomic conditions.

Proposals should foresee a task for joint activities with other projects financed under this topic.

C. [2020]: Plant energy biology

The Commission considers that proposals requesting a contribution from the EU of up to EUR 6 million for sub-topic A and EUR 5 million for sub-topic B would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

Results of funded activities will help to create knowledge hubs in their respective domains and develop specific pathways to feed biological insight into agricultural (husbandry, crops) and aquaculture practices.

In the short to medium term work will:

- deliver comprehensive genome annotation maps of high quality in the targeted farmed animal species/tissues (sub-topic A);
- progress in understanding genotype per environment interactions and deciphering the mechanisms by which some effects induced by environment/stressors can be transmitted across generations (sub-topic A);
- pave the way for subsequent use of annotated genomes to improve precision breeding in farmed animal production, by linking genome to phenotype and improving means to measure/record phenotypes (sub-topic A);
- contribute to international cooperation on genome annotation (sub-topic A);
- provide insight into the range of mechanisms that underpin plant responses (from single cell to whole plant) to specific and/or multiple environmental changes (sub-topic B);
- deliver more accurate models for the prediction of crop adaptation in response to environmental stresses (sub-topic B);
- translate knowledge on the adaptive plasticity of plants and complex genotype by phenotype interactions into crop improvement and management strategies (sub-topic B).

In the long term activities will enhance the sustainability of farmed animal production (sub-scope A). They will allow making more solid assertions on how crops will respond and can possibly better adapt to the effects of climate change (sub-scope B).

Delegation Exception Footnote:
It is expected that this topic will continue in 2020

Cross-cutting Priorities:

Open Science
International cooperation
Blue Growth
[1]http://www.faang.org/index
[2]http://data.faang.org

SFS-31-2019: ERANETs in agri-food

Call identifier	SFS-31-2019
Type of Call	ERA-NET-Cofund
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 15 million
Indicated Proposal Range	EUR 6 million for sub-topic A and 5 million for sub-topics B and C Subtopics: D. [2019] ICT-enabled agri-food systems E. [2019] Climate change and food systems F. [2019] International coordination of research on infectious animal diseases

Specific Challenge:

The agri-food sector[1] is subject to multiple external pressures, such as rising demand for food, competition for land and other natural resources with other biomass uses, globalisation, threats from animal or plant diseases, environmental and climatic changes and public health considerations. Climate change will further impact the agri-food sector both directly through its effect on production at EU level, but also indirectly through its supply chain. This implies the need to become more efficient and sustainable; improve its impact on consumer health; take advantage of new technological developments; and become more transparent and responsive to consumer demands, within a food-system approach.

Scope:

Proposals should address one or more of the following sub-topics (A) to (C) and should clearly indicate to which one they refer.

A. [2019] ICT-enabled agri-food systems

Today, despite increased information demand from consumers and food chain players alike, Europe's food businesses and farmers are slow at adopting digital technologies. This is due in part to the inherent complexities of relevant products and processes, and in part to the dynamically changing open network organisation of the food sector with its multitude of SMEs, its cultural diversity, its differences in expectations and in the ability to serve transparency needs. The agri-food sector needs to take more advantage of the potential of digital technologies. Relevant technologies may include Internet of Things, Artificial Intelligence, Big Data technologies, remote and localised sensing. This sub-topic will engage the agri-food community in supporting the development of solutions to remove the barriers to adoption of digital technologies, taking a multi-actor approach across different supply chains (conventional and organic) from farm to fork. These solutions will be targeted to supporting third party development of a variety of digital technologies which can take advantage of, integrate with, and complement the standardisation efforts and platform developments in other Horizon 2020, European Structural and Investment Funds (ESIF) and regionally/nationally-funded projects. In addition, this sub-topic will support the development of new data-driven ICT platforms and solutions which derive value for multiple actors from the data collected throughout the food chain, thereby enabling new business models which will increase the affordability and adoption of such solutions, reduce the environmental footprint, increase system resilience, and empower consumers. Interregional and international cooperation will be encouraged and complementarity with other ERA-NETs will be ensured throughout the project development stages by means of active collaboration and

communication. When relevant, projects should consider synergies with the Thematic Smart Specialisation Platform on Agri-food (TSSP-AF)[2] and related interregional partnerships under the Research and Innovation Strategies for Smart Specialisation (RIS3).

B. [2019] Climate change and food systems

Proposals under this sub-topic will aim at developing climate-resilient and sustainable value chains for food systems. In particular they will assess risks and vulnerabilities of food systems faced with climate change, including expected effects on supply chains, thereby offering low carbon footprint solutions (technological and/or non-technological) to increase resilience and sustainability. Specific focus will be put on the socio-economic impacts of climate change on different food chains, price volatility and the territorial dimension on access to accessible and nutritious foodstuffs. Complementarity with SusFood ERA-NETs will be ensured throughout the project development stages.

C. [2019] International coordination of research on infectious animal diseases

Animal health is a key element to guarantee food safety and security, by means of competitive and sustainable livestock systems. Partnerships and collaborations at the European and International levels are important for fighting infectious animal diseases, including those which are a significant threat to human health and international trade.

The ERA-Net will cover the major groups of infectious diseases of animals, including infections by viral, bacterial, protozoal, fungal pathogens, prions, parasites, and multifactorial diseases. An important focus will be put on at least African swine fever (ASF) and animal influenza.

The ERA-NET will pool and share resources and expertise between countries to further the fundamental understanding of hosts, pathogens and their interactions. Also, focus on understanding wider animal infectious disease issues e.g. systems-based studies that integrate host/pathogen studies with the epidemiology, and population dynamics of disease, pathogenesis, ecology, evolution, and transmission, resulting eventually in better prevention of disease. An important focus will be put on the role of wildlife in the emergence and transmission of infectious diseases to livestock, and on related disease surveillance and control, in order to also contribute to animal health risk assessment activities, in particular by EFSA or OIE.

In addition, consideration needs to be given to data sharing, integration and analysis to develop new tools to accelerate identification of outbreaks, enabling a rapid response and thus reducing the spreading of diseases. This should be done in coordination with existing data sharing systems (e.g. WAHIS[3] and ADNS[4] systems).

Another focus will also be on development of safe and effective vaccines, generic technology platforms for producing novel and/or improved vaccines, and rapid, accurate and easy to use in-field diagnostics technology. Vaccination strategies, including the tools to distinguish vaccinated animals from non-vaccinated ones (DIVA vaccines) should also be addressed. New and improved vaccines have been identified as an important component in strategies to reduce reliance on antimicrobials (OIE *ad hoc* Group on prioritisation of diseases for which vaccines could reduce antimicrobial use in animals, 2015). There is a need to investigate new methods of generating vaccines and to understand of how best to design vaccines that drive long-lasting and protective memory responses.

Projects should be complementary to other H2020 projects in the same area.

International cooperation and industry engagement in projects selected under the ERA-Net are encouraged. The projects selected should take into consideration the EU animal health regulatory

framework, and follow the policies and contribute to the objectives of the STAR-IDAZ international research consortium[5]. Participation of legal entities from third countries, and/or regions including those not automatically eligible for funding in accordance with General Annex A, is encouraged in the joint call as well as in other joint activities including additional joint calls without EU co-funding. Participants from countries not listed in General Annex A are eligible for EU funding under this topic and may request a Union contribution (on the basis of the ERA-NET unit cost) only for the coordination costs of additional activities.

The Commission considers that proposals requesting a contribution from the EU of EUR 5 million for sub-topic A) and 5 million for sub-topics B) and C), respectively, would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Improve coordination between national and EU funding and ensure better use of resources in the priority research areas above [A, B, C];
- Reduce the environmental footprint of the sector by reducing inputs and waste [A, B].
- Realise the potential of ICT and digital technologies to share data throughout the food value chain, thereby driving greater sustainability, offering new business models and helping to empower consumers to make smarter, more sustainable, healthier and more personal food and dietary choices, taking into account data regarding environmental impact, origin, nutrition, safety, integrity, etc., underpinned by the concept of transparency [A];
- Integrate effectively with major digital platforms from food actors, ICT solution providers and consumers [A];
- Enhance understanding and awareness about the effects of climate change on global food value chains [B];
- Develop innovative solutions to cope with the multiple risks and challenges to the food systems posed by global environmental changes [B];
- Improve control of specific infectious animal diseases, in particular those where the role of wildlife is prominent, by further understanding of the epidemiology and means of surveillance and control [C].
- Provide new generic tools, systems for better prevention and improved preparedness to react to infectious animal disease outbreaks, in particular by designing and developing new or improved vaccines, diagnostic tools and vaccination strategies[C];
- Improved translation of key knowledge on host and pathogen interaction into pathways for means of prevention, detection and control of animal infectious diseases [C];
- Improve collaboration with international initiatives to promote coherence and the applicability of research to preventive tools in order to control infectious animal diseases [C];
- Contribute to the reduction of antimicrobial use in livestock, minimising antimicrobial resistance [C].
- Contribute to animal welfare by a better prevention of diseases [C].
- More broadly, contribute to food security and sustainable production, by reducing the burden of disease and reducing impact on international animal trade [C].

[1]OECD/WTO (2013), developing on FAO (2005) on agrifood value chain: "A 'value chain' in agriculture identifies the set of actors and activities that bring a basic agricultural product from the field to final consumption and add value at each stage of the production process."
[2]http://s3platform.jrc.ec.europa.eu/agri-food
[3]http://www.oie.int/en/animal-health-in-the-world/wahis-portal-animal-health-data/
[4]https://ec.europa.eu/food/animals/animal-diseases/not-system_en
[5]http://www.star-idaz.net/

LC-SFS-34-2019: Food Systems Africa

Call identifier	LC-SFS-34-2019
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage)
Budget	EUR 21 million
Indicated Proposal Range	EUR 7 million

Specific Challenge:

Nutritional imbalances in both Europe and Africa are increasing, characterised by growing diet-related, non-communicable diseases and persistent under-nutrition. The UN projects that the global population will increase from 7 billion to more than 9 billion by 2050[1], of which the majority is expected to occur in Africa. To anticipate such population growth and challenges associated with enhanced climate change, agricultural systems need to become more sustainable and better linked to nutrition performance by strengthening the agro-biodiversity of resilient cropping systems, thereby increasing the range of food products for a balanced, healthy diet. Furthermore, resource-efficient, resilient food value chains need to be developed to deliver sufficient, safe, affordable and nutritious food to local consumers and for high value global markets. Africa has a wealth of local varieties, food intelligence and healthy African diets including plant based proteins, which are currently largely untapped and not reaching the market, neither in African cities nor in Europe.

Scope:

Proposals shall assess and deliver better nutrition performance of African farming systems, strengthening the agro-biodiversity (and integrated aquaculture systems) and food diversity. They shall address innovative approaches in local food systems while covering technological, food safety, social and gender issues[2], and address sustainable postharvest technologies, including bio-based packaging, to reduce food waste along the post-harvest/consumer chain and plastic littering. Empowerment of small farmers (including aquafarmers) and processors benefitting rural areas leading to diversity of diets and improving food identity is essential. Food supply chains (conventional and organic) for both local urban markets and high value global markets shall be targeted. Proposals need to ensure the commitment and participation of a variety of partners established in the EU and in Africa, and shall establish relevant links with other projects involved in the EU-Africa Research and Innovation Partnership on Food and Nutrition Security & Sustainable Agriculture (FNSSA). Proposals should include a task to cluster with other projects involved in the EU-Africa R&I Partnership on FNSSA and with the cooperation platform established under SFS-33-2018.

The Commission considers that proposals following a multi-actor approach including civil society organisations requesting a contribution from the EU of the order of EUR 7 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

In the framework of SDG no 1, 2, 3, 8, 10, 12, 13, 15 and 17, the EU-Africa R&I Partnership on FNSSA[3], the EU's Bioeconomy Strategy 2012, and the FOOD 2030 SWD[4], proposals shall describe how projects can contribute to:

- Improved food systems resulting in sustainable, healthy African diets (comparable to the Mediterranean diet) that on the short term are to become mainstream in 10 African cities;
- Empowerment of small farmers (including aquafarmers) combined with sustainable growth of food chain operators (SMEs) in rural areas in Africa, both for internal markets and export;
- New market opportunities for novel food products, tools and processes applicable in Africa that are taking into account food safety issues across the entire food value chain (e.g. improved food storage under mycotoxins free conditions) and reduce food waste;
- Significant reduction of malnutrition in Africa and particularly in relation to children, including those within the first 1,000 days of life, by implementing nutritional recommendations (proportion/figures to be specified in the proposals as well as reflections on specific food strategies for crisis and civil war situations);
- Major progress towards the establishment of the EU-Africa Research and Innovation Partnership on FNSSA and impact at local level;
- Development and implementation of pilot innovation actions for the benefit of African and European consumers at TRL 4-5.

Cross-cutting Priorities:

RRI
Gender
Socio-economic science and humanities
International cooperation
Blue Growth
[1]http://www.un.org/en/development/desa/news/population/2015-report.html
[2]Applicants may be interested in a separate but connected call topic on " Implementation research for maternal and child health" under Societal Challenge 1.
[3]Joint communication to the EP and Council for a renewed impetus to the Africa-EU Partnership', JOIN (2017) 17
[4]European Research and Innovation for Food and Nutrition Security, SWD(2016)319. http://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/SWD-2016-319-F1-EN-MAIN.PDF

SFS-35-2019-2020: Sustainable Intensification in Africa

Call identifier	SFS-35-2019-2020
Type of Call	Research and Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 (First Stage) 04 Sep 2019 (Second Stage) *The 2020 indicative deadlines are not yet available*
Budget	EUR 35 million *The 2020 indicative budgets are not yet available*
Indicated Proposal Range	EUR 7.5 million for sub-topic A and EUR 5 million for sub-topic B Sub-topics: C. [2019]: African Farming Systems, sustainable intensification pathways D. [2019]: Soil system for Africa

Specific Challenge:

African and European agriculture share the common challenge of moving towards more sustainable ways of agricultural production. Both regions aim to ensure food production and reduce the environmental impact of agricultural activities in the face of climate change, more unpredictable water supply and increased degradation of (land) resources. Systems approaches are needed to optimise agricultural productivity as well as the delivery of ecosystem services.

Scope:

A. [2019]: African Farming Systems, sustainable intensification pathways (RIA)

Activities shall seek to implement and test systems approaches for the sustainable intensification of primary production in Africa, taking into account its long term economic support to local communities. The proposed research should address the improvement of agricultural practices by tackling land and water management (including land degradation where appropriate) plant protection and pest control (including integrated pest management) and sustainable soil management (including its quality and nutrients uptake) for sustainable intensification. The importance of traditional agricultural practices like grazing methods, livestock, crops and legumes should be duly reflected. Emphasis should be given to farming systems that support restoration of land, increase land productivity and/or bring land back into production. Proper attention should be given to the importance of gender in African agricultural production.

For proper analysis, a range of different systems should be included (e.g. organic farming, agroecology, agroforestry). While presenting results the importance of scale of the analysis and its applicability should be taken into account. The analysed systems should include socio-economic aspects, analyse its resilience to climate change, farm income and where pertinent also cultural aspects of farming. Preference will be given to proposals focusing on specific regions of Africa.

Proposals fall under the concept of the 'multi-actor approach'[1]. Proposals should include a task to cluster with other projects financed under the topic and with the cooperation platform established under SFS-33-2018.

B. [2019]: Soil system for Africa (RIA)

For the implementation of the EU-Africa R&I Partnership on FNSSA a comparable and open database on agricultural soils information is needed. It is expected that a minimum of 20 000 sampling points will be sufficient to create a database with standard soil properties (a similar procedure to the one used for LUCAS[2] - European database - should be developed).

The soil samples will only be taken from the agricultural land and analysed by one laboratory for the: physical and chemical parameters. As a minimum the following parameters should be analysed: particle size (clay, silt and sand content), pH (acidity and alkalinity), organic carbon, carbonate content, phosphorus content, total nitrogen content and extractable potassium content. In addition an analysis of heavy metal content and other chemical residues in selected sub-samples might be proposed in order to assess the risk of soil contamination. Based on the analysed samples a set of indicators for monitoring of state of land soil, water and ecosystem should be proposed. Other physical, chemical and biological parameters for soil test might be proposed along with the specific indicators for which they will be used. The indicators should be developed as a part of the long-term implementation of FNSSA and its contribution to the SDGs discussion. Presentation of data should be provided in an open data and map viewer and should include four aspect pictures of where the soil sample was taken and should link with open earth data from e.g. the Copernicus programme and the project funded under H2020 topic SFS-43-2017[3]. It is expected that the open database will contain at least a minimum of 20 000 soil sample analysed by one laboratory. The final methodology should be developed in

cooperation with and validated by the Joint Research Centre and the Global Soil Partnership – ITPS African members.

Proposals should include a task to cluster with other projects financed under the topic and with the cooperation platform established under SFS-33-2018.

The Commission considers that proposals requesting a contribution form the EU of up to EUR 7.5 million for sub-topic A and EUR 5 million for sub-topic B would allow this specific challenge to be addressed properly. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

In the short to medium term:

- Boost the impact of Africa-EU joint research at local level by addressing the entire value-chain, strengthening capacity-building and focusing on demonstration projects and pilot actions to bring research and innovation results to the users (sub-topic A);
- Provide simple tools and solutions for preserving and increasing natural resources of specific agro-system (sub-topic A);
- Identification of methods and tools for improving soil condition for water retention, increase in nutrient and organic matter (sub-topic A);
- Proposed methods and solutions for different farming systems should include potential of transferability and scale at which solution can be implemented (sub-topic A).
- Solutions and tools for increasing farm income within sustainability of long term farming (sub-topic A);
- Based on the soil sample analysis, provide a set of key indicators for soil assessment in Africa (sub-topic B).

In the long term: for sub-topic A - improve agricultural production potential and income of farmers and for sub-topic B- provide an open soil dataset with a set of key indicators with methodology for which soil samples and the time line of indicators can be independently repeated in support of monitoring of soil and land degradation. The set of indicators should as much as possible support the relevant SDGs implementation discussion.

Delegation Exception Footnote:
It is expected that this topic will continue in 2020

Cross-cutting Priorities:

RRI
Gender
International cooperation
Socio-economic science and humanities
[1]See definition of the 'multi-actor approach' in the introduction to this Work Programme part.
[2]Number of publications related to LUCAS soil component can be found under the following link: http://esdac.jrc.ec.europa.eu/resource-type/documents
[3]https://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-food_en.pdf

DT-BG-04-2018-2019: Sustainable European aquaculture 4.0: nutrition and breeding

Call identifier	DT-BG-04-2018-2019
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019
Budget	EUR 6 million
Indicated Proposal Range	EUR 6 million

Specific Challenge:

European aquaculture[1] provides 1.25 million tonnes of seafood annually[2], valued at over 4 billion euro. However, Europe heavily depends on external markets to ensure consumer demands for seafood (including from fresh water) is met. EU aquaculture needs to increase the competiveness of its food products and to respond to consumer demands for high-quality and safe food, in a challenging context of climate change, greater competition for natural resources, and conflicting interests for space and markets. To ensure food and nutrition security by 2030, European aquaculture has to sustainably expand in terms of space, production and new value chains, exploring and enhancing innovation opportunities offered by sustainable and resilient aquaculture production systems, implementing the circular economy principles and increasing social acceptance of the corresponding activities and products. European aquaculture has now a unique opportunity to address not only today's challenges of climate change and food and nutrition security, but also to implement the international commitments encompassed in the UN SDGs, while fostering economic growth and social prosperity.

Scope:

Activities shall develop smart breeding programmes and/or tailor feeding formulas and technologies for conventional and organic aquaculture – for marine and/or freshwater - targeting animal health (contributing to disease resistance) and welfare, different production systems, feeding efficiency, resilience and climate change mitigation - when applicable, including related traits and possible links between them (synergies, trade-offs) -, zero waste, by-products valorisation following circularity principles and organoleptic and nutritional values of seafood optimisation. Efforts to close the reproduction cycle of economically important species should be considered. In addition, activities shall explore the potential of the microbiome on health and productivity of farmed species.[3] Activities shall consider sound cost-effective production methods and profitability, testing, demonstrating and upscaling of the production processes to pre-commercial product. Regulatory authority and consumers should also be consulted, addressing their concerns and demands. The use of Internet of Things (IoT) and Artificial Intelligence (AI) should be considered. The participation of deep-tech start-ups is encouraged. Activities shall develop a set of indicators to monitor and measure progress towards the expected impacts as listed in the call text and in particular the improvement of the production systems that increases productivity, resilience and sustainability. The interdisciplinary and cross-sectorial nature of the project should also apply to training activities improving the professional skills and competencies and supporting the creation of new jobs in the blue economy.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 6 million would allow this specific challenge to be adequately addressed. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Expected Impact:

Contributing to the ongoing implementation of EU policies such as the Bioeconomy Strategy, the Circular Economy Strategy, the Blue Growth Strategy, the Common Fisheries Policy, the Marine

Strategy Framework Directive, the priorities defined in the European Commission Staff Working Document FOOD 2030[4], as well as international policies and initiatives such as the UN SDGs, the EU Biodiversity Strategy, the BLUEMED Initiative, the Atlantic Ocean Research Alliance and the BIOEAST Initiative, activities shall:

In the short term:

- Demonstrate that investment in sustainable aquaculture research and innovation leads to the creation of new value chains, markets, growth and jobs in coastal, offshore and landlocked areas.
- Improve consumers' awareness, perceptions and acceptability of the European aquaculture products and methods.
- Contribute to the creation of improved sustainable aquaculture systems and implement productive and resilient aquaculture practices that maintain healthy aquatic ecosystems and strengthen capacity for adaptation to climate change, by 2020 (UN SDG 2).
- Contribute to ensure the genetic diversity of farmed algae (micro and macro) and farmed aquatic species (fish, molluscs and crustaceans) and their related wild species, and promote access to the utilisation of genetic resources by 2020 (UN SDG 2).

In the medium term

- Contribute to increasing available, accessible, affordable and nutritious food and feed, while conserving natural resources and contributing to climate change mitigation (UN SDG 2).
- Improve the professional skills and competences of those working and being trained to work within the blue economy.
- Contribute to policymaking in research, innovation and technology.

Cross-cutting Priorities:

Blue Growth
International cooperation
Socio-economic science and humanities

[1]In this context, 'Aquaculture' comprises the farming of aquatic organisms (including fish, shellfish, algae and aquatic plants) in all types of controlled or natural water environments (fresh, brackish and seawater).

[2]http://www.europarl.europa.eu/atyourservice/en/displayFtu.html?ftuId=FTU_5.3.7.html

[3]Two other topics under the SC2 Sustainable Food Security Call will address related issues on terrestrial animal welfare and the influence of microbiomes on terrestrial livestock health (SFS-02-2020: Healthy livestock gut ecosystem for sustainable production; and SFS-09-2018-2019: Increasing animal welfare).

[4]European Research and Innovation for Food and Nutrition Security, SWD(2016)319. http://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/SWD-2016-319-F1-EN-MAIN.PDF

CE-RUR-08-2018-2019-2020: Closing nutrient cycles

Call identifier	CE-RUR-08-2018-2019-2020
Type of Call	Innovation action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019 *The 2020 indicative deadlines are not yet available*
Budget	EUR 8 million
Indicated Proposal Range	EUR 8 million for sub-topics B and C in 2019 and 2020 respectively

	Sub-topics: B.[2019] Bio-based fertilisers from animal manure C.[2020] Bio-based fertilisers from other by-products of the agro-food, fisheries, aquaculture or forestry sectors (IA)

Specific Challenge:

The EU depends strongly on external sources for the supply of key fertilisers used in agriculture. Resource depletion and an increasing global demand for mineral fertilisers may, in the long term, lead to price tensions with an impact on food security. Mineral-based fertilisation also poses significant environmental problems, linked e.g. to the amounts of fossil energy needed to produce and transport these fertilisers. At the same time, large amounts of minerals are being dispersed in the environment through a large variety of organic waste streams, resulting in soil, water and air pollution. Agro-food specialisation has led to regional imbalances: whilst in some regions a nutrient overabundance is causing severe environmental impacts (e.g. nitrate pollution), other are experiencing nutrient deficits. These contrasting effects may also be observed between locations within the same region.

Several technologies are being developed to recover and re-use nutrients from organic by-products, but many are insufficiently mature and the characteristics of end-products do not always match end-user preferences. It is expected that the EU 'circular economy package' will boost the emergence and commercialisation of such new fertilisers, hence it is important to understand their agronomic and environmental performance in order to establish adequate policies, guidelines and application rules.

Scope:

Proposals shall address inter-regional and intra-regional imbalances through effective nutrient recovery from by-products of the agro-food or the forestry sectors, and conversion into novel fertilisers. Proposals should include a task to cluster with other projects financed under this topic, under topic SFS-39-2019 and – if possible – with other relevant projects in the field funded by Horizon 2020 (including under the BBI JU).

Proposals should address only one of the following sub-topics:

A. [2018] Understanding properties and impacts of bio-based fertilisers (RIA)

B. [2019] Bio-based fertilisers from animal manure (IA)

Projects shall demonstrate processes for recovery of mineral nutrients and production of novel fertilisers from animal manure. Proposals shall perform a thorough analysis of the state of the art, and demonstrate that the activities proposed go beyond past or ongoing research, without overlaps. Technologies that are currently under development shall be further improved, and possibly integrated, to produce high quality end-products[3]. Proposals shall address end-product marketability, safety, sustainability including emissions of greenhouse gasses and pollutants, and compliance with relevant EU regulations[4]. Their suitability and acceptability under the organic farming regulatory framework shall also be analysed. An integrated assessment of the business model (economic, agronomic, social and environmental) shall be performed. The whole value chain shall be demonstrated to a near-commercial scale (TRL 6-7). Proposals shall fall under the concept of the 'multi-actor approach'[5] including relevant actors such as agro-food industries, technology providers, research centres, end-users (farmers and farmer associations), or public administration.

C. [2020] Bio-based fertilisers from other by-products of the agro-food, fisheries, aquaculture or forestry sectors (IA)

The Commission considers that proposals requesting a contribution from the EU of up to EUR 6 million for sub-topic A and 8 million for sub-topics B and C would allow this specific challenge to be addressed appropriately. Nonetheless this does not preclude the submission and selection of proposals requesting other amounts. For sub-topics B and C, participation of partners from CELAC countries[6] is encouraged.

Expected Impact:

Proposals are expected to provide the technologies needed to develop a new generation of commercial, sustainable and safe fertilisers based on organic by-products, and the scientific knowledge needed to frame their use. This will help to:

- set up a coherent policy framework for the sustainable production and use of organic-based fertilisers (sub-topic A);
- replace conventional, non-renewable mineral fertilisers, hence reducing external dependence and risks related to depletion (sub-topics A, B and C);
- balance nutrient concentrations between or within regions, thus increasing resource efficiency (sub-topics A, B and C);
- reduce the environmental impacts linked to the dispersion of nutrients present in waste flows, or to the production of fossil-based fertilisers (sub-topics A, B and C);
- develop new business models creating value from agro-food, fisheries, aquaculture or forestry by-products (sub-topics B and C).

In the long term, this shall contribute to a thriving, sustainable and circular bio-economy, the development of new business models that are synergic with other economic sectors, and therefore to the creation of wealth and quality jobs in rural areas.

Delegation Exception Footnote:
It is expected that this topic will continue in 2020

Cross-cutting Priorities:

Socio-economic science and humanities
Blue Growth
RRI
[1]This shall include both products with low organic matter (comparable to current mineral fertilisers) and products with high organic matter content (advanced organic fertilisers)
[2]Including the production, transport and use phases.
[3]These can be mineral-type (i.e. with low organic matter content), or advanced organic fertilisers (e.g. through improved composting processes).
[4]This includes notably regulations relative to fertilisers, animal by-products, or nitrates.
[5]See definition of the 'multi-actor approach' in the introduction to this Work Programme part.
[6]Community of Latin American and Caribbean States

LC-RUR-11-2019-2020: Sustainable wood value chains

Call identifier	LC-RUR-11-2019-2020
Type of Call	Innovation action
Opening Date	16 Oct 2018

Deadline (s)	23 Jan 2019 *The 2020 indicative deadlines are not yet available*
Budget	EUR 20 million
Indicated Proposal Range	EUR 10 million for sub-topic A and 5 million for sub-topic B Sub-topics: C. [2019] Building with wood D. [2020] Resilient forest systems

Specific Challenge:

Forests play a vital role in Europe's economy, society and environment[1]. Scenarios likely to keep the global warming below 2°C (Paris Agreement goal) would entail a substantial reduction of anthropogenic GHG emissions, through far-reaching changes to energy systems, land use and associated value chains. The second consumer-driven factor of GHG emissions is the construction sector (ca. 15%), implying a significant role for forest-based products. The forest-based sector can contribute to climate change mitigation through increasing sinks in and reducing emissions from living biomass, soils and wood products, and the substitution of non-renewable resources through the sustainable use of material and energy use of wood-based materials. The combined sink and substitution effects of wood value chains can provide a key mitigation option, provided that changes in fossil and biogenic carbon are taken into account in a comprehensive and balanced manner. Climate change is at the same time increasing forests' vulnerability. Several research projects[2] and COST Actions[3] launched in FP7 looked into the development of innovative, resource efficient wood-based products. While ensuring the sustainability of forest production systems under changing climate conditions remains a long-term objective for the sector, a key challenge now is to further develop and deploy the technological advancements of environmental and micro/macroclimate-friendly wood-based value chains on the ground.

Scope:

A. [2019] Building with wood:

Proposals shall develop and test new technologies and environmental friendly solutions for the use of wood-based materials in the (re)construction and/or retrofitting of buildings. Proposals should also explore options for building with wood in combination with composite/hybrid materials, linkages with other nature-based solutions, make use of ICT, and consider LCA and carbon accounting, 'environmental documentation' (i.e. product definitions, standards and construction codes), performance standards, public policies and regulations, consumer perception and engagement/co-creation. Activities could include limited research and shall produce 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. Proposals shall ensure that relevant actors (researchers, citizens, policy makers from urban/rural areas, businesses, architects, site-managers, etc.) work together during the whole research and innovation process in order to better align the process and its outcomes with the societal values, needs and expectations.

B. [2020] Resilient forest systems

Both sub-topics (A and B) are suitable for INCO and SMEs participation, and are expected to integrate technology with SSH and RRI aspects.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 10 million for sub-topic A and 5 million for sub-topic B would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

In the framework of SDG 9, 11, 13 and 15, the EU's Bioeconomy Strategy 2012, the EU's Forest Strategy 2013, the Circular Economy Package 2015 and Paris Agreement 2015, proposals are expected to assess how they will contribute to:

- Increased resource and/or energy efficiency and added value and minimising pollution and the environmental footprint (emissions of GHG and air pollutants included) in the construction sector in the cities, by specific amounts/proportions to be specified in the proposals, by 2030 [sub-topic A];
- Enhanced connectivity of rural-urban areas and their overall contribution to a resilient, circular and competitive, forest-based bioeconomy, by 2025 [sub-topic A];
- Increased long-term resilience of forest production systems and associated value chains to enhanced climate/environmental change and societal demand [sub-topic B];
- Enhanced contribution of forest-based sector to long-term climate change mitigation, adaptation and rural development objectives [sub-topics A & B];
- Also in the long-term, prompt a sizeable positive change to European landscapes and economies, by keeping the countryside green and serving to make the cities greener, and increasing the share of both decent and green jobs [sub-topics A & B].
- Advance available solutions from TRL 4-5 to TRL 6-7 for sub-topic A and from TRL 3-4 to TRL 5 sub-topic B

Delegation Exception Footnote:

It is expected that this topic will continue in 2020

Cross-cutting Priorities:

International cooperation
Socio-economic science and humanities
[1]Forests cover more 40 % of the EU's landmass, represent 70 % of Europe's freshwater repository, remove the equivalent of 9 % of GHG emitted by other parts of the economy, and provide for a wide range of other social, economic and ecological services. The forest-based sector provides income for 16 million forest owners and 3-4 million workers in rural areas, and represents some 8% of the EU's total manufacturing value.
[2]e.g., BEST, BOOSTEFF, CUTEWALL, HIFIVENT, OSIRYS, PERFORMWOOD, REACTAFIRE, SUSTAINCOMP, WOOD-FLARETCOAT
[3] e.g. FP 1004, 1006, 1101, 1105

RUR-15-2018-2019-2020: Thematic networks compiling knowledge ready for practice

Call identifier	RUR-15-2018-2019-2020
Type of Call	Coordination and support action
Opening Date	16 Oct 2018
Deadline (s)	23 Jan 2019

Budget	EUR 10 million
Indicated Proposal Range	EUR 2 million

Specific Challenge:

Despite the continued funding of scientific projects, innovative ideas and methods from practice are not captured and spread, while also research findings are often not integrated into agricultural and forestry practice. It is essential to close the research and innovation divide and to act at EU level. National and sectoral agricultural knowledge and innovation systems (AKISs) are insufficiently connected to fully meet this challenge. More intense cooperation is needed between researchers, advisors and farmers/foresters to stimulate the exchange of knowledge in view of fostering economically viable and sustainable agriculture and forestry.

Scope:

The activities of thematic networks focus on summarising, sharing and presenting, - in a language that is easy to understand and is targeted to farmers and foresters - existing best practices and research findings that are near close to being put into practice, but not sufficiently known or used by practitioners. The specific themes of the networks can be chosen in a 'bottom-up' way and must focus on the most urgent needs of farmers and foresters. If appropriate, they can cover important or promising cross-sectoral issues. They should pay attention to the cost/benefit aspects of the new practices. A comprehensive description of the state of the art on the chosen theme should explain the added value of the proposal, the relevance of the theme and how it avoids duplication with ongoing or completed projects and networks. If duly substantiated, proposals may focus on the widening of an existing thematic network. 'Widening' could apply to content and/or geographic coverage (e.g. through twinning or cross-border exchange visits). In order to better reach and capture knowledge from the targeted farmers/foresters, the networks may organise 'cross-fertilisation' through sub-networks covering, for example, a region, a language or a production system.

The result of the project should be an extensive range of appealing end-user material. This information should be easily to access and understand, and feed into the existing dissemination channels most consulted by end-users in countries. It should also be provided to the European Innovation Partnership (EIP) 'Agricultural Productivity and Sustainability'. Proposals should fall under the concept of the 'multi-actor approach'[1], with a consortium based on a balanced mix of actors with complementary knowledge involving farmers/foresters, farmers' groups and advisors. Wherever possible and relevant to the chosen theme, synergies and complementarity with EIP Operational Groups and interactive innovation groups operating in the context of the EIP-AGRI are encouraged, and, if useful, with other European Structural and Investment Fund projects. In the exceptional event that minor testing of specific solutions would be needed, a maximum of 20% of the project budget may be used for this purpose.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 2 million per project would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Expected Impact:

Activities must contribute to the collection and distribution of easily accessible practice-oriented knowledge on the thematic area chosen, including delivering as many as possible “practice abstracts” in the common EIP-AGRI format and as much audio-visual material as possible. The aim is to:

- conserve the practical knowledge for the long term - beyond the project period - using the main trusted dissemination channels which farmers/foresters consult most often, and also serve education and training purposes;
- increase the flow of practical information between farmers/foresters in Europe in a geographically balanced way, creating spill-overs and taking account of the differences between territories;
- achieve greater user acceptance of collected solutions and a more intensive dissemination of existing knowledge.

Delegation Exception Footnote:
It is expected that this topic will continue in 2020

Cross-cutting Priorities:

RRI
[1] See definition of the 'multi-actor approach' in the introduction to this Work Programme part.

Societal Challenge 5

LC-CLA-09-2019: ERA-NET Cofund action on biodiversity and climate change: Impacts, feedbacks, and nature-based solutions for climate change adaptation and mitigation

Call identifier	LC-CLA-09-2019
Type of Call	ERA-NET-Cofund
Opening Date	14 Nov 2018
Deadline (s)	19 Feb 2019
Budget	EUR 5 million
Indicated Proposal Range	EUR 5 million

Specific Challenge:

Climate change is predicted to pose the greatest long-term threat to biodiversity in many regions. It is affecting the habitats of many species, which must either adapt or migrate to areas with more favourable conditions. Biodiversity changes can have knock-on effects upon a range of ecosystem functions and services, including food and biomass production and capacity to mitigate and adapt to climate change. Feedback processes may amplify or diminish the effect of climate forcing, and so play an important part in determining the climate sensitivity to human activities and the future climate state.

Addressing the impact of climate change requires the mobilisation of all relevant actors: academia, research institutes, public authorities at various levels, manufacturing industry and business at large, finance and insurance, non-governmental organisations and civil society. A properly aligned European Research Area, which is also open to the world, can make an essential difference in enabling a transformative, climate-resilient sustainability agenda to take shape. The alignment of research and innovation agendas is therefore crucial in bringing about the necessary transformations.

Scope:

The Cofund action should examine: the impact of climate change on all levels of biodiversity, ecosystem functioning and ecosystem services; feedback processes; the potential of nature-based solutions for enhancing climate change adaptation, mitigation, including negative emissions; and

synergies and trade-offs between different policies, including those on biodiversity, climate action and air quality. The action should capitalize on major strands of knowledge and on the results of relevant projects funded under past EU Framework Programmes. The Cofund action will target all types of terrestrial, freshwater and marine environments, which may also include the impact of climate change on biodiversity and ecosystem functioning and services in agricultural areas and taking agricultural and forestry policies into account.

The Cofund action should be implemented through close cooperation between the Member States and Associated Countries grouped around the BiodivERsA network and in collaboration with the FACCE JPI. The Cofund action should envisage clustering activities with other relevant selected projects for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end, proposals should foresee a dedicated work package and/or task, and earmark the appropriate resources accordingly. The Cofund action should also take into account data and information from the Copernicus programme, as the European Union's Earth Observation Programme.

Proposals should pool the necessary financial resources from the participating national (or regional) research programmes with a view to implementing a joint call for proposals resulting in grants to third parties with EU co-funding in this area. Proposers are requested to include at least one additional joint call without EU co-funding as well as other activities such as the establishment or consolidation of a pan-European network of funding agencies and other key players in Europe, building on previous experience and avoiding overlaps with existing initiatives, support to mutual learning and training, exchange of good practice, researcher mobility and equal opportunities (e.g. through EURAXESS) and better careers in the field. Wherever relevant, actions should involve social sciences and humanities.
Participation of legal entities from third countries, and/or regions including those not automatically eligible for funding in accordance with General Annex A, is encouraged in the joint call as well as in other joint activities including additional joint calls without EU co-funding. Participants from countries not listed in General Annex A are eligible for EU funding under this topic and may request a Union contribution (on the basis of the ERA-NET unit cost) only for the coordination costs of additional activities. The proposal should demonstrate that these co-funded other activities exclude any overlaps with related on-going actions co-funded by the EU under Horizon 2020.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

The project results are expected to contribute to:

- effective trans-national, pan-European research networking and synergies among national/regional and EU research programmes in the areas addressed;
- improved evidence-based policy through the interdisciplinary and trans-disciplinary science-policy interface and links with international efforts and fora on the areas addressed;
- underpinning the EU Nature Directives, EU Water and Marine Strategy Framework Directive, EU Biodiversity Strategy, 7th Environment Action Programme, and the EU Strategy on adaptation to climate change;
- informing major international scientific assessments such as the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Intergovernmental Panel on Climate Change (IPCC) reports and contributing to the goals of the Paris Agreement;

- the protection, restoration and enhancement of natural capital in line with the work of the Convention on Biological Diversity (CBD), the IPBES, the IPCC and further relevant global processes and organisations.
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Cross-cutting Priorities:

ERA-NET

2019 Calls for Spreading Excellence and Widening Participation

WIDESPREAD-04-2019: ERA Chairs

Call identifier	WIDESPREAD-04-2019
Type of Call	Coordination and support action
Publication Date	26 Jul 2018
Deadline (s)	15 Nov 2018
Indicative Budget	EUR 30 million
Indicated Proposal Range	EUR 2.5 million

Specific Challenge:

With adequate institutional support outstanding researchers can have a decisive and positive impact on the culture and performance of research institutions. Yet issues such as the availability of research funding, institutional rigidities and access to resources can hamper their mobility to promising institutions, particularly in low R&I performing countries. ERA Chairs actions will address the specific challenge of creating the appropriate conditions for high quality researchers and research managers to move and engage with institutions willing to achieve excellence in the scientific domain of choice and modify their research and innovation landscape.

Scope:

The ERA Chairs actions will support universities or research organisations with the objective of attracting and maintaining high quality human resources under the direction of an outstanding researcher and research manager (the "ERA Chair holder") and in parallel implement structural changes to achieve excellence on a sustainable basis.

The scientific field can be any domain of research and innovation addressed under the Treaty on the Functioning of the European Union[1], however it needs to be closely connected with the activities of the ERA Chair holder and fully capitalise on his/her presence and expertise.

Research organisations interested in establishing an ERA Chair shall submit a proposal based on a strengths, weaknesses, opportunities, and threats (SWOT) analysis, aimed at structural change in the institution and ensuring that the conditions are in place to foster excellent research. Proposals should include arrangements for compliance with ERA priorities[2] including the European Charter for Researchers & Code of Conduct for the Recruitment of Researchers[3], a description of the necessary investments in research projects, facilities and infrastructures and how those will be achieved as, for example, through the use of Cohesion Policy funds, and/ or a better use of the installed research capacity (in particular of EU co-funded research infrastructures & facilities). Proposals should outline how the proposed activities will positively induce a change in current practices.

ERA Chair holders should be excellent researchers and research managers in the given field of research, with a proven record of effective leadership. They should establish their own research team fully integrated in the coordinator's institution to significantly improve its research performance in the scientific domain of choice and to be more successful in obtaining competitive funding. The ERA Chair holder should have a position within the organisation/university, professor or similar, that will allow her/him to make appropriate resource allocation decisions, supervise team members and freely apply for research funding. A letter of the head of the institution clearly describing the intended remuneration package of the ERA Chair holder and the criteria on which the level of remuneration[4] has been established, as well as his/her roles, level of responsibility and obligations should be included

within the proposal. This will allow for the determination of the commitment of the institution and feasibility of the ERA Chair tasks.

The position of the ERA Chair holder must be open to all EU and non-EU nationals but shall match the profile of an "Established Researcher (R3)" or "Leading Researcher (R4)" as set out in the European Framework for Research Careers [5]. Moreover, given the objectives of the action, internal mobility within the institution hosting the grant is excluded except in exceptional and duly justified cases. The appointment of an ERA Chair holder will be undertaken by the host institution at the beginning of the action and must follow an open, transparent and merit-based recruitment process that will be monitored by the European Commission.

It is expected that the Chair holder commits him/herself for the full duration of the grant. The ERA Chair holder is to be appointed in a full-time position (permanent or non-permanent) in accordance with the national legislation of the institution hosting the grant.

The grant that can have a duration of five years maximum will cover the appointment of the ERA Chair holder and a number of team members (e.g. their salaries, recruitment costs[6], administrative costs, travel and subsistence costs).

The grant will also provide a contribution towards measures aimed at facilitating structural changes in the institution (e.g. costs for trainings, meetings, publications and managing Intellectual Property Rights (IPR).While the action does not focus on equipment and consumables, these could be accepted if they constitute only a minor part of the total Horizon 2020 funding requested and are deemed necessary to fulfil the action's specific scope and objective). For grants awarded under this topic and type of action, the following cost categories will be ineligible costs:

- Infrastructure costs;

The respective option of Article 6.5.C of the Model Grant Agreement will be applied.

The Commission considers that proposals requesting a contribution from the EU of EUR 2.5 million, would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting lower amounts.

Expected Impact:

- Institutional changes within the ERA Chair host institution allowing for its full participation in the European Research Area.
- Increased attractiveness of the institution for internationally excellent and mobile researchers (including a policy of compliance to the European Research Area priorities like (an open recruitment policy, gender balance, peer review and innovative doctoral training).
- Increased research excellence of the institution in the specific fields covered by the ERA Chair holders illustrated quantitatively and qualitatively through indicators such as expected future publications in peer reviewed journals, collaboration agreements with businesses, intellectual property, new innovative products or services.
- Improved capability to compete successfully for internationally competitive research funding.

Cross-cutting Priorities:

Gender
[1]http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:12012E/TXT&from=en
[2]http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2012:0392:FIN

[3]http://eur-lex.europa.eu/eli/reco/2005/251/oj
[4]see page 40 of the Annotated Model Grant Agreement (AGA) at http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf
[5]https://cdn5.euraxess.org/sites/default/files/policy_library/towards_a_european_framework_for_research_careers_final.pdf
[6] That can be considered under the category of "other direct costs".

WF-02-2019: Widening Fellowships

Call identifier	WF-02-2019
Type of Call	MSCA Career Restart panel, Reintegration panel, Society and Enterprise panel, Standard European Fellowships
Publication Date	11 Apr 2019
Deadline (s)	11 Sep 2019
Indicative Budget	EUR 6 million

Specific Challenge:

The Marie Skłodowska-Curie actions (MSCA) contribute to boosting jobs, growth and investment by equipping researchers with the new knowledge, skills and international and inter-sectorial exposure to fill the top positions of tomorrow and solve current and future societal challenges. They are based on the principle of mobility, and researchers can receive funding on the condition that they move from one country to another to acquire new knowledge. The results from the first years of MSCA in Horizon 2020 also revealed the existence of a mobility gap across Europe and discrepancies between European countries in their ability to attract funding. To specifically address this gap in participation Widening Fellowships will provide an additional opportunity to researchers of any nationality to acquire and transfer new knowledge and to work on research and innovation in Widening countries.

Scope:

Support is foreseen for individual, trans-national fellowships awarded to researchers of any nationality, in Widening countries. Applications to the 2019 call for Marie Skłodowska-Curie actions Individual Fellowships (MSCA-IF), where the host organisation is located in an eligible widening country, will be automatically resubmitted to this call in case their proposal fails to reach an adequate place in the ranking to be funded in the regular MSCA-IF call[1]. Applicants who do not wish to be considered for this funding opportunity may opt out during the application stage.

The proposals submitted under the Widening Fellowships must fulfil all the admissibility and eligibility conditions of the Marie Skłodowska-Curie actions Individual Fellowships and pass all the thresholds for that call.
The award criteria, scoring and threshold for Marie Skłodowska-Curie actions apply to eligible proposals. Proposals will be ranked according to the 2019 MSCA-IF call scores and evaluation procedure and will retain scores and comments included in the Evaluation Summary Report (ESR) of the MSCA-IF call . The MSCA-IF model grant agreement and the unit costs applicable to MSCA-IF will also apply to the Widening Fellowships.

Expected Impact:

The expected impact indicated for the MSCA-IF-2019 Individual Fellowships call under the MSCA Work Programme will apply to this call.

In addition, the Widening Fellowships are expected to lead to the following:

1. Enhanced cooperation and stronger networks including widening countries.
2. Boosting of R&I capacity among participating organisations.
3. Increase in international, interdisciplinary and intersectoral mobility of researchers in Widening countries.

[1]The following "Types of Action" under MSCA-IF are eligible for resubmission: CAR – Career Restart panel, RI – Reintegration panel, SE - Society and Enterprise panel, Standard EF.