



Opportunities for Researchers from the Socio-economic Sciences and Humanities (SSH) in Horizon 2020

Analysis of SSH-relevant Topics
Work Programme 2018/20
Updated version



Main authors

Natalia Morazzo (APRE)

Marco Galeotti (APRE)

Contributors

Susanne Dragosits (FFG)

Stephanie Rammel (FFG)

Graphic Designer

Emanuela Dané (APRE)

©NET4SOCIETY, December 2017

www.net4society.eu

All rights reserved

Reproduction only with written consent by the coordinator

This publication reflects only the author's views

– the EU Commission is not liable for any use that may be made of the information contained therein.

NET4SOCIETY is the international network of National Contact Points for the Societal Challenge 6 "Europe in a changing world: inclusive, innovative and reflective societies" in Horizon 2020.

Project funded by the EUROPEAN COMMISSION

H2020-REFLECTIVE-SOCIETY-2014

REFLECTIVE-10-2014 - Grant Agreement 649180

Coordination and Support Action



Table of Contents

Introduction	5
Societal Challenges	
Societal Challenge 1 “Health, Demographic Change and Wellbeing”	7
Call – Better Health and care, economic growth and sustainable health systems	8
Call – Digital transformation in Health and Care	26
Call – Trusted digital solutions and Cybersecurity in Health and Care	39
Societal Challenge 2 “Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy”	42
Call – Sustainable Food Security	43
Call – Blue Growth	61
Call – Rural Renaissance	70
Societal Challenge 3 “Secure, Clean and Efficient Energy”	81
Call – Building a low-carbon, climate resilient future: secure, clean and efficient energy	82
Societal Challenge 4 “Smart, green and integrated transport”	115
Call – Mobility for Growth	116
Call – Automated Road Transport	129
Societal challenge 5 “Climate action, environment, resource efficiency and raw materials”	137
Call – Building a low-carbon, climate resilient future	138
Call – Greening the economy in line with the SDGs	145
Societal challenge 6 “Europe in a changing world: Inclusive, Innovative and Reflective Societies”	162
Call – Migration	163
Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution	170
Call – Governance for the future	181
Societal challenge 7 “ Secure societies: Protecting freedom and security of Europe and its citizens”	193
Call – Protecting the infrastructure of Europe and the people in the European smart cities	194
Call – Security	196
Industrial Leadership	
Information and Communication Technologies	211
Call – Information and Communication Technologies	212
Call – Cybersecurity	228
Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing	230
Call – Foundations for tomorrow’s industry	231
Call – Transforming European industry	232
Call – Industrial sustainability	238



Space	241
Call – Earth Observation	242
Innovation in SMEs	243
Call – For a better innovation support to SMEs	244
Excellent science	
Future and Emerging Technologies	245
Call – FET-Open: Novel ideas for radically new technologies	246
Call – FET Proactive: Boosting emerging technologies	248
Research Infrastructures	250
Call – Development and long-term sustainability of new pan-European research Infrastructures	251
Call – Implementing the European Open Science Cloud	253
Call – Integrating and opening research infrastructures of European interest	254
Call - European Data Infrastructure	257
European Research Council	259
ERC – Starting Grant	260
ERC – Consolidator Grant	261
ERC – Advanced Grant	262
Marie Skłodowska-Curie Action	263
Innovative Training Networks	264
Individual Fellowships	266
Research and Innovation Staff Exchange	268
Co-funding of regional, national and international programmes	270
European Researchers’ Night	272
Science with and for Society	273
Call - Science with and for Society	274
Spreading Excellence and Widening Participation	295
Call - WIDESPREAD	296
Call - Widening Fellowships	300



Introduction

This document is designed to help potential proposers find SSH-related topics across the different parts of Horizon 2020 in Work Programmes 2018-20.

SSH in H2020

Horizon 2020 aims at fully integrating Socio-economic Sciences and Humanities (SSH) in each of its pillars and specific objectives. SSH is therefore a cross-cutting issue and integrated in the whole framework programme. While SSH research aspects are particularly present in the societal challenge 'Europe in a changing world: Inclusive, innovative and reflective societies', they are also present in all other challenges and in other parts of Horizon 2020.

H2020 requires applicants to submit proposals and build consortia that transcend disciplinary and sectorial boundaries, bringing together scholars from SSH and from life and physical sciences, technology, engineering and mathematics (STEM) as well as researchers and practitioners across these fields.

The SSH encompass a wide range of disciplines such as sociology and economics, psychology and political science, history and cultural sciences, law and ethics. Contributions from these research and activity fields are needed under Horizon 2020 to generate new knowledge, support evidence-based policymaking, develop key competences and produce interdisciplinary solutions to both societal and technological issues.

SSH-flagged topics across H2020

To assist SSH researchers in identifying funding opportunities, the European Commission (EC) has established a search engine within its online [Participant Portal](#). Certain topics with substantial SSH aspects have been “flagged” by the EC as [SSH-relevant topics](#) and the search engine offers the possibility to directly search for these SSH “flagged” topics. It also allows for keyword and full-text search.

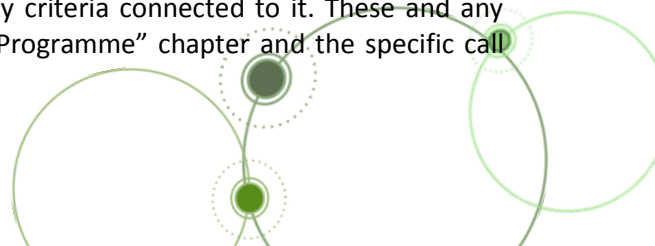
This document compiles the “SSH-flagged topics” and is based on the analysis of SSH relevant topics carried out jointly by the thematic services and Unit B.6 Open and Inclusive Societies of the EC Directorate-General for Research and Innovation. The document also includes a few additional topics that, while not flagged, may require the contribution of Social Sciences and Humanities researchers.

This document serves as a guideline and is meant to demonstrate the wealth of possibilities for scientists in Socio-economic Sciences and Humanities within Horizon 2020 and includes:

- SSH-DEDICATED TOPICS: topics where SSH aspects dominate the text,
- SSH-RELEVANT TOPICS: topics with substantial relevance to the SSH community. In these topics, SSH aspects are indicated in **bold text**,
- TOPICS WITH MINOR SSH RELEVANCE: short information is provided (title and link to the Participant Portal)

Researchers are strongly encouraged to screen the Work Programmes themselves, in order not to lose out on research opportunities offered to their specific interest. In any case, the Work Programmes need to be read in more detail to be aware about the overall approach of the Theme, the context of the topics, rules for participation and other specific requirements. At the same time, the topic texts may include footnotes with more information, which could not be included in the compiled topic texts within this document.

Of special importance are the “type of action” and the eligibility criteria connected to it. These and any other relevant information can be found in the specific “Work Programme” chapter and the specific call



document. All the relevant documents can be downloaded from the Participant Portal. The specific links are provided for topic in the respective chapters.

The structure of the document is determined by the degree of SSH integration in the different Horizon 2020 programme parts. Instead of following the numerical order of the different parts in Horizon 2020 (*I. Excellent science, II. Industrial leadership, III. Societal challenges*), this report starts with the part that includes “top down” topics and the highest amount of SSH research dimensions, the *societal challenges*. It continues with the “Leadership in enabling and industrial technologies” of the *Industrial leadership* part. In the following chapter, SSH aspects in *Excellent science* are presented (mostly “bottom up” opportunities). Last but not least, the SSH-relevant topics in “Science with and for society” and in “Spreading Excellence and Widening Participation” are included.

SSH Opportunities in ERA-Initiatives

Topics that clearly address research funding agencies and not researchers, such as ERA-Net topics, are not included.

To support researchers in finding European funding opportunities in ERA-calls, Net4Society performs a regular monitoring and publishes up-to-date information on SSH-relevant calls of ERA-Nets, Joint Programming Initiatives, Joint Technology Initiatives or Article 185 Initiatives.

Open calls are available online on the Net4Society website under www.net4society.eu/public/408.php

This document includes information on topics for 2018 and 2019.

An update for 2020 topics will be published at the end of 2018.

DISCLAIMER

Information on calls might be subject to change. Researchers need to consult the Participant Portal for receiving the latest information on calls.

Net4Society has made every attempt to ensure the accuracy and reliability of the information provided in this document. However, the information is provided "as it is" without warranty of any kind. Net4Society does not accept any responsibility or liability for the accuracy, content, completeness, legality, or reliability of the information contained in this document.

Net4Society (www.net4society.eu) is the international network of National Contact Points for the Societal Challenge 6 "Europe in a changing world: inclusive, innovative and reflective societies" in Horizon 2020.





Societal Challenge 1

Health, Demographic Change and Wellbeing

Call – Better health and care, economic growth and sustainable health systems

SC1-BHC-01–2019: Understanding causative mechanisms in co- and multimorbidities

Specific challenge

The increasing number of individuals with co- and multimorbidities poses an urgent need to improve management of patients with multiple co-existing diseases. A better understanding of their causative mechanisms is needed to develop early diagnosis, efficient prevention and monitoring, and better treatments adapted to co- and multimorbid patients throughout their life course. Furthermore, there are many different etiological models of comorbid conditions (e.g., direct causation model or a consequence of treatment). **In this context, capturing and measuring patient's complexity in the context of co- and multimorbidities is crucial for adequate management of these conditions and requires innovative approaches.**

Scope

Proposals should identify and validate causative mechanisms (e.g. molecular, genetic, correlative, drug-drug interaction) combining mental and physical disorders through the integration of basic, pre-clinical and/or clinical research. Applicants should prove the relevance of the identified mechanisms for co-morbid development. Where pertinent, development of biomarkers and other technologies for diagnosis and monitoring of comorbid conditions in patients is encouraged. A purposeful exploitation of existing data, biobanks, registries and cohorts is expected, but does not exclude generation of new data. **Sex and gender aspects, age, socio-economic, lifestyle and behavioural factors and any other non-health related individual attributes should be taken into consideration.** SME participation is strongly encouraged.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 6 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

- New directions for clinical research to improve prevention, diagnosis, prognosis, therapy development, and management of co- and multimorbidities.
- Whenever relevant identified biomarkers for more accurate and earlier diagnosis, prognosis as well as monitoring of patients' condition.

Type of action	Research and Innovation action
Deadline	1st stage - 02 October 2018 2nd stage - 16 April 2019
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-01-2019.html



Call – Better health and care, economic growth and sustainable health systems

SC1-BHC-05-2018: International flagship collaboration with Canada for human data storage, integration and sharing to enable personalised medicine approaches

Specific challenge

The EU has ample experience in building and running data repositories to support biomedical research. Notable initiatives are ELIXIR and the European Genome-phenome Archive, storing many types of data up to the population-wide level. Similar expertise exists in Canada notably via IHEC (International Human Epigenome Consortium) and its Data Portal as well as PhenomeCentral, a repository for clinicians and scientists working on human rare disorders.

There is a recognised need for tools that allow researchers to manage, exchange and preserve their data efficiently. Data repositories are scattered around the world and often do not use compatible data standards. There is a pressing need for better integration of public repositories, coordinated data sharing and sustainable storage of high value data. Apart from hardware and maintenance costs, the cost of data curation, a necessary element to foster progress in biology and medicine, also needs to be considered.

Scope

To build a collaboration of stakeholders in Europe and Canada in the domain of repositories storing and sharing human –omics data that will create a framework for long-term cooperation. In order to do so, this programme aims to enhance and standardise data deposition, curation and exchange procedures thus ensuring better data reuse and increased benefit to the scientific communities worldwide. The selected projects should build on the data quality metrics, standards and access policies developed by major international initiatives (e.g., IHEC, ICGC, IHMC, MME).

Considering the existing data policies, projects should develop approaches that integrate data from disparate sources and include one or more of the following elements:

- Data models that guarantee the interoperability of human health research data from different repositories and integrate different types of –omics data and, where relevant, clinical research and lifestyle data. The data models should take into account sex/gender differences where relevant. The projects should build on existing research infrastructures such as –omics repositories, biobanks and registries.
- Reference architecture for data and process interoperability.
- Technologies and methodologies for data harvesting, data access, data transfers, and archiving complex datasets.
- Bioinformatics toolbox to support the analysis and management of data on diseases from a personalised medicine standpoint.
- **International ethical and legal governance model for a research data management and storage infrastructure and an associated data management plan** compliant with the required level of data security and privacy that is aligned with the recent recommendations of the OECD Council on Health Data Governance.

This topic raises important issues of **data sharing, privacy protection, informational right to self-determination and data security, which should be addressed from a legal, ethical as well as a social sciences perspective**. It is important that proposals enable sustainable, collaborative projects and ensure cross-references with existing infrastructures (e.g., BBMRI-ERIC, ELIXIR) and other on-going initiatives (e.g., International Consortium for Personalised Medicine, European Open Science Cloud, IHEC, etc.). Synergies should be sought with other projects (e.g. calls under the Innovative Medicines Initiative (IMI) and running IMI projects). The proposals should take stock of the BBMRI-ERIC Code of Conduct for using personal data in health research. A multidisciplinary approach, i.e., involving clinicians, biologists, bioinformaticians, etc., is considered a key aspect of successful proposals. Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from Canada.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 6 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting different amounts. In addition to the EU/Associated Countries and Canada, the proposed project consortia may include other international partners. SME participation is encouraged.

Expected impact

- **Intensified sharing, reuse, collaboration and knowledge discovery in the health field, while ensuring legal safety on the use of the data.**
- Integration of various health and disease data in data-intensive fields such as personalised medicine.
- More efficient research through reduced duplication of experimentation.
- A network of research infrastructures and databases in the EU and Canada that build synergies between ongoing activities, contributing to delivering the backbone for new discoveries that address the Societal Challenges delineated in Horizon 2020.
- Strengthened position of the EU and Canada in science and more collaboration between academia and industry resulting in more innovation, jobs and growth.
- Contribute to the Digital Single Market through piloting IT health research solutions.
- Further the “Open science” and “Open to the world” priorities and contribute to the Health Research and Innovation Cloud, one of the thematic clouds of the European Open Science Cloud.



Call – Better health and care, economic growth and sustainable health systems

Type of action	Research and Innovation action
Deadline	18 April 2018
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-05-2018.html



Call – Better health and care, economic growth and sustainable health systems

SC1-HCO-01-2018-2019-2020: Actions in support of the International Consortium for Personalised Medicine

Specific challenge

Personalised Medicine is a very broad and multifaceted area where success relies on a well-functioning **collaboration between several disciplines and different actors**. While great advances have been made in some fields of medicine, in particular in stratification of cancer patients and in addressing rare diseases, most of today's healthcare protocols do not include personalised approaches apart from occasional division into broad age groups (children/adults/elderly), sex or ethnicity. Furthermore the prevention aspect of personalised medicine, i.e. identifying individuals prone to develop certain diseases, is largely isolated from treatment options. As is the case for a relatively nascent field there is a need for standardisation of approaches, including for sampling, data storage, interpretation and data exchange and also for clinical trials design and reimbursement models. European countries with their social model of healthcare along with (in several cases) centralised cost reimbursement, are ideally placed to lead the way for an integrated health management system. Many needs for coordination and support activities have been identified by ICPeMed, which includes representatives from most EU countries along with several other European countries and Canada. Also the wider internationalisation of ICPeMed can be underpinned by coordinating networking activities with third countries.

Scope

Each action should focus on one of the following fields:

1. International aspect: The action should focus on building links with third countries by analysing the potential and advantages of collaboration in personalised medicine (PM) with those countries, studying areas of interest for Europe in PM collaboration and promoting international standards in the field. **In particular the uptake of personalised approaches in health systems and healthcare should be addressed, taking into account social and cultural aspects, health economy issues and equitable healthcare.** For the 2018 call, the project should focus on CELAC as a group of countries, and for the 2019 call on China. Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from the international partner region CELAC or from China, respectively.
2. Regional aspect: The action should establish and support networking between regions and interregional cooperation in different European countries, in particular linking remote or sparsely populated regions with regions harbouring critical mass of medical and PM expertise while **taking into account broader socio-economic and cultural aspects**. The focus of the action can include aspects of genomic analysis, me-Health (mobile and electronic Health), telemedicine etc. but should aim at structuring PM application at regional level. Linkage to existing inter-regional projects (financed by INTERREG programmes) or interregional partnerships of Thematic Smart Specialisation Platforms will be actively encouraged. (2018 call).
3. Healthcare- and pharma-economic models for personalised medicine, interlinking European public health approaches with medical practice and financing. The action should carry out studies in support of research in and development of new health- and pharma economic models for PM, including prevention, to capture value and to develop relevant health financing models. Analysing mid- and long-term impacts of innovative products designated for sub-sets of patient populations on the patients themselves and on public health systems. **Assessing the benefits of personalised medicine development for citizens and their broader social environment while ensuring patient safety, access, equity, solidarity, data safety and financial sustainability of public health systems in the EU.** The action should involve different relevant stakeholders and take into account work being carried out by other EU funded initiatives, such as EUnetHTA. SME participation is encouraged. Results of the studies and workshops should be actively disseminated to a wider audience, including relevant authorities, professionals and the wider public. (2018 call).
4. Standardisation for clinical study design. Establishment of innovative clinical trial design methodology for PM, including guidelines for research and reflection papers. The action should take into account sex/gender differences as well as the work done by relevant stakeholders and authorities such as EMA and the HMA network, as well as the European legal framework. SME participation is encouraged. The results of the studies and workshops should be actively disseminated to a wider audience, including, industry, researchers and other professionals. (2019 call).

For grants awarded under this topic for Coordination and Support Actions it is expected that results could contribute to European or international standards. Therefore, the respective option of Article 28.2 of the Model Grant Agreement will be applied.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1.5 and 2 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

Contributing to the implementation and reach of the ICPeMed initiative; furthermore:

1. International aspect: Integrating the country/group of countries into ICPeMed activities. Support wider adoption of standards developed in Europe. Contribute towards the UN Sustainable Development Goal 3: Ensure healthy lives and promote well-being for all at all ages.
2. Regional aspect: Strengthened links between European regions setting up or planning personalised medicine healthcare approaches. Aligning research funding with ongoing and foreseen investments e.g. from Structural Funds. Recommendations on best practice in



Call – Better health and care, economic growth and sustainable health systems

implementing PM at regional level.

3. Healthcare- and pharma-economic models: **Increased understanding of personalised medicine perspectives on how to capture value, develop institutional support and design relevant payment models.** Recommendations for faster translation from discovery to patients'/citizens' access. **Contributing to understanding of trends and dynamics in the pharmaceutical markets in relation to increased emphasis of research and development efforts on PM. Suggestions on how savings through prevention can be included in payment and reward models and contribute to the sustainability of public health systems in the EU.** Improved knowledge and understanding among healthcare professionals and the wider public of potential benefits of PM approaches.
4. Standardisation for clinical study design: Contribute to standardisation of PM clinical trial design. Demonstrate feasibility and importance of PM approaches. Underpin accelerated market uptake. **Improved knowledge and understanding among healthcare professionals, regulatory authorities and industry how best to adapt clinical trials designs to stratified patient populations.**

Type of action	Coordination and support action
Deadline	Call 2018 - 18 April 2018 Call 2019 - 16 April 2019
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-hco-01-2018-2019-2020.html



Call - Better health and care, economic growth and sustainable health systems

SC1-BHC-14-2019: Stratified host-directed approaches to improve prevention, treatment and/or cure of infectious diseases

Specific challenge

Despite major advances in development of new drugs and vaccines against infectious diseases, many of the therapies and preventive measures do not result in the expected favourable health outcomes for various reasons. The pathogen might be resistant to the treatment, or a required immune response might not be provoked to contain the infection; the used drug might not reach the pathogen, or the pathogen might escape the host defence mechanisms. In addition, each individual might be responding differently to the intervention, making it difficult to make one intervention fit all patients. A promising avenue to overcome treatment failure in infectious diseases is to develop novel therapeutic or preventive approaches on the basis of specific factors identified in the host or the host-pathogen interaction. This approach provides the basis for stratification of individuals based on these characteristics and tailor the treatment or the preventive measure accordingly.

Scope

Proposals should test emerging concepts in drug and/or vaccine development in order to address the problem of antimicrobial drug resistance and to optimize therapeutic, curative or preventive measures against infectious diseases of major concern for Europe. Proposals should capitalize on knowledge of the role of host factors, immune-modulators or of host-pathogen interactions influencing disease outcome that can be utilized to strengthen the response to treatment or prevention measures. This should lead to new enhanced therapies, cures and/or preventive measures. Differences in factors such as age, gender and genetic variation among the human population should be taken into consideration.

The proposals should focus on late pre-clinical and/or clinical research, supporting proof of concept and selecting relevant biomarkers for clinical validation. They should take advantage of existing or newly established cohorts to help identify factors for predicting the course of the disease and its response to the intervention in stratified patients.

The downstream constraints for the uptake of the intervention by national health systems should be taken into account. **The suitability, acceptability and adaptability of the interventions to be developed should be addressed and assessed for different population groups and will thus require expertise from the social sciences and the humanities.**

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 10 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

- Increase Europe's capacity to control infectious diseases.
- Enriched product development pipelines with novel, potentially more effective, targeted treatments, cures and/or preventive measures for infectious diseases and/or validated biomarkers with potential for rapid uptake into clinical practice.
- Reduced burden of major infectious diseases.
- Contribute to the achievement of the European One Health Action Plan against Antimicrobial Resistance.
- Contribute to the achievement of the Sustainable Development Goal 3, ensure health and well-being for all, at every stage of life.

Type of action	Research and Innovation action
Deadline	1st stage - 02 October 2018 2nd stage - 16 April 2019
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-14-2019.html



Call - Better health and care, economic growth and sustainable health systems

SC1-BHC-15-2018: New anti-infective agents for prevention and/or treatment of neglected infectious diseases (NID)

Specific challenge

Neglected Infectious Diseases (NIDs) diseases are responsible for a significant health and socioeconomic burden in large parts of the world, particularly in resource-poor countries, however some (e.g. leishmaniasis, Chagas disease) are increasingly becoming a concern for Europe too, driven by factors like the climate change and globalization. Despite a significant effort to develop new drugs to treat these diseases over the past 10 years, existing therapies suffer from various shortcomings, namely, a high degree of toxicity and unwanted effects, as well as treatment regimens often lengthy or parenteral that discourage compliance and increase the emergence of resistance. Vaccines can also be a major tool for the control of NIDs, particularly given the limitations of mass drug administration strategies, but currently the only major NIDs for which licensed vaccines exist are rabies and dengue. Development of new, more effective, safe and affordable treatments and vaccines for NIDs is therefore an urgent need.

In the last few years, increased awareness and funding for NIDs has resulted in the identification and preclinical development of several treatment and vaccine candidates against various NIDs. However, the typical NIDs 'market failure' (i.e. high risk and low potential return) discourages the uptake and costly further development of these candidates by pharmaceutical and biotechnology companies. Targeted public funding is therefore necessary to bridge the gap between preclinical and clinical development, and help advance existing candidates along the development pipeline.

Scope

The topic bridges the gap between preclinical and early clinical development of drugs and/or vaccines against neglected bacterial and parasitic diseases. Therefore, the proposed actions should focus on late preclinical (e.g. validation in animal models, toxicology, Good Manufacturing Practices (GMP) production, preparation of Investigational Medicinal Product Dossier) and early clinical (up to phase 1) development of already existing lead drug and vaccine candidates. Multidisciplinary platforms bringing together academic and industry research teams, from European and disease-endemic countries, with the capacity to exploit existing experience and propose innovative solutions addressing several relevant pathogens are particularly encouraged. **Sex and gender differences should be taken into account where relevant.**

The downstream constraints of candidates for the effective deployment and uptake by limited-resources public health systems should be taken into account by the proposed action:

- It should address the following key elements of the target-product profile (TPP): **suitability, acceptability, adaptability of the intervention to be developed for different population groups, including particularly vulnerable ones (e.g. women and children), served by under-resourced health systems.**
- It should also address issues that permeate and often impede access such as: optimal route and dosing or immunization regime, up-scaling of manufacturing, registration and pre-qualification, distribution and field-deployment logistics (e.g. storing temperatures), and the predicted cost per patient of the final product.
- Ultimately, the proposed action should include a clear pathway through the different necessary steps (research, manufacturing, regulatory approvals and licensing, IP management, pricing etc.) in order to allow uptake by health systems in limited-resource settings.

Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from disease-endemic countries.

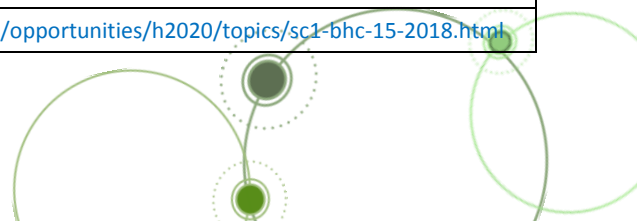
Please note that this topic is part of the lump sum funding pilot scheme. Funding for grants awarded under this topic will take the form of lump sums as defined in Commission Decision. Details of the lump sum funding pilot scheme are published on the Participant Portal together with the specific Model Grant Agreement for Lump Sums applicable.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 and 10 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

- Increase the number and quality of treatment and vaccine candidates for neglected infectious diseases appropriate for implementation and uptake by health systems with limited resources.
- Reduce the NIDs disease burden and their social and economic consequences, and thus contribute to achieving the United Nation's Sustainable Development Goals 1 (No Poverty), 3 (Good Health and Well-being), 5 (Gender Equality), 10 (Reduced Inequalities) and 13 (Climate Change).
- Strengthen the pipeline of products available to proceed into further development and clinical testing and, if appropriate, within the context of the European and Developing Countries Clinical Trials Partnership (EDCTP2).

Type of action	Research and Innovation action
Deadline	1st stage - 06 February 2018 2nd stage - 04 September 2018
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-15-2018.html



Call - Better health and care, economic growth and sustainable health systems

SC1-BHC-16-2018: Global Alliance for Chronic Diseases (GACD) - Scaling-up of evidence-based health interventions at population level for the prevention and management of hypertension and/or diabetes

Specific challenge

The Global Alliance for Chronic Diseases (GACD) call will support research associated with the scale-up of interventions for the prevention and/or management of hypertension and/or diabetes in low- and middle-income countries (LMIC58) and/or in vulnerable populations in high income countries (HIC).

Hypertension affects one billion people worldwide and is a major contributor to the growing global pandemic of cardiovascular disease and stroke. It is estimated that raised blood pressure indirectly currently kills approximately 8 million people every year, while cardiovascular disease accounts for approximately 18 million deaths a year, nearly one third of total deaths. Not only is hypertension more prevalent in LMIC, there are also more people affected because a larger proportion of the population live in those countries than in HIC.

Poor hypertension control and the absence of strategies to maintain normal blood pressure, particularly in LMICs and in vulnerable populations in HIC, reflect the challenges of effective and affordable implementation in healthcare and other sectors.

In the past twenty years the global death rate from diabetes has doubled and the World Health Organisation is predicting that this will increase by two thirds by 2030. It is currently estimated that 422 million adults worldwide suffer from diabetes of which 80% are from LMIC. In 2012, an estimated 1.5 million deaths were directly caused by diabetes and another 2.2 million deaths were attributable to high blood glucose.

Identifying and evaluating interventions to assess efficacy is not always enough to ensure their wide uptake in the real-world. Even when information, tools and interventions have been tested within real-world effectiveness studies, the development of knowledge to support their broader uptake has often remained outside the remit of research. Effectively implementing and scaling-up interventions, programmes, and policies to the regional and national levels are persistent challenges.

It is essential that policy makers, communities, families, caregivers, patients, as well as healthcare practice and other settings are equipped with evidence-based strategies to integrate scientific knowledge and effective interventions into everyday use. Researchers have found it challenging to ensure that tools and interventions deemed efficacious within clinical or community-based trials are readily adopted and implemented. Scaling-up interventions to large populations is not a straightforward task. In practice, translation from a pragmatic trial to the real-life commissioning and continuous delivery of an intervention across a health system is a huge political and economic challenge. Without intentional, guided efforts to scale-up, a new evidence-based intervention might not be broadly implemented.

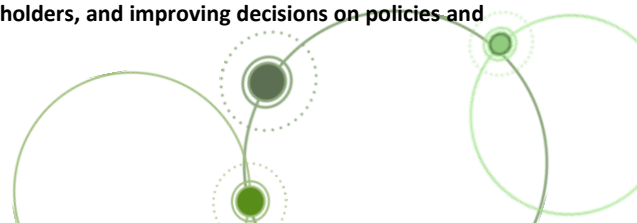
Scope

Proposals must focus on the scale-up of interventions at population level for hypertension and/or diabetes prevention and/or management in LMIC, and/or in vulnerable populations in HIC. Proposals addressing comorbidities with either hypertension or diabetes, including between them, are encouraged.

Proposals must align with commitments or planned commitments at a regional or country level to implement evidence-based interventions (including evidence of cost-effectiveness and affordability) across health or other sectors. Policymakers, intervention payers (excluding research funding agencies), researchers (including local researchers), implementers and beneficiaries should be involved at all stages of the intervention development and implementation design to identify the challenges to intervention delivery in real settings. Such partners will be integral to the success and sustainability of the programme and it is essential that they are engaged early, and participate actively in the design of the research proposal. Researchers should collaborate closely with the authorities responsible for the programme's delivery. Those authorities must pay for and provide the interventions, possibly through loans contracted from development banks or other financial providers. Proposals will carry out the research associated with the scale-up of the intervention.

Proposals must build on evidence-based interventions (including evidence of cost-effectiveness and affordability) for the respective population groups under defined contextual circumstances and should seek to replicate and scale-up interventions. The selected interventions to be scaled-up should have been proven to be equitable, safe, effective, and efficient as well as making local health systems and health services more responsive and person-centred. In particular, proposals should:

- Be targeted at the regional or national level.
- Identify, develop, test, evaluate and/or refine strategies to scale-up evidence-based practices into public health, clinical practice, and community settings.
- **Identify, understand, and develop strategies for overcoming barriers to the adoption, adaptation, integration, scale-up and sustainability of evidence-based interventions, tools, policies, and guidelines.** They should address a range of scale-up
- challenges, including complex processes, inefficient use of resources, inequitable allocation of resources, and supply and demand barriers to scaling-up and sustainability.
- Identify, understand, and develop strategies for measuring the unintended consequences of intervening at a system level.
- **Use scale-up methods, tools, and approaches to enhancing equity, efficiency, people-centred, and responsive health systems, promoting a culture of evidence-informed learning, engaging stakeholders, and improving decisions on policies and programmes to achieve better health outcomes.**



Call - Better health and care, economic growth and sustainable health systems

- Be aligned with existing policies, programme management, monitoring and evaluation processes. They may include important shifts in the practices, incentives, and engagement of global, national and regional health policy, regulatory frameworks, management, research, publication, and civil society stakeholders.
- **Include health economic assessments as an integral part of the proposed research.**
- Demonstrate that policy makers and health authorities are supportive of, and have been engaged in designing the research proposal.

Proposals should be multidisciplinary and cross-sectorial. Relevant gender and cultural aspects, as well as vulnerable populations, should be taken into account. Proposals may build on previous hypertension and diabetes projects supported under the GACD that have demonstrated the potential for impact.

The proposal will cover the research around the scaling up of the interventions. The research may cover:

- Identification of the best evidence-based interventions;
- Definition and implementation of optimum scale-up methods (e.g. pilots in multiple settings, defining a scalable unit);
- Embed real time monitoring/evaluation to refine protocols and ensure adaptability and effective uptake;
- Evaluation of health outcomes;
- Where appropriate, make recommendations for the replication of the applied scale-up interventions to other countries or very large regions.

The GACD aims to coordinate research on chronic diseases at a global level in order to enhance knowledge exchange across individual projects, and to **better understand the impact of socio-economic, cultural, geopolitical and policy** on research findings, so as to appropriately **adapt interventions and scale-up to different geographical, economic and cultural settings**. Research under GACD involves regular exchange of research findings and information across participating projects by means of cross-project working groups and annual joint meetings. Wherever feasible, projects should harmonise and standardise their data collection and exchange data. Applicants must budget for annual costs of having two team members participate in one annual face-to-face meeting of the Annual Scientific Meeting (location to vary annually).

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 4 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 (one of or combinations of)

- Enhanced programmes and policies that can significantly reduce the numbers of patients with hypertension and/or diabetes through prevention.
- Enhanced programmes and policies that can significantly increase the number of patients for whom hypertension and/or diabetes was previously undetected.
- Enhanced programmes and policies that can significantly increase the number of patients for whom hypertension and/or diabetes is controlled.
- Enhanced effective, efficient, equitable and sustainable health systems, to lesser inequalities and greater health equity and additional societal benefits, in the medium and long-term.
- Improved health services more responsive to the need of the comorbidities of hypertension and diabetes and other non-communicable diseases.
- Recommendations to translate findings to other countries or very large regions.
- Contribute to the attainment of the sustainable development goals for non-communicable diseases.

Type of action	Research and Innovation action
Deadline	18 April 2018
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-16-2018.html



Call - Better health and care, economic growth and sustainable health systems

SC1-BHC-18-2018: Translational collaborative cancer research between Europe and the Community of Latin American and Caribbean States (CELAC)

Specific challenge

The world is facing a critical healthcare problem: due to a growing and aging population increasingly exposed to a number of well-known and new risk factors, cancer is becoming one of the most important public health problems worldwide.

In 2012, the incidence of new cancer cases in the Community of Latin American and Caribbean States (CELAC) countries was 1.1 million, with 0.6 million deaths; in Europe the incidence was 3.45 million new cases, with 1.75 million deaths. Moreover, about two-thirds of all cancer deaths occur in low- and middle-income countries and incidence and mortality are expected to increase by about 75% in these countries by 2030.

Current cancer care does not fully reflect ethnic, cultural, environmental and resource differences. In addition, limited research is being conducted on tumours primarily found in CELAC countries.

There is a need to establish evidence obtained through international high-quality translational collaborative research to tailor cancer control to specific patient groups.

Scope

Proposals must focus on translational and multidisciplinary research to identify specific patient groups in view of improving one or more of the following aspects: screening, early detection, diagnosis, and/or prognosis.

Proposals must build on the diverse genetic backgrounds, risk factors, cancer incidence, geographical environment, and/or different healthcare models (including social care and volunteers) in European and CELAC countries.

Proposals may integrate molecular, behavioural, nutritional, clinical, social and environmental epidemiology data from cohorts; registries; biobanks; repositories; research infrastructures;

Considerations of effectiveness and potential clinical benefit should be integrated in the proposals where relevant.

Specific population age groups, sex and gender aspects, socio-economic, ethical, ethnic, cultural, lifestyle and behavioural factors and any other non-health related individual attributes should be taken into consideration where relevant.

Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least two participants from two different CELAC countries.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 4 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 proposals should address one of or combinations of:

- Identify high-risk populations with a view to tailor early detection and diagnosis or to optimise prevention.
- Improve early detection and/or diagnosis and/or prognosis of cancer adapted to specific settings.
- Provide evidence to national programmes and policies focusing on screening, early detection and/or diagnosis and/or prognosis.
- Provide novel opportunities for the development of targeted therapies.
- Contribute to attaining sustainable development goals for non-communicable diseases.

Type of action	Research and Innovation action
Deadline	18 April 2018
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-18-2018.html



Call - Better health and care, economic growth and sustainable health systems

SC1-BHC-19-2019: Implementation research for maternal and child health

Specific challenge

Each year, an estimated 213 million women become pregnant and 140 million newborn babies are delivered. However, many of the women and infants receive no appropriate care or care that is below evidence-based standards; others suffer from over-medicalisation. Access to quality care, during and after pregnancy, is essential to ensure good maternal health and the favourable early development of the child.

The gap between countries with the lowest and highest maternal mortality rates has doubled between 1990 and 2013 and huge differences exist within countries in Europe and globally. The burden of maternal mortality in both contexts falls disproportionately on the most vulnerable groups of women and girls: Every day approximately 830 women die from preventable causes related to pregnancy and childbirth; 99% of maternal deaths occur in developing countries.

Although there is a consolidated evidence base of what works in improving maternal and newborn health, the "knowledge-do" gap has not been bridged and evidence based guidelines are insufficiently implemented or integrated in routine training and service provision. Therefore, more and better targeted implementation research is needed.

Scope

Proposals should focus on implementation research for improving maternal and child health with a focus on the first '1000 days' from pregnancy until two years of age. This research can take place in either high income countries or low and middle income countries, or in a combination thereof.

The implementation research in the first 1000 days may cover:

- new or improved health service delivery interventions that strengthen maternal and child health; and/or.
- the scaling up and/or adapting of existing evidence-based interventions to new contexts.

Neither pre-clinical research nor clinical trials in the context of product development are within the scope of this call.

The research should take into account the specificities of different contexts and situations. The research should be integrated from different perspectives, e.g. recognising the interdependent relationship between mother and child; addressing prevention, health promotion and treatment; allowing for the specific needs of vulnerable groups (e.g. preterm infants, adolescents, migrants); addressing different concurrent pathologies; avoiding the creation of parallel or vertical programmes, etc;. **Research may cover physical and/or mental health, as well as communicable and non-communicable diseases. The integration of social sciences including gender analysis and the use of mixed methods research is strongly encouraged. In addition, particular attention should be given to equity issues.**

The interventions should build on but may go beyond existing state-of-the art knowledge on biological, psychological and social determinants of maternal and child health. Research is expected to be carried out in continuous partnership, in particular with the end-users, i.e. the concerned women, the fathers, and their community, in addition to policy makers, politicians, and the media, to ensure that evidence can be translated into policy and practice.

The Commission considers that proposals requesting an EU contribution between EUR 2 to 4 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 proposals should address one of or combinations of:

- Identify high-risk populations with a view to tailor early detection and diagnosis or to optimise prevention.
- Improve early detection and/or diagnosis and/or prognosis of cancer adapted to specific settings.
- Provide evidence to national programmes and policies focusing on screening, early detection and/or diagnosis and/or prognosis.
- Provide novel opportunities for the development of targeted therapies.
- Contribute to attaining sustainable development goals for non-communicable diseases.

Type of action	Research and Innovation action
Deadline	1 st stage - 02 October 2018 2 nd stage - 16 April 2019
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-19-2019.html



Call - Better health and care, economic growth and sustainable health systems

SC1-HCO-06-2018: Establishment of an International Network of Social Sciences Research Centres to help address governance and other challenges in the preparedness for and the response to infectious threats

Specific challenge

Infectious diseases, in particular epidemics and antimicrobial resistance, pose significant threats to the social, economic and health security of communities and countries around the world. However, these diseases also transcend borders and require multi-sectoral and multi-jurisdictional co-operation and preparedness to ensure the world is safe from global threats.

Many global infectious disease outbreaks are enabled, accelerated and allowed to spread by shortcomings in governance at all levels (national, regional as well as global). This governance challenge has been recognised and many initiatives are beginning to work in this space. However, **communities would be better prepared to respond to infectious threats** (public health emergencies or antimicrobial resistance) if **such efforts and structures that govern the overall prevention and response were informed by research evidence from the range of social sciences and humanities disciplines.**

The Global Research Collaboration for Infectious Disease Preparedness (GloPID-R- <https://www.glopid-r.org/>) and the Joint Programming Initiative on Antimicrobial Resistance (JPI-AMR- <http://www.jpiamr.eu/>) have identified the need to establish an international Network of **Social Sciences Research Expertise**, to better address governance and other challenges in prevention and response to infectious threats, be it at local, national, regional or global levels.

Scope

The scope of this Coordination and Support Action (CSA) is to:

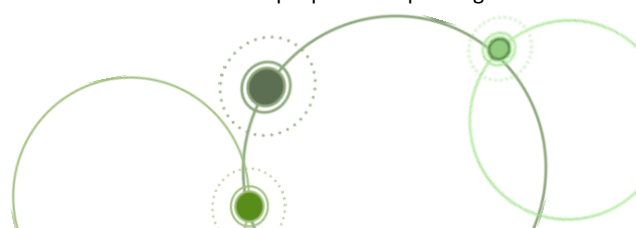
- I. **Initiate**, in an organised and coordinated manner, **the International Network of Social Sciences Research Expertise**, addressing governance challenges, engage with stakeholders on behalf of network members, and work with research funding agencies to grow the network to an effective, internationally representative scale. The proposed network would have the following main objectives:
 1. **Strengthen research capacity and catalyse social sciences researchers to generate and apply new knowledge about effective governance arrangements for infectious disease preparedness, combating antimicrobial resistance, and prevention and response efforts. This would include addressing the ethical, legal and social aspects (ELSA) as well as among others the issue of accessibility;**
 2. **Foster cross-region and global research collaborations to better connect researchers currently working in isolation and to support bigger, more robust social science research on the governance aspects of infectious threat prevention and response;**
 3. **Facilitate ongoing engagement between researchers and global policymakers to inform national and global decision-making on appropriate governance arrangements for effective prevention and response measures;**
 4. **Inform and enable better preparedness and response efforts through the application of knowledge, sharing of lessons learned, and creation of improved governance arrangements. But also be a source of advice in case of a public health emergency, to inform priority setting and response from a social science perspective. In this respect flexibility will be expected from the consortium.**

Activities supported by this CSA should include among others the following:

1. **Identifying best practices and lessons for enabling, coordinating, and supporting prevention and response efforts by international institutions and regional agencies across borders, while also taking into account research-constrained settings and systems;**
 2. **Identifying strategies to strengthen the discovery, development, and take-up of existing and new innovative interventions and other measures across multiple sectors including examining their impact on health systems. This would include identifying the barriers and motivations that influence the wider use and uptake of these innovations such as vaccines;**
 3. **Developing proposals for more effective raising of public awareness about infectious threats in general and AMR in particular, and inducing behaviour change;**
 4. **Conducting socio-economic and cultural analyses to better understand the societal cost/benefit of different strategies to prepare for and prevent AMR and epidemics.**
- II. **Establish the central coordinating hub for the network under development, focusing on maximising opportunities for collaboration, learning and data sharing in order to scale-up evidence.**

The consortium is expected to collaborate with GloPID-R members and JPI AMR and their various initiatives in this domain, as well as other relevant initiatives already existing or under development at national, regional, and international level, in order to maximise synergy and complementarity. Specific propositions on how this can be achieved should be included in the proposal. It is expected that, at a minimum, the network hub will host an annual meeting for the network, and additional thematic workshops as appropriate.

The Commission considers that a proposal requesting an EU contribution between EUR 2 to 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amount.



Call - Better health and care, economic growth and sustainable health systems

Expected Impact

- Effective cross-region and global research collaborations that better connect multidisciplinary researchers currently working in isolation.
- **Strengthened capacity to address the socio-economic and governance dimensions of an effective research preparedness and response to infectious threats.**
- Robust evidence to guide policy makers on global infectious disease governance.
- Built in-country capacity in low and middle income countries to better support global efforts.
- Contribution to the implementation of the 'European One-health action plan against AMR and the WHO Global Action Plan on AMR'.
- Contribution to the achievement of SDG 3, and in particular the targets 3 on combatting communicable diseases, B on supporting the research and development of vaccines and medicines for diseases that primarily affect developing countries, and D on strengthening capacity on early warning and management of global health risks.

Type of action	Coordination and support action
Deadline	18 April 2018
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-hco-06-2018.html



Call - Better health and care, economic growth and sustainable health systems

SC1-BHC-22-2019: Mental health in the workplace

Specific challenge

In most European countries, absences from work and early retirement due to mental illness have increased in recent years⁸⁶. Mental health conditions such as depression, anxiety and stress represent substantial financial costs for employers and employees, as well as a significant loss for society at large. An EU-level estimate of the overall costs, direct health costs and lost productivity is more than 450 billion EUR per year. Mental illness is an important cause of absence from work but it is also linked to high levels of presenteeism, where an employee remains at work despite experiencing symptoms resulting in lower productivity. It is important to create mentally healthy workplaces, i.e., promoting and protecting employees' good mental health and supporting them when they experience mental health problems, and their return to work. A healthy workplace involves creating an environment that is supportive of the psychosocial aspects of work, recognising the potential of the workplace to promote workers' mental health and wellbeing, and reduce the negative impacts of work-related stress. Many of the factors that influence the positive mental health and wellbeing of workers relate to the social environment at work such as the working conditions, style of management, working culture and levels of supports, as well as job security. More knowledge is needed about effective interventions by employers to promote good mental health, and about the barriers to effective implementation of such interventions, in particular for smaller enterprises and public agencies with less resources and knowledge to manage these health issues.

Scope

Proposals should develop and implement intervention(s) that an employer/organization can take to promote good mental health and prevent mental illness in the workplace. These interventions can be newly developed or improvements on existing ones. They should address challenges in mental health in the workplace in the EU. The interventions should be assessed in terms of direct and indirect individual and collective health outcomes and cost-effectiveness, implementation facilitators and barriers.

Proposals should build on existing knowledge but may well go beyond. Co-morbidities in mental and/or physical health should be addressed. **Research should be multidisciplinary, including social sciences and the humanities. The stigma attached to mental ill health is important to consider as well as other social and cultural factors which may be relevant to improving the working environment. Mixed-methods research is encouraged. Proposals should involve key partners such as employers and employees in the private and public sector, policy makers, insurers, social partners and civil society in developing initiatives. Proposals should address relevant gender issues (e.g. gender equality at the workplace). Ethics and data protection aspects should be addressed where they are relevant.**

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 4 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

- Improved mental health and reduced sickness absence in the EU working population.
- **Positive impact on productivity and economic results of workplaces by improved policies and action to promote mental health.**
- Improved policies on mental health in the workplace based on the broader evidence base of effective interventions.

Type of action	Research and Innovation action
Deadline	1st stage - 02 October 2018 2nd stage - 16 April 2019
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-22-2019.html



Call - Better health and care, economic growth and sustainable health systems

SC1-BHC-23-2018: Novel patient-centred approaches for survivorship, palliation and/or end-of-life care

Specific challenge

Health conditions linked to end-of-life issues, acute and chronic pain, life-threatening non-communicable diseases, late or long term side effects and consequences of diseases and their treatments impact quality of life and pose an immense societal and economic burden. Palliative, end-of-life and survivorship care benefits patients with malignant and non-malignant chronic health conditions, providing relief from their symptoms and improving their quality of life. From 38% to 74.0% of the affected population is estimated to be in need of palliative care. While a variety of interventions are in use, these are often not adequately validated or adapted to the specific needs of patients affected with a specific chronic disease or with multimorbidities. Therefore a need exists to strengthen the evidence base for available effective interventions improving quality of life in the domains of palliative, end-of-life and survivorship care.

Scope

Proposals should demonstrate, the effectiveness and cost-effectiveness of new, improved or specifically adapted pharmacological and/or non-pharmacological interventions to either relieve symptoms (e.g. pain) and suffering caused by life-threatening non-communicable diseases (including disabilities), or serious late and long-term side effects of disease treatments in patients and survivors, or symptoms that occur at the end of life. Randomised clinical trials or observational studies of new or improved patient and/or family centred interventions, targeting children and/or adults, should be considered for this topic. Proposals should give a sound feasibility assessment justified by available publications or preliminary results.

Proposals should prove the feasibility of integrating the proposed interventions in current pain management, palliative and/or end-of-life and/or survivorship care regimes and healthcare systems across Europe while taking into account the complex human aspects which are necessarily managed by such regimes and systems.

The proposals should address sex, gender, age and socio-economic factors in health and any other factors (e.g. ethical, familial, cultural considerations, including personal beliefs and religious perspectives, etc.) that could affect health equity.

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 4 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

- Reduced symptom burden and suffering or improved well-being of patients in need of palliative, end-of-life or survivorship care and their formal and informal caregivers.
- Improved clinical guidelines and policy recommendations with respect to pain management, palliative, end-of-life or survivorship care of patients with life-threatening non-communicable diseases or afflicted by late and long term side-effects of treatments.
- Improved quality, effectiveness and cost-effectiveness of palliative, end-of-life or survivorship care services as well as access to care.
- **Reduced economic and wider societal burden arising from increased number of patients in need of palliative,, end-of-life or survivorship care.**

Type of action	Research and Innovation action
Deadline	18 April 2018
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-23-2018.html



Call - Better health and care, economic growth and sustainable health systems

SC1-BHC-25-2019: Demonstration pilots for implementation of personalised medicine in healthcare

Specific challenge

Personalised medicine (PM) has the potential to respond to, among others, the increasing burden of co-morbidities and thus enhance the sustainability of healthcare systems. With the increasing number of scientific approaches available, it is crucial to demonstrate the benefit of large scale deployment of personalised medicine to citizens and healthcare systems. This was also one of the conclusions of the Personalised Medicine Conference 2016 (<http://ec.europa.eu/research/conferences/2016/permed2016/index.cfm>).

Scope

The pilot projects should demonstrate the benefit for individuals as well as the implementability and economic viability of personalised medicine approaches in real life healthcare settings. The pilots should be tailored to the needs of citizens, making use of a wide variety of data and proposing prediction, prevention or treatment solutions, focussing on diseases with high burden to society (taking due account of sex/gender differences) and including multi-morbidity conditions if relevant. The use of big data approaches and high performance computing is encouraged. Applicants should ensure coordination with national, regional or local authorities engaging in healthcare environments and should aim at linking different institutions (hospitals, other healthcare facilities, public health authorities, payers etc.). The pilot projects should engage partners in regions or cities having adopted or that are in advanced planning for introducing PM approaches. Patient representatives as well as partners from countries that are in the process of upgrading their healthcare systems should be involved, ensuring a wide European dimension. **Applicants should address the health economic, ethical, legal and societal aspects of the proposed action.** Taking into account the advances already achieved for PM approaches in cancer and rare diseases, projects with primary focus on these diseases are excluded from the scope of this topic.

The Commission considers that proposals requesting a contribution from the EU of between EUR 18 and EUR 20 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

- Evidence for a PM-based model of care that can be used as a basis for the delivery of new ways of care organisation.
- Demonstration of the viability and feasibility of PM approaches in real-life settings and at a large scale, exemplifying potential for savings in overall healthcare costs.
- Widening of PM approaches to include diseases other than cancer and rare diseases.
- **Linking of different actors for healthcare, economy, lifestyle, healthy living and regulation, making use of the multitude of data available.**

Type of action	Innovation action
Deadline	1 st stage - 02 October 2018 2 nd stage - 16 April 2019
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-25-2019.html



Call - Better health and care, economic growth and sustainable health systems

SC1-BHC-28-2019: The Human Exposome Project: a toolbox for assessing and addressing the impact of environment on health

Specific challenge

Despite the general acknowledgement by the scientific community that 'Genetics load the gun but environment pulls the trigger' when it comes to the causation of major non-communicable diseases (NCDs), there is persistent uncertainty as to the global burden of disease attributable to environmental (including life-style and climatic) factors, including healthcare costs and negative economic impact. Deciphering the human exposome is a novel way of addressing the challenge to improve health and reduce the overall burden of disease. This will require improved knowledge of health risks, including combinations of several risk factors, and the mechanisms by which they affect health at different stages throughout the life course, including exposures in foetal life. **Effective preventive action will need to be designed, building on knowledge of various risk factors, including exposure to pollutants in daily life, individual behaviour and the social context, taking into account gender issues.**

Developing a Human Exposome Project would present a fundamental shift in looking at health, by moving research away from 'one exposure, one disease' understanding to a more complex picture upon which to build solid, cost-effective preventive actions and policies in the future. It would respond to the need for more complete and accurate individual-level exposure data in order to estimate the largely unknown environmental component of NCDs.

Scope

Applicants should take advantage of the last decade's rapid technological advances which have opened up new opportunities to collect, combine and analyse large data sets offering new possibilities to understand the contribution of environmental factors to the global health burden of common chronic diseases. Proposals should use innovative approaches to the systematic and agnostic identification of the most important environmental risk factors for the development of major NCDs across the life course (including in utero), leading to preventive interventions at the individual, group or population level and contribute to sustainable healthcare. Well-designed retrospective epidemiological studies may be included and proposals may envisage the creation of a prospective Europe-wide exposomics cohort and biobank, **integrating behavioural, socio-economic factors and clinical records.**

The following components should be considered: agnostic evaluation of the role of multiple and unknown exposures; assessment of individual exposure to multiple stressors; sensors that combine external exposure and health data measurements; integration of external exposome data with cross-omics responses and (epi)genetic data; systematic evaluation and simulations of the health impacts; **socio-economic modelling and econometric analysis including ethical and sex/gender aspects where relevant;** better data mining tools, including advanced statistical analysis of complex data and high-performance/high throughput computing and storage; a long-term host and a single shared data infrastructure, taking into account existing structures and ensuring open access to data generated.

Innovation and connections with industry are expected in the areas of sensor development (external exposome), omics technology and novel biomarker development (internal exposome), bioinformatics, and data processing and management. Proposals are expected to respond to a persistent or long-standing policy/regulatory need where the exposome approach would be useful to solve a scientific issue to underpin better regulation now or in the future (examples: indoor and outdoor air quality, waste, occupational health, noise).

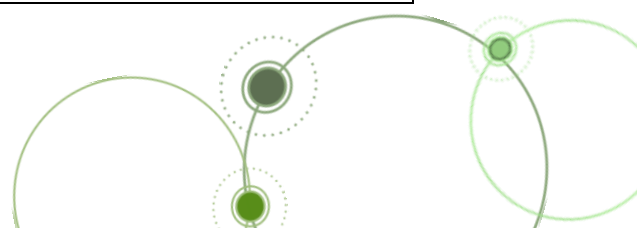
In order to establish an overarching Human Exposome Project, an overall coordination mechanism between the projects funded will be required and will be added at the grant preparation stage to all selected proposals as a common work package. Grants awarded under this topic will be complementary. The respective options of Article 2, Article 31.6 and Article 41.4 of the Model Grant Agreement will be applied.

The Commission considers that a proposal requesting an EU contribution between EUR 8 to 12 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

- Innovation in environmental health sciences, in particular for external and internal exposure assessments and data management.
- Enabling researchers and policy makers to continuously include new knowledge in the policy making processes by using the toolbox to generate data and information.
- Better prediction of disease risk by acquisition of new knowledge on the influence of external exposures on biological pathways at different life-stages and identification of early signs of health damage caused by environmental factors.

Type of action	Research and Innovation action
Deadline	16 April 2019
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-28-2019.html



Call - Better health and care, economic growth and sustainable health systems

Topics with minor SSH relevance

SC1-BHC-03-2018: Exploiting research outcomes and application potential of the human microbiome for personalised prediction, prevention and treatment of disease

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-03-2018.html>



Call – Digital transformation in Health and Care

SC1-DTH-01-2019: Big data and Artificial Intelligence for monitoring health status and quality of life after the cancer treatment

Specific challenge

Currently available methods and strategies for diagnosis and treatment of cancer help clinicians continuously improve quality of care and prevent cancer deaths in the population. Accurate risk assessment, availability of genetic tests, timely diagnosis and effective treatment has created the impression of cancer being a chronic disease that can be cured. However, often rather aggressive treatment, psychological stress (anxiety and depression) can cause physical and psychological problems that may cause long-term after-cure consequences such as similar or other types of cancer, other types of (chronic) diseases and affect the quality of life of a patient. Therefore, the importance of addressing and, if possible, preventing long-term effects of cancer treatment is growing. In addition to patient-reported outcomes such as functional status, symptoms intensity and frequency, multiple domains of well-being and overall satisfaction with life, the use of big data can bring valuable information for monitoring health status and quality of life after the cancer treatment. Big Data can provide new opportunities to define statistical and clinical significance, but present also challenges as it requires specific analytical approaches.

Scope

Proposals should focus and deliver on how to better acquire, manage, share, model, process and exploit big data using, if appropriate, high performance computing to effectively monitor health status of individual patients, provide overall actionable insights at the point of care and improve quality of life after the cancer treatment. Relevant solutions include for example systems for determining and monitoring (taking also in account gender differences) the combined effects of cancer treatment, environment, lifestyle and genetics on the quality of life, enabling early identification of effects that can cause development of new medical conditions and/or impair the quality of life. **Proposals preferably address relevant health economic issues, use patient reported outcome and experience measures (PROMs and PREMs) and take into account the relevant social aspects of health status and quality of life after cancer treatment. Integrated solutions should include suitable approaches towards security and privacy issues.**

Information can be collected from traditional sources of health data (cohorts, comprehensive electronic health records or clinical registries, incl. genetic data, validated biomarkers for remission), from new sources of health data (mobile health apps and wearables) and from sources that are usually created for other purposes such as environmental data.

It is important to assure ethical aspects of data, confidentiality, and anonymity of data transfer and engagement of those who collect / code such data in its analysis and interpretation, in order to avoid misinterpretation and inappropriate conclusions by using proper annotation methodologies of the data. Involvement of those who work within healthcare systems, patients, family and relatives, and the general public is needed.

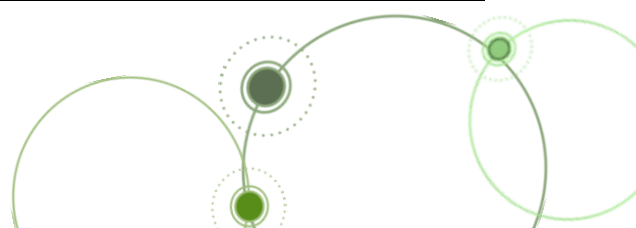
The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Participation of SMEs is encouraged.

Expected Impact

The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Mapped comprehensive big data in a reachable and manageable way by applying principles for sharing and reusability, creating a network of knowledge by linking translation tools, heterogeneous data sources and biomedical texts for monitoring health status and quality of life after the cancer treatment;
- Emerging data driven analytics and advanced simulation methods to study causal mechanisms and improve forecasts of ill-health, identification of disease trajectories and relapse;
- Better and faster means of high quality response to prevent or timely address development of new medical conditions and/or improve the quality of life;
- Better knowledge for improved patient counselling as well as to improve follow-up of patients;
- Novel information on health maintenance, onset and course of medical conditions with a view to optimise prevention and treatment;
- Evidence base for the development of policy strategies for prevention, early diagnosis, therapies as well as addressing health inequalities, support to patient registries at national level;
- **Improved quality of life after cancer treatment, strengthening personal confidence and enhancing employability;**
- Preventative strategies are established which have a real effect of reducing the occurrence of health disorders and co-morbidities associated with cancer treatment.

Type of action	Research and Innovation action
Deadline	24 April 2019
Call identifier	H2020-SC1-DTH-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-dth-01-2019.html



Call – Digital transformation in Health and Care

SC1-DTH-03-2018: Adaptive smart working and living environments supporting active and healthy ageing

Specific challenge

Demographic change and the ageing of the population create new heterogeneous challenges for age-friendly living, recreational and working environments such as a shrinking workforce and increasing numbers of workers with functional impairments, chronic conditions, care duties or re-integration in and later retirement from the labour market.

Digital solutions can support older individuals in being and staying actively involved in professional life for longer by designing fit for purpose working environments and by enabling flexible management of job-, leisure- and health-related activities considering their needs at the workplace, at home and on the move, with a particular focus on social inclusion, health needs and job retention.

Scope

Proposals should develop and validate digitally enabled adaptive services and solutions leading to smart work environments for older adults, supporting them to remain actively involved in professional life, helping them to sustain and renew their work and personal life related skills and support independent active and healthy lifestyles while taking into account reduced capabilities due to age-related health risks and conditions.

Proposals should be based on trans-disciplinary research, involving behavioural, sociological, psychological, medical and other relevant disciplines, including gender and cultural aspects.

Proposals should convincingly describe the planned progress beyond state of the art in development and integration of unobtrusive, adaptive solutions for age-friendly living and working environments, addressing the needs of employees in specific and various sectors and workplaces.

Proposals should build on active user engagement (e.g. employee participation at the workplace) in order to ensure the understanding of user needs, safeguarding ethics, privacy, security and regulatory aspects (e.g. labor law). Attention theft and impeding physical activity by ICT should be avoided.

Concepts should aim at realistic and verifiable benefits for flexible and sustainable job longevity measures and the consortium should include the necessary stakeholders to validate all relevant issues. The validation should take place in real settings (at workplaces and at home as required). **The approach should demonstrate improvements in quality of life and/or improved health and safety for older adults, better management of aging workforce leading to a win-win for employers and employees, health and social system efficiency gains, business and financing models and organisational changes required for service delivery.**

The Commission considers that proposals requesting a contribution from the EU between EUR 3 and 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Participation of SMEs is encouraged.

Expected Impact

Proposals should present methodologies and metrics as appropriate for measuring progress with significance towards the expected impact in:

- Independent living, and quality of life of older persons compared to current state of the art, enabling older persons to stay actively involved in work life for longer or return to work after severe disease;
- Enhanced health and safety working conditions and quality of life of older persons at work compared to the current situation, enabling older persons to be able to contribute at an appropriate level for a longer period of time;
- Evidence of user-centred design and innovation, new intuitive ways of human-computer interaction, and user acceptance;
- Potential cost-effectiveness due to enhanced self-care, life-style, age-friendly and skills conducive work environments and socio-economic benefits;
- Competitive advantage for European industry through flexible and sustainable work arrangements for an ageing workforce;
- Global leadership in ICT based innovation for active and healthy ageing including the occupational environment.

Type of action	Research and Innovation action
Deadline	24 April 2018
Call identifier	H2020-SC1-DTH-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-dth-03-2018.html



SC1-DTH-05-2019: Large scale implementation of digital innovation for health and care in an ageing society

Specific challenge

An ageing population is increasing demand-side pressures on public health and social care providers across Europe. These pressures undermine the long-term sustainability of existing models for delivering care services to the ageing population.

The challenge is to scale up outcome-based innovative digital health and care solutions across EU borders through joining up actions in procurement of innovation. Digital health and social care solutions have been tested and have demonstrated success in smaller scale settings. However, despite cooperation initiatives amongst regions through INTERREG programmes or the transfer of innovation schemes of the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA), large-scale deployment of digital health and care solutions across EU borders remains limited. There is a lack of collaborative efforts in public purchasing of innovative ICT-based solutions for active and healthy ageing and successfully engaging demand and supply sides in scaling up innovation. This is the case in particular for digital solutions integrating health, social or community care and informal care, IoT enabled independent living solutions that allow the citizens to live safely and independently at home therefore avoiding institutionalisation, or tele-care solutions and tools supporting for self-care and person-centred care. Moreover, take-up of these ICT-based solutions by both public care providers as well as people in need for care is a crucial factor in successfully alleviating the demand-side pressures on public health and care provision. Supporting the public procurement of innovation helps public authorities by aggregating demand and sharing the inherent risks associated to deploying new innovative solutions that can be integrated with existing public health and care provision systems.

Scope

This topic will contribute to the Digital Single Market Strategy priorities on digital transformation of health and care (notably to the priority on user-centred integrated care), to the Scaling-Up Strategy of the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) and will support the EIP on AHA Reference Sites contribution to the Digital Single Market Strategy, notably the priority focusing on user-centred integrated care. The actions supported will target large-scale deployment of digital health and care solutions across different regions in Europe. In line with the priority actions of the EIP on AHA Scaling-up Strategy, the scope of this PPI is to specify, purchase and deploy ICT based solutions (made up of services and ICT products to enable the provision of services) for active and healthy ageing through a common supply and demand side dialogue, which can deliver sustainable, new or improved health and care services promoting patient feedback in which public procurement approaches for innovative solutions lead to improved outcomes. Proposals should:

- **Be driven by clearly identified procurement needs of the participating organisations and building on a deep understanding of the needs of the ageing population, as well as the needs of the relevant health and care providers;**
- Support sustainable deployment of new or improved person-centred and outcome-based services promoting patient feedback by providers involved in the procurement of solutions for digital health and care providers, including networking of inpatient and outpatient care, nursing services and care homes;
- Contribute to the creation of scalable markets across Europe in innovative solutions for active and healthy ageing;
- Specify measures that will ensure the sustainability of solutions beyond the lifespan of the proposed project, notably **taking into account levels of acceptance with users and professionals as well as health economics considerations.**
- Engage public and/or private procurers from each country participating (at national, regional or local level) that have responsibilities and budget control in the relevant area of care or supply of services;
- Be based on a complete set of common specifications for end to end services;
- Demonstrate that the implementation phase will reach "large scale" (i.e. sufficient scale to achieve statistical significance) through region-wide deployment across multiple regions of Europe;
- Contribute to the use of interoperable solutions based on open platforms and take into account existing best practices and standardisation initiatives;
- **Provide robust safeguards to ensure compliance with ethical standards and privacy protections and take account of the gender dimension;**
- Contribute with good outcome-based practices that are impact measured according to the MAFEIP methodology and can be made available for replication across other regions (e.g. "detailed plans" for larger scale sustainable uptake of innovative solutions for active and healthy ageing, reference material and guidelines, manuals and education materials) through the EIP on AHA innovative practices repository.
- Contribute to the development of national strategies to stimulate the procurement of digital innovation for health and care services based on the outcomes achieved at national level.

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

Proposals of this topic should follow the specific requirements for innovation procurement PPI supported by Horizon 2020 grants as set out in Annex E of the WP.



Call – Digital transformation in Health and Care

Expected Impact

The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Growing awareness and successful use of public procurement to boost ICT innovation applied to integrated care and active and healthy ageing, implemented across the whole chain of care ultimately benefiting the growing ageing population across Europe;
- Contribution with data and experiences to regulatory and legislative process development addressing potential barriers to procurement of innovative solutions for active and healthy ageing;
- Contribution of an open and comprehensive socio-economic evidence base for ICT investments in the field that can support the development of sustainable business models (e.g. cost-benefit analysis, increased efficiency of health and care systems, impact assessments, return on investments, quality of life improvements for users, ethics, safety gain and user satisfaction);
- Support initiatives on interoperability and standardisation that can contribute to defragmentation of the market for ICT based active and healthy ageing solutions;
- Creation of economic boundary conditions that can support long-term sustainability of health and care systems and emergence of new business models to develop ICT innovation for active and healthy ageing in Europe;
- Support forward-looking, concerted public-sector investment strategies that benefit from joint approaches across different regions;
- Create new opportunities for market uptake and economies of scale for the supply side for ICT based solutions and services for active and healthy ageing in a Digital Single Market for Europe.
- Contribute to inform policy measures that foster the take-up of ICT solutions for active and healthy ageing.

Type of action	Public Procurement of Innovative solutions
Deadline	24 April 2019
Call identifier	H2020-SC1-DTH-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-dth-05-2019.html



SC1-DTH-08-2018: Prototyping a European interoperable Electronic Health Record (EHR) exchange

Specific challenge

Large amounts of valuable health data are generated and collected during and between citizens' medical examinations across Europe. However, opportunities to reuse these data for research and better healthcare are often missed because health data continue to be confined in data silos, often not matching semantic standards, quality needs and safe data exchange techniques. With 24 official languages spoken across EU Member States, the EU eHealth interoperability task is even more daunting. In order to fully unlock these sources of value, effort must be invested in standardisation and harmonisation (including common clinical models, tools and agreed approaches), privacy and security (including data access and data integrity) and communication (towards citizens, patients and healthcare providers) to allow citizen/patient empowerment, advance medical science and improve health for everyone. Infrastructures are nowadays mature enough to host extensible and secure HER services that can extend the healthcare continuum across borders and possibly embrace social care as well as healthcare-related data storage services such as fitness/wellbeing.

Scope

The focus is on developing and testing an extensible, secure and interoperable platform in compliance with the General Data Protection Regulation and the Network and Information Systems directive. The work should include the development of a European prototype implementation with embedded security and large scale testing and validation in a set of use cases with demonstrated relevance for citizens' health and with involvement of citizens, hospitals, medical doctors, pharmacies and health professionals across Europe. Health authorities should be involved in the relevant parts of the proposed work.

This action is expected to prototype a (i) citizen-centered implementation of a platform that can be integrated in a federated platform structure, easy-to-use and secure, constantly accessible and portable within any other Member States of the EU **and (ii) a data-driven platform to help the scientific community to benefit from user generated data (health, care, and health-related)** going beyond the currently established level of implementation. **Social Sciences and Humanities should thereby be considered appropriately.**

The proposal should demonstrate its ability to providing a harmonised/standardised and interoperable platform with demonstrated relevant functionalities at the different user levels including, but not limited to:

- Ingest appropriate and relevant data and information sets in real time or in batch mode, including multilingual text and binary data;
- Expandable to new fields and datasets, extensible so as to be able to integrate subsequent types of data;
- Ensure the translations, mappings of source information towards the clinical/database models while using appropriate standards and semantic services;
- Ensure scalability and performance of the services, such as in a cloud-based platform;
- Ensure data and metadata quality and curation to provide analytics and reporting capabilities;
- Provide rigorous security mechanisms such as identification, authentication and encryption services to allow secured data access and privacy, for example building on distributed ledgers such as blockchain;
- Operate in a secure environment;
- Provide citizen health data and health information import capabilities through a secured API;
- Provide appropriate export and/or access/use functionalities for citizens' health data and health information;
- Ensure citizens' opt-in processes are properly undertaken in order to allow the secondary use of data for scientific purposes and promoted health;
- Provide anonymisation/pseudonymisation capabilities to allow open access to health data for research and public health purposes;
- Ensure the proper and legitimate governance of the platform, ensuring the privacy and confidentiality of all citizens/patients/users at all time;
- Ensure compliance with relevant EU legislation, in particular REGULATION (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data;
- Ensure compliance with the Medical Devices Regulation as appropriate and regarding the specific requirements, such as the need for a unique device identification and proof of cybersecurity;
- **Consider legal aspects related to data contributions and use, such as portability, data donorship, based on existing regulations on national and EU level;**
- **Compliance or harmonisation with requirements of respective national legislation as appropriate, especially in terms of data protection and regarding electronic patient consent.**

This prototype should be primarily focused on citizens' health data generated by the citizens themselves, healthcare professionals or sourced from relevant healthcare organisations. It should include relevant components to enable further medical purposes and health research. This prototype should also be extensible so as to be able to integrate subsequent types of data such as quantified-self data or Omics data.

The consortium should cover a wide range of relevant stakeholders with multi-disciplinary expertise in technology, health and care, legal aspects, interoperability and user engagement. Involvement of Industry and health organisations is encouraged in the most appropriate phases of the project as well as a balanced European collaboration.



Call – Digital transformation in Health and Care

The design of the prototype should be user driven as to ensure the early buy-in of final users (from citizens to healthcare professionals and scientists). It should demonstrate tested and validated functionality in exchange of realistic and fit for the purpose EHR datasets exchange bi-directionally between: 1. hospitals, 2. medical doctor practitioners and hospitals, 3. hospitals and citizen, 4. medical doctor practitioner and citizen 5. Cross-border hospitals and 6. Citizen and research database.

Additionally, a targeted communication and education campaign with key information and tools should be produced to explain the functioning and purpose of the infrastructure (from empowerment of the citizen and promotion of health to the contribution to research) and incentives should be provided to users to accelerate the take-up and sustainability of the platform. The Connecting Europe facilities and the activities of the eHealth network should be taken into account to avoid duplication.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 10 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 proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Interoperable and secure electronic health data use across Europe for citizens and for promoting health,
- Improved health services and health conditions, enhanced quality and safety;
- Improved efficiency in terms of health economics such as on timeliness of intervention or measures taken, preventive actions/recommendations;
- Extended healthcare continuum across borders, actors and confinements;
- Improved collection and re-use of data and information sets for citizens' health and related research;
- Open, extensible and harmonisation-based EHR solution for app developers;
- Easy and safe for citizens to donate their health data for research;
- Contribution to the creation of the digital single market providing a scalable, extensible interoperable platform;
- Support integration with services under the Connecting Europe Facility.

Type of action	Research and Innovation action
Deadline	24 April 2018
Call identifier	H2020-SC1-DTH-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-dth-08-2018.html



SC1-DTH-11-2019: Large Scale pilots of personalised & outcome based integrated care

Specific challenge

Senior people are statistically at greater risk of cognitive impairment, frailty and multiple chronic health conditions with consequences for their independence, their quality of life (and the one of their families) but also for the sustainability of health and social care systems. There is also increasing evidence that interactions with the environment play an important role in the evolution of the patient's health status and condition. The challenge is now to foster secure, scalable and robust digital solutions for integrated care which will:

- Ensure a truly personalized delivery of health and social care, whilst supporting outcomes-based significant efficiency gains in health and care delivery.
- Promote a shift towards outcome-based delivery of integrated (health and social) care, which can be realised in a realistic operational, organisational and financial setting.
- Ensure trust of users and policy makers with regard to data access, protection and sharing.
- Design flexible but replicable solutions with a potential for financial sustainability, large scale deployment and further business and job creation opportunities.

Scope

The scope of this topic is to foster the large-scale pilots for deployment of trusted and personalised digital solutions dealing with Integrated Care, with a view to supporting and extending healthy and independent living for older individuals who are facing permanently or temporarily reduced functionality and capabilities. This in turn is expected to contribute to a patient-centred and truly individualized strategy in order to develop trusted, robust and financially sustainable services potentially useable in any Member States and the Digital Single Market, and applicable to a very wide range of patient pathways. These approaches aim to enable people to remain independent as long as possible and prevent hospitalisation.

Expected outcomes are in priority:

- Efficiency gains in terms of resource utilization and coordination of care.
- Flexibility and replicability of service delivery patterns to combine personalization and large scale adoption of services with patient and citizen feedback.
- Ensuring secure and efficient sharing and processing of all data and information involved in the supply chain at each step of data stream: access, protection, sharing, processing and storage.
- **Improvement of quality of life for the patient and his/her family and also of working conditions of all health care and social care providers involved in the supply chain, taking into account multi-disciplinary environment and constraints. Working conditions of professionals should cover in priority: work time management, quality of data/information exchange and multi-disciplinary coordination.**

Outcome indicators should contribute to the assessment of the action regarding trust, recruitment, added value for the patient (in terms of quality of life) and cost-efficiency altogether.

- Recruitment of professionals will be measured by the number of professionals registered as actual used compared with the number of professionals actually registered in the pilot site region.
- **Quality of life should be measured on the basis of commonly used questionnaires (like SF36) but also if required on the basis of specific disease-oriented measurement tools.**
- Measurement of cost-efficiency should be measured on the basis of work time information dedicated to each patient.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 6 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

Proposals should provide measurable progress towards:

- A common vision of technical prerequisites and framework to ensure users trust with regard to health and social data and information in IT supported environment, in line with existing EU data protection regulation (and if required with EU reflection on platforms).
- An evidence-based minimum data set on key points of the pathway:
- Clerical information: complete definition
- Clinical information: generic definition.
- Harmonisation, certification, approval labelling or reliable identification of adequate solutions for integrated care.
- Robust and reliable and replicable business models for IT supported solutions in a truly personalized and multi-disciplinary environment.



Call – Digital transformation in Health and Care

Type of action	Innovation action
Deadline	24 April 2019
Call identifier	H2020-SC1-DTH-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-dth-11-2019.html



SC1-HCC-01-2018: Supporting investment in smart living environments for ageing well through certification

Specific challenge

The building stock in Europe today is not fit to support a shift from institutional care to the home-based independent living model for the ageing population.

There is a recognised need to facilitate the development of community-based services and to stimulate the emergence of "age-friendly home" conversions. These homes should enable independent living and remote health monitoring to the growing ageing population. In addition to physical / spatial alterations, making homes age-friendly should include upgrading existing ICT infrastructure to support digital services for independent living and connected and integrated care including telehealth and telecare, as well as solutions supporting health status and healthy lifestyle (e.g. sensor based physiological measurements, mHealth apps, telepresence, robotics supported living). Ideally, these ICT upgrades for independent living and health status management could be combined with the needs related to energy-efficiency, security, and entertainment.

Despite its proven potential for systemic change, large-scale investment (both public and private) in sustainable homes still faces barriers, often caused by insecurity about personal, societal and financial returns on investment and a lack of clarity about concrete elements of sustainable age-friendly living environments and the choice of building, retrofitting and adaptation measures to be implemented.

Coordination and support is needed to develop a sound basis for safe investment decisions in smart age-friendly, adaptable living environments made by procurers, public authorities, industry and citizens.

This should be achieved by bringing stakeholders together (including researchers from the social sciences and the humanities), synthesising innovation from European projects, analysing and aligning (emerging) national certification and labelling schemes and facilitating development and exchange of best practices.

This CSA should aim to support the establishment of a European reference framework for age-friendly housing and should build on the ongoing work in the emerging stakeholder-driven Reference Framework for Age-Friendly Housing and the smart living environments for ageing well as demonstrated in the Large-Scale Pilot on Internet of Things.

Scope

The action will consolidate knowledge from related projects and initiatives to identify the most appropriate scheme for harmonisation, certification, approval labelling or other forms or reliable identification of adequate smart living environments for ageing well, including indicators and good practices.

In a coordinated effort with relevant R&I projects, national initiatives and other stakeholders (among them national schemes, procurers, civil society representatives, certification and regulation & standardisation bodies, building and ICT industry), the scheme should be developed and agreed for adoption.

Tasks include:

- Frequent exchange with relevant R&I projects which can contribute to certification, especially large-scale pilots on Internet of Things and other projects in the fields of independent living and ageing well;
- Providing an overview of relevant standards;
- Development of a comparative overview of relevant European and international certification or labelling schemes with their respective advantages and disadvantages;
- Development and validation of a full concept of European certification scheme based on results of comparison and validation;
- Quality and risk management concept for sustainability and further development of the proposed scheme;
- At all stages, the CSA should take into account outcomes of the ongoing work around a European Reference Framework on Smart Age-Friendly Housing and ensure that its subject and conclusions align with the framework;
- It will support the delivery on the Commission's commitment to Leadership in the Internet of Things as described in the Communication "Digitising European Industry - Reaping the full benefits of a Digital Single Market", particularly in the field of smart living environments.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 1 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 proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Agreed scheme for European certification with potential for wide-spread adoption across Europe;
- Adequate basis for investment decisions in smart living environments for ageing well (both private and public) based on expected returns;
- Proof of increased investment into building stock fit for the longevity challenge, i.e. to move from institutional care to the home-based independent living model for the ageing population.



Call – Digital transformation in Health and Care

Type of action	Coordination and support action
Deadline	24 April 2018
Call identifier	H2020-SC1-DTH-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-hcc-01-2018.html



Call – Digital transformation in Health and Care

SC1-HCC-02-2019: Support for the large scale uptake of open service platforms in the Active and Healthy Ageing domain

Specific challenge

In the past years several open service platforms for Active and Healthy Ageing domains have been developed, originating from the medical, independent living, and IoT domain. These platforms aim at building a common basis for application development, assuring interoperability at the application and service level, and reducing development cost by re-use of components. As these platforms mature more insight is needed in the way they contribute to the development of a scalable and open market for digital solutions for health and ageing, and which value is actually achieved through them. The integration of platforms between different domains will introduce new interoperability issues that need to be tackled. A coordination and support action that addresses these issues and gathers the insight referred above is needed in order to promote the effective uptake and impact of open platforms.

Scope

Proposals should deliver an inventory of the state of the art and analyse the use of open service platforms in the Active and Healthy Ageing domain, covering both open platforms -such as universAAL and FIWARE - and partly-open/proprietary platforms developed by industry. In addition, proposals should address interactions between platforms.

Proposals should elaborate a methodology that monitors open platform development, adoption and spread across Europe, with relevant KPI's, factors that support or hinder the uptake of open platforms in Europe, including the associated evolution of the ecosystems and stakeholder networks.

Proposals are then expected to put this methodology into practice and study the use of open platforms by, amongst other possible actions, collecting and processing data from running and recently ended projects –including EU funded projects- and initiatives that use the referred platforms, with special focus on those building upon UniversAAL and FIWARE. They should also address the evolution in the further development and maintenance of the platforms as well as the use and sustainability of relevant open platforms.

Proposals should elaborate evaluation guidelines aimed at collecting evidence on socio economic costs and benefits of the use of open platforms as means for service delivery to serve as a reference for promoting further use of this approach.

Proposals are expected to include activities aimed at fostering integration efforts and knowledge exchange between the projects and initiatives referred above and also the user communities around the platforms. **Proposals should collect best practices and practical experience** with integrating multiple platforms. Technical, **organisational, financial/business and legal aspects should be taken into account.** Proposals should explore and link relevant on-going policy initiatives in the field such as the Blueprint for digital transformation of health and care.

Proposals should describe collaboration activities with other relevant European projects or initiatives, e.g. the European Innovation Partnership on Active and Healthy Ageing. They are also expected to include dissemination activities for different stakeholder groups - technology developers, policy makers, end users-, preferably in the context of major events such as EIP-AHA summit, AAL Forum and eHealth Week.

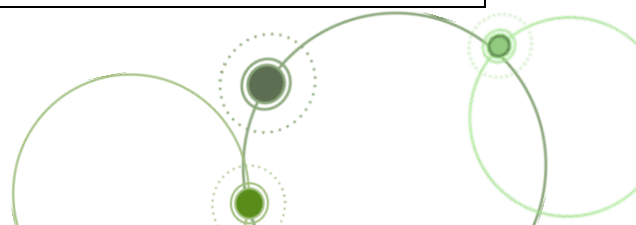
The Commission considers that proposals requesting a contribution from the EU of up to EUR 1.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

Proposal should present appropriate indicators to measure their progress and impact in these areas:

- Identification of the critical success factors of open platform development, deployment, and spread;
- Increased knowledge on the differences and synergies between open platforms, with regard to both their features and their interoperability on different levels (data / information / applications / services);
- **Evidence for the socioeconomic benefit of open service platforms;**
- Engagement of required stakeholders to ensure the reliability of the data collected and to maximize the value of results achieved;
- Increased levels of participation by service platform providers and platform users in networking and knowledge exchange events;
- Contribution to the effective implementation of relevant policy initiatives in the field;
- Enhanced synergies with other European projects to make joint progress on favourable framework conditions to scaling-up digital innovation for active and healthy ageing across the EU, including standardisation.

Type of action	Coordination and support action
Deadline	24 April 2019
Call identifier	H2020-SC1-DTH-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-hcc-02-2019.html



SC1-HCC-05-2018: Support to a Digital Health and Care Innovation initiative in the context of Digital Single Market strategy

Specific challenge

The Communication on the mid-term review of the implementation of the Digital Single Market Strategy (COM(2017)228) identified three priorities on digital transformation of health and care (DTHC): citizens' access to their data; data infrastructure; interaction between citizens and healthcare providers for better health management. That document indicated that specific measures would be elaborated in a dedicated Communication to be adopted in the months to follow.

Progressing significantly at EU scale on the referred priorities requires aligning the efforts of many relevant players across Europe, namely their efforts on research and innovation, in line with activities supported by H2020, as well as efforts on deployment, political coordination, stakeholder awareness and mobilisation, etc. Such coordinated European action on is already supported through various frameworks including the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA), the eHealth network of Member State representatives, the eHealth stakeholders group, the health and care activities under the Digitising European Industry platform and other. It is also the focus of actions under European programs including H2020 (notably its societal challenge 1), the Active and Assisted Living Joint Programme, the IMI and ECSEL Joint Undertakings and the Knowledge and Innovation Community on Health from the European Institute of Technology.

Scope

The action should address the activities indicated below, in close coordination with European Commission services, while considering the coordination activities and programs mentioned above, relevant projects and actions supported by the EU, and other relevant initiatives.

1) Delivery on the third DTHC priority of the DSM (focusing on user-centred integrated care), which should represent approximately 75% of the total effort of the action. This will concentrate on supporting and extrapolating the lessons from practical experiences across Europe that are particularly impactful, successful and replicable. The focus will be on large scale deployment of digital solutions for chronic diseases and integrated care (that absorb the majority of healthcare budgets and where there is a big scope for improvement) and patient-centred care, considering a limited set of implementation scenarios which seem particularly impactful. The experiences to be considered may cover public and non-public initiatives, including from the reference sites and other participants of the EIP on AHA, as well as relevant European projects (finished or not) on integrated care. Three tasks will be undertaken:

1.1. Support the identified initiatives and projects, assessing their impact, analysing their strengths and weaknesses, and providing advice for further deployment, including on available funding from public (EU or other) and private sources as well as other types of assistance. In all cases, and notably for EU funding and assistance, the aim should be to maximise their leverage effect and demonstrable impact.

1.2. Replicate the lessons from the selected initiatives and projects, through a common framework for assessing impact (with particular consideration to the MAFEIP), twinning activities, and collaboration actions between relevant initiatives and stakeholders. The later may include a variety of instruments including pre-commercial and innovation procurement. Success and failure factors will be analysed and compared in view to assess their potential replicability. This work should build on the H2020 support action funded under SC1-HCO-17-2017154, and any other relevant efforts to link initiatives in the scope of the third DTHC priority of the DSM.

1.3. **Scale up the deployment across Europe of DTHC solutions, analysing, elaborating on and promoting enabling factors and "building blocks"**, which may lead to European reference frameworks. **These may relate e.g. to mHealth, smart homes, smart hospitals, legislation and practices on data management, recognition of professions and professional acts, reimbursement schemes, health technology assessment, incentive and penalty schemes, performance and outcome-based approaches, subsidy schemes, interoperability and standards, skills and literacy measures, etc.** This work will build up on the scale-up strategy of the EIP on AHA and any other efforts to scale at European level initiatives in the scope of the third DTHC priority of the DSM.

2) Collaboration platforms on key aspects of the three DTHC priorities of the DSM, which should represent approximately 20% of the total effort of the action. This requires to identify relevant stakeholders and initiatives across Europe and engage them to collaborate, jointly analyse key challenges and solutions, elaborate common strategic agendas and commitments for action in three areas:

2.1. Citizens' access and management of data relevant to their health and wellbeing (first DTHC priority). This will address public and private initiatives allowing active citizen involvement with regard to data relevant to their health (access, manage, sharing, donating, etc). It will be important to reach out to relevant stakeholders, e.g. health authorities, patient and healthcare provider associations, data protection authorities, data platforms, etc. Account should be taken of schemes to share data, including across borders, such as the health Digital Service Infrastructure under the Connecting Europe Facility (CEF), and other relevant ongoing projects and actions funded by the EU (e.g. topic SC1-DTH-08-2018).

2.2. Aggregated demand for infrastructure capacity to handle health data (capture, transfer, process, store, etc) by researchers, developers of products and services and other players involved in the secondary use of data (second DTHC priority). The focus will be on the interaction between the referred demand and the supply for generic data infrastructure capacity, considering in particular the initiatives on EuroHPC (high performance computing), European Open Science Cloud (EOSC) as well as future related activities supported by the H2020 and the (CEF) programs. Special attention should be paid to security, privacy and identification aspects. Account should be also taken of the most relevant ongoing projects and actions funded by the EU (under H2020, CEF, structural funds, etc) focusing on health data.



Call – Digital transformation in Health and Care

2.3. Interaction between citizens and healthcare providers (third DTHC priority), including feedback from patients and on health outcomes, exploitation of real world data, and other aspects meant to improve quality of care and health management in general. This will refer to various initiatives already existing in this area.

3) Vision of EU coordination and support on DTHC beyond 2020, which should represent approximately 5% of the total effort of the action. Considering inputs gathered through the implementation of the two other work packages and additional feedback from relevant stakeholders, advise on future EU support on DTHC goals, including possible financial support under the next Multi-annual Financial Framework (e.g. support for research and innovation, cohesion, strategic investment), as well as legislative, policy, or other types of intervention.

The proposal should include partners with demonstrated experience of delivering on the areas mentioned above, who are widely acknowledged for their expertise and results, while providing a broad representation of constituencies relevant to DTHC, as well as of regions across Europe.

Beyond the profile and credentials of their partners, the proposal should demonstrate capacity to reach out to and effectively engage relevant stakeholders across Europe, influence their policies and practices as well as stimulate cooperation amongst them.

Moreover, the proposal should be able to credibly deliver on the expected impacts identified below. This will require relevant expertise on a variety of domains and an appropriate level of resources convincingly allocated to the action.

The Commission considers that proposals requesting a contribution from the EU up to 4 M€ over two years 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 proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Effective support to and engagement of stakeholders active on the third DTHC priority of the DSM, resulting in tangible impact from the beginning of the action and sustainably throughout its duration.
- Functional collaboration platforms on key aspects of the three DTHC priorities of the DSM and instrumental contribution to the implementation of EU policy on DTHC in the context of the DSM.
- Actionable strategic vision for EU policy on DTHC beyond 2020, including appropriate mobilisation of EU instruments.

Type of action	Coordination and support action
Deadline	24 April 2018
Call identifier	H2020-SC1-DTH-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-hcc-05-2018.html

Topics with minor SSH relevance

SC1-HCC-03-2018: Support to further development of international cooperation in digital transformation of health and care

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-hcc-03-2018.html>

SC1-DTH-10-2019-2020: Digital health and care services

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-dth-10-2019-2020.html>



Call – Trusted digital solutions and Cybersecurity in Health and Care

DT-TDS-01-2019: Smart and healthy living at home

Specific challenge

Citizens in a rapidly ageing European population are at greater risk of cognitive impairment, frailty and multiple chronic health conditions with considerable negative consequences for their independence, quality of life and for the sustainability of health and care systems. The challenge is to foster large-scale deployment of integrated digital solutions which will bring improved quality of life to citizens while demonstrating significant efficiency gains in health and care delivery across Europe.

Scope

A mix of advanced ICT ranging from biophotonics to robotics, from artificial intelligence to big data and from IoT to smart wearables can address these challenges. A platform for smart living at home should integrate these technologies in an intelligent manner.

The pilots should build on open platforms, standardised ontologies, APIs and results from IoT-based smart living environments, service robotics and smart wearable & portable systems and clearly go beyond current state of the art in terms of scale, the capabilities for personalisation, adaptation, and user acceptance.

Pilots in the selected areas should clearly cover the supply and demand sides. For further expanding with other users, developers of additional applications, replication of the pilot through new sites, and complementary assessment of the acceptability of the use cases where appropriate, the actions in this topic may involve financial support to third parties as outlined in the chapeau 'Platforms and Pilots'.

A clear methodology and impact indicators for socio-economic impact assessment from using the platform should be included, where possible using the MAFEIP framework. The number of users involved and duration of pilot services should be sufficient to ensure significance in impact analysis, with a minimum of 4 pilot sites in 4 countries.

The proposed pilots should also demonstrate feasibility of integration with other relevant application domains such as energy, transport, or smart cities, including interoperability, along with data security and integrity, and models for data sharing and valorisation are to be developed in order to create incentives for data aggregation across different platforms and application areas. **Regulatory aspects and legal aspects of data ownership should be addressed. Relevant ethics and gender issues should be taken into account.**

Proposals should address one of the two following areas:

1. Intelligent and personalised digital solutions for sustaining and extending healthy and independent living. The objective is to develop and deploy innovative and user-led digital solutions capable of supporting and extending healthy and independent living for older individuals who are facing permanently or temporarily reduced functionality and capabilities. **Innovative ways for ensuring user-friendly and accessible interface design and new intuitive ways of citizen interaction and trust creation are needed. Special emphasis should be given to viable concepts that ensure security and privacy by design, data protection, safety, security and trust in the resulting system and service delivery inside and outside the home.**

2. Personalised early risk detection and intervention. The objective is to develop and deploy innovative and user-led solutions building on big data for personalised risk detection, advanced health monitoring and early interventions for people facing increased health and social risks. Proposals should design and demonstrate innovative personalised treatments and therapies based on early detection and risk avoidance. Because of the personal and sensitive nature of health data, special attention needs to be paid to trust, privacy and data protection.

For this topic, the four activities and impact criteria described in the chapeau 'Platforms and Pilots' have to be applied. Pilot projects are expected to contribute to the consolidation and coherence work that will be implemented by the CSA supporting the activities defined under " DT-ICT-14-2019: Digital Platforms/Pilots Horizontal Activities" below. This requires that they contribute to clustering their results of horizontal nature (interoperability approach, standards, security and privacy approaches, business validation and sustainability, methodologies, metrics, etc.).

The Commission considers that proposals requesting a contribution from the EU between 15 and 20 EUR million for Innovation Actions would allow the areas to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. At least one proposal should be funded for each of the above-mentioned areas

Expected Impact

- Emergence of European-led platform for smart and healthy and independent living at home;
- Increased competitiveness of the European ICT industry in the domain, through enhanced interoperability, best practices for viable business and financing models and scalable markets;
- Demonstrate links and build synergies with Member States' and regional initiatives in this area;
- Improved and evidence-based efficiency of health and care systems with demonstrated added-value of underlying technologies;
- Improved quality of life and health status for involved users and carers, with demonstrated added-value of underlying technologies;
- User accepted, validated innovative solutions addressing accessibility, privacy, security, vulnerability, liability, and trust in connected data spaces.



Call – Trusted digital solutions and Cybersecurity in Health and Care

Type of action	Innovation action
Deadline	14 November 2018
Call identifier	H2020-SC1-FA-DTS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-tds-01-2019.html



Call – Trusted digital solutions and Cybersecurity in Health and Care

SU-TDS-03-2018: Raising awareness and developing training schemes on cybersecurity in hospitals

Specific challenge

ICT infrastructures and data have become critical for the functioning of the hospitals and care systems. Due to increasing connectivity, the exposure to risks of cyber-crime is constantly increasing. Cyber-attacks are a potential danger to the safety of patients and to the privacy of sensitive health data. Some cybersecurity threats are caused by human errors or ignorance.

Scope

Awareness raising of staff working in healthcare settings on security and data privacy is important to reduce cybersecurity vulnerabilities and exposure.

Training of IT staff working in healthcare settings is of high priority in order to enforce the knowledge on information security processes and data protection procedures. **This may include proactive managerial and technological strategies to reduce vulnerabilities** e.g. best practices to minimize the potential for becoming a victim of phishing and ransomware or strategies to respond to attacks,.... **Appropriate training on the permitted use of patient health data/ information according to the requirements of relevant data protection law(s)** is also a priority.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 1 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Proposals under this topic may be subject to security scrutiny if they could potentially lead to security-sensitive results that should be classified (see guide for classification).

Expected Impact

The proposal should provide appropriate indicators to measure its progress and specific impact in the following areas:

- Less human errors causing cybersecurity threats;
- Less risk of data privacy breaches;
- Reduced cybersecurity vulnerability of Health and Care services, data and infrastructures;
- Increased patient trust and safety.

Type of action	Coordination and support action
Deadline	24 April 2018
Call identifier	H2020-SC1-FA-DTS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-tds-03-2018.html





Societal Challenge 2

Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy

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

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. 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- Belowground biodiversity interaction with plants (RIA)

Proposals will lay the ground for better understanding and applying the benefits of soil organisms for resource uptake, plant growth, development and health. Activities will explore the processes and interactions between plants and the different plant and soil micro and macro biota. Work will expand knowledge of the impacts of land management on soil biological dynamics and its ecological importance, e.g. for nutrient cycling processes, plant defence mechanisms (i.e. disease prevention/pest control), plant development and growth. Findings on the beneficial effects of functional soil biodiversity for crop production will feed into the development of strategies and tools for sustainable plant/soil management. Proposals should fall under the concept of the 'multi-actor approach' to ensure that knowledge and needs from various sectors including farming are brought together.

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' 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 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



Call – Sustainable Food Security

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.

Type of action	Research and Innovation action
Deadline	1st stage - 23 January 2019 2nd stage - 04 September 2019
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-01-2018-2019-2020.html



LC-SFS-03-2018: Microbiome applications for sustainable food systems

Specific challenge

The EU food system is an important part of the economy and society in Europe. Given the current context of societal, environmental and economic changes, there is need for constant improvement in terms of productivity, quality, safety, market orientation, adaptability, and international competitiveness. Knowledge of the potential of microbial systems, or microbiomes, throughout the food chains, is a promising means to this end. Microbiomes are known to regulate the productivity and health of major food sources such as plants and animals of both terrestrial and aquatic origin, therefore playing a major role in food and nutrition security. They also play a major role in food and feed processing and metabolism in different organisms throughout the evolutionary scale, ultimately influencing human health. A better understanding of the microbiomes associated with the food system would help address a number of key societal challenges including food and nutrition security, health and wellbeing, food waste management, climate change adaptation and mitigation.

Scope

Proposals shall focus on concrete microbiome applications which are of benefit to the food system. Building on knowledge already accrued from the isolation and characterization of microbiota associated to food production systems (plants, soils, animals, marine), proposals should look into ways to improve the quantity, quality and safety of the food we produce and consume in Europe. Microbiome applications in the treatment of food waste and alternative uses which promote sustainability and circularity are also included in the scope. Proposals are expected to develop holistic approaches across all stages of the food system from fork to farm including aquatic (marine and fresh water) resources. Activities shall also aim at increasing knowledge and applications derived from the marine microbiome for the development of new products, services or processes for food and health, while contributing to climate change mitigation. The inter-relations among microbiomes from different components across food chains - from soil to plants, animals, the marine and the human gut - and their impact on food and nutrition security and health shall also be considered. **International co-operation, transdisciplinary research, and integration of SSH and RRI including gender aspects to ensure long-lasting implementation of the results are encouraged.** Activities shall build on existing data and knowledge on the microbiomes associated to food production and processing systems, including results of EU funded projects in FP7 and Horizon 2020. Activities shall optimise the use of pre-existing databases and research infrastructures (including the distributed and virtual ones) and the opportunities granted by big data management tools, thus ensuring interoperability, standard methods and enhanced networking. **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 food sector and the bioeconomy.**

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 10 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, 3, 9, 12, 13 and 15, the EU's Bioeconomy Strategy 2012, and the FOOD 2030 SWD, and the Blue Economy communication, proposals should explain how activities included are expected to:

- Raise awareness of the potential behind microbiomes from terrestrial and aquatic environments in transforming and future-proofing our food system;
- Bring to market new and cost-effective commercial applications to assist different stages and processes throughout the food chains, by 2025;
- Improve overall knowledge of microbiomes from land and seas towards the market needs in areas where applicability and readiness is not visible;
- Improve overall sustainability, including climate change mitigation, and innovation capacity of the food system through the use of microbiome applications and knowledge;
- Move available solutions from TRL 5/6 to TRL 7.

Type of action	Innovation action
Deadline	13 February 2018
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sfs-03-2018.html



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

Specific challenge

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 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. Work should connect the risk assessment of PPPs with initiatives for the protection of European biodiversity, as well as initiatives under 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' 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);



Call – Sustainable Food Security

- foster lasting transdisciplinary cooperation in the fields of life sciences, human, plant and animal health and environmental sciences and strengthen the European scientific community (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.

Type of action	Research and Innovation action
Deadline	1st stage - 23 January 2019 2nd stage - 04 September 2019
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-04-2019-2020.html



SFS-07-2018: Making European beekeeping healthy and sustainable

Specific challenge

The outputs of beekeeping can be private goods (e.g. honey production), public goods and services (e.g. pollination of wild flowers) or in-between (e.g. non-contracted pollination of crops). Many initiatives aim to expand knowledge on honeybee colonies and their environment. However, the lack of a holistic approach makes it difficult to use this knowledge to best effect. Key factors for healthy and sustainable European beekeeping are determined by what happens in or around hives but also by wider socioeconomic and ecological conditions. However, much still needs to be learnt about the interactions of stressors affecting honeybees and their relative contribution to colony losses. The EFSA is developing an integrated risk assessment through the Multiple Stressors in Bees (MUST-B) project. As part of the project, the HEALTHY-B initiative provides a toolbox to assess honey bee colony health in a holistic way. This conceptual framework, the Health Status Index, needs further work to become operational. Little is known about how beekeepers assess and overcome the complexity of their business environment and what and how it influences their health management decisions (e.g. to treat against pathogens or not, to continue keeping bees or to quit, to replace lost colonies or not, to use local or introduced subspecies) and what makes them successful, including whether and how healthy colonies result in sustainable beekeeping and pollination. More information is needed on the role of actors other than beekeepers.

Scope

Proposals will develop ready-to-use tools for operationalising the 'Health Status Index' developed by EFSA28 to enable data collection and return to beekeepers, while **exploring the various socio-economic and ecological factors beyond bee health to provide comprehensive blueprints of successful business model(s) of European beekeeping**. Proposals should also consider issues related to emerging risks or pathogens (e.g. the small hive beetle and the Asian hornet *Vespa velutina*). Proposals should aim to create an EU platform to collect and share knowledge of science and practice related to honeybees, their environment and agricultural and beekeeping practices, in order to develop and implement an action plan for a coordinated and harmonised approach to the collection of related data and information and to minimise the impact of biotic and abiotic stressors. The proposals should build on past or ongoing EU-funded research (e.g. Bee Health Workbench), and take into account other relevant EU initiatives (e.g. evaluation of the EU's apiculture measures, Member State bee monitoring projects), and entities (EFSA, EURL, JRC), as appropriate. Funded activities will include organising and coordinating data sets and standards relating to the environment and agricultural and beekeeping practices relevant to the monitoring of honeybee health and giving all relevant stakeholders access to such information. Work will serve to select the most promising and relevant indicators for bee health that could be developed and/or tested, and validate technologies for monitoring colonies and indicators in an automated or semi-automated way to facilitate standardised and accurate data collection and transfer. The selected project should carry out a pilot study in different representative European countries to test, standardise and validate methods for measuring and reporting selected indicators and factors affecting bee health, making it possible to give appropriate feedback to beekeepers both through dissemination and training and perform statistical analyses of the relative importance of relevant biological, chemical and environmental stressors affecting bee health and their pollination services. **A multi-actor approach bringing together beekeepers, bee inspectors, other stakeholders (e.g. plant growers) and scientists (including social scientists) is required.**

The Commission considers that proposals requesting a contribution from the EU of up to 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

Funded activities will provide the critical knowledge necessary to understand bee colony health and **identify important socio-economic components of sustainable beekeeping**. The outputs of the project must contribute to:

- an EU platform on science and practice in relation to honeybees, their environment and agricultural and beekeeping practices;
- a pilot toolbox to improve monitoring of honeybee colonies and assessment of the multiple stressors that affect colony health;
- a better understanding of the management decisions made by beekeepers;
- **potential and viable business models for EU beekeeping, with and without public interventions;**
- support to scientists, risk assessors and policy makers in assessing and managing multiple stressors that affect the sustainability of the EU's apiculture.

More generally, the funded activities will help beekeepers better manage honeybees and contribute to the sustainability of EU beekeeping and related pollination services.

Type of action	Research and Innovation action
Deadline	1 st stage - 13 February 2018 2 nd stage - 11 September 2018
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-07-2018.html



SFS-11-2018-2019: Anti-microbials and animal production

Specific challenge

Since their discovery, anti-microbials have played an essential role in the treatment of infectious diseases in humans and farmed animals, whether terrestrial or aquatic, and have enormously improved population health as well as food security and safety. However, with the widespread use of anti-microbials for human and animal health in recent decades, the world is increasingly confronted with the emergence and spread of microbes that resist anti-microbial treatment. Discoveries of new anti-microbials are not keeping up with pace anti-microbial resistance (AMR). AMR is responsible for an estimated 25 000 deaths yearly and over EUR 1.5 billion of healthcare costs and productivity losses in the EU alone. Addressing AMR is a cross-sectorial issue, requiring action by different policy areas, from health to agriculture, aquaculture and environment, from research to users, stakeholders and policy makers. A large proportion of anti-microbials is used in livestock production. Although links between this and resistance on human health are not fully established, agriculture is a main target for action. In line with the EU animal health strategy "prevention is better than cure" alternative strategies to anti-microbials need be developed. Alternatives to antimicrobials may be valuable, although evidence of efficacy in controlled trials is currently very limited.

In 2011, the European Commission came up with a five year action plan to fight against AMR and the new action plan³⁴ is focussing on three pillars: making the EU a best practice region; boosting research, development and innovation; shaping the global agenda. For the purpose of this topic, the words 'animals' and 'farmers' apply to both terrestrial and aquatic animals.

Scope

A. [2018] Rethinking management of health of farmed animals (RIA)

The activities should include socio-economic and behavioural science to analyse the practices, information and decision systems of farmers, veterinarians and other professionals involved in managing the health of farmed animals with (and without) reduced drug use practices, in order to: identify the reasons why farmers accept or reject health management recommendations (e.g. use vs. non-use of anti-microbials, use of vaccines as a preventive measure); identify levers/incentives for adherence to prudent use principles by veterinarians and farmers; create a basis for predicting the behaviour of stakeholders (breeding organizations; feeding and pharmaceutical industries, governments) involved in health management to estimate the effectiveness of intervention measures; create a basis for assessing resource allocation for health management (disease prevention, monitoring, therapeutic intervention, compensation of losses, etc.). The activities should also develop - and if possible validate - integrative strategies for animal health, to foster minimal use of anti-microbials; from breeding and feeding of farmed animals, to biosecurity, good husbandry practices, animal welfare and farm management. Proposals should address both conventional and organic farming. Proposals should fall under the concept of 'multi-actor approach', involving representatives of farmers, extension services, veterinarians and other professionals as well other animal production stakeholders (e.g. feeding, breeding, pharmaceutical industries), and should involve training activities.

B. [2019] Alternatives to anti-microbials (RIA)

Activities shall focus on developing and testing new, efficient and targeted alternatives to anti-microbials in farmed animal production. This could be any type of alternative intervention measures (prophylaxis/prevention or treatment), other than vaccines - such as the modulation of host immunity and/or of microbial flora, feed additives or novel molecules. Basic research on gut microbiome should not be covered under this topic. Proposals should take into account the guidelines, standards and legislation in the field, to facilitate the marketing of the measures the project will identify. Proposals should fall under the concept of 'multi-actor approach, involving at least representatives of practitioners (e.g. veterinarians), of the feed/feed additives and pharmaceutical industries.

The selected projects under sub-topics A and B should follow the policies and contribute to the objectives of the STAR-IDAZ international research consortium. International cooperation is recommended.

The proposals under sub-topic A and sub-topic B should liaise with other relevant EU projects and initiatives, in particular JPI AMR and the project selected under topic SFS-36-2017. The projects should take into account the guidelines and standards of relevant EU and international statutory bodies, in particular the European Medicines Agency and the World Organisation for Animal Health.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 6 million, for sub-topic A and 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

The funded activities will contribute to the fight against anti-microbial resistance arising from farmed animal production. More specifically they will help:

- develop options for reducing the use of anti-microbials in farming (scope A);
- develop alternative intervention measures from technology readiness levels (TRL) 5-6 to TRL 7 (scope B).

More generally, the funded activities will contribute to improved animal disease prevention and control, reduced production losses and improved resource-use (scopes A and B).



Call - Sustainable Food Security

Type of action	Research and Innovation action
Deadline	Call 2018 1 st stage - 13 February 2018 2 st stage - 11 September 2018 Call 2019 1 st stage - 23 January 2019 2 st stage - 04 September 2019
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-11-2018-2019.html



Call - Sustainable Food Security

DT-SFS-14-2018: Personalized Nutrition

Specific challenge

The World Health Organization estimates that about 80% of premature heart disease cases, strokes, type 2 diabetes and 40% of cancers could be avoided if the major risk factors for non-communicable diseases, such as unhealthy diets, were eliminated⁴¹. Whereas a one-size-fits-all approach may fail, personalized nutrition can empower consumers to adhere to a long-lasting, healthy, pleasurable, nutritional and sustainable diet when tailored to individual parameters such as: the physical and psychological characteristics (health status, phenotype, genotype, microbiome configuration), the needs and preferences, behaviour, lifestyle, and budget; alongside to general economic factors (e.g. market prices) and socio-cultural aspects. Personalised nutrition can be used for different target groups from healthy people to patients such as malnourished people, vulnerable groups, people with allergies or non-communicable diseases, including cancer. **Specific dietary and behavioural advice and/or support should be based on robust scientific evidence and knowledge from nutritional, medical, biological and social sciences and the humanities. Tackling this challenge requires a combined inter- and transdisciplinary approach engaging academics, policy makers, civil society, relevant industry and market actors.**

Scope

Proposals shall deliver innovative solutions for personalized nutrition advice and/or support that will help consumers to achieve their optimal health and well-being and to adopt long-term healthy and sustainable diets. These concepts/tools/products/services shall focus on the consumer benefit and integrate all relevant factors such as health indicators, nutritional requirements, food composition, lifestyle, preferences, environment (i.e. cultural and socio-economic), etc. Moreover, proposals shall address all levels of personalization: from food choice in the shop, to customised production and delivery, to specific advice/warning systems (e.g. new, smart digital/ICT applications). Besides activities such as prototyping, testing, demonstrating, piloting and large-scale products validation in a near to operational environment, proposals may include limited research activities. Assessment and deepening the understanding of the drivers of food choice, the food environment, incentives and other relevant aspects influencing the motivation and behavioural change needed to sustain long term healthy and sustainable diets are essential. Proposals shall also develop and/or validate innovative approaches/methods/technologies for dietary assessment (e.g. measure dietary intake). Proposals shall build on existing knowledge and make use of relevant research infrastructures. **To ensure the success of the developed actions, consumer engagement and acceptance, gender differences in patterns of nutrition and ethical issues, particularly on the use of personal data, should be taken into account.** When applicable, proposals should address requirements from relevant EU regulatory frameworks, including pre-market approval.

The Commission considers that proposals 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, 9, 12 and 15, the EU's Bioeconomy Strategy 2012, and the FOOD 2030 Staff Working Document, proposals should explain how activities included contribute to:

- Empowered consumers able to make healthy and sustainable dietary choices;
- Personalized diets upon scientific-based dietary assessment and advice, by 2025;
- **Increased consumer trust in personalized nutrition advice and/or support;**
- Prevention of diet-related and non-communicable diseases;
- Increased/optimal health and well-being of individuals adopting long-lasting healthy and sustainable dietary behaviour;
- **New market opportunities for novel concepts/tools/products, or services in personalized advice and/or support;**
- **New market opportunities for novel approaches/methods/technologies for dietary assessment.**
- Move available solutions from TRL 5 to TRL 6/7

Type of action	Innovation action
Deadline	13 February 2018
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-sfs-14-2018.html



Call - Sustainable Food Security

SFS-16-2018: Towards healthier and sustainable food

Specific challenge

Increasingly, consumers are paying attention to healthier food diets, "healthy" food attributes (such as "freshness", "naturalness" and "nutritional value") and overall sustainability of production and processing methods. To meet these demands food production and processing need to further evolve in terms of better preservation of the raw material and natural food properties while ensuring healthy, tasty and sustainable food. In parallel it is necessary to improve the understanding of the influence of consumers' practices in maintaining the healthy food attributes from purchasing to consumption. Other important trends include a growing demand for regional and locally produced/supplied and less processed food. This has resulted in the emergence of new SME-led business models and an increasing number of farmers engaging in food processing (either on farm or by sharing processing facilities) and local food value chains. Developing effective and sustainable logistics systems for these types of products is essential to fully capitalise on new business opportunities in local/regional food systems and meet consumer expectations.

Scope

Activities will assess and develop food processing methods (e.g. minimal, mild, careful processing) with the potential to optimise the preservation of the naturally occurring nutritional, structural and functional food properties, even once the food is processed. **They will focus on innovative small-scale processing technologies** tailored to the needs of SMEs, **while ensuring** links between food processing and primary production. Work will include, as appropriate, testing of solutions and assessment of their impacts on product characteristics (food structure, composition and stability, safety, nutritional and sensory quality), traceability and authenticity, **sustainability (environmental, social, economic)** and public health. When needed, proposals should address requirements from relevant EU regulatory frameworks including needs for pre-market approval. Activities will also look into the potential for the post-harvest preservation of naturally occurring nutritional food properties. Furthermore, **work will explore appropriate business models adapted to proposed methods / technologies, taking into account organisation and distribution concepts, consumer behaviour / acceptance and/or the potential for consumer engagement.** Proposed work shall benefit both the conventional and organic sectors. Activities will fall under the concept of the 'multi-actor approach' and allow for adequate involvement of food SMEs, farmers and consumers.

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 enhance market orientation and capacity of small and medium scale food processors and its suppliers to meet consumer demand for healthier food diets.

In the short- to medium term work will:

- increase the availability of food with "healthy" attributes, resulting in positive impacts on sustainability and public health;
- develop food processing methods/technologies adapted to the needs of the SMEs and with the potential to optimise the preservation of the naturally occurring nutritional, structural and functional food properties;
- develop flexible and optimised food processing units adapted to the seasonal character of raw material production and processing in small(er) batches;
- ensure food authenticity and prevent/reduce food losses through efficient use of raw material and optimised processes between primary production and processing;
- stimulate creation of new business models supporting job creation and job retention in rural areas.

In the longer term funded activities will contribute to increased competitiveness, sustainability, circularity and diversity of regional and local food systems.

Type of action	Research and Innovation action
Deadline	1st stage - 13 February 2018 2nd stage - 11 September 2018
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-16-2018.html



Call - Sustainable Food Security

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

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)

Proposals shall improve the resilience of farming systems, including the livestock sector, to variable climatic conditions and more extreme weather events through risk management strategies and innovations in field and regional landscape design. Work will take into account the potential of traditional and innovative techniques and sensors and test their effectiveness in mitigating/buffering the effects of different weather events (such as drought, heat and cold waves, wind, heavy rain and flooding). Activities will maximise the time and space resolution of decision support systems to increase their effectiveness and reliability. Studies at landscape scale are required to understand leading ecological processes; therefore activities will include collaboration and coordination between farmers and between farmers and other stakeholders. Activities should look at the wider impacts of trade-offs and synergies between microclimate management and related policies (Water Framework Directive, Biodiversity Action Plans, Common Agricultural Policy, EU Adaptation Strategy) on agri-ecosystems and their surroundings. Proposals will use transdisciplinary research methods and should fall under the concept of the 'multi-actor approach'. Proposals should establish a farm and landscape-level observatory and knowledge-exchange network on regional risks and microclimate management. They should build links with the European Innovation Partnership "Agricultural productivity and sustainability" and showcase good practices to be replicated.

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'.

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.



Call - Sustainable Food Security

Type of action	Research and Innovation action
Deadline	Call 2018 1 st stage - 13 February 2018 2 st stage - 11 September 2018 Call 2019 1 st stage - 23 January 2019 2 st stage - 04 September 2019
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sfs-19-2018-2019.html



Call - Sustainable Food Security

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

Specific challenge

The challenge of providing the inhabitants of European cities with affordable, safe, and nutritious food is both urgent and complex. Moreover, the health and wellbeing of EU citizens and consumers are directly affected by the way cities and regions themselves are shaping a sustainable food environment. Research and (open) innovation co-created with citizens are part of broader city-region food system approaches. Such initiatives stimulate the development of cities as innovative food hubs. Nevertheless, there are barriers to the application and demonstration of systemic food-related innovative approaches due to the diversity of European cities and regions that are not well understood, leading to market failure in the uptake of promising research results and innovation in cities. Demonstration and first application in the market of innovative solutions, co-created with citizen and cities with the involvement of public authorities, economic actors and non-profit organisations, could be one way to support sustainable food security in cities.

Scope

The proposals shall identify several food-related innovative approaches based on citizen science and engagement, to be practised in cities to foster sustainability of the food system. Proposals shall explore and share the application of these approaches in a wider range of European cities and shall be built on results of existing research, best practices and existing platforms and programmes. Proposals could comprise activities such as prototyping testing, demonstrating and piloting in a (near to) operational environment, as well as experimental production, all with a view to subsequent replication and application in other cities. **Proposals shall include the development of a classification and assessment of the benefits (economic, environmental and societal) of existing approaches** for dissemination purposes, accessible online. Proposals may include limited R&D activities and a clear focus on validating the benefits of pilot activities for citizens with a view of increasing engagement and replication. The action shall cover cities in rural and coastal areas and urban agglomerations. **Proposals shall also include co-creation between social innovation and technological innovation.** 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. Active participation of municipalities and SMEs is strongly encouraged.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 6 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, 3, 9, 11 and 12, the EU's Bioeconomy Strategy 2012, and the FOOD 2030 Staff Working Document⁵⁴, proposals should explain how activities included are expected to contribute to:

- Job creation in EU cities in which good practices for sustainable food security are applied in the short term (up to 3 years), fostering thriving urban, rural and coastal economies and communities;
- Intensified interactions between all actors in the food chain such as research, (small scale) food production, city municipalities, education centres, consumers and citizens in the medium to long term;
- Empowered local communities by using their potential to contribute to ensuring food and nutrition security at city level, which in turn supports the relevant SDGs;
- Increased participatory and citizen science initiatives in the area of food and nutrition security in cities;
- Easy and increased knowledge-sharing;
- In the long term, positive economic, social and environmental links between urban, peri-urban and rural areas, meeting the needs, values and expectations of society in a responsible and ethical way.

Type of action	Innovation action
Deadline	23 January 2019
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ce-sfs-24-2019.html



Call - Sustainable Food Security

CE-SFS-25-2018: Integrated system innovation in valorising urban biowaste

Specific challenge

Most of the biowaste produced in cities (such as garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises), as well as sewage sludge from urban wastewater treatment plants are processed into compost and biogas used for energy recovery or even landfilled without fully exploiting in a smart and innovative cascading fashion its potential as feedstock for valuable and precious compounds. New and emerging processing technologies can enable the recycling and valorisation of urban biowaste into higher-value biobased products (e.g. biobased chemicals and plastics, nutrients, human food or animal feed ingredients and proteins), thereby generating significant economic, social and environmental benefits. The successful implementation of urban biowaste recycling and valorisation technologies will require an integrated system innovation approach in a city context. Besides the technological challenges, there will be a need for public authorities to adopt new policies; **changing citizens' behaviour will require social innovation initiatives, and new, profitable business models along the entire urban biowaste value chain will have to be developed.**

Scope

Proposals shall focus on an integrated system innovation approach in urban biowaste recycling and valorisation for the production of high-value biobased products, including proteins for food and feed. Proposals shall ensure the full integration of the upgraded urban biowaste value chain into the existing local waste/wastewater management schemes. Proposals shall guarantee the active participation of local and regional authorities, waste/wastewater management utilities, (biobased) industries, the scientific community, local communities and citizens. **Particular attention shall also be given to:** Life Cycle Assessment (LCA) of the entire urban biowaste value chain; **improving logistic models taking into account changing the behaviour and participation of citizens and local communities in relation to the collection and use of this particular feedstock; increasing consumer awareness and acceptance of urban biowaste-derived products; adapting/developing business models for successful market uptake;** food and feed safety aspects; **regulatory aspects;** and facilitating the exchange of good practices and experiences between all stakeholders.

The proposal should seek the complementarity to the projects funded under H2020 topics CIRC-05-2016, H2020 CIRC-02-2016-A and the topic BBI 2016.D6.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 10 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 3, 6, 9, 11, 12 and 13, the EU's Bioeconomy Strategy 2012, the EU's Circular Economy Package 2015, and the FOOD 2030 Staff Working Document, proposals shall assess their contribution to:

- **Validated technical and economic viability** of the proposed approaches at target TRL 7;
- **New business and organisational models** on cities ensuring the full integration of the upgraded urban biowaste value chain into the existing local waste/wastewater management schemes;
- Improved perception of citizens on urban biowaste as a local resource and their enhanced active participation in its separate collection through **social innovation initiatives;**
- **Improved consumer acceptance** of urban biowaste-derived products, including food and feed ingredients;
- A more sustainable and resilient protein supply chain;
- Safety assessment of biobased processes and products from urban biowaste;
- Reduced amount of urban biowaste that would otherwise be incinerated or landfilled, and hence reduced environmental impact (including emissions of GHG and of air pollutants and their precursors) of municipal and food waste;
- **Detailed assessments of specific technical, regulatory, financial, market** and logistical barriers hampering the full exploitation of the urban biowaste value chain;
- Evidence-based support for EU policies/targets in the biobased and circular economy, climate mitigation, sustainable growth and re-industrialisation.

Type of action	Innovation action
Deadline	13 February 2018
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ce-sfs-25-2018.html



Call - Sustainable Food Security

SFS-27-2018: Monitoring food R&I investments and impacts

Specific challenge

Research plays a significant role in helping the agriculture, fisheries, aquaculture and food sectors to cope with the various challenges these sectors face among which ensuring sustainable use of natural resources, and mitigating and adapting to climate change. Yet little information exists on the levels of investments in public and private research and innovation at European and other levels of governance. Without monitoring, in particular at national and EU levels, it is not possible to gain a comprehensive overview and a good understanding of the dynamics behind and the impact of investments in research and innovation. Furthermore, **it is necessary to improve methodologies and tools for measuring the impact of research, including in relation to the UN Sustainable Development Goals (SDGs).**

Scope

Taking into account the main results of recent research projects as well as of ongoing policy initiatives, establish strategies, methodologies and tools to improve the monitoring of public and private investments in agriculture, fisheries, aquaculture and food research in Europe, at different levels of governance, thereby allowing monitoring of these investments over time and for major research areas. **The network will also look into the measurement – quantitative and qualitative - of the impact of research, at micro and macro levels**, applying different methodologies (quantitative, impact pathways, etc.) and taking into account EU policy objectives such as those related to the SDGs. It will monitor research and innovation policies, foster policy discussions and debates and provide recommendations for research and innovation policies and investment strategies, including as result of a foresight exercise. Proposals will take account of initiatives related to research and innovation, for instance the IFPRI's initiative ASTI or the OECD monitoring of innovation in food and agriculture.

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

- In the short to medium term: increased transparency of investments in research and innovation in Europe at different governance levels; improved management of agricultural, fisheries, aquaculture and food research and innovation ensuring better coordination and synergies between the actors involved; improved impact measurement of research and innovation activities allowing for better policy developments;
- In the long term: better investments in research and innovation for improved solutions to societal needs.

Type of action	Research and Innovation action
Deadline	1st stage - 13 February 2018 2nd stage - 11 September 2018
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-27-2018.html



Call - Sustainable Food Security

LC-SFS-34-2019: Food Systems Africa

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 2050⁷⁹, 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**, 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-32-2017.

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, the EU's Bioeconomy Strategy 2012, and the FOOD 2030 SWD, 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.

Type of action	Research and Innovation action
Deadline	1st stage - 23 January 2019 2nd stage - 04 September 2019
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sfs-34-2019.html



SFS-35-2019-2020: Sustainable Intensification in 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) 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'. Proposals should include a task to cluster with other projects financed under the topic and with the cooperation platform established under SFS-33-2017.

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 - 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-43-201786. 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 – IPTS African members.

Proposals should include a task to cluster with other projects financed under the topic and with the cooperation platform established under SFS-32-2017.

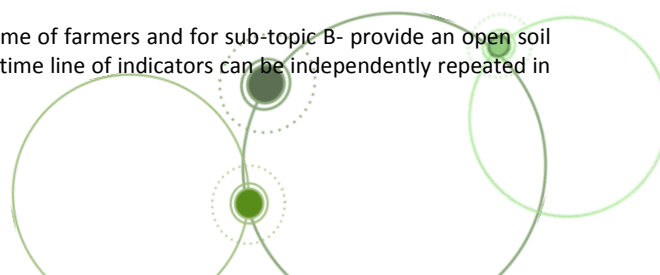
The Commission considers that proposals requesting a contribution from the EU of up to EUR 7.5 million for sub-topic A and EUR 5 million for sub-topic B would allow this specific challenge to be addressed properly. Nonetheless, this does not preclude submission and selection of proposals requesting other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



Call - Sustainable Food Security

support of monitoring of soil and land degradation. The set of indicators should as much as possible support the relevant SDGs implementation discussion.

Type of action	Research and Innovation action
Deadline	1st stage - 23 January 2019 2st stage - 04 September 2019
Call identifier	H2020-SFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-35-2019-2020.html

Topics with minor SSH relevance

SFS-08-2018-2019: Improving animal welfare

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-08-2018-2019.html>

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

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sfs-17-2019.html>

SFS-32-2018: Supporting microbiome coordination and the International Bioeconomy Forum

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sfs-32-2018.html>



BG-01-2018: Towards a Baltic and North Sea research and innovation programme

Specific challenge

The northern seas of Europe - the Baltic Sea and the North Sea - are at the forefront of the global surge to enhance and realise marine and maritime potential. This enormous economy is directly and critically dependent on the quality and extent of the ecosystem services provided by the two regional seas and their coasts. In order to foster understanding of these coastal seas and the sustainable use of their goods and services (within the context of the EU Blue Growth Strategy, related policies and environmental legislation) challenges need to be addressed such as: **fragmentation among nations and sectors, gaps in interdisciplinary knowledge, inadequate information on potential synergies and trade-offs between different sectors and the environment (including climate change issues), insufficient exchange of knowledge among scientists, industries and policy makers, and a need to increase attention to the societal inclusiveness and human well-being.** To address these challenges, it is recognised that a significant and well-coordinated research effort between these two regional seas is necessary. BONUS, the Joint Baltic Sea Research and Development Programme, implemented under Article 185 of the TFEU, has already progressed towards consolidating such efforts among the Baltic Sea Member States. There is now an expressed interest and willingness to prepare conditions for launching a broader European North Sea and Baltic Sea Research and Innovation Programme.

Scope

Activities shall focus on creating the necessary conditions for coordinated research and innovation efforts in the North Sea and Baltic Sea region in cooperation with BONUS by bringing together the main national funding agencies (programme owners and/or managers). They shall map and engage with relevant stakeholders in the region and especially further strengthen a possible new/successor programme with a sound North Sea component. Taking into account of existing commitments in relevant fora the activity shall focus on the preparation and delivery of a Joint Baltic-North Sea Strategic Research and Innovation Agenda, the creation of conditions (governance, management, financial, legal aspects and administration) and the development of an effective mechanism for its implementation, showing a strong commitment to achieve a sound level of integration (scientific, management and financial). Furthermore, they shall ensure visibility and broad involvement of the scientific community, public authorities, decision makers, and other stakeholders (including industry) in the region. The action shall facilitate consultation, awareness and commitment by all parties involved. The action shall also prepare and launch a long-term partnership ensuring appropriate funding from all the relevant participating states and a high leveraging effect. Finally, **the action shall demonstrate the rationale of the initiative, EU added value, clearly identifying the problems that it proposes to tackle, likely impacts (scientific and technological, economic, social, environmental including climate-change, administrative, impacts on SMEs and on competitiveness and innovation) and main drivers.** Synergies and harmonisation should be sought with other relevant ongoing national, regional, EU and international initiatives and institutions such as the Joint Programming Initiative 'Healthy and Productive Seas and Oceans', the International Council for the Exploration of the Seas (ICES), the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention), the Baltic Marine Environment Protection Commission (HELCOM), etc. In agreement with the Commission services, projects should ensure appropriate flexibility so as to respond in real time to potentially fast-changing policy scenarios.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 2.5 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

In order to contribute to the implementation of the EU Integrated Maritime Policy, the EU Blue Growth Strategy, the EU Marine Strategy Framework Directive, the EU Maritime Spatial Planning Directive, the EU International Ocean Governance Communication, the EU Communication for a Sustainable European Future and other EU initiatives such as the Blue Growth Agenda for the Baltic Sea Region, Blue Growth and North Sea related activities, the EU Strategy for the Baltic Sea Region (EUSBSR) and the UN SDGs, activities shall contribute to the following:

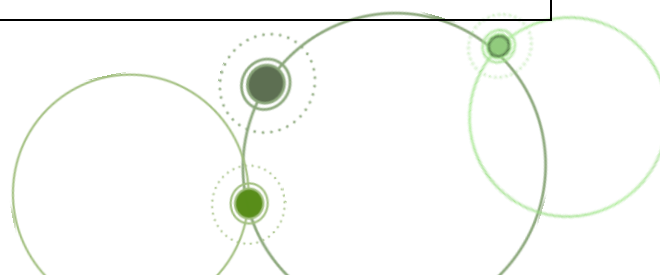
In the short term:

- Overcome fragmentation in research and innovation by developing a joint Baltic-North Sea Marine and Maritime Strategic Research and Innovation Agenda by the Baltic Sea and the North Sea countries.
- Create lasting marine and maritime stakeholder platforms and integration mechanisms in the area, and establishing appropriate stakeholder collaboration mechanisms between the North Sea and Baltic Sea regions.

In the medium term:

- Create a framework and deliver the necessary mechanisms, based on experience gained by the current BONUS and other equivalent initiatives, for developing a European Baltic-North Sea Research and Innovation Programme.
- Contribute to 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.

Type of action	Coordination and support action
Deadline	13 February 2018
Call identifier	H2020-BG-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/bg-01-2018.html



LC-BG-03-2018: Sustainable harvesting of marine biological resources

Specific challenge

In the search for new biological resources, a large unexploited biomass has been identified in the mesopelagic zone (water column between 200 and 1000 m). This largely unknown zone includes micro-organisms, copepods, krill and plankton feeding fish that are lower in the food chain, as well as squids and other higher trophic level fish. This zone is known to play a significant role in the global carbon cycle, where the concentration of atmospheric carbon dioxide would be ~50% higher without its activities. If exploited at sustainable levels, without impacting upon biodiversity and compromising the oceans' role in climate regulation, this biomass could be used to produce more high quality ingredients (proteins with high nutritional value and polyunsaturated fatty acids) for human food chain (which includes farmed animals), to decrease the fishing pressure on overexploited species of higher trophic levels and potentially discover and to develop new bio-based products, including pharmaceuticals and nutraceuticals. This requires a holistic assessment of this globally important marine ecosystem and an understanding of the mechanisms controlling its biomass and its significant role in the global carbon cycle through the reduction of atmospheric CO₂. It also requires development of new monitoring and management tools able to weight the costs and benefits of the exploitation of these marine biological resources.

Scope

Activities shall provide data, information and knowledge on the potential role of mesopelagic micro- and macro-organisms for human food chain and other bio-based products and processes. While preserving biodiversity and enhancing resilience to climate change and mitigation. **They shall address issues such as food safety (with regards to risks linked to emerging marine toxins), fisheries management, fishing techniques, processing (on-board and on-shore) and consumer acceptance and marketing.** Impacts of fishing and climate change on the mesopelagic populations and the wider ecosystem, including biodiversity, natural food webs and greenhouse gas sequestration shall be assessed. They shall also address the potential of mesopelagic resources including micro-organisms for marine biotechnological applications. **An ecosystem-based approach to exploitation for food and other bio-based products and processes, as well as cost-effective and environmentally sustainable resource management tools shall be developed. Inclusion of societal actors and stakeholders during the whole research and innovation process shall allow for better alignment of both the process and its outcomes with the values, needs and expectations of society.** Activities undertaken as part of this interdisciplinary and cross-sectorial project shall build on previous knowledge produced in EU Framework Programme projects and contribute to creating jobs, reinforcing capacity building and improving the professional skills and competences of those working within relevant blue economy sectors. **The interdisciplinary and cross-sectorial nature of the project shall also apply to training activities contributing to improving the professional skills and competencies supporting the creation of new jobs in the blue economy.** Proposals shall fall under the concept of the 'multi-actor approach' and allow for adequate involvement of SMEs. 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

In line with the EU Blue Growth Strategy, the EU Common Fisheries Policy, the EU Marine Strategy Framework Directive, the EU International Ocean Governance Communication, the EU Communication for a Sustainable European Future, the EU Bioeconomy Strategy, the EU Biodiversity Strategy and the EU Food 2030 process for food and nutrition security, activities shall:

In the short term:

- Increase the knowledge of mesopelagic zone ecosystems.
- Contribute to the UN SDG 14 targets to effectively regulate marine harvesting and to sustainably manage and protect marine ecosystems, including by strengthening their resilience, and to take action for their restoration in order to achieve healthy and productive oceans by 2020; further strengthen the knowledge base to support the implementation of the Paris Agreement of 2015, COP22 and UN SDG 13.
- Contribute to preserve the ecological functioning of the mesopelagic zone in line with the EU targets of halting the loss of biodiversity and ecosystem services by 2020 and restoring at least 15% of degraded ecosystems.
- Contribute to the preservation of processes regulating climate and to the mitigation of impacts of climate change.
- Foster innovation for food and nutrition security and other bio-based value chains, biodiversity preservation and climate resilience.

In the medium term:

- Contribute to enhance the conservation and sustainable use of oceans and their resources (UN SDG 14).
- Contribute to achieve the sustainable management and efficient use of natural resources, by 2030 (UN SDG 12) ensuring that fishing has no significant adverse impacts on species and ecosystems (EU Biodiversity Strategy).
- Create management tools to ensure that nutritious seafood is available, accessible and affordable for all while conserving natural resources and contributing to climate change mitigation (UN SDG 2).
- Contribute to improve the professional skills and competences of those working and being trained to work within the blue economy.
- Contribute to the creation of jobs and growth in the fishing and processing sector as well as in the marine biotech sector particularly in coastal areas.
- Contribute to policymaking in research, innovation and technology.



Call – Blue Growth

Type of action	Research and Innovation action
Deadline	1st stage - 13 February 2018 2st stage - 11 September 2018
Call identifier	H2020-BG-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-bg-03-2018.html



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

Specific challenge

European aquaculture provides 1.25 million tonnes of seafood annually, 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 competitiveness 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. 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, 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.

Type of action	Innovation action
Deadline	Call 2018 1 st stage - 13 February 2018 Call 2019 1 st stage - 23 January 2019
Call identifier	H2020-BG-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-bg-04-2018-2019.html



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

Specific challenge

Combining several activities such as renewable energy, aquaculture, marine bio-resources and biotechnologies, maritime transport and related services, in the same marine space, including in multi-use platforms, can serve to divide and reduce the costs of offshore operations and the demand on the space needed for different activities. Research on multi-use platforms funded under the FP7 call ‘The Oceans of Tomorrow’ has provided promising designs, technological proposals and models for combining activities in terms of economic potential and environmental impact. Horizon 2020 funded projects have helped to identify and tackle regulatory and technological barriers and develop business models to reduce the risk for operators and investors. Before reaching a stage enabling large scale installations, it is necessary to develop pilots for demonstration in a real environment of multi-use platforms or co-location of activities in a marine space with their logistic support, including service vehicles and port facilities.

Scope

Activities shall develop pilots by involving industrial actors and by integrating the available knowledge, technologies and facilities, in particular capitalising on the results of EU and national projects for the development of multi-use platforms or co-location of different activities in a marine space, and relevant support offshore vessels and autonomous vehicles. Pilots could include the reconversion/reuse of decommissioned platforms. **The pilots shall aim to demonstrate in a real environment the viability (economic, social and environmental) of the multi-uses of a marine space for the output of at least two economic activities (such as renewable energy, aquaculture, marine bio-resources and biotechnologies, maritime activities and related services or tourism). The aim is to demonstrate the economic, social and environmental added-value of the multi-use of a marine space around coastal or deep sea environments and should include a business plan and a commercial economic feasibility assessment** (informed by the Pilot's results), addressing possible trade-offs and costs for other sectors, for the combined activities to generate revenue. The pilots should also address health and safety issues, including for the logistics, ancillary infrastructure and maintenance services. **Societal acceptance should also be integrated, especially by involving local communities. 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 9 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

In order to contribute to the implementation of the EU Integrated Maritime Policy and its environmental pillar, the EU Blue Growth Strategy, the EU Marine Strategy Framework Directive, the EU Maritime Spatial Planning Directive, the EU International Ocean Governance Communication, the EU Communication for a Sustainable European Future, the EU Bioeconomy Strategy, the EU Integrated Maritime Policy and in order to reinforce European competitiveness in the blue economy, activities shall:

In the short term:

- Starting from technology readiness level (TRL) 5, bring selected designs of multi-purpose and multi-use facilities to TRL 7, ensuring validation in the real environment.
- Improve health and safety in multi-use platforms or co-location of activities.
- Reduce costs of implementation and increase economic viability of multi-use of marine space for the European maritime industry.
- **Raise societal awareness, involve local communities and secure acceptance of these new developments by society-at-large.**

In the medium term:

- 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.

Type of action	Innovation action
Deadline	23 January 2019
Call identifier	H2020-BG-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/bg-05-2019.html



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

Specific challenge

Decoupling of plastics production from fossil feedstock is necessary. In addition to the recycled plastics waste, alternative feedstock such as biomass is part of a more resource-efficient, greenhouse gas emission (GHG) neutral solution. The shift towards biomass-sourced plastics will only make sense in the framework of a circular plastics economy where plastics reuse and recycling are maximised. Reuse and recycling of plastics, particularly for some applications such as packaging, remain very low. It has been estimated that globally, about 12 million tonnes of plastics waste per year leak out of the waste management systems and end up in the environment, in particular in the oceans, where it interferes with ecosystem processes and eventually enter the food-feed chain. As regards marine litter, while land-based sources are predominant as a result of land-sea interaction, sea-based sources such as shipping, fishing or aquaculture are also significant. As part of the mitigation efforts, biodegradable or compostable plastics for specific applications such as fishing gear could be a positive development if a clear sustainability framework for biodegradability conditions is provided.

Scope

Activities shall focus on sustainability strategies and solutions for bio-based products. **They shall include innovative product design and business models facilitating efficient reuse and recycling strategies and solutions, including ensuring the safety of recycled materials when used for toys or packaging food stuffs. They shall address the technical and economic barriers** to bio-based plastics recycling as regards established and/or alternative recycling options. The risk, impact and solutions to cross-contamination with conventional plastics waste streams or other contaminants shall also be addressed. Additionally, activities shall contribute to building a biodegradable plastics sustainability framework by mapping and focusing on the applications where biodegradable and compostable solutions could support public policies. Work on the biodegradable sustainability framework could include pre-normative research including field tests on land and at sea. Lastly, in line with the requirements of responsible research and innovation, activities shall support the development of international fora and platforms that would facilitate systemic innovation and uptake of results by enabling different actors of the value chains, from industry to civil society and public authorities, to cooperate towards more circularity in the bio-plastics economy. Activities shall build on the results and ongoing developments of EU projects funded under Framework Programmes FP7 and Horizon 2020 as well as on available and on-going standardisation results and activities including work within CEN TC 411 or under ISO. **The interdisciplinary and cross-sectorial nature of the proposal should also apply to training activities improving the professional skills and competencies and supporting the creation of new jobs in the blue economy and in the bioeconomy.**

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 9 million would allow this specific challenge to be addressed properly. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Expected impact

Contributing to the implementation of the EU Bioeconomy Strategy, the EU Plastic Strategy, the EU Circular Economy action plan, the EU Marine Strategy Framework Directive, the EU Maritime Spatial Planning Directive, the Energy Union's vision for a low carbon, energy-efficient economy, the EU Blue Growth Strategy and the UN SDGs, activities shall:

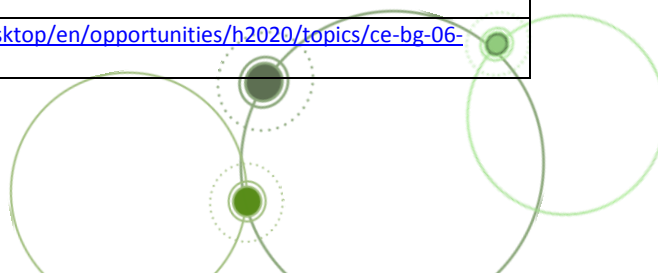
In the short term:

- Deliver solutions with work starting at technology readiness level (TRL) 5 and achieving TRL 6 or higher, where technological innovation is involved.
- Deliver results in a form that allows for efficient feedback into policymaking in research, innovation and technology, in particular in the EU Plastic Strategy.
- Prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution by 2025 (UN SDG 14).
- **Raise awareness and create a better framework for systemic innovation and uptake of results through broad stakeholder engagement.**

In the medium term:

- Demonstrate solutions and develop strategies for circular innovation of the whole bio-plastics system, building on a shared vision and enhancing cooperation between all stakeholders on land and at sea.
- Contribute to the development of EU-harmonised criteria for biodegradability (in open-air and in oceanic conditions) and a sustainability framework that increase market transparency and improves waste management practices on land and sea.
- Contribute to the assessment of the impact of plastics on terrestrial and aquatic flora and fauna and on human health.
- Improve the professional skills and competences of those working and being trained to work within the blue economy and the bioeconomy.
- Improve framework conditions and foster innovations that enable the plastics value chains to become more circular, resource-efficient and reduce their carbon and GHG footprint, in line with climate, energy and sustainable development goals (e.g. UN SDG 14).
- Contribute to policymaking in research, innovation and technology.

Type of action	Innovation action
Deadline	23 January 2019
Call identifier	H2020-BG-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ce-bg-06-2019.html



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

Specific challenge

The Atlantic Ocean is an invaluable shared resource. **The societal value of its blue economy is enormous for countries located on its shores.** There are however, still considerable gaps in our knowledge and understanding of processes related to this ocean especially with regard to its chemistry, ecology, biodiversity, impacts of climate and the potential for the sustainable exploitation of its natural resources including aquaculture. The Atlantic Ocean is subject to a range of pressures, such as impacts related to climate change, pollution, fishing above sustainable levels, mining and coastal eutrophication. Both remote and local forces play a role in these changes and it is necessary to consider local, regional and basin-wide drivers and factors to understand, predict and adapt to change. Furthermore, **the potential of seafood to reduce food and nutrition insecurity calls for collaboration at international level. Having already demonstrated how successful research cooperation can be in the North Atlantic Ocean in tackling some of these issues, the objective now is to take a systemic approach to tackle the scientific and socio-economic challenges and to move towards a basin-wide cooperation from Antarctica to the Arctic, through enhanced cooperation with countries bordering the South Atlantic, notably Brazil and South Africa.**

Scope

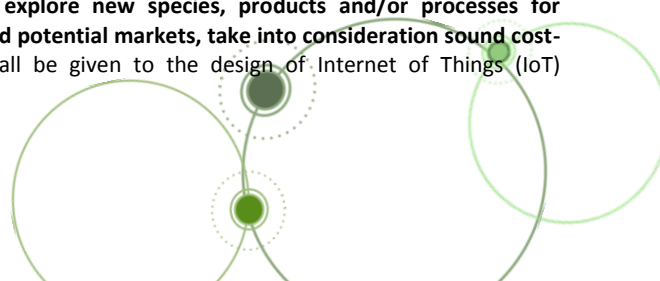
The actions shall aim at understanding and sustainably managing the Atlantic Ocean as a whole, through a large-scale basin effort involving both the northern and the southern parts of this ocean and its interlinks with the adjacent areas. In order to achieve this, it is necessary to bring together and systematically connect scientists, stakeholders, data, knowledge, expertise, capacities, and resources. This is only feasible through the synergistic cooperation among the bordering countries. With the development of a South Atlantic Ocean Science Plan focusing on the challenges and research needs of the South Atlantic Ocean, which are also interconnected with the challenges and research needs of the North Atlantic Ocean, this cooperation can converge towards the implementation of a systemic approach by linking and jointly tackling the climate-food-ocean challenges. Overall, activities shall contribute to upscale cooperation along and across the Atlantic Ocean and the creation of long-term partnerships building on on-going initiatives such as the All Atlantic Ocean Research Alliance. In order to realise this, proposals shall address one of the following sub-topics:

[A] 2018 - Coordination of marine and maritime research and innovation activities in the Atlantic Ocean. Activities shall launch a multi-stakeholder platform to reinforce international cooperation between Europe and tropical and South Atlantic countries and to connect with the challenges and research needs of the North Atlantic Ocean, as outlined above. **The platform shall address the key following points: enhance business opportunities and the up-take of innovations** e.g. aquaculture production systems, marine and maritime technologies; **develop common standards** e.g. for deep ocean and shelf observing systems, seafloor mapping, ecosystem approaches in utilizing marine living resources; **reinforce capacity building by aligning European training programmes**, including through industrial apprenticeship opportunities and networking with Atlantic partners; **promote citizen awareness and literacy on ocean issues; align and converge international research and innovation cooperation activities and other relevant initiatives and investments between the northern and southern Atlantic countries.** It will upscale cooperation with countries bordering the South Atlantic Ocean, in particular Brazil and South Africa, by reinforcing the mutual benefits of science diplomacy, addressing the grand challenges and opportunities of the Atlantic Ocean as a system, exploiting the benefits it holds for our citizens and entering a new era of Blue Enlightenment which spans from Antarctica to the Arctic.

This action should build on past and ongoing regional, national initiatives and programmes e.g. PIRATA, SAMOC, SA MAR-ECO, GEOTRACES, SOLAS, OTN, ICEMASA, BCLME, and EU projects e.g. MAREFRAME, BIOMORE, ATLANTOS, AORAC-SA, EU POLAR Net, INMARE, PREFACE etc. as well as national initiatives across and alongside the Atlantic Ocean. It should also involve (or liaise with) relevant European research infrastructures such as Euro-Argo ERIC and EMSO ERIC. In agreement with the Commission services, projects should ensure appropriate flexibility so as to respond in real time to potentially fast-changing policy scenarios.

[B] 2018-2019- Assessing the status of Atlantic marine ecosystems. Activities shall enhance the knowledge on the status and dynamics of Atlantic marine ecosystems, quantifying main drivers of short and long-term change, examine the interactions between different stressors, including climate change, and the role of cumulative impacts on ecosystem functioning and associated ecosystem services. They shall also contribute to improve the sustainability of the exploitation of the marine resources, through extending climate based predictions as well as testing for so-called tipping points, regimes shifts or more advanced assessments of ecosystem stability. Activities may entail 3D-mapping of the water column and high resolution seafloor mapping of selected large areas (including relevant marine ecosystems), considering the feasibility/safety and sustainability of these maritime operations. Mapping shall include variables of a different nature, such as physical, biological, chemical, habitats, seafloor characteristics and integrity (including in relation to climate change) and may require the development of new technologies. Furthermore, demonstration of cost-effective approaches to management and processing of the large quantities of data, better coordinated data sharing and operability, as well as the development of improved forecasting capabilities of stressors, tipping points, recovery and changes in ecosystem state will be important. The participation of industrial and regional stakeholders is encouraged to help define ecosystem-requirements. All data collected by the projects (including in international waters) shall be made open access by the end of the project. The choices of the selected areas need to be justified. Actions shall include capacity building and training with/in countries bordering the South and Tropical Atlantic Ocean. Links with ongoing initiatives such as EMODNet should be considered. The activities will be carried out in close co-operation with relevant Commission services (Directorate-General for Research and Innovation), ensuring coherence with related policy initiatives.

[C] 2018-2019- New value chains for aquaculture production. Activities shall explore new species, products and/or processes for aquaculture production (including algae). They shall consider existing, emerging and potential markets, take into consideration sound cost-effective production methods, sustainability and profitability. Consideration shall be given to the design of Internet of Things (IoT)



approaches in the development of innovative production technologies, including new/improved biosensors, the circularity of the processes with the objective of zero waste and **consider consumers' concerns and demands**. The development of monitoring programmes for risk assessment including emerging pollutants and climate change resilience and mitigation will be essential. Activities shall contribute to reduce risks to human health. They will also foster higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors. Finally, it will be important to reinforce capacity building by aligning training programmes, including through industrial apprenticeship opportunities and networking along and across the Atlantic Ocean, in particular, but not exclusively, with South Africa and Brazil and other Atlantic Ocean coastal states. Reinforcing links between industrial partners is also crucial to exchange best practices and to facilitate the creation of business opportunities, therefore the SME participation in this topic is encouraged.

Consortia submitting proposals to this Flagship are encouraged to include participants from countries bordering the Atlantic Ocean as their active participation is key to the success of the proposals.

The Commission considers that proposals requesting a contribution from the EU respectively in the range of EUR 4 million for sub-topic [A], EUR 9 million for sub-topic [B] and EUR 8 million for sub-topic [C] would allow this specific challenge to be adequately addressed. Nonetheless, this does not preclude the submission and selection of proposals requesting other amounts.

Proposals shall include a task to cluster with other projects financed under this topic and – if possible – with other relevant projects in the field funded by Horizon 2020. Possible links with related research and innovation activities supported by the Belmont Forum on Ocean sustainability shall also be considered.

Expected impact

In order to contribute to the implementation of the EU Integrated Maritime Policy and its related Atlantic Strategy and Action Plan, the EU Blue Growth Strategy, the EU Marine Strategy Framework Directive, the EU Maritime Spatial Planning Directive, the EU International Ocean Governance Communication, the EU Communication for a Sustainable European Future, the UN SDGs, the EU Food 2030 process for food and nutrition security, as well as the Atlantic Ocean Research Alliance, activities shall:

In the short term:

- Contribute to the implementation of the EU-Brazil-South Africa Belém Statement on Atlantic Ocean Research and Innovation cooperation (sub-topics A, B & C).
- Improve the coordination and alignment of programmes/initiatives and projects between South and North Atlantic regions and with the EU and its Member States (sub-topic A).
- Contribute to create the right conditions for the development of better and accurate monitoring, modelling, planning, management and prediction capacities in the whole Atlantic (sub-topics A & B).
- Develop ecosystem assessments and forecasts as well as a deeper understanding of vulnerabilities and risk including those relating to the global climate system and the impacts of climate change (sub-topic B).
- Increase the competitiveness of the EU's blue economy by developing new technologies to service societal needs and new value chains (sub-topics A, B & C).
- Create a lasting partnership on sustainable aquaculture business opportunities for industrial partnerships between Europe and countries bordering the South Atlantic (sub-topic C).
- Contribute to creating sustainable food production systems and implementing resilient aquaculture practices that increase productivity and production, help maintain healthy and productive aquatic ecosystems and strengthen capacity for adaptation to climate change (UN SDG 2) (sub-topic C).
- Contribute to the sustainable management and protection of marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans (UN SDG 14) (sub-topics A & B).

In the medium term:

- **Contribute to the development of ecosystem services to ensure the long-term sustainable management of marine resources (UN SDG 14) (sub-topic B).**
- Ensure that nutritious and safe food is available, accessible and affordable for all while conserving natural resources and contributing to climate change mitigation (UN SDG 2 and SDG 13) (sub-topic C).
- Contribute to achieving a zero waste European aquaculture system by strengthening the sustainability, resilience and robustness of industry, by 2030 (sub-topic C).
- Increase EU leadership in ocean technology developments (sub-topics A, B & C).
- **Increase consumers' trust and confidence in seafood products (sub-topic C).**
- Create a well trained workforce able to tackle the multi-sectoral, multi-disciplinary challenges and opportunities of the Atlantic Ocean (sub-topics A & C).
- **Consolidate education and training networks including more ocean-engaged citizens and communities (sub-topic A).**
- 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 (sub-topics A, B & C).



Type of action	Research and Innovation action, Coordination and support action
Deadline	CSA - 13 February 2018 RIA Call 2018 - 1 st stage - 13 February 2018 2 st stage - 11 September 2018 Call 2019 - 1 st stage - 23 January 2019 2 st stage - 04 September 2019
Call identifier	H2020-BG-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/bg-08-2018-2019.html

Topics with minor SSH relevance

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

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/bg-07-2019-2020.html>

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

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-bg-09-2019.html>



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

Specific challenge

The design of modern rural policies requires capturing and anticipating the long-term trends affecting European rural areas. The EU has already invested in rural research on a variety of issues, although the impact on policies has been insufficient due to the diversity of rural areas, the complexity of the problems at stake and the multiplicity of policy makers involved. The interfaces between science, society and policy makers need to be improved to enhance the use of new and existing knowledge, provide policy makers with the evidence they need and empower rural citizens to take part in policy-making, including designing future research priorities. In addition, there are still knowledge gaps regarding big challenges facing rural areas and how they will impact people and territories. One of the most important is demographic change. Current trends combine rural exodus, selective out-migration of women and young people and the arrival of newcomers, including migrants, highly-skilled former urban dwellers and retired people. The challenge is particularly acute in the farming sector. With 6% of farmers under the age of 35, as opposed to 55% who are above 55, the ageing of farmers is one of the biggest threats to food security, farming systems diversity, biomass provision and rural vitality in the coming decades. The situation is similar for small forest owners. A new generation needs to be empowered to take over. Beyond young farmers, who are supported by the common agricultural policy (CAP), a broader group of people referred to as "new entrants into farming" could contribute to generation renewal while bringing new approaches to farming and rural areas. This could happen provided they can overcome the many obstacles they face, such as access to land. Finally, long-term trends and changes are likely to increase disparities between rural areas faced with various constraints. Mountainous areas, which represent 15% of EU utilised agricultural area and are particularly supported under the CAP, are likely to be more strongly impacted by climate change, as well as by increased economic competition, due to geophysical conditions which limit productivity, production choices and adaptability. A deeper understanding of how rural communities, territories and businesses will evolve is needed to design new policies that would protect rural areas from the existing threat of decline and help them seize opportunities.

Scope

Proposed actions shall address one of the following sub-topics:

A. [2018] Rural society-science-policy hub (CSA)

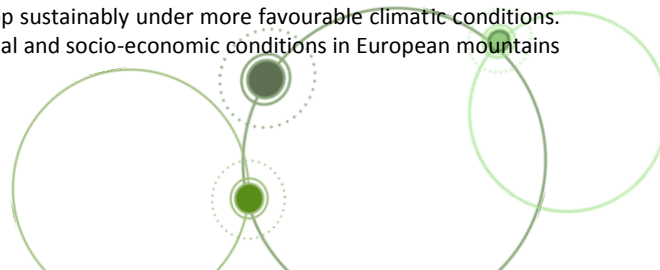
Actions shall setup a knowledge and policy hub that engages policy makers, scientists, stakeholders and rural dwellers locally **with the objectives to: take stock of past and on-going rural research; translate outcomes into attractive and easily understandable tools for policy-makers and citizens; conduct public engagement activities contributing to future rural policy and research policy design; and explore avenues for longer-term science-society-policy interfaces.** Activities shall at least build upon relevant past and on-going research projects funded under EU framework programmes in the last fifteen years, including those under this topic, and consider integrating toolboxes and datasets used within these projects. Communication products and tools shall bring real adding-value content to the different target groups in various countries and languages. The use of multimedia is encouraged. Public engagement activities shall involve rural dwellers, policy-makers and other business, social innovation or community actors at various geographic levels in a representative and balanced set of geographical and socio-economic situations across the EU, including coastal areas. Building on knowledge made accessible and on outcomes of foresight activities under this topic, public engagement activities shall result in concrete proposals to renew policy instruments that impact rural areas at various levels, as well as an agenda for future research activities matching rural citizens' needs. Close cooperation and networking activities will be needed, throughout the project, with relevant networks and platforms and with all the relevant on-going projects. The duration of the project shall take into consideration the need to implement participatory approaches.

B. [2018] Renewing rural generations, jobs and farms (RIA)

Actions shall carry out foresight analyses of the evolution of European rural populations and jobs, in time and space, in the coming decades, describing the drivers and root causes explaining the expected changes. **They shall cover all economic sectors with particular attention to farming** (including farm structures and forest and farm land ownership) **and all socio-economic and age categories, with special attention to women, young people and migrants** (from inside and outside the EU). **Beyond basic demographic indicators, activities shall extend to skills profiles and other relevant social capital dimensions.** A significant part of activities shall be dedicated to rural newcomers and new entrants into farming, **improving the understanding of their human, social and professional characteristics** and of their role in generation renewal, in innovation and in rural development in general. **The issue of access to land, including the impact of such aspects as legal and policy arrangements** and land market trends, **shall be analysed.** An EU-wide quantitative analysis shall be combined with more focused qualitative analyses. **The qualitative analyses shall include significant public engagement activities and cover a representative and balanced set of geographical and socio-economic situations across the EU to yield generalizable policy conclusions.** Actions shall undertake an ambitious policy design exercise aimed at assessing the performance of current policies and public or private strategies which impact rural and farming attractiveness to different types of people, and at proposing a set of renewed policy options, backed by a prior assessment of their possible impacts, and accompanied by practical tools allowing i) policy makers at EU and other governance levels to easily exploit project outcomes for forward-looking policy design (e.g. typologies, maps, policy analysis, benchmarking); and ii) new rural generations to find inspiration in winning strategies developed by their peers.

C. [2019] Building resilient mountain value chains delivering private and public goods (RIA)

Actions shall carry out foresight analyses of the development of primary production and related value chains and ecosystems in mountainous areas, in the coming decades, looking in particular at the positive and negative effects of climate change, of changes in policies influencing these areas and of **broader socio-economic drivers.** The analysis shall benchmark production and land-use systems with regards to their capacity to sustainably improve performance and resilience under changing climate and broader conditions while securing public goods provision for uplands and lowlands, taking into account interactions across scales (field, territories and ecosystems) and sectors. Particular attention shall be paid to new or emerging products or practices which could develop sustainably under more favourable climatic conditions. Activities shall cover a variety of situations representing the diversity of environmental and socio-economic conditions in European mountains



Call – Rural Renaissance

as well as the diversity of mountain crop, livestock and forest-based products and value chains. Public engagement of stakeholders in the activities will be key to securing relevant results. Activities shall assess whether current policy approaches are fit for the future and shall deliver a set of renewed policy options, backed by a prior assessment of their possible impacts and accompanied by practical tools and recommendations to i) modernise relevant policy instruments available at EU and other governance levels (with a particular focus on CAP, quality policy, regional policy, climate and environment policies and innovation policy tools), ii) adapt value chain development strategies, and iii) secure long-term public good provision.

All sub-topics – Proposals should include a task to cluster with other projects financed under this topic, under RUR-02-2018 and – if relevant – with other relevant projects in the field funded by Horizon 2020. They shall fall under the concept of multi-actor approach, bringing in the complementary expertise of private sector and civil society representatives of relevance to the scope. The Commission considers that proposals requesting a contribution from the EU of up to EUR 5 million (sub-topic A), 6 million (sub-topics B, C) would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact

This topic aims to foster the design of future-proof rural policies. In the short to medium term, proposals are expected to:

- translate visions of future trends and dynamics and understanding of the associated drivers into strategic options for policy design, delivery and monitoring and maximise their uptake by the relevant policy levels (sub-topics A,B,C);
- ensure a wide outreach and engagement in most EU Member States through a balanced and representative coverage of activities (sub-topics A,B,C);
- improve the uptake of available knowledge by policy makers and open avenues for long-lasting mechanisms improving interfaces between society, science and policy makers (sub-topic A);
- help diversifying rural economic activities, improve the skills base and social capital by identifying and promoting policy options which enhance the attractiveness and sustainable development of rural areas and favour generation renewal (sub-topics B, C);
- increase the number and success rate of new entrants into farming; ease their access to farmland and forested land by promoting the most efficient instruments and strategies implemented in the Member States when it comes to accessing land (sub-topic B);
- maintain and enhance sustainable primary production, income generated by value chains and ecosystem service delivery in mountain areas through adequate policies and integrated strategies (sub-topic C).
- In the long term proposed actions shall contribute to improving quality of life, socio-economic prospects, resilience to climate change, job diversity and the attractiveness of rural areas.

Type of action	Research and Innovation action, Coordination and support action	
Deadline	CSA - 1st stage - 13 February 2018	
	RIA - 2018 - 1st stage - 13 February 2018	2nd stage - 11 September 2018
	RIA - 2019 - 1st stage - 23 January 2019	2nd stage - 04 September 2019
Call identifier	H2020-RUR-2018-2020	
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/rur-01-2018-2019.html	



RUR-02-2018: Socio-economic impacts of digitisation of agriculture and rural areas

Specific challenge

The deployment of information and communication technologies induces changes that impact individuals, societies and the environment in profound and pervasive ways. Agriculture and rural areas will be changing significantly with the multiplication of devices, their increased "intelligence", autonomous behaviour and connectivity. Aside from the benefits of digital innovations, there are also challenges, and sometimes threats, that need to be addressed to ensure that technological innovations go hand in hand with societal needs and expectations. **To cope with the digital revolution research needs to clarify its dynamics and its net impact on socio-economic challenges that agriculture and rural areas are confronted now and in the future.**

Scope

Proposals shall analyse the social and economic impacts of digitisation on agriculture and rural areas, looking into costs, benefits and possible trade-offs. Analyses shall distinguish the diversity of agricultural sub-sectors or farming systems and other activities in rural areas, including forest operations. They must cover a representative set of different rural contexts that exist across the EU, analysing the impact of the various policy settings. **They shall fill knowledge gaps on the impacts of digitisation on agriculture and rural areas regarding at least: employment and quality of life, functioning of markets and value chains, competitiveness and scalable opportunities for agricultural and rural businesses and (re)deployment of public services.** Beyond the impacts of past and ongoing developments, the action shall explore future scenarios for digitisation in the coming decades, characterising drivers and barriers which are likely to accelerate or hamper their respective development, as well as their respective impacts.

Proposals shall include activities to work in cluster with projects selected under RUR-01-2018. They shall fall under the concept of multi-actor approach, engaging representatives of farmers, rural businesses or citizens groups and digital technology providers. Early engagement of public authorities shall help guarantee the relevance of the analysis and the uptake of project outcomes.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 5 million 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

Anticipating and adjusting policy and strategies to take advantage of digitisation opportunities and mitigate associated risks. For agriculture and rural areas, the project will in the short term:

- **fill the socio-economic knowledge gaps on digitisation of agriculture and rural areas, including impacts on existing and future challenges;**
- develop the most plausible future scenarios for the development of digitisation;
- raise awareness among key stakeholders about digital game changers, allowing for the development of appropriate coping strategies, in particular at policy level; and
- improve the uptake of societal concerns in ICT-related policy and innovation, by liaising with on-going projects on the digitisation of agriculture and rural areas.
- In the longer term, the project will contribute to EU agricultural and rural economies and communities becoming more inclusive and competitive, due to adapted strategies.

Type of action	Research and Innovation action
Deadline	1st stage - 13 February 2018 2nd stage - 11 September 2018
Call identifier	H2020-RUR-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/rur-02-2018.html



RUR-03-2018: Contracts for effective and lasting delivery of agri-environmental public goods

Specific challenge

The links between the richness of the natural environment and farming practices are complex. Many valuable habitats in Europe are maintained by extensive farming and forestry, but inappropriate agricultural practices and land uses have also had an adverse impact on natural resources, such as soil, water and air pollution, fragmentation of habitats and loss of native biodiversity in farmland landscapes, as well as on climate change adaptation and mitigation. Beyond providing food, fibre or biomass, farmers can provide environmental public goods through the land management activities necessary to grow crops and rear animals. Farmers often face trade-offs between sustainability and short-term profitability. Providing environmental public goods, in domains such as biodiversity, water, carbon sequestration and recreation can require collective actions for the necessary scale and scope of the action and its existence over time.

Scope

Proposals will look into effective ways of coupling public and/or private incentives to the delivery of one or more environmental goods at land and value chain levels. Proposals will review and investigate existing and new initiatives addressing the delivery by farmers of environmental public goods and services and their longevity. They will explore existing and design new approaches to improve cooperation between farmers as well as between farmers and other stakeholders (e.g. land owners, forestry sector, food industry, retailers, consumer associations, environmental NGOs, public bodies, water management authorities, protected areas, tourism services).

Activities will cover the three following issues in a combined or stand-alone way in each of the analysed approaches: (1) how land tenure systems can strengthen the longevity of both agricultural activities and environmental protection; (2) how result-based approaches, as compared to practice-based approaches, can be implemented effectively (considering the use of the most appropriate indicators); (3) how collective implementation of practices can be managed to enhance the delivery of ecosystem services at different scales. **Proposals will take into account the diversity of European situations, e.g. with regard to legal and historical contexts or different categories of land ownership.** Proposals will analyse how duties and responsibilities are shared in arrangements between two or more parties, including as relevant, the distribution of the added value and the financial and/or production risks inherent to the agricultural sector and its complex links with the natural environment. Proposals will analyse the strengths and weaknesses of different approaches regarding their transaction costs, their relationship with market trends and their impacts on the ecosystem services over time. Proposals will fall under the concept of the 'multi-actor approach' and ensure appropriate involvement of the farming sector. **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 agri-environmental contracts.

The Commission considers that proposals requesting a contribution from the EU of up to 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

Funded activities will showcase cooperation models enabling the delivery of agri-environment-climate public goods and guaranteeing their longevity over time. In the short to medium term work will:

- Lead to the development of innovative agri-environment-climate contractual models based on the review of existing initiatives and the design of new ones;
- Unlock and improve economic viability of agri-environment-climate initiatives through a renovated and coherent agri-environment-climate contractual framework;
- **Provide support to policy makers and stakeholders (set of incentives/legal/economic instruments) by sharing the good practices at national and regional level;**
- Strengthen transdisciplinary research and integrated scientific support for consistent approaches between agricultural and environment-climate priorities and identify, when relevant, data management needs for the implementation of these approaches.
- In the longer term funded activities will help to foster the necessary socio-economic contractual framework to enable farmers to reconcile agricultural production with the delivery of environmental public goods and services, including climate adaptation and mitigation benefits.

Type of action	Research and Innovation action
Deadline	1st stage - 13 February 2018 2nd stage - 11 September 2018
Call identifier	H2020-RUR-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/rur-03-2018.html



RUR-04-2018-2019: Analytical tools and models to support policies related to agriculture and food

Specific challenge

Society assigns an increasing number of objectives to the policies influencing the agricultural sector and rural areas that it expects to see fulfilled. Therefore, justifications for policies extend well beyond mere food production. **Evidence-based policy making implies the development and maintenance of appropriate instruments for use in the design of these policies and for the monitoring of their effects, taking advantage of new socio-economic approaches** and increased possibilities opened up by progress in the ICT area.

Scope

A. [2018] Developing new models supporting policies related to agriculture (RIA)

Modelling policies dealing with agriculture and the related management of renewable resources at various geographic scales implies the development of a new architecture taking advantage of progress in modelling approaches and ICT. Given the focus on local effects of global events and EU policies, **new approaches should take into account the individual decision making unit** (e.g. agent-based or machine learning-based approaches). Modelling will include such aspects as the environmental and climatic impacts of farming, delivery of ecosystem services modelling of aspects ranging from product / sector to farming systems, structural change including the transfer of production factors such as land, the integration of agriculture in rural society and will allow the establishment of links with biophysical models and geo-referenced datasets. Proposals will develop modelling at various geographic scales – from regional to global. They will build a highly modular and customisable suite of tools which will allow flexible use and further improvements as needs arise.

B. [2019] Modelling international trade in agri-food products (RIA)

Trade modelling has a long-standing tradition but some issues are notoriously difficult to assess and include in the existing simulation models. **Proposals will develop appropriate methodologies to include some of these issues in existing trade models. These issues include** (non-exhaustive):

- **Non-tariff measures (NTM):** The project will work on a methodology to assess the welfare effects of NTM (both positive and negative) and to include them in trade simulation models. This should go further than the standard gravity model approach which has strong downsides as discussed in the literature;
- **Geographical Indications (GIs):** The project will work on a methodology to assess the welfare effect of GIs and the resulting trade impacts of different schemes under trade negotiations;
- **Zero trade flows:** Current trade models have problems creating trade flows that did not exist before due to tariff or NTM reasons. This project will work on a methodology to overcome this bias;
- **Quality differentiation:** current trade models typically assume homogeneous goods. However, agri-food trade is becoming increasingly heterogeneous. The project should aim to broaden the commodity scope by including horizontal and vertical product differentiation trade models.

Proposals for both sub-topics should ensure that the approach proposed will be compatible with and improve the tools used at the European Commission. Proposals should include a task to cluster with other projects financed under the topic and with the modelling platform SUPREMA established under SFS-49-2017.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 4 million for A and 5 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.

Expected impact

- In the short term: improvement of the capacity to model policies dealing with agriculture and related natural resources, food and international trade;
- In the medium to long term: improvement of policy design, impact assessments and monitoring.

Type of action	Research and Innovation action
Deadline	2018 - 1st stage - 13 February 2018 2nd stage - 11 September 2018 2019 - 1st stage - 23 January 2019 2nd stage - 04 September 2019
Call identifier	H2020-RUR-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/rur-04-2018-2019.html



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

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)

The project shall generate a knowledge basis that could support policy decisions related to novel fertilisers based on organic resources. On the basis of products that are currently available or under development, a comprehensive set of potential environmental impacts shall be identified and assessed across the fertiliser value chain, along with criteria related to their agronomic performance, safety and quality. Parameters and reference values shall be proposed as a basis for future policies related to new organic-based fertilisers. The project shall also propose reliable analytical measurement and testing methods for future compliance checks. An analysis of nutrient imbalances between regions in the EU shall be carried out, and the viability and sustainability of nutrient flows between regions through new organic-based fertilisers (including the understanding of logistic costs) shall be assessed.

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. **Proposals shall address end-product marketability, safety, sustainability including emissions of greenhouse gasses and pollutants, and compliance with relevant EU regulations. 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' 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 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.



Call – Rural Renaissance

Type of action	Research and Innovation action, Innovation action
Deadline	RIA - 1st stage - 13 February 2018 2nd stage - 11 September 2018 IA - 23 January 2019
Call identifier	H2020-RUR-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ce-rur-08-2018-2019-2020.html



RUR-09-2018: Realising the potential of regional and local bio-based economies

Specific challenge

Bioeconomy is a major opportunity for regional and local communities. Despite broad political agreement, **the potential of many European regions to develop a thriving circular bio-based economy using their own resources remains largely untapped.**

Many factors contribute to this situation, including lack of awareness and practical knowledge among regional/local authorities and stakeholders, low degree of cooperation and networking at all levels, insufficient involvement of local/regional stakeholders in drawing up bioeconomy strategies, or inadequate technology transfer and exploitation of innovation.

New, sustainable technology options or business models suitable for local deployment are needed, as current integrated biorefinery models are predominantly based on complex technologies and are difficult to finance, so remain inaccessible to many players.

Scope

Proposals shall foster cooperation and networking between relevant actors at all levels, so that regional bio-based economies can take off, promote open innovation approaches, and ensure adequate knowledge exchange within and among regions. **Emphasis shall be put on increasing the capacities of regional/local authorities and stakeholders,** especially in regions with high potential (e.g. underused biomass streams, human capacities), but that have a low number of established biorefineries. **Proposals shall ensure proper support and guidance in developing regional strategies and roadmaps through participative approaches, adapted to the local conditions** and biomass sources. These shall also include avenues to address the education and information gap on key issues related to sustainability, to increase R&I capacities and to improve the generation of innovation, making best use of the various funding streams available and establishing synergies with relevant policies and programmes, notably those related to rural and regional development, and related Smart Specialisation Strategy implementing bodies.

Proposals shall address the different bio-based business models available for stakeholders and policy-makers, with a specific attention paid to models that could be deployed at a smaller scale in rural areas. **Their economic (growth and jobs), social and environmental potential, as well as their advantages and disadvantages compared to larger and more complex models, shall be established.**

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

Expected impact

In the framework of the EU Bioeconomy Strategy, the impact of the proposals will be assessed on the basis of:

- Increased capacity of regional/local policy makers and stakeholders to structure their bioeconomy and to support the emergence of a thriving bio-based sector. Adequate knowledge and best practice exchange and networking within and among regions, across the EU;
- Improved capacity of policy makers and stakeholders to make informed decisions, based on a thorough knowledge of the different business models, their respective advantages and disadvantages, and the best approaches to promote them;
- Ambitious regional strategies and roadmaps leading to regional bio-based sectors that are sustainable, inclusive and adapted to local assets and conditions;
- Enhanced research and innovation capacities, and appropriate transfer of research results to regional/local stakeholders.

Type of action	Coordination and support action
Deadline	13 February 2018
Call identifier	H2020-RUR-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/rur-09-2018.html



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

Specific challenge

To boost the development of a bio-based economy in Europe, there is a need for business models that can be replicated easily in a variety of locations and contexts, with relatively low levels of investment, risk and technical sophistication. A wider range of rural entrepreneurs needs to get involved in the emerging bio-based business sector, including farmers, forest owners, their associations, and small rural business. This will help to diversify and revitalise the economy and create quality jobs in rural areas. Local and regional authorities need to do more to support the bio-economy in their respective territories. They should therefore have a range of options to choose from and be able to select the approach that best suits local needs and assets. As a key part of a circular economy, the bioeconomy needs to close loops to make the most efficient possible use of biomass under market and logistical constraints, and to ensure the sustainability of business models.

Scope

Based on an established agro-food system, proposals shall consider a variety of additional bio-based processes and end products that could be integrated into the system, and that are viable on a small scale (farm to rural community level). The TRL of the technologies considered can vary at the start. The project shall test and demonstrate the combination of these in a circular configuration. The integrated system shall achieve a TRL 6-7.

Proposals can target any combination of non-food bio-based outputs, but projects focussing mainly on bio-fuels or bio-energy are not eligible. The choice of feedstock sources shall avoid negative effects on food security. Proposals shall focus on a single agro-food system that should be common in Europe and offer high replication potential, and can be combined with sustainable management of natural areas and/or use of marginal lands. **A complete assessment (economic, environmental and social) of the integrated system shall be carried out. The project shall include a business plan, and a set of policy options and recommendations.**

Proposals shall fall under the concept of the 'multi-actor approach', ensuring solid collaboration between relevant actors such as farmers or farmers associations, agro-food industry (including small businesses), technology providers, research centres or public authorities. Proposals should include a task to cluster with other projects financed under this topic, under topic SFS-35-2020 and – if possible – with other relevant projects in the field that are funded by Horizon 2020 (including under the BBI JU).

The Commission considers that proposals requesting a contribution from the EU of up to EUR 10 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

Proposed activities will expand the range of business models available to entrepreneurs and local authorities by developing circular and sustainable business models with large potential for replication in areas with unexploited resources, at a relatively low cost, risk and with low levels of technical complexity. This will help to:

- expand and diversify the sector by mobilising a wider range of players in the bio-based economy, including small businesses, farmers, forest owners and their associations;
- develop regional and local bio-based models adapted to the wide variety of contexts found in the EU, including rural and remote areas and outermost regions;
- ensure adequate recovery of nutrients and organic matter, and their reuse in agriculture.

In the longer term results consolidate a diversified, circular and climate-friendly bio-based sector that harnesses regional assets, provides quality jobs and opportunities in rural areas and revitalises rural economies.

Type of action	Innovation action
Deadline	23 January 2019
Call identifier	H2020-RUR-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ce-rur-10-2019.html



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

Specific challenge

Forests play a vital role in Europe's economy, society and environment. 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 fossil fuels through the 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. Several research projects and COST Actions 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 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. 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.
- 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 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

Type of action	Innovation action
Deadline	23 January 2019
Call identifier	H2020-RUR-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-rur-11-2019-2020.html



Topics with minor SSH relevance

RUR-14-2018: Digital solutions and e-tools to modernise the CAP

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/rur-14-2018.html>

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

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/rur-16-2019.html>





Societal Challenge 3
Secure, Clean and Efficient Energy

Call – Building a low-carbon, climate resilient future

LC-SC3-EE-2-2018-2019: Integrated home renovation services

Specific Challenge

Many project promoters – public authorities, individuals or businesses – lack the skills and capacity to set up, implement and finance ambitious low-energy and clean energy building projects. In addition, many project developers still face obstacles in raising the necessary up-front costs for their projects – particularly as the small-size of investments and the lack of turnkey solutions increase implementation cost – and lack access to attractive and adequate financing products from the market.

Scope

This topic aims at creating or replicating innovative local or regional "integrated home renovation services". **The developed services should cover the whole "customer journey" from technical and social diagnosis, technical offer, contracting of works, structuring and provision of finance (e.g. loans or EPCs), to the monitoring of works and quality assurance.** Such integrated services should be operational at the end of the project and create more demand for holistic approaches as a result of improved offer by trustful market operators and **better awareness from homeowners.** They should also support the streamlining of standards and practices into consistent and transparent processes investors can rely on, and by doing so help connect the supply of finance with demand for it.

Proposals should build upon the promising experiences of integrated renovation services emerging in Europe and aim at developing / improving economically viable business models, ultimately running without the need for public subsidies.

Projects funded under this topic will optimise the services required along the renovation process (based on a thorough analysis of the local needs and actors in place), **improve trust and awareness of homeowners towards such services, reduce renovation costs and time on-site through standardised approaches (e.g. optimized business processes, standardised contractual arrangements, branding of the proposed services, ...),** mainstreaming innovative technical solutions adapted to the local context, **help improve their legal and regulatory environment, and overall improve financing conditions for energy renovation.**

The services can be developed through dedicated operators (new public or public/private entity or mandated private operator) and/or through an improved co-ordination between existing local actors.

The Commission considers that proposals requesting a contribution from the EU of between EUR 0.5 and 1.5 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

Proposals are expected to demonstrate the impacts listed below, using quantified indicators and targets wherever possible:

- **Implementation and upscale of economically viable business models, ultimately running without the need for public subsidies. Data evidence made available to market actors. Proof of the replication of these initiatives by other market actors;**
- **Availability of adequate financing offer for integrated renovation services; Proposals are encouraged to take advantage of using the already developed common methodologies for calculating energy savings in public buildings and social housing.**
- Strong and trustworthy partnerships with local actors (e.g. SMEs, ESCOs, financial institutions, energy agencies, NGOs) and quality of the proposed services recognized by market actors;
- Development of large, locally-developed investment pipelines for home renovation, connecting the supply of finance with demand for it (in million Euro of investments within the first 5 years);
- Uptake of home energy renovation at local level and corresponding primary energy savings triggered (in GWh/year).

Additional positive effects can be quantified and reported when relevant and wherever possible:

- Reduction of the greenhouse gases emissions (in tCO₂-eq/year) and/or air pollutants (in kg/year) triggered by the project.

Type of action	Coordination and support action
Deadline	Call 2018 - 04 September 2018 Call 2019 - 03 September 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-2-2018-2019.html



Call – Building a low-carbon, climate resilient future

LC-SC3-EE-4-2019-2020: Upgrading smartness of existing buildings through innovations for legacy equipment

Specific Challenge

An essential part of Europe's clean energy transition is the changing role of buildings from energy consumers to actively controlling and optimising indoor environment while contributing to energy system flexibility by ensuring distributed energy generation from renewable energy sources, energy storage, facilitate smart charging of EVs, load reduction through energy efficiency and load shifting through demand response. Innovative technologies will enable smart buildings to interact with their occupants and the grid in real time and to manage themselves efficiently, so as to become an active element of the energy system. Intelligent and connected devices, sensors and controllers, supported by the development of new business models for new energy services, will create new opportunities for energy consumers.

Today in the EU, the existing building stock represents the main challenge for a more efficient energy use, in buildings as well as across the whole energy system. The smart readiness of buildings may evolve faster for devices and systems easily replaced and installed, than for other parts of the building's equipment such as HVAC and DHW systems etc. due to higher costs of replacement, longer lifecycles and difficulties related to the integration in buildings. This installed equipment remains highly relevant for buildings interactions with the energy system, making its upgrade to higher levels of smartness an essential step.

Scope

Proposals should develop and demonstrate cost-effective technological solutions to manage energy within existing buildings and interact with the grid providing energy efficiency, flexibility, generation and storage, **based on user preferences and requests**. These solutions should be aimed to upgrade existing buildings, either residential or tertiary, using automation and IT to offer new services and control to the building users, thereby improving their comfort and increasing their satisfaction.

Proposals should demonstrate how the smart systems, smart controls and smart appliances can be integrated seamlessly in existing buildings to interface and/or to control the major energy consuming domestic appliances that are already installed. These pilots should involve several types of domestic appliances and technical building systems with longer lifecycles (boilers, radiators, DHW preparation, motors for ventilation, windows opening and shading; lighting etc.) and with shorter lifecycles (dryers, washing machines, fridges, etc.), testing several types of control modes (ON/OFF, power modulation, etc.) possible for a given type of appliance. Recharging points for electric vehicles and other forms of energy storage should also be incorporated in the pilots. The proposed solutions should not adversely affect the original functionalities, product quality, lifetime, as well as warranties of the appliances.

Proposals are expected to include clear business model development and a clear path to finance and deployment. Key partners should have the capability and interest in making the developed solution a core part of their business/service model to their clients.

Besides the pilot demonstrations, proposals should outline business models and strategies for the broad uptake of the proposed smart systems into specific building typologies in Europe and their integration with evolving electricity markets, e.g. dynamic pricing or other services and information offered by energy suppliers and/or aggregators. Integrations with other energy networks (e.g. DHC) can also be considered.

The solutions should focus on cost-effectiveness, interoperability and user-friendliness: easy installation and maintenance, **maximising consumer comfort** (e.g. self-learning) and information on own consumption (e.g. recommendations to the user in order to maximise savings) as well as on gains from its contribution to grid operation.

A realistic estimate should be provided on the total energy savings/year and on the impact of the innovations demonstrated in the project on the total power available for cost effective demand response actions. The projects should involve technology providers (e.g. manufacturers of appliances, movable envelope components, smart control/ home systems providers), energy services providers (aggregators and/or suppliers and/or ESCO's), user representatives, electricity system operators and other actors as relevant.

The activities are expected to be implemented at TRL 6-8 (please see part G of the General Annexes).

The Commission considers the proposals requesting a contribution from the EU of between 3 to 4 million would allow this specific challenge to be addressed appropriately. Nonetheless this does not preclude submission and selection of proposals requesting other amounts.

This topic contributes to the roadmap of the Energy-efficient Buildings (EeB) cPPP.

Expected Impact

Proposals are expected to demonstrate the impacts listed below using quantified indicators and targets wherever possible:

- Primary Energy savings triggered by the project (in GWh/year);
- Investments in sustainable energy triggered by the project (in million Euro);
- Upgrade of existing buildings to higher smartness levels, including a significantly enlarged base of existing building equipment and appliances monitored by energy management systems and activated through demand response actions;
- Reduction in energy consumption and costs, exceeding the additional consumption from IT and its cost.

Additional positive effects can be quantified and reported when relevant and wherever possible:

- Reduction of the greenhouse gases emissions (in tCO₂-eq/year) and/or air pollutants (in kg/year) triggered by the project.



Call – Building a low-carbon, climate resilient future

Type of action	Innovation action
Deadline	03 September 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-4-2019-2020.html



Call – Building a low-carbon, climate resilient future

LC-SC3-EE-8-2018-2019: Capacity building programmes to support implementation of energy audits

Specific Challenge

The Energy Efficiency Directive, in its art.8, requires Member States to develop programmes encouraging SMEs to undergo energy audits and to implement the recommended energy-saving measures. SMEs represent enormous energy saving potential. However, the lack of expertise, time and capital, including energy audit supporting scheme, often prevents SMEs from implementing energy conversation measures or from getting access to the energy services market.

The effectiveness of energy audit recommendations is influenced by people's behaviours and the improvement of enterprises' energy cultures. The availability of reliable energy consumption data is of utmost importance to monitor the impact of energy saving measures and behaviours. The actions should lead SMEs to become fully aware of the multiple benefits resulting from energy audits as well as facilitating their actual implementation. Moreover, capacity building programmes should also support implementation of the recommended energy-saving measures both for small and large enterprises.

Scope

Proposals should focus on one, or more, of the following issues:

- Staff trainings and capacity buildings programmes, facilitating SMEs to undergo energy audits and to implement the recommended energy-saving measures, shall be developed according to SMEs specificities (size, sectors, lifetime of the company etc.) and highlighting the financial aspects. Programmes should aim at bridging the gap between demand and supply side (SMEs, auditors, finance institutions, managing authorities of supporting schemes). An active participation of both managerial and operational staff must be ensured. The proposed solution should be tailored to national/local conditions in order to ensure the effective uptake by the SMEs.
- Capacity building to support the take-up of audits recommendations and undertake the actions necessary to reduce energy consumption (maintenance or investments in new equipment but possibly also behavioural actions) in the companies required to undergo energy audits (large enterprises). **Development and implementation of corporate policy measures involving all actors (from decision makers/corporate board members to employees in each department) willing to undertake more efficient energy-related actions (motivations, behaviour change, mitigation of perceived risks and barriers). Evaluation of the total costs of building investments, in terms of financial, environmental and health impact.**
- Initiatives supporting Member States in empowering or establishing national supporting schemes for SMEs providing appropriate incentives to undergo energy audits and/or to implement the recommended energy-saving measures.

Proposals should demonstrate how the proposed activities will be continued commercially beyond the project lifetime. Involvement of relevant multiplier organisations is also encouraged.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 2 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

Proposals are expected to demonstrate, depending on the scope addressed, the impacts listed below using quantified indicators and targets wherever possible:

- Primary energy savings triggered by the project (in GWh/year);
- Investments in sustainable energy triggered by the project (in million Euro);
- Market stakeholders with increased skills/capability/competencies (to be measured in number of people with increased capacity) and long-lasting training schemes;
- Number of people/enterprises with enhanced energy culture documenting why and how changes are an effect of particular measures taken as consequence of energy audits, as well in terms of the sustainability of the behavioural change;
- Policies and strategies created/adapted at national level (to be measured in number of initiatives/actions taken to improve/create audit supporting schemes and/or number of SMEs supported in the implementation of energy audit).

Additional positive effects can be quantified and reported when relevant and wherever possible:

- Reduction of the greenhouse gases emissions (in tCO₂-eq/year) and/or air pollutants (in kg/year) triggered by the project.

Type of action	Coordination and support action
Deadline	03 September 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-8-2018-2019.html



Call – Building a low-carbon, climate resilient future

LC-SC3-EE-11-2018-2019-2020: Aggregation - Project Development Assistance

Specific Challenge

Investors and lenders need to gain more confidence on investment projects related to energy efficiency which are still seen as risky and fragmented. EU added value can be realised in particular where projects introduce innovation to the market regarding project aggregation and financing solutions minimising transaction costs and engaging the private finance community. EU added value could also be realised where projects demonstrably remove legal, administrative and other market barriers for mainstreaming large scale sustainable energy investment schemes.

Scope

Project Development Assistance (PDA) will be provided to public and private project promoters such as public authorities or their groupings, public/private infrastructure operators and bodies, energy service companies, retail chains, large property owners and services/industry. The action will support building technical, economic and legal expertise needed for project development and leading to the launch of concrete investments, which are the final aim and deliverable of the project.

Proposals should focus on one or more of the following sectors:

- existing public and private buildings including social housing, with the aim to significantly decrease energy consumption in heating/cooling and electricity;
- energy efficiency of industry and service;
- energy efficiency in all modes of urban transport (such as highly efficient transport fleets, efficient freight logistics in urban areas, e-mobility and modal change and shift); and
- energy efficiency in existing infrastructures such as street lighting, district heating/cooling and water/wastewater services.

The proposed investments will have to be launched before the end of the action which means that projects should result in signed contracts for sustainable energy investments to that effect, e.g. construction works, energy performance contracts, turnkey contracts. Whilst proposals may address investments into distributed, small-scale renewable energy sources in combination with energy efficiency, the main focus should lie on capturing untapped high energy efficiency potentials.

Proposals should include the following features:

- an exemplary/showcase dimension in their ambition to reduce energy consumption and/or in the size of the expected investments;
- deliver organisational innovation in the financial engineering (e.g. on-bill financing schemes, guarantee funds, or factoring funds) and/or in the mobilisation of the investment programme (e.g. bundling, pooling or stakeholder engagement);
- demonstrate a high degree of replicability and include a clear action plan to communicate experiences and results towards potential replicators across the EU;
- build on the experiences from previous PDA projects.

This PDA facility focuses on small and medium-sized energy investments of at least EUR 7.5 million to EUR 50 million. Large scale investments are covered by the ELENA facility. The Commission considers that proposals requesting a contribution from the EU of between EUR 0.5 and 1.5 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

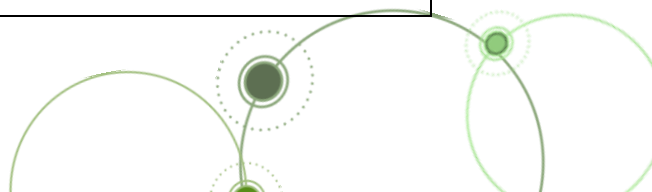
Proposals are expected to demonstrate, depending on the scope addressed, the impacts listed below using quantified indicators and targets wherever possible:

- Primary energy savings triggered by the project (in GWh/year);
- Investments in sustainable energy triggered by the project (in million Euro);
- Market stakeholders with increased skills/capability/competencies (to be measured in number of people with increased capacity) and long-lasting training schemes;
- Number of people/enterprises with enhanced energy culture documenting why and how changes are an effect of particular measures taken as consequence of energy audits, as well in terms of the sustainability of the behavioural change;
- Policies and strategies created/adapted at national level (to be measured in number of initiatives/actions taken to improve/create audit supporting schemes and/or number of SMEs supported in the implementation of energy audit).

Additional positive effects can be quantified and reported when relevant and wherever possible:

- Reduction of the greenhouse gases emissions (in tCO₂-eq/year) and/or air pollutants (in kg/year) triggered by the project.

Type of action	Coordination and support action
Deadline	Call 2018 - 04 September 2018 Call 2019 - 03 September 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-11-2018-2019-2020.html



Call – Building a low-carbon, climate resilient future

LC-SC3-EE-14-2018-2019-2020: Socio-economic research conceptualising and modelling energy efficiency and energy demand

Specific Challenge

In the Energy Union Strategy, Energy Efficiency was recognised as a resource in its own right which should be enabled to compete on equal terms with generation capacity and to have primary consideration across all policies. However, the structure of energy demand as well as the real value beyond the fuel's cost and the (energy and non-energy) impacts of energy efficiency are still not well understood with the effect that benefits of energy efficiency are not sufficiently taken into account in financial and political decision making, and planning, while prices of fossil fuels remain relatively low.

The topic addresses three different dimensions of this challenge with the aim to trigger actions which:

1. make the energy efficiency first principle more operational (2018);
2. substantiate the demand side aspects in energy modelling (2019).

Scope

2018:

The research projects should help to make the Energy Efficiency First principle more concrete and operational and to better understand its relevance for energy demand and supply and its broader impacts across sectors and markets. In particular, **it needs to be analysed how energy efficiency programmes along the efficiency chain**, i.e. end-use, operation, transmission and generation/utilisation of resources, **can compete in reality with supply side investments** (e.g. additional generation capacities or import capacities) **including at the level of countries and having in mind limited public budgets. It would also be necessary to describe and assess how it interacts with and correlates to other policy objectives, at a policy level as well as at the level of implementation.**

Actions which conceptualise and assess the impacts and model the energy efficiency first principle, in particular as regards:

- its role and value in the energy system (e.g. for planning of generation assets and networks adequacy etc.) and the energy market (participation in capacity market, participation and impact on prices and costs on wholesale and balancing/reserve markets);
- **its role and value in financing decisions** (considering as well that in some Member States retail prices do not reflect real costs);
- **its economic and social impacts;**
- **its correlation and interaction with other policy objectives** (e.g. renewable energy, demand response);
- existing best practices worldwide where energy efficiency projects are given priority over additional supply side measures.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 million and 1.5 million would allow this specific challenge to be addressed. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

2019:

The aim of the action is to deepen the demand side-related parameters in existing models and to include new aspects and data sources (e.g. by tapping DSOs modelling for forecasting of distributed loads). In general, it is to be expected that the introduction of smart meters and smart equipment will lead to more accurate consumption data providing for a more holistic mapping of the demand side and thus for better projections inside energy policy development and a more effective regulatory framework.

The action should complement the existing demand side energy models by developing multiple-agent energy models and/or modelling segments and/or developing methodologies on how to improve and enhance the demand side aspects in modelling.

These models and/or methodologies should:

- be compatible with the energy models most commonly used at European level;
- model more accurately those aspects not yet sufficiently considered in the existing models;
- make use of new data sources, including big data as for example generated by smart meters, smart buildings and smart equipment;
- identify and refine the structure and patterns of demand and how it will develop;
- contribute to an enhanced demand-side model to be consistently used at European level.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 million and 2 million would allow this specific challenge to be addressed. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

2018:

Actions are expected to support policies aiming to promote and implement the "energy efficiency first-principle" based on a sound assessment of the concept and its impacts. To this end, actions should lead to a better understanding of:

- all relevant aspects linked to the "energy efficiency first-principle";
- its impacts (e.g. technical, economic, socio-economic, and ecological etc.) on the relevant sectors and markets;
- its potential across the different policy areas and sectors;
- its consideration and valorisation in modelling and assessments; and



Call – Building a low-carbon, climate resilient future

- its interaction with other policy objectives both at policy level (e.g. climate and renewable policies, circular economy) and at the level of concrete application (e.g. design of buildings).

2019:

Proposals are expected to demonstrate the impacts listed below, using quantified indicators and targets wherever possible

- More accurate and holistic mapping and modelling of the demand side and to a better assessment of energy consumption trends for different categories of economic agents;
- More accurate follow-up of energy efficiency measures implemented at the demand side;
- Better assessment of demand-side policy needs at European level.

Type of action	Research and Innovation action
Deadline	Call 2018 - 04 September 2018 Call 2019- 03 September 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-14-2018-2019-2020.html



Call – Building a low-carbon, climate resilient future

LC-SC3-EE-16-2018-2019-2020: Supporting public authorities to implement the Energy Union

Specific Challenge

The delivery of the Energy Union targets requires the full engagement of the public sector at all governance levels.

Local and regional public authorities have a crucial role in setting ambitious energy efficiency strategies, for instance in the framework of the Covenant of Mayors for Climate & Energy and Smart Cities & Communities or the Clean Energy for All islands initiative. The political commitment at local level should be enhanced and the focus should turn to implementation and effective monitoring of concrete energy efficiency solutions and actions, which can contribute to modernise and decarbonise the European economy. Synergies should be sought, whenever possible, with local and regional air quality plans and air pollution control programmes to reduce costs since these plans rely to a large extent on similar measures and actions.

Support should continue and be reinforced in building capacity of public authorities and empowering them to take up their role of energy transition leaders at regional and local level, by permanently improving their skills as public entrepreneurs and supporters of market transformation towards more efficient energy systems.

At national level, the Energy Efficiency Directive has triggered numerous positive developments in the Member States by setting targets to incentivise and enable investment in energy efficiency programmes across all sectors. However, Member States have yet to fully implement the Directive and additional support in building capacity and know-how is needed.

Scope

a) Support to local and regional public authorities

Proposers should aim to focus their proposed action on one of the following points:

- **Deliver higher quality and consistency of energy efficiency measures implemented through enhanced coordination of different administrative levels. Actions should lead to politically approved and jointly applied monitoring and verification schemes of energy efficiency measures across local and regional authorities, enhanced and better coordination of the energy efficiency measures implemented and more efficient use of public spending in energy efficiency;**
- Support public authorities in the development of transition roadmaps that clearly outline the path to the European long-term 2050 targets and inform the ongoing implementation of SEAPs/SECAPs or similar plans and the development of future plans/targets for 2030 and beyond. Actions should link closely to the Covenant of Mayors and/or Smart Cities and Communities initiatives;
- **Innovative ways to enable public engagement in the energy transition, developing interface capacities within public authorities to engage with civil society;**
- Deliver large-scale and action-oriented peer-to-peer learning programmes targeting cities and/or regions, with a strong replication potential European-wide. **Proposals should develop transparent, effective and compelling programmes, building on existing initiatives and real needs and ensure embedded conditionalities such as institutionalisation of the skill base and impact monitoring.** Programmes should deliver public entrepreneurs able to drive the sustainable energy transition in their respective territories within the Covenant Mayors and beyond.

b) Supporting the delivery of the Energy Efficiency Directive

Support will be provided to actions that are assisting Member States to fulfil their obligations under the Energy Efficiency Directive and help with its efficient implementation taking into account existing effective practices and experiences from across Europe. Actions may address, for example, the harmonisation of energy savings calculations under Article 3, implementing Energy Efficiency Obligation Schemes or alternative measures and setting up effective and consistent monitoring and verification systems under Article 7 or the removal of barriers to higher efficiency of the generation, transmission, distribution systems including demand response under Article 15.

Proposals should link into existing, relevant initiatives such as ManagEnergy and target a specific sector with high energy saving potential such as buildings, transport mobility, heating and cooling, or water infrastructure operation etc., as seen relevant by applicants.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 1.5 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

Proposals are expected to demonstrate, depending on the scope addressed, the impacts listed below, using quantified indicators and targets wherever possible:

- Primary energy savings, renewable energy production and investments in sustainable energy triggered in the territory of participating parties by the project (respectively in GWh/year and in million Euro);
- Number of public officers with improved capacity/skills;
- Number of policies influenced through the action;
- Number of Member States with improved implementation of Art 7. (Energy Efficiency Obligation schemes or alternative measures) / Energy savings achieved through successfully implemented Energy Efficiency Obligation schemes or alternative policy measures;
- Number of Members States with improved and consistent monitoring and verification systems for energy savings across governance levels.



Call – Building a low-carbon, climate resilient future

Type of action	Coordination and support action
Deadline	Call 2018 - 04 September 2018 Call 2019 - 03 September 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-16-2018-2019-2020.html



Call – Building a low-carbon, climate resilient future

LC-SC3-RES-1-2019-2020: Developing the next generation of renewable energy technologies

Specific Challenge

The renewable energy technologies that will form the backbone of the energy system by 2030 and 2050 are still at an early stage of development today. Bringing these new energy conversion solutions, new renewable energy concepts and innovative renewable energy uses faster to commercialisation, taking into account social acceptance and secure and affordable energy supply, is challenging. These new technologies must not only have a commercial potential but they should also have a lower environmental impact and lower greenhouse gases emissions than the current renewable energy technologies.

Due to the pre-competitive nature of the research activities of this type, particular emphasis is put on including international cooperation opportunities, whenever relevant to the proposal and the domain.

Scope

Proposals are expected to bring to TRL 3 or TRL 4 (please see part G of the General Annexes) renewable energy technologies that will answer the challenge described. **Beside the development of the technology, the proposal will have to clearly address the following related aspects: the potential lower environmental and climate impact on a life cycle basis, the better resource efficiency, issues related to social acceptance or resistance to new energy technologies, related socioeconomic and livelihood issues.**

Support will be given to activities which focus on converting renewable energy sources into an energy vector, or the direct application of renewable energy sources.

One of the following technology-specific sub-topics has to be addressed:

- Developing the new energy technologies that will form the backbone of the energy system by 2030 and 2050. The challenge is to develop energy technologies currently in the early phases of research. It is crucial that these new, more efficient, and cost-competitive energy generation and conversion technologies, demonstrate their potential value in the future European energy system. Developments in sectors other than energy may provide ideas, experiences, technology contributions, knowledge, new approaches, innovative materials and skills that are of relevance to the energy sector. Cross-fertilisation could offer mutually beneficial effects;
- Innovative materials for geothermal heat exchangers to maximize energy transfer and improve the overall conversion efficiency of a geothermal system;
- Innovative testing methods and design tools for acceleration of wind energy technology development and increased life time extension;
- Sustainable fuels other than hydrogen for energy and transport application through ground-breaking conversion technologies, addressing for example development of novel microorganisms, enzymes, catalysts, photosensitizers and separation techniques, improvement of biomass and microalgae yields, and development of novel technologies of combined indirect and direct artificial photosynthesis with chemical/ biochemical/biological systems;
- Innovative very high efficiency thin-film photovoltaics concepts considering advanced, sustainable and low-cost materials and processes.

Novel technology solutions for grid integration, storage, fuel cells and hydrogen – (other than integral to the technology solution developed), energy efficiency and smart cities will not be supported under this topic but in the relevant parts of this work programme part and other H2020 work programme parts.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 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

On its completion, the project is expected to advance the knowledge and prove the technological feasibility of the concept including the environmental, social and economic benefits. The proposal should show its contribution towards establishing a solid European innovation base and building a sustainable renewable energy system contributing to the decarbonisation of our economies. The proposed solutions are expected to contribute to strengthening the EU leadership on renewables.

Type of action	Research and Innovation action
Deadline	1 st stage - 16 October 2018 2 nd stage - 25 April 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-res-1-2019-2020.html



Call – Building a low-carbon, climate resilient future

LC-SC3-RES-4-2018: Renewable energy system integrated at the building scale

Specific Challenge

An increased penetration of renewable energy in the energy mix and the decarbonisation of the heating sector are amongst the most important priorities set in the Energy Union Strategy. To this aim, solutions that integrate several technologies based on one or more renewable energy sources (and their combination with energy storage systems where necessary) should be made available and the highest possible share of renewable energy should be achieved. This integration requires innovative approaches, due consideration of the implications for the user and a proper assessment of the cost-effectiveness. This specific challenge is in line with the objectives of the SET-Plan, of Innovation Challenge n. 7 ("Affordable Heating and Cooling of Buildings") of Mission Innovation and the roadmap of the Energy-efficient Buildings (EeB) cPPP.

Scope

The proposal will provide a combination of different renewable energy technologies to cover the highest possible share of electricity, heating and cooling needs of a multi-family residential or commercial or public or industrial building (in the case of the industrial building, the project is not expected to address the energy needs of the industrial process).

Since the final application will be operated by users and installed by installers, their needs and requirements (e.g. in terms of space that the users are willing to provide for the installation of the different components of the system) shall be taken into account and the relevant expertise in terms of social sciences and humanities has to be included in the consortium.

Attention should be paid to reducing emissions of air pollutants.

Proposals are expected to bring the integrated technologies solutions from TRL 3-4 to TRL 4-5 (please see part G of the General Annexes).

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 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

The project is expected to develop solutions that will reduce the dependence on fossil fuels for providing electricity, heating and cooling in buildings. Cost competitiveness with traditional solutions is expected to be achieved by 2025 considering also the effect of economies of scale.

Type of action	Research and Innovation action
Deadline	1 st stage - 31 January 2018 2 st stage - 23 August 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-res-4-2018.html



Call – Building a low-carbon, climate resilient future

LC-SC3-RES-11-2018: Developing solutions to reduce the cost and increase performance of renewable technologies

Specific Challenge

Achieving or maintaining global leadership in renewable energy technology requires that the innovative solutions are also affordable. Therefore cost reductions remain a crucial necessity for existing or new technologies. This specific challenge is in line with the sectorial cost reduction targets stated in the respective Declarations of Intent of the SET Plan, where applicable.

Scope

Proposals will address one or more of the following issues:

- Floating Wind – Technology development including reliable, sustainable and cost efficient anchoring and mooring system, dynamic cabling, installation techniques, and O&M concepts;
- Onshore Wind - Disruptive technologies for the rotor, generator, drive train and support structures for the development of the advanced or next generation wind energy conversion systems;
- Ocean: New integrated design and testing of tidal energy devices with behavioural modelling to achieve extended lifetime and high resistance in marine environment;
- Geothermal: Novel drilling technologies need to be developed to reach cost-effectively depths in the order of 5 km and/or temperatures higher than 250°C;
- CSP: Novel components and configurations for linear focusing and point focusing technologies need to be developed and tested;
- Hydropower: Novel components for hydropower hydraulic and electrical machinery which allow efficient utilization also in off-design operation conditions, especially during ramp up and ramp down phases and reduce related machinery wear and tear;
- Bioenergy: Improve small and medium-scale combined heat and power (CHP) from biomass to reduce overall costs of investments and operation through achieving at the same time high resource efficiency and high overall and electrical conversion performance.

Proposals are expected to bring technologies from TRL 3-4 to TRL 4-5 (please see part G of the General Annexes). **Beside the development of the technology, the proposal will have to clearly address the following related aspects where relevant: potentially lower environmental impacts, issues related to social acceptance or resistance to new energy technologies, related socioeconomic issues.**

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 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

The proposed solution will reduce the CAPEX and/or OPEX of energy generation from any of the mentioned renewable sources making it comparable to generation costs from competing fossil fuel sources.

Type of action	Research and Innovation action
Deadline	1 st stage - 31 January 2018 2 nd stage - 23 August 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-res-11-2018.html



Call – Building a low-carbon, climate resilient future

LC-SC3-RES-22-2018: Demonstration of cost effective advanced biofuel pathways in retrofitted existing industrial installations

Specific Challenge

Commercialization of advanced biofuels depends on up-scaling of the technologies. The specific challenge is to overcome the high cost and high risk of the installation of industrial plants for advanced biofuels. This challenge is in line with priorities identified in the context of the SET-Plan for commercialization of advanced biofuels.

Scope

Proposals will demonstrate cost-efficient advanced biofuel pathways which improve the economic viability and reduce capital expenditure (CAPEX) and operating expenses (OPEX). This is to be done through retrofitting of existing industrial installations with necessary innovation specific to the proposed advanced biofuel pathway. Proposals will address integration in first generation biofuels sites, in pulp and paper industry or in existing fossil refineries with production of advanced biofuels at a scale of a few thousand tons through upgrading the existing sites with innovative installations. **The economic feasibility and other socio-economic benefits including the impact on current first generation sites will be included and clearly demonstrated. Proposals will provide information about the expected CAPEX and OPEX improvements.**

Proposals are expected to bring the technology from TRL 5 to 7 (please see part G of the General Annexes).

The Commission considers that proposals requesting a contribution from the EU of between EUR 8 to 10 million would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

The supported projects are expected to increase the industrial installed capacity for advanced biofuels and show the socio-economic benefits.

Type of action	Innovation action
Deadline	05 April 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-res-22-2018.html



Call – Building a low-carbon, climate resilient future

LC-SC3-RES-28-2018-2019-2020: Market Uptake support

Specific Challenge

Since the adoption of RES Directive in 2009, most Member States have experienced significant growth in renewable energy production and consumption, and both the EU and a large majority of Member States are on track towards the 2020 RES targets. The "Clean Energy for all Europeans" package adopted at the end of 2016 introduces further targets towards 2030 and introduces modifications in the energy market design that will empower individuals or communities to participate actively to the energy system transformation. Renewable energy technologies have the opportunity to play a crucial role in this transition, leading to an increased share of renewable energy consumed in the EU and to a more active role for the consumers. However, introducing and deploying at large scale new and improved technologies entails a number of challenges, notably as regards their initial high cost, the consumer acceptance and the legal and financial barriers arising from bringing novel solutions to a technical environment with already reliable solutions in place.

Scope

The proposal will develop solutions which can be easily implemented for overcoming barriers to the broad deployment of renewable energy solutions. In particular, the proposal will address one or more of the following issues:

- **Recommendation for harmonisation of regulations, life cycle assessment approaches, environmental impact methodologies of renewable energy solutions;**
- Development of additional features for RES to be compliant with the electricity market requirements, making them "market fit", such as developing the possibility to provide additional services to the grid such as peak power and having an active role in electricity balancing/reserve market;
- Support sharing of best practice between public funding bodies for the cross-border participation in RES electricity support schemes, increasing the use of the "RES co-operation mechanisms" foreseen in the legislation;
- **Development of insurance schemes to be available to developers in Europe and worldwide to mitigate risks,** such as in geothermal drilling and offshore installation;
- **Development of innovative financing mechanisms, schemes and sharing of best practices for cost-effective support for uptake of renewable sources, such as through the use of Public Procurement of Innovative Solutions instrument or smartly designed tenders;**
- Development of support tools to facilitate export markets, especially for technologies where export market potential is much higher than internal market e.g. for hydropower. The focus will be on capacity building for market activities in developing and emerging countries, including identifying research needs, within the objectives of developing country- specific technologies and solutions, and/or adapting existing ones, taking into account local aspects of social, economic and environmental sustainability. Participation of developing and emerging countries is encouraged, in particular if these countries have identified energy as a priority area for their development and whenever common interest and mutual benefits are clearly identified.
- Development of tools (methods and models) for environmental impact assessments of renewable energy projects;
- Development of tools or services using global earth observation data, (such as those available through COPERNICUS), to support development and deployment of renewable energy sources;
- Determining conditions and defining options for retrofitting existing energy and industrial installations (first generation biofuels, pulp and paper, fossil refineries, fossil firing power and Combined Heat and Power (CHP) plants) for the complete or partial integration of bioenergy, with concrete proposals for such retrofitting for the different cases of bioethanol, biodiesel, bio-kerosene, intermediate bioenergy carriers and other advanced biofuels and renewable fuels and biomass based heat and power generation, on the basis of the assessment of the capital expenditure (CAPEX) reduction and market benefit;
- Development of optimisation strategies regarding cost, energy-performance and LCA for bioenergy and sustainable renewable fuels in upgraded energy and industrial installations;
- Development of cost-effective logistics, feedstock mobilisation strategies and trade-centres for intermediate bioenergy carriers.

For all actions, the consortia have to involve and/or engage relevant stakeholders and market actors who are committed to adopting/implementing the results. **The complexity of these challenges and of the related market uptake barriers calls for multi-disciplinary research designs, which should include contributions also from the social sciences and humanities. Where relevant, regional specificities, socio-economic, spatial and environmental aspects from a life-cycle perspective will be considered.** Where relevant, proposals are expected to also critically evaluate the legal, institutional and political frameworks at local, national and European level and how, why and under what conditions these (could) act as a barrier or an enabling element.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 to 3 million would allow this specific challenge to be addressed appropriately.

Expected Impact

It is expected that the solution proposed will contribute to:

- Facilitate the introduction of these technologies and increase the share of renewable energy in the final energy consumption;
- Lead to substantial and measurable reductions for project developments, whilst still fully addressing the needs for environmental impact assessments and public engagement;



Call – Building a low-carbon, climate resilient future

- Develop more informed policy, market support and financial frameworks, notably at national, regional and local level, leading to more cost effective support schemes and lower financing costs for RES facilities.

Type of action	Coordination and support action
Deadline	Call 2018 - 13 February 2018 Call 2019 - 11 December 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-res-28-2018-2019-2020.html



LC-SC3-EC-1-2018-2019-2020: The role of consumers in changing the market through informed decision and collective actions

Specific Challenge

A precondition for active demand is for consumers to be aware of their own potential to permanently or temporarily reduce energy consumption; and moreover, for them to know how to offer this potential to the market and what it would represent in terms of monetary value by bringing benefits to the energy system.

Different forms of collective action have the potential to assist consumers in forming critical mass and to facilitate increased uptake of energy efficiency & active demand solutions and services. Although collective actions on energy efficiency have emerged in recent years, a lack of awareness on the potential benefits of such actions, together with regulatory barriers, continues to hamper their full development and uptake.

Finally, important challenges involve installed appliances (such as boilers for space and/or water heating) of which a big share is inefficient and fossil-fuel based, resulting in increased fuel consumption and fuel costs for households. Informing consumers of the potential energy savings and their monetization, as well as other benefits such as increased comfort and improved air quality, can result in increased motivation for replacing inefficient appliances, thereby permanently reducing consumption.

Scope

2018:

The proposed action should develop activities informing and motivating consumers to change old and inefficient installed appliances with the highest energy saving potential (e.g. boilers, local space heaters, air heaters) to more efficient and clean energy heating and/or cooling solutions. While financial aspects (cost savings, payback period) would be the main motivating factor and therefore should be presented in a precise and credible manner, other aspects such as increased comfort and aesthetics, safety, improved air quality, or possible participation in demand-response should be the integral part of the actions in order to unlock the full potential of multiple benefits of energy efficiency improvements.

2019:

The proposed action should set up and/or support consumer cooperatives, consumer collective purchase groups, and/or other consumer driven collective actions that form such energy communities to increase energy efficiency and/or optimise energy management within the community by for example combining collective solutions to distributed generation, distributed storage, and/or demand-response aggregation.

The proposed action should cover the following:

- **Identify and address regulatory barriers and contractual conditions with utilities, suppliers, grid operators, technology providers etc. for cooperative actions, possibly linking activities with structural solutions involving public authorities;**
- **Demonstrate that collectively organised energy-related actions are financially viable and attractive to the consumer-members of the energy community.**

In addition, the proposed action could cover the following, as relevant:

- Identify and implement solutions to address split incentives (e.g. allowing tenants to set up/join the consumer driven collective action);
- Demonstrate collective actions of energy consumers based on the solutions and business approaches using digital tools and technologies (such as digital platforms or blockchain transactions). If the proposed action includes smart home/IoT solutions, it should link to the developments under the call DT-ICT-10-2018: Interoperable and smart homes and grids.

Relevant for both years:

The proposed actions should address the risk of "rebound effects" and propose measures to counteract them, where relevant.

All relevant stakeholders necessary for the successful implementation of the action should be involved and relevant consumer organisations, in particular, should be either directly involved or their support demonstrated in the proposal. Proposed actions should also take issues of consumer data ownership and data privacy into account, where relevant. The proposed actions are invited to build on experiences and lessons learned in other relevant projects and programmes.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 2 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

Proposals are expected to demonstrate, depending on the scope addressed, the impacts listed below using quantified indicators and targets, wherever possible:

- Primary energy savings triggered by the project (in GWh/year);
- Investments in sustainable energy triggered by the project (in million Euro);
- **Contribution to reducing regulatory barriers and improving contractual conditions;**
- Increase domestic uptake of energy efficient products and services;
- Involvement of at least 5.000 consumers per million Euro of EU funding.

Additional positive effects can be quantified and reported when relevant and wherever possible:



Call – Building a low-carbon, climate resilient future

- Reduction of greenhouse gases emissions (in tCO₂-eq/year) and/or air pollutants (in kg/year) triggered by the project.

Type of action	Coordination and support action
Deadline	2018 - 04 September 2018 2019 - 03 September 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ec-1-2018-2019-2020.html



Call – Building a low-carbon, climate resilient future

LC-SC3-EC-2-2018-2019-2020: Mitigating household energy poverty

Specific Challenge

European households continue to spend an increasing share of income on energy, leading to higher rates of energy poverty and negatively affecting living conditions and health. Recent estimates suggest that more than 50 million Europeans are affected by energy poverty. Although roots of this phenomenon lie mainly in low incomes and poor thermal efficiency of buildings, energy efficiency measures at the household level and increased use of renewable energy are key tools in addressing energy poverty and can bring energy savings, leading to lower fuel costs and improved living conditions. The issue is in part exacerbated by a lack of sufficient knowledge on how to identify energy poor households.

In this context, the role of local and national authorities, related networks and initiatives, and availability of support schemes are important to ensure the sustainability and larger scale uptake of the measures.

Energy Efficiency Obligation Schemes can also be used to promote social aims, such as tackling energy poverty. The obligated parties (utilities) have potentially at their disposal the necessary data and means to identify energy poverty among their clients and effectively address it by fulfilling in this way the energy efficiency obligation. Building the capacity of the obligated parties is needed in order to spread such schemes across the EU.

Scope

Actions should contribute to actively alleviating energy poverty and developing a better understanding of the types and needs of energy poor households and how to identify them, taking into account gender differences where relevant, building on any existing initiatives such as the European Energy Poverty Observatory.

The proposed action should cover one or more of the following:

- **Facilitate behaviour change** and implementation of low-cost energy efficiency measures tailored for energy poor households (e.g. provision of information and advice, energy efficiency services such as draught proofing or optimisation of existing building technology systems, as well as energy efficiency devices & kits such as low-energy lighting);
- **Support the set-up of financial and non-financial support schemes for energy efficiency and/or small scale renewable energy investments for energy poor households.** These actions should be embedded in, and add value to, structural frameworks and activities involving local, regional, and national authorities, and/or networks such as the Covenant of Mayors;
- Develop, test and disseminate innovative schemes for energy efficiency/RES investments established by utilities or other obligated parties under Article 7.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

The proposed actions are invited to build on experiences and lessons learned in other relevant projects and programmes.

Expected Impact

Proposals are expected to demonstrate, depending on the scope addressed, the impacts listed below using quantified indicators and targets, wherever possible:

- Primary energy savings triggered by the project (in GWh/year);
- Investments in sustainable energy triggered by the project in (million Euro);
- Contributions to policy development and to best practice development on energy poverty;
- Support schemes established for energy efficiency and/or small-scale renewable energy investments and to be sustained beyond the period of EU-support.
- Involvement of at least 5.000 consumers per million Euro of EU funding.

Additional positive effects can be quantified and reported when relevant and wherever possible:

- Reduction of greenhouse gases emissions (in tCO₂-eq/year) and/or air pollutants (in kg/year) triggered by the project.

Type of action	Coordination and support action
Deadline	Call 2018 - 04 September 2018 Call 2019 - 03 September 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ec-2-2018-2019-2020.html



LC-SC3-ES-3-2018-2020: Integrated local energy systems (Energy islands)

Specific Challenge

The fast growth of the energy production from renewable energy sources offers new and economically attractive opportunities for decarbonising local energy systems on the mainland (e.g. isolated villages, small cities, urban districts, rural areas with weak or non-existing grid connections). It is also a technological and financial challenge for the electricity network. Decarbonisation and energy savings should result from an optimal combination of these energy sources. In this context, storage of all energy vectors, including possibilities offered by batteries and electric vehicles, and intensive use of the latest technologies on power electronics, control and digitisation will certainly play an increasingly important role. Local energy systems may also show economically interesting conditions to boost local energy sources and activate local demand-response. Innovative approaches can result in attractive business cases for both districts and remote areas, including outermost regions. At the same time, decarbonisation has to go hand-in-hand with the improvement of local air quality and the acceptance by citizens.

Scope

Proposals will develop and demonstrate solutions which analyse and combine, in a well delimited system, all the energy vectors that are present and interconnect them where appropriate.

Proposals should present a preliminary analysis of the local case as part of the content of the proposal and propose to develop solutions and tools for the optimisation of the local energy network, but having a high replication potential across Europe.

Local consumers, small to medium industrial production facilities and commercial buildings should be involved in the projects from the start.

TRL will range typically between 5 and 8 (see part G of the General Annexes). Proposers will indicate the estimates levels of TRL at the beginning and at the end of the project.

Proposals should include a task on the analysis of obstacles to innovation and foresee the coordination on policy relevant issues (e.g. regulatory framework, business models, data management, consumer engagement) with similar EU-funded projects through the BRIDGE initiative. An indicative budget share of at least 2% is recommended for the research work associated with these issues and an additional 2% for the coordination effort are recommended.

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

In several international contexts such as the Clean Energy Ministerial, the Mission Innovation initiative launched in COP21, the International Energy Agency Implementing Agreement on Smart Grids (ISGAN), bi-lateral discussions between India and the EU identified this topic as being of common interest owing to its potential for decarbonisation. In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with India.

Expected Impact

The supported projects are expected to contribute to:

- validate solutions for decarbonisation of the local energy system while ensuring a positive impact on the centralised energy infrastructure, on the local economy and local social aspects, and local air quality;
- enhance the involvement of local energy consumers and producers, create energy communities in the development and the operation of local energy systems and test new business models;
- validate approaches to safe and secure local energy system that integrates significant shares of renewables (electricity, heating, cooling, water, wastes, etc.). For variable renewables, this entails the development of an accurate prediction system for the local generation of energy and adequate solutions to match the generation with local consumption as a function of time;
- benchmark technical solutions and business models that can be replicated in many local regions and that are acceptable by local citizens.

Type of action	Innovation action
Deadline	05 April 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-es-3-2018-2020.html



Call – Building a low-carbon, climate resilient future

LC-SC3-ES-4-2018-2020: Decarbonising energy systems of geographical Islands

Specific Challenge

Energy prices on geographical island are typically 100% to 400% higher than on the mainland; therefore the large-scale deployment of local renewable energy sources brings economic benefits and, at the same time, contributes to decarbonise the energy system of the island, reduce greenhouse gases emissions and improve, or at least not deteriorate, air quality.

Scope

The proposed solutions will contribute to at least 4 of the following objectives:

- Achieve high levels of local renewable energy sources penetration;
- Achieve highly integrated and digitalised smart grids based on high flexibility services from distributed generation, demand response and storage of electricity, heat, water, etc.;
- Develop synergies between the different energy networks (electricity, heating, cooling, water, transport, etc.);
- Achieve a very significant reduction of the use of hydrocarbon based energies (ideally achieve carbon neutral primary energy for all non-transport uses). Modelling, forecasting of demand (e.g. for touristic/non-touristic seasons) and supply (e.g. based on weather, wind, sun, etc.);
- Innovative approaches to energy storage, electricity storage in particular relying on batteries (including avoidance or delay of costly grid upgrades of existing grids).

Projects should also deliver:

- **Effective business models for sustainable solutions;**
 - **Practical recommendations arising from project experience on:**
 - **regulatory, legal aspects and data security/protection;**
 - **gender and socio-economics (Social Sciences and Humanities);**
 - storage solutions (from short to seasonal);
 - big data, data management and digitalisation;
- Contributions to environmental sustainability, in particular in view of the specificities of islands ecosystems.

The TRL will range typically between 5 and 8 (see part G of the General Annexes). Proposers will indicate the estimates levels of TRL at the beginning and at the end of the project.

Proposals should include a task on the analysis of obstacles to innovation under the current context and foresee the coordination on policy relevant issues (e.g. regulatory framework, business models, data management, consumer engagement) with similar EU-funded projects through the BRIDGE initiative. An indicative budget share of at least 2% is recommended for the research work associated with these issues and an additional 2% for the coordination effort are recommended.

If relevant, synergies should be established with ongoing and planned work on islands in the 'Clean Energy for EU islands' initiative.

The Commission considers that proposals requesting a contribution from the EU of between EUR 7 to 10 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 projects are expected to contribute to:

- developing RES-based systems (including heating and cooling and storage) that are cheaper than diesel generation;
- reduce significantly fossil fuel consumption;
- large-scale replication on the same island and on other islands with similar problems;
- enhance autonomy for islands that are grid connected with the mainland (existing diesel generators shall be used primarily as security back-up in the long term).

Proposals are invited to identify and substantiate to which of the above impacts they contribute and include ad-hoc indicators to measure the progress against specific objectives of their choice that could be used to assess the progress during the project life. Proposals are also invited to identify if they impact on future investment perspectives (see also topic LC-SC3-ES-8-2019).

Type of action	Innovation action
Deadline	05 April 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-es-4-2018-2020.html



Call – Building a low-carbon, climate resilient future

LC-SC3-SCC-1-2018-2019-2020: Smart Cities and Communities

Specific Challenge

The COP21 Paris Agreement recognises the role of cities and calls on them to rapidly reduce greenhouse gas emissions and adapting to climate change. The EU is committed to implementing the 2030 Agenda for Sustainable Development, including Sustainable Development Goal 11 ("Make cities inclusive, safe, resilient and sustainable"). Many forward-looking cities have set themselves climate goals whose achievement rests on wide scale roll out of highly integrated and highly efficient energy systems. To achieve the necessary energy transition in cities, it is essential to increase energy systems integration and to push energy performance levels significantly beyond the levels of current EU building codes and to realize Europe wide deployment of Positive Energy Districts by 2050.

This call will also contribute to the specific objectives of the SET Plan action 3.2 - Smart cities and communities - focussing on positive-energy blocks/districts.

Scope

Integrated innovative solutions for Positive Energy Blocks/Districts will be developed and tested and performance-monitored in the Lighthouse Cities. Projects will consider the interaction and integration between the buildings, the users and the larger energy system as well as implications of increased electro-mobility, its impact on the energy system and its integration in planning. Lighthouse Cities will closely collaborate with the Follower Cities and should act as exemplars helping to plan and initiate the replication of the deployed solutions in the Follower cities, adapted to different local conditions.

As a sustainable energy transition will see increased electro-mobility, its impact on the energy system needs to be understood and well integrated in planning.

Definition: Positive Energy Blocks/Districts consist of several buildings (new, retro-fitted or a combination of both) that actively manage their energy consumption and the energy flow between them and the wider energy system. Positive Energy Blocks/Districts have an annual positive energy balance⁸⁹. They make optimal use of elements such as advanced materials, local RES, local storage, smart energy grids, demand-response, cutting edge energy management (electricity, heating and cooling), user interaction/involvement and ICT.

Positive Energy Blocks/Districts are designed to be integral part of the district/city energy system and have a positive impact on it. Their design is intrinsically scalable and they are well embedded in the spatial, economic, technical, environmental and social context of the project site.

To increase impact beyond the demonstration part of the project, each Lighthouse City and Follower City will develop, together with industry, its own bold city-vision for 2050. The vision should cover urban, technical, financial and social aspects. Each vision should come with its guide for the city on how to move from planning, to implementation, to replication and scaling up of successful solutions.

Proposals should also:

- Focus on mixed use urban districts and positively contribute to the overall city goals;
- Develop solutions that can be replicated/gradually scaled up to city level. **The technical, financial, social, and legal feasibility of the proposed solutions should be demonstrated in the actual proposal.**
- **Make local communities and local governments (particularly city planning departments) an active and integral part of the solution, increase their energy awareness and ensure their sense of ownership of the smart solutions.** This should ensure sustainability of Positive Energy Blocks/Districts;
- Promote decarbonisation, while improving air quality.
- Incorporate performance monitoring (ideally for more than 2 years) of deployed solutions from the earliest feasible moment. All relevant performance data must be incorporated into the Smart Cities Information System database (SCIS).

Projects should also deliver:

- **Effective business models for sustainable solutions;**
- **Practical recommendations arising from project experience on:**
 - **regulatory, legal aspects and data security/protection;**
 - **gender and socio-economics (Social Sciences and Humanities);**
 - storage solutions (from short-term to seasonal);
 - big data, data management and digitalisation;
 - electro-mobility: i) its impact on energy system and ii) appropriate city planning measures to support large scale roll-out;

Eligible costs are primarily those that concern the innovative elements of the project needed to:

- connect and integrate buildings;
- enable Positive Energy Blocks/Districts;
- foster innovative systems integration;
- complement the wider energy system.

Costs of commercial technologies are not eligible, for example:

- Buildings: purchase, construction, retrofitting and maintenance;
- Electric vehicles and charging stations: purchase, installation and maintenance;
- City-level ICT platforms: purchase, development and maintenance;
- Standard, commercially-available RES: purchase, development and maintenance.



Call – Building a low-carbon, climate resilient future

Projects are expected to cooperate with other Smart Cities and Communities projects funded under Horizon 2020 as well as the European Innovation Partnership on Smart Cities and Communities (EIP-SCC).

Therefore, proposals should foresee a work package for cooperation with other selected projects and earmark appropriate resources (5% of the requested EU contribution) for coordination and communication efforts and research work associated with cross-cutting issues.

The Commission considers that proposals requesting a contribution from the EU of between EUR 15 to 20 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Typically, projects should have a duration of 48 to 60 months.

Expected Impact

Projects should contribute to:

- Meeting EU climate mitigation and adaptation goals and national and/or local energy, air quality and climate targets, as relevant;
- Significantly increased share of i) renewable energies, ii) waste heat recovery and iii) appropriate storage solutions (including batteries) and their integration into the energy system and iv) reduce greenhouse gas emissions;
- Lead the way towards wide scale roll out of Positive Energy Districts;
- Significantly improved energy efficiency, district level optimized self-consumption, reduced curtailment;
- Increased uptake of e-mobility solutions;
- Improved air quality.

The higher the replicability of the solutions across Europe, the better.

Type of action	Innovation action
Deadline	Call 2018 - 05 April 2018 Call 2019 - 05 February 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-scc-1-2018-2019-2020.html



Call – Building a low-carbon, climate resilient future

LC-SC3-NZE-1-2018: Advanced CO2 capture technologies

Specific Challenge

Commercial deployment of CCS requires a significant reduction of the energy intensity of the CO2 capture process for power plants or other energy-intensive industries, and a substantial decrease of the cost of capture. A continuous effort is needed to develop and demonstrate new and advanced capture technologies, including new materials.

Scope

The objective is the validation and pilot demonstration of advanced CO2 capture technologies that have shown a high potential for reduction of the energy penalty and a significant overall improvement of cost-efficiency of the whole capture process, but that are not yet commercial. Projects will test operating conditions and operational flexibility, and provide proof of the reliability and cost-effectiveness of these concepts, whilst at the same time evaluating the cost, technical requirements and operational and safety impacts on the associated transportation infrastructure, storage or utilisation of CO2, as part of their integration in a CCS cluster based on a whole system approach. The proposal should state credible and clearly defined targets and key performance indicators (KPIs) for the energy penalty reduction, the capture rate and the relative incremental operating costs of the capture process. Environmentally benign technologies have to be pursued and their environmental impact addressed in the project also in view of future scaling up.

Proposals are expected to bring technologies to TRL 5-7 (please see part G of the General Annexes). **Technology development should be balanced by an assessment of the societal readiness towards the proposed innovations, including by identifying and involving relevant end users and societal stakeholders and analysing their concerns and needs using appropriate techniques and methods from the social sciences and humanities.**

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 5 to 10 million (depending on the degree of demonstration) would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

Significant, step-change advances in reductions in energy penalty and thus in the fuel-dependent cost of CO2 capture, facilitating safe and economic integration into industrial clusters - which will lower the barriers to the wider uptake of CCS, in particular for those sectors vulnerable to carbon leakage.

Type of action	Research and Innovation action
Deadline	06 September 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-nze-1-2018.html



Call – Building a low-carbon, climate resilient future

CE-SC3-NZE-2-2018: Conversion of captured CO2

Specific Challenge

Conversion of captured CO₂, for example using hydrogen made from renewable energy, to produce fuels is not only a means to replace fossil fuels, but also a promising solution for seasonal energy storage. There are still relevant and significant scientific and technological challenges to be able to exploit the CO₂ as a chemical and fuel feedstock in a systematic manner, the main challenge being that the chemical utilisation of CO₂ is limited by its low energy content, and the conversion process is highly energy intensive.

Scope

Development of energy-efficient and economically and environmentally viable CO₂ conversion technologies for chemical energy storage or displacement of fossil fuels that allow for upscaling in the short to medium term. Projects have to substantiate the potential for the proposed CCU solution(s) as CO₂ mitigation option through conducting an LCA in conformity with guidelines developed by the Commission or the relevant ISO standard. Proposals have to define ambitious but achievable targets for energy requirements of the conversion process (including catalytic conversion), production costs and product yields, that will be used to monitor project implementation.

Proposals are expected to bring technologies that have reached at least TRL 3-4 to TRL 5-6 (please see part G of the General Annexes). Technology development has to be accompanied by an assessment of the societal readiness towards the proposed innovations. **Relevant end users and societal stakeholders will be identified in the proposal, and their concerns and needs will be analysed during the project using appropriate techniques and methods from the social sciences and humanities, in order to create awareness, gain feedback on societal impact and advancing society's readiness for the proposed solutions.**

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 3 to 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with relevant Mission Innovation countries such as China.

Expected Impact

New solutions for the conversion of captured CO₂, either from power plants or from carbon-intensive industry, to useful products such as fuels or chemicals for energy storage (CCU) that will create new markets for innovative industrial sectors, diversify the economic base in carbon-intensive regions, as well as contribute to achieving a Circular Economy.

Type of action	Research and Innovation action
Deadline	06 September 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ce-sc3-nze-2-2018.html



Call – Building a low-carbon, climate resilient future

LC-SC3-NZE-3-2018: Strategic planning for CCUS development

Specific Challenge

Establishing the necessary infrastructure for safe and cost-effective CO₂ transport and storage is of high importance in Europe. Early CCS projects will most likely explore CO₂ storage sinks in the vicinity of capture points, and the required infrastructure will therefore most likely be initiated at national level in CO₂ hubs and industrial clusters in order to achieve economies of scale by sharing CO₂ transport and storage infrastructure. A cross border transport infrastructure is ultimately necessary to efficiently connect the CO₂ hubs and industrial clusters to sinks.

Scope

Elaboration of detailed plans for comprehensive European CO₂ gathering networks and industrial clusters linked to CO₂ storage sites via hubs, pipeline networks and shipping routes, with due attention to national and border-crossing permitting and regulatory issues. Mapping and understanding the nature and longevity of emission sources, identification of transport corridors and performing initial impact assessments, and developing local business models for delivery of CO₂ capture, transport, utilisation and/or storage (including the separation of capture, transport, utilisation and storage responsibilities) within promising start-up regions. Industrial clusters may include for example power producers, cement and steel factories, chemical plants, refineries and hydrogen production facilities. A hubs-and-clusters approach could also include the coupling of hydrogen production and CCS, possibly using common infrastructure. The assessment of cost-effective ('bankable') storage capacity in selected regions is a key component of strategic planning, as it will provide additional certainty that the required CO₂ storage capacity will be available when needed. Due attention has to be given to regions with potential for early onshore storage development (including enhanced oil recovery). **Close cooperation with industrial players, as well as engagement with local stakeholders, is paramount. This includes identifying and involving relevant end users and societal stakeholders and analysing their concerns and needs using appropriate techniques and methods from the social sciences and humanities.**

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 2 to 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

Timely strategic planning will enable and accelerate the roll-out of a CCS infrastructure consisting of capture points and clusters, intermediate hubs, CO₂ conversion facilities, safe and cost-effective CO₂ transport and storage. Projects should pave the way for the development of operational storage sites as from the early 2020's, in particular linked to carbon-intensive industry. Proposals should clearly demonstrate how their outputs will contribute to achieving these expected impacts in the short term (up to 3 years), medium term (3-10 years) and long term (more than 10 years).

Type of action	Coordination and support action
Deadline	06 September 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-nze-3-2018.html



Call – Building a low-carbon, climate resilient future

LC-SC3-NZE-4-2019: Integrated solutions for flexible operation of fossil fuel power plants through power-to-X-to-power and/or energy storage

Specific Challenge

With a growing share of energy produced from renewable resources (RES), fossil fuel power plants will have to increasingly shift their role from providing base-load power to providing fluctuating back-up power (i.e. ramping up and down) in order to control and stabilise the grid. These strong fluctuations result not only in increased wear-and-tear, but (more importantly) also in a lower efficiency and hence higher greenhouse gas emissions per unit of produced electricity. Severe ramping up and down can be limited through load-levelling i.e. storing power during periods of light loading on the system and delivering it during periods of high demand.

Scope

Validation and pilot demonstration of the integration of energy storage and/or use of excess energy (including via power-to-X-to-power in fossil fuel power plants and showing that EU emission limits for such installations can not only still be met, but that emissions of air pollutants can even be reduced. This could include the enabling of the combustion system to deal with synthetic fuels and/or hydrogen enriched fuels, as well as a better integration of combined production of heat and power into the overall system.

Proposals are expected to bring technologies to TRL 6-7 (please see part G of the General Annexes). **Technology development has to be complemented by activities to create awareness, gain feedback on societal impact and advancing society's readiness for the proposed solutions.**

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 6 to 10 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

Solutions will contribute to a smart, secure and more resilient power system through the integration of energy storage for the purpose of load levelling in fossil fuel power generation. Results of the project(s) should allow a smoother operation of these plants at optimal efficiency and environmental performance in order to better adapt to an energy systems that will increasingly be dominated by intermittent renewable energy.

Type of action	Innovation action
Deadline	27 August 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-nze-4-2019.html



Call – Building a low-carbon, climate resilient future

LC-SC3-NZE-5-2019-2020: Low carbon industrial production using CCUS

Specific Challenge

CCUS in industrial applications faces significant challenges due to its high cost and the fierce international competition in the sectors concerned. However, these sectors currently account for 20% of global CO₂ emissions, and in the 2 degree scenario, should represent half of the stored CO₂ by 2050. Relevant sectors with high CO₂ emissions are for example steel, iron and cement making, oil refining, gas processing, hydrogen production, biofuel production and waste incineration plants.

Scope

Projects will focus on integrating CO₂ capture in industrial installations, whilst addressing the full CCUS chain. Projects will elaborate a detailed plan on how to use the results, i.e. the subsequent transport, utilisation and/or underground storage of the captured CO₂. **Important aspects to address are of technical (e.g. the optimised integration of capture plant with industrial processes; scalability; CO₂ purity), safety (e.g. during transportation and storage), financial (e.g. cost of capture; cost of integration) and strategic nature (e.g. business models; operation and logistics of industrial clusters and networks).**

Projects are expected to bring technologies to TRL 6-7 (please see part G of the General Annexes). Technology development has to be balanced by an assessment of the societal readiness towards the proposed innovations. **Relevant end users and societal stakeholders will be identified in the proposal, and their concerns and needs will be analysed during the project using appropriate techniques and methods from the social sciences and humanities, in order to create awareness, gain feedback on societal impact and advancing society's readiness for the proposed solutions. Projects should also explore the socio-economic and political barriers to acceptance and awareness with a view to regulatory or policy initiatives.**

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 10 to 12 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with relevant Mission Innovation countries such as China.

Expected Impact

Successful, safe and economic demonstration of integrated-chain CCUS from relevant industrial sources such as mentioned in the specific challenge will accelerate the learning, drive down the cost and thus help break the link between economic growth and the demand for industrial output on one hand, and increasing CO₂ emissions on the other hand.

The impact of projects under this call will to a large extent be determined by the extent to which the results will be exploited, i.e. the plan on how the captured CO₂ will be actually utilised and/or stored, either in the project or planned as a future phase. This will be evaluated based on the maturity and quality of the proposed post-capture solutions. Projects under this call that are carried out in areas where there is both a high concentration of CO₂ emitting industries and a nearby capacity for geological storage are considered prime sites for hub and cluster developments, and will generate the highest impact on full-scale deployment in the medium to longer term.

Type of action	Innovation action
Deadline	27 August 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-nze-5-2019-2020.html



Call – Building a low-carbon, climate resilient future

LC-SC3-CC-1-2018-2019-2020: Social Sciences and Humanities (SSH) aspects of the Clean-Energy Transition

Specific Challenge

The clean-energy transition doesn't just pose technological and scientific challenges; it also **requires a better understanding of cross-cutting issues related to socioeconomic, gender, sociocultural, and socio-political issues. Addressing these issues will help to devise more effective ways of involving citizens and to better understand energy-related views and attitudes, ultimately leading to greater social acceptability as well as more durable governance arrangements and socioeconomic benefits.**

Scope

In 2018, proposals should be submitted under the theme "Social innovation in the energy sector" and in 2019 under the theme "Challenges facing carbon-intensive regions". They should address one or several of the questions listed under the respective sub-topics below. All proposals should adopt a comparative perspective, with case studies or data from at least three European Union Member States or Associated Countries.

2018

Social innovation in the energy sector: The energy transition has given rise to various forms of social innovation, such as the emergence of energy cooperatives or that of energy "prosumers" consuming but also producing energy. Urban areas have emerged as major hubs for these trends, given the close proximity between citizens, businesses and institutions, facilitating linkages between sectors and the emergence of new business and service models, as well as associated governance arrangements. These issues need to be studied in more detail, with a **particular focus on the following questions:**

- **What characterizes successful examples of social innovation in the energy sector?**
- **What enabling conditions facilitate social innovation in the energy sector and how can it be encouraged? What factors work against it?**
- **In what way does social innovation contribute to the preservation of livelihoods and the development of new business and service models in the energy sector?**
- **In what way does social innovation contribute to making energy more secure, sustainable and affordable? Does social innovation lead to greater competitiveness and if so, how?**
- **Under what conditions does social innovation lead to greater acceptance of the transition towards a low-carbon energy system?**

2019

Challenges facing carbon-intensive regions: The transition to a low-carbon energy system and economy poses particular challenges for regions that are still heavily dependent on fossil-fuel-based industries or the extraction of fossil fuels themselves ("coal and carbon-intensive regions"). At the same time, this transition offers major opportunities for developing new lines of business and for increasing the competitiveness of structurally weak regions. Focusing on the past 5-10 years up to the present, particular attention should be focused on the following issues:

- **What are the principal socio-economic challenges facing coal and carbon-intensive regions today and what effect have these had on livelihoods and the sustainability of local and regional economies?**
- **What coping strategies have emerged in recent years? What are the principal differences between regions that are coping well and those that are not?**
- **To what extent have coal and carbon-intensive regions experienced outward migration in recent years and in what way has this affected their social and demographic composition?**
- **What effect, if any, have these changes had on the rise of populism and of antidemocratic attitudes in the regions concerned?**

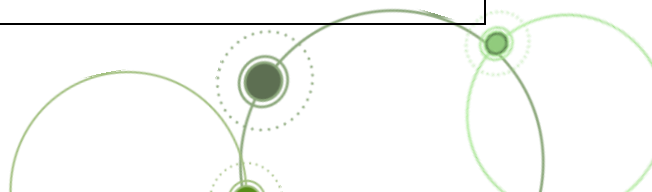
The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

The proposed research will:

- provide a better understanding of socioeconomic, gender, sociocultural, and socio-political factors and their interrelations with technological, regulatory, and investment-related aspects, in support of the goals of the Energy Union and particularly its research and innovation pillar;
- yield practical recommendations for using the potential of social innovation to further the goals of the Energy Union, namely, to make Europe's energy system more secure, sustainable, competitive, and affordable for Europe's citizens;
- yield practical recommendations for addressing the challenges of the clean-energy transition for Europe's coal and carbon-intensive regions, including socioeconomic and political ones.

Type of action	Research and Innovation action
Deadline	Call 2018 - 06 September 2018 Call 2019 - 27 August 2019
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-cc-1-2018-2019-2020.html



LC-SC3-CC-2-2018: Modelling in support to the transition to a Low-Carbon Energy System in Europe

Specific Challenge

The energy system in Europe will follow a transition to a low-carbon future in accordance with the COP21 agreements and the European Union targets and objectives set for 2020, 2030 and 2050. Energy models that are currently used to plan, support and verify the energy policies at national and European level do not fully encompass and integrate all the new challenges posed by this transition, such as decentralisation and variability in electricity supply, the need for flexibility, short-and long-term market dynamics, integration of the energy systems, the deployment of innovative technologies and the interaction between increasing numbers of independently acting agents in liberalised markets. In addition, **energy models do not always capture the determinants, barriers (including financing-related issues) and (macroeconomic) impacts of the necessary investments to secure the low-carbon transition.**

Civil society is looking for improved access to the assumptions, tools and results underlying the assessment of policy options.

Researchers are also looking for enhanced possibilities for open collaborative research and the use of open data sources. An enhanced transparency of modelling tools and a wider availability of data used and generated by the modelling exercises would improve access and understanding of the challenges ahead. In addition, Europe needs to continuously promote networks and platforms for dialogues on energy modelling across relevant actors and institutions in order to progress the scientific knowledge in the field and to reinforce the interaction between researchers and policy makers.

The challenge is therefore to develop new knowledge on energy system modelling to set up an open space for researchers at national and European levels to collaboratively innovate and progress in using modelling tools to understand and predict the requirements of the transition towards a low-carbon energy system. The aim is to support the development of effective and efficient policy measures, to increase consistency and comparability of modelling practices and their use in defining low-carbon transition pathways at regional, national and European level.

Scope

Proposals must target the development of a suite of modelling tools and scenario building exercises that will contribute to a better understanding of the issues below. Proposals will address all of the following issues:

1. **A better representation of recent and future aspects of the European energy system in transition.** For power generation, it includes aspects such as decentralisation, variability, the need for flexibility, and real market functioning. **For demand, it includes the behaviour of individuals and communities of actors.** It should also help address issues such as the integration of energy sectors (electricity, heating/cooling and gas).
2. Greater transparency and access to assumptions, data, model outputs and to tools used in modelling exercises. A collaborative environment for research on modelling, scenario and pathways development including ex-post validation and inter-comparison exercises should be proposed. Interaction with energy transition modelling activities in member states and with energy and climate policy makers.
3. **A better representation of the investment determinants, barriers (energy market and regulatory failures) and impacts of actors:** individuals, communities, private and public actors and cover the deployment of innovative technologies. **This should help represent policy measures that address barriers and market failures. The exploration of energy and macroeconomic relationships, including via the investment channels, would also create a clearer understanding of macro-economic impacts of the low-carbon transition.**

The organisation of an annual conference on energy modelling, bringing together the relevant experts and policy-makers, would be an important asset.

The Commission considers the proposals requesting a contribution from the EU of between 4 and 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 supported projects are expected to contribute to:

- a. A better adequacy of energy system modelling approaches to model the transition to a low-carbon energy system and to encompass the new challenges posed by the energy transition driven by the Energy Union with its targets and objectives for 2020, 2030 and 2050;
- b. Improve the understanding of energy systems by enhancing the transparency of modelling engines and practices and making data and knowledge more widely available. Increase the sharing of modelling infrastructures and databases;
- c. Increase openness to collaborative research on energy system modelling as well as the provision of more complete information on policy options and their assessment to civil society and decision-makers.
- d. Better representation of the determinants, barriers and impacts of investments by actors: individuals, communities, and private and public actors. Allow better design and representation of policy measures that address barriers and market failures;
- e. Promote a coherence of modelling practices at regional, national and European levels, allowing an assessment of cross-border effects and the comparison and integration of individual approaches;
- f. Provide a clearer understanding of the macro-economic impacts of the low-carbon transition.



Call – Building a low-carbon, climate resilient future

Type of action	Research and Innovation action
Deadline	06 September 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-cc-2-2018.html



Call – Building a low-carbon, climate resilient future

LC-SC3-CC-4-2018: Support to sectorial fora

Specific Challenge

The transition to a low-carbon energy system poses a unique set of policy, technological and scientific challenges, changes the fundamental nature of the interrelations between all actors in our societies (from energy incumbents to regulators and citizens), and requires the engagement of all stakeholders. Not only is **there a need to find novel approaches to the development and application of technological or social processes as they relate to the energy transition, but also to a better understanding of how these changes impact people's behaviour, pervasive values, cultures of practice and modes of communication**. It also entails the need to engage all stakeholders, foster cooperation between them, align their actions to the achievement of commonly agreed goals.

Scope

Proposals will have to support sector-specific stakeholder fora along the following lines:

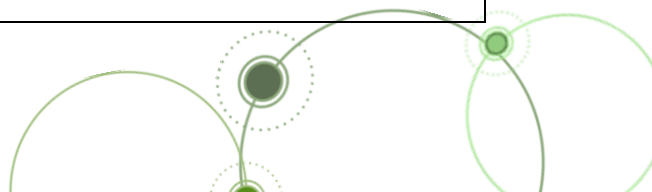
1. Support the coordination of stakeholders' activities in the context of the SET-Plan European Technology Innovation Platforms (especially towards the progress of the strategic R&I Implementation Plans identified in the different technological areas in the context of the SET-Plan Key Actions), in particular in the area of
 - a. PV;
 - b. Ocean energy;
 - c. Wind energy;
 - d. Renewable Fuels and Bioenergy;
 - e. Renewable Heating and Cooling (RHC); and
 - f. Zero emission fossil fuel power plants and energy intensive industry.
2. All relevant stakeholders of the hydropower sector will be brought together in a forum including workshops and online discussion groups in order to identify research and innovation needs and priorities, to share knowledge at the European level between basic science, the research and industrial value chain, civil society and European and national authorities, to support the discussion with up-to-date information. The forum will produce a synthesis of expected research developments and research needs for the coming decades in a technology roadmap and research and innovation agenda in the hydropower sector, targeting an energy system with high flexibility and renewable share.
3. **Building on the platform for energy-related SSH research that was set up during the pilot phase, the dialogue among different SSH stakeholders - as well as with other energy-research communities, fostering interdisciplinarity as well as knowledge and information sharing – should be continued and enhanced.** This includes promoting the generation of novel, evidence-based research designed to inform and influence relevant policy processes, particularly in the context of the Energy Union and the transition to a low-carbon energy system. **The platform will be sought after by European policymakers as a source of specific expertise and advice on how best to integrate SSH aspects in energy-related policymaking.**
4. Taking into account that private investment is the most important contributor to the Energy Union's Research and Innovation priorities, this action will support the coordination of the industrial participation in the SET Plan. It will in particular focus on the execution of the implementation plans of the SET Plan nine non-nuclear priority actions to reach the strategic targets agreed by the SET Plan Steering Group to enhance European competitiveness in clean energy innovation. In order to reach this goal, the action will promote collaboration and the development of cross thematic synergies among actors who are interested in bringing new clean energy innovations to the market, in particular from the European industry-driven associations and initiatives such as the European Technology and Innovation platforms (ETIPs), European Joint Technology Initiatives or other relevant public-private partnerships, and importantly the industrial actors identified in the 13 non-nuclear SET plan implementation plans. A key task of this action will be to help further define adequate financial strategies to mobilise investments from different sources to fulfil the implementation plans. In line with the SET Plan principles, financial resources will come mainly from industry and national public funds. The use of complementary European funds will be promoted whenever relevant (e.g. from ESIF and the risk sharing facility InnovFin EDP recently significantly enlarged in terms of funding and scope to channel undisbursed funds from NER300 and to prepare the future Innovation Fund). The focus of the action will be European, establishing links with the corresponding sectorial fora in Europe and with other international initiatives in the clean energy domain, such as Mission Innovation.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 1 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

Coordinated stakeholders' activities in the different sectors, providing specific and extensive advice to EU policymakers on energy-related research policy-making, continuing to foster social innovation and social dialogue in the energy field at European level, contributing towards the progress of the strategic research and innovation Implementation Plans identified in the context of the SET-Plan.

Type of action	Coordination and support action
Deadline	19 April 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-cc-4-2018.html



Call – Building a low-carbon, climate resilient future

LC-SC3-CC-5-2018: Research, innovation and educational capacities for energy transition

Specific Challenge

The energy sector is evolving rapidly creating new job opportunities while requiring new skills and expertise to be developed. The challenges are significant. Over the coming years, the growing low-carbon energy sector requires many employees to be educated, trained or re-skilled. At the same time, energy innovation creates a massive need for new talents, able to cope and conduct the energy transition with a systemic approach. Therefore curricula and programmes, including the modules organised in operating environment, need to be upgraded or new ones developed.

Due to their interdisciplinary work in research, innovation, education and training, universities are core stakeholders in Europe's energy transition towards a low carbon society. They also are important change agents that will be instrumental in responding to the above mentioned challenges.

In order that European universities contribute fully to the objectives of the Energy Union and to the SET Plan they need to cooperate further with innovative businesses and offer appropriate curricula/programmes. **To do so silos need to be broken between energy technologies and interdisciplinarity that is conducive to addressing the challenges of the whole energy system needs to be fostered. The appropriate skills for tackling the energy transition, going beyond separate technologies and incorporating social, entrepreneurial/managerial and market aspects of the energy system, need to be developed.**

In addition, solutions need to be clearly targeted, oriented to meet skills needs quickly, easily replicable in other domains and scalable to other European universities/institutions. For this purpose it is crucial to have active networks in place among universities and between universities and business.

Scope

Proposals will cover one or more of the following fields:

- Renewable energy,
- Energy storage,
- Smart and flexible energy systems,
- Carbon capture, utilisation and storage (CCUS).

Proposals will combine the relevant scientific and technological elements of these fields with relevant social sciences and humanities in a way that is balanced and provides an interdisciplinary approach (e.g. involving SSH scientists as partners; including SSH scientific subjects as parts of interdisciplinarity, developing special SSH curricula or similar).

Proposals will deliver all the following, addressing the specific needs of the SET Plan objectives and its Implementation Plans:

- Efficient and effective cooperation networks both among European universities and between European universities and business;
- Challenge and case-based modules that are linked to European university programmes (at least three per programme) to teach students about operational problems combining the social, technological and industrial dimensions;
- At least three innovative (such as using digitisation) and short (3-4 months) university tools/programmes in the chosen field or fields, which are replicable and scalable in Europe, and respond rapidly to urgent European industry needs and the rapidly evolving European energy landscape;
- Opportunities for student mobility between the academia and industry.

The networks will also address needs for training the trainers. However, except for piloting, the actual teaching or training the trainer activities remain outside the scope of this topic. Modules and programmes will only be developed in English.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 2 to 4 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 funded proposals are expected to lead to a generation of researchers and engineers who are equipped to develop, improve and deploy new energy technologies, thereby contributing to meeting the challenges of the energy transition.

At the same time, the capacities of the European universities in energy research, innovation and education will be enhanced, as will their ability to engage with industry, cities, regions and other key societal actors. This will increase European universities' abilities to facilitate the swift deployment of technological and non-technological innovations in the energy sector.

Type of action	Coordination and support action
Deadline	06 September 2018
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-cc-5-2018.html



Topics with minor SSH relevance

LC-SC3-EE-6-2018-2019-2020: Business case for industrial waste heat/cold recovery

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-6-2018-2019-2020.html>

LC-SC3-EE-9-2018-2019: Innovative financing for energy efficiency investments

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-9-2018-2019.html>

LC-SC3-EE-10-2018-2019-2020: Mainstreaming energy efficiency finance

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-10-2018-2019-2020.html>

LC-SC3-ES-7-2018: Pan-European Forum for R&I on Smart Grids, Flexibility and Local Energy Networks

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-es-7-2018.html>

LC-SC3-CC-6-2018: Transition in coal intensive regions

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-cc-6-2018.html>





Societal Challenge 4

**Smart, green and integrated
transport**

Call – Mobility for Growth

LC-MG-1-2-2018: Sustainable multi-modal inter-urban transport, regional mobility and spatial planning

Specific Challenge

A metropolitan area, "agglomeration" or "commuter belt" (with important cross-docking activities), is a region consisting of a densely populated urban core and its less-populated surrounding territories, that is sharing industry, infrastructure and housing. An efficient multimodal transport network at different spatial levels is fundamental to allow a smooth functioning both in such areas and with their connected surrounding regions thus encouraging mobility and enhancing/preserving social inclusion. However, the transport infrastructure needed could cause important negative externalities and even induce unbridled suburbanization.

The introduction of new forms of people mobility and freight distribution, such as innovative soft mobility schemes, drive-sharing, ride-sharing, crowd shipping, crowd delivery and automated vehicles, innovative flying vehicles, Mobility as a Service, could revolutionise transport demand with major consequences for the spatial organisation of cities and their local neighbourhoods. Mitigating the negative impacts of transport and substantially contribute to the achievement of the COP 22 goals must be pursued.

To address these challenges and in line with the guidelines to implement SUMP, **a multidimensional approach is needed assessing new forms of mobility in all transport modes, their infrastructures, travel flux evolution, spatial-economic development, environmental and quality-of-life issues, governance issues across spatial and institutional levels and user behavioural aspects.** Development of vertical spatial planning can be included. Models should be proposed to support decision-makers in assessing evolution and potential rebound effects of their plans.

GNSS can contribute to boosting new forms of mobility and allow for a more efficient use of transport infrastructure. A large potential stemming from the combination and integration of GNSS with communication technology and telematics platforms remains so far untapped.

Scope

Proposals should address one or several of the following:

- **Address environmental, socio-cultural and spatial impacts of planning in large metropolitan regions, whilst also enhancing connectivity; governance and institutional issues should be included.**
- Identification of new forms of mobility (including trips not covered by metropolitan radial transport infrastructure) with the potential to have the greatest impact on spatial redesign of urban and low-density areas - improving the balance between city and rural development -, on urban space sharing (including pedestrians), on new public and private service allocation patterns, on investments in infrastructure, and new solutions for collective transport and transport planning. Identify ways to promote their implementation of the new forms of mobility both in passenger and freight transport.
- Use of geolocation data, including Galileo and EGNOS for cooperative mobility in combination with other communication and telematic data to foster a more efficient use of infrastructure and reduction of air pollution.
- Suggest appropriate measures to ensure the lowest carbon and air pollutant level of transport with particular consideration for the interdependencies between different spatial patterns of production/consumption (i.e. localization of production sites and relevant schemes of distribution to final consumers) and the energy and carbon intensity of the related transport systems. Collection and analysis of comprehensive data to provide a sound basis for future planning.
- **Comprehensive planning for the entire functional area** (defined as an area of intensive commuter movements and/or freight distribution), adapting, further developing and extending the Sustainable Urban Mobility Plan (SUMP) concept, considering specific needs of metropolitan regions, new operating models in collective public and private transport, **overcoming social segregation and inequalities**, including gender inequalities, **in access to education, jobs, health and leisure. Innovative planning concepts** (e.g. multistate planning, performance-based planning, scenario techniques and community planning) **should also be considered with the aim to ensuring accessibility, social justice and equity in the mobility of all citizens groups.** Coordinated infrastructure development: balancing long-term environmental goals with other development aims (e.g. effective land use and preservation of natural zones), developing environmental high-performance infrastructure (e.g. light rail), upgrading/ repurposing existing infrastructure, improving connectivity to the TEN-T and overall resilience of the region.
- Coordinated development of sustainable policies with proven environmental impact, e.g. air-quality and noise-sensitive traffic management, including "nowcasting" as well as long-term strategy, region-wide freight and logistics concepts, shared mobility and innovative collective mobility promotion and incentives/disincentives for access to urban centres.

Involvement of local authorities, transport operators in research is essential to ensure the appropriate implementation, in line with SUMP guidelines, as well as **modelling and recording reactions of users to changes in infrastructure and mobility options (rebound effects) to support future decision-making and ensuring citizens' engagement. Users' involvement is encouraged, as it is important to reach effective changes in behaviour.**

The Commission considers that proposals requesting a contribution from the EU between EUR 5 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.

In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged. In particular, proposals should foresee twinning with entities participating in projects funded by US DOT to exchange knowledge and experience and exploit synergies



Call – Mobility for Growth

Expected Impact

Research will provide cities, regional and national authorities and spatial planners with evidence of long term impacts of innovative transport technologies and business models. It will aid decision makers to better anticipate and plan necessary investments, adaptation and spatial re-design strategies in view of taking full advantage of the new forms of mobility for improving competitiveness, sustainability, social cohesion, equity, and citizen well-being. Research will also contribute to devising transport planning strategies that contribute to a balanced development between urban and rural areas.

The innovation processes and final impacts should be systematically evaluated in terms of their contribution to environmental health, to enhanced accessibility to the centre of the metropolitan region as well as to the TEN-T corridors, to regional economic performance, social cohesion and overall regional development potential.

To meet the challenge of reducing the environmental impact of commuting and inter-urban transport proposals must demonstrate their contribution towards the following objectives:

- Reduced congestion, energy, emissions of air pollutants, carbon footprint, noise and landuse within the identified metropolitan regions.
- Increased coordination between multimodal infrastructure mobility and spatial-economic development, including reduction of inequalities.
- Increased inter-modality and higher resilience of the transport system between the metropolitan region and the neighbouring cities and rural areas.

Type of action	Research and Innovation action
Deadline	1st stage - 30 January 2018 2nd stage - 19 September 2018
Call identifier	H2020-MG-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-mg-1-2-2018.html



Call – Mobility for Growth

LC-MG-1-3-2018: Harnessing and understanding the impacts of changes in urban mobility on policy making by city-led innovation for sustainable urban mobility

Specific Challenge

Urban mobility is in transition. This is a result of, for example, changing user needs; emerging transport technologies; new transport services using new business models; and new institutional and financing structures. Greater data availability provides new opportunities for evidence-based policy and policymakers aim at an ever-increasing integration of urban mobility policy with other sectorial policies. The impacts of this change will go far beyond the transport sector and influence other sectors that are transport-reliant. The policy impacts, individually and in combination, of new solutions, which are at different levels of maturity, are not clear yet. There are many open questions about how policymakers should react and how Sustainable Urban Mobility Plans (SUMP), and other sectorial policies that affect urban mobility, should respond and adapt to these potential disruptive changes. Therefore, **research is necessary to improve the understanding of the impacts of new urban mobility solutions on policy making.** This topic covers passenger transport and freight transport. It covers urban and peri-urban areas. **Special attention should be paid to the needs of vulnerable groups and users with different cultural backgrounds** taking into account gender issues; and to the specific context of areas that are undergoing rapid economic change.

Scope

This topic will be implemented through two sub-topics with different types of actions: Proposals should address one of the two.

A) **Research and innovation actions:** This sub-topic asks to examine the impacts of new mobility solutions, addressing the changing mobility patterns and set up of mobility services, including possible negative effects, and covers all relevant transport modes (including active modes) and vehicle types. City-led proposals should address one or more of the following aspects:

- investments in and management of the transport network, with attention for facilities for recharging; transport system resilience; and transport demand management tools (such as pricing; low emission zones; parking management; one way traffic);
- **the specific challenges in areas undergoing rapid economic change, for example in institutional setup; policy coherence; policymakers mind-set; outdated or incomplete legislation/methodologies;** and data/statistics;
- new operating and business models in collective public and private transport;
- pathways to tackling congestion and reducing levels of car use through decoupling economic growth and high mobility from traffic growth;
- implications for and interaction with urban planning and design including inputs for developing SUMP.

Proposals should incorporate new data-driven planning approaches.

The actions will also deliver at least three validated test cases (small pilot projects with quantified objectives in which public stakeholders and economic actors participate) **that take into account different political and socio-economic contexts.** The active participation of a small number of representatives from authorities of small and medium-sized cities in proposals should be ensured.

B) **Coordination and support actions:** This sub-topic addresses the facilitation of knowledge exploitation and support to the cooperation between projects and stakeholders involved in the projects under the first sub-topic, and from across CIVITAS 2020. This Coordination and Support Action should also consolidate the common 'CIVITAS Process and Impact Evaluation Framework' and ensure the continuity of a 'CIVITAS Secretariat' as well as financing of CIVINets.

Proposals should present innovative approaches for all of the following needs:

- local capacity building and training in deploying innovative mobility solutions;
- networking cities and engaging with stakeholders working at the local level, overcoming language and contextual barriers; - reinforcing the involvement of the CIVITAS cities from different CIVITAS-Phases in the CIVITAS network;
- partnering with industry and civil society in navigating through transition and change;
- implementing a communication and dissemination strategy with high impact actions.

In order to maximise impacts, and in the context of CIVITAS 2020, all projects funded under this topic and other relevant topics (for example dealing with SUMP) shall work together and exchange information and practical experiences.

In line with the Union's strategy for international cooperation in research and innovation international cooperation is encouraged, especially with the USA, China and India.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 to 4 million each for Research and Innovation actions, and of up to EUR 3 million for the Coordination and Support Action, could address this specific challenge appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

Proposals addressing sub-topic A) above, will produce new, practice-based knowledge on how to navigate urban mobility policy through transition taking into account legacy systems and the need to integrate new solutions that are at different levels of maturity. They will provide added-value inputs and contribute to evidence-based policy making at local, regional, national and EU levels. Proposals should demonstrate how their work will support effectively mobility policies in the cities' efforts to follow a viable transformation path towards sustainable mobility.



Call – Mobility for Growth

Type of action	Coordination and support action, Research and Innovation action
Deadline	RIA 1st stage – 30 January 2018 2nd stage - 19 September 2018 CSA 04 April 2018
Call identifier	H2020-MG-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-mg-1-3-2018.html



Call – Mobility for Growth

MG-2-1-2018: Human Factors in Transport Safety

Specific Challenge

Human factors are the largest cause of accidents across all transport modes. Increased technical development and automation fundamentally change the way in which **humans interact with the road or rail vehicles, vessels or aircraft and can improve safety by decreasing the human element**. Evolving systems, operations and technology change how humans perceive their immediate environment and traffic as well as how they interact with the machine. However, machines are inherently less flexible than humans, who are, by their nature, variable in terms of behaviour, experience, cultural demographic, distraction, fatigue etc. **Availability of sufficient relevant data on human factors needs to be secured. There is also a need for better methodologies to assess human factors which should be incorporated within risk based approaches to design and operation**. In particular, human behaviour in "normal situations", in addition to accidents and incidents, should be assessed using real world data when available. Consideration also needs to be taken of demographic factors, including dynamics such as variations in safety perception and behaviour resulting from greater cultural and ethnic diversity in the EU.

The challenge is to improve transport safety through a more timely, focussed and integrated **adoption of human factors in the design of road or rail vehicles, vessels or aircraft, infrastructure and the mobility system** - taking advantage of automation - as well as increasing knowledge of enhanced human machine interactions to further advance the use of automation without introducing new, previously unknown, safety risks. More knowledge is needed on how automation changes human behaviour and the capability to react appropriately to fast emerging situations in a complex environment.

It is also necessary to understand and address bottlenecks in organisational acceptance of technological and social change. This includes emerging legal and regulatory issues associated with shifts in responsibility of the operator (driver, pilot, captain etc) as well as governance of complex integrated systems. Cross-fertilisation of concepts and technologies across transport modes is encouraged.

Scope

In order to meet this challenge, proposals should address one of the following subtopics, and clearly indicate which subtopic is addressed:

- **Subtopic A):** Understand the limitations, interaction and range of factors that influence and degrade human performance when controlling a vehicle/aircraft/vessel and apply solutions that overcome these limitations. Establish the conditions for a "tolerance zone" of acceptable operator performance and corresponding appropriate actions when the limits of safe behaviour are approached. The range of factors to be taken into account includes – but is not limited to - physical profile and ability, age, gender, linguistic and IT abilities, level of technical and non-technical skills, culture, and limitations faced by persons of reduced mobility ("PRM"). **Carry out comparative behavioural and perceptive studies** in different EU regions, and – within them – **between different cultural and ethnic groups amongst transport users and operators**, in order to understand diversity in perception of danger, comprehension of rules, mobility behaviour. Apply the knowledge in concepts and solutions. Methods and measures that support better adaptation skills in human behaviour, or provide intelligent support, may be considered. **Define behavioural markers, including indicators of successful and degraded human performance**. Develop recovery measures and mitigation solutions together with methods and techniques for measurement of changes in performance. Virtual concepts should be considered. Verify models and methods experimentally in relevant use cases. Activities should be aimed at identifying measures to increase understanding, respect and acceptance of transport safety rules. Furthermore the actions proposed should support the transfer of best practice within the EU and in neighbouring countries and ensure a better transport culture. Collaboration with neighbouring countries is recommended.

- **Subtopic B):** **Improve the assessment of human risk factors in risk based design and operation** within waterborne / air transport, including crew resource management, crew awareness and response in extreme cases (e.g collision, evacuation, aircrafts upset recovery, runway excursions, etc). Identify new (and presently unknown) risk factors which might arise in the transformation towards increasing automation. Compile and analyse a large quantity of global real world accident, incident, near miss and other safety event data. Use this data to develop improved methodologies to address human factors within risk based comprehensive design models and operational safety assessment for waterborne and air transport. The data (if necessary anonymised) should be retained as an open source beyond the project, and be maintained and updated. **Standardised guidelines should be developed for assessing and categorising human factors** within investigations of accidents, incidents and near misses and other safety events. The resulting data should be easily incorporated into open data bases which can be a continued resource for risk based design and operations. Guidelines should be developed and, if necessary, recommendations to amend existing rules and regulation should be made.

Proposals should include methodologies or tools to demonstrate that they contribute significantly to safe transport systems through the knowledge created and also show how the measures identified adapt best practices to local conditions. Work should draw upon knowledge from other sectors-when addressing risk and interaction with complex systems. Development of enhanced Human Machine Interface solutions and simulators should take into account the advantages of automation. The cross-modal transfer of human factors issues within various levels of automation should also be considered.

Proposals addressing air transport may include the commitment from the European Aviation Safety Agency to assist or to participate in the action.

In line with the strategy for EU international cooperation in research and innovation[(COM(2012)497, international cooperation is encouraged.



Call – Mobility for Growth

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 8 million each 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 significant step towards a safe transport system considering all transport modes, enabled by a decrease in collisions and incidents attributable to human factors by taking advantage of increasing automation in transport operation and control. Enhanced transport safety for a diverse demographic by increasing consideration of human factors within designs and transport operation means. Improved selection and training of operators. Enhanced international cooperation concerning human factors. Improved international rules and regulations. Facilitation of learning and safety improvement from assessment of human factors within accidents, incidents, near misses and other safety events, enabled through the provision of a long term human factors data resource. For road transport, actions will contribute to UN's Sustainable Development Goals 11 (Make cities and human settlements inclusive, safe, resilient and sustainable) and 3.6 (By 2020, halve the number of global deaths and injuries from road traffic accidents). For aviation, actions will contribute to United Nations' International Civil Aviation Organisation (ICAO), EASA and FlightPath2050 goals to decrease fatality rates. For waterborne actions will contribute to IMO, EMSA, European maritime transport policy and UN Sustainable Development Goals 14 concerning the sustainable use of the seas and oceans.

Type of action	Research and Innovation action
Deadline	1st stage – 30 January 2018 2nd stage – 19 September 2018
Call identifier	H2020-MG-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-2-1-2018.html



MG-3-3-2018: "Driver" behaviour and acceptance of connected, cooperative and automated transport

Specific Challenge

Today's vehicles - in all modes of transport - are becoming increasingly connected and cooperative, as well as automated. This raises a number of issues about the role of the "driver" (or operator, rider, pilot, captain) in such vehicles (cars, trucks, powered-two-wheelers, trains, ships, planes, etc.). In particular, human-machine interaction is becoming increasingly complex in an environment with higher levels of both qualitative and quantitative information, automated data exchange (into and out of the vehicle) and increasing levels of automation (systems, operations, etc.).

However, developments in recent years have primarily focused on "hard" technological advances and the maturity of technology-driven transport/mobility concepts, outpacing and insufficiently addressing the "soft" human component in this evolution. Therefore **the challenge relates to a number of inter-related themes, ranging from public acceptance of connectivity and automation (e.g. data privacy, role of the human), to the development of user-friendly and appropriate Human-Machine Interfaces (HMI), "driver"/vehicle interaction and ethical decision making, to "driver" training and certification for new technologies/levels of automation.**

A clear challenge for the roll-out of connectivity and automation in transport remains the lack of a detailed, evidence-based assessment of real "driver" behaviour in connected and highly automated or autonomous vehicles (and possible mitigation solutions), accounting also for gender, age and ability, with and without the assistance of cross-modal Cooperative Intelligent Transport Systems (C-ITS), under various use cases (incl. technical failure) and in a range of operating environments (e.g. urban, rural, etc).

Scope

In order to meet this challenge, proposals should address at least 5 of the following aspects:

- **Assess public acceptance** across Europe for higher levels of connectivity and automation, relating to a number of public concerns, including data privacy, safety and security, consequences of the availability of 24/7 mobility, vehicle control, liability, ethics, new features such as driver alerts (various types of alarm), as well as the proliferation of new technology and related behaviours, particularly in view of different types of users ("drivers" / passengers, etc) – all elements enabling sensible use of connectivity and automation.
- **Public acceptance of different user groups**, including current non-drivers (i.e. the elderly, people with disabilities, children, etc.), which in higher levels of automation could travel alone in an automated vehicle.
- **Perform simulations, correlate and analyse driver behaviour/reaction under different scenarios/use cases**, including driver distraction/assistance, driver-vehicle interaction technology failures and/or conditions instigating accidents (either by the vehicle itself or by other/external factors), as well as in different operating environments (e.g. urban, rural, multimodal hub) with other users, utilising big data analytics, assessing impacts of traffic flows, schedule reliability and congestions and also developing appropriate mitigation solutions to enhance "driver" behaviour under such scenarios (including using visual and acoustic information).
- **Demonstrate the relevance, differentiation and the required evolution/adaptation of "driver" behaviour** in connected and automated vehicles for passenger and/or freight transport (considering in particular the value of life vs. the value of cargo and also time and comfort).
- Estimate the effects of "driver"-vehicle interaction on transport safety and whether these would be marginal compared to full automation (with no "driver" interaction), hence implying a need to accelerate efforts towards fully connected automation. The necessary timing and issues on the transition from conventional to automated vehicles should be examined (e.g. interaction between "drivers" of conventional and automated vehicles).
- Analyse the levels of Human-Machine Interfaces (HMI) across different types of vehicles, as well as the margins for further optimisation in order to enable information generation and dynamic processing in multiple real-time or changing conditions.
- Assess and elaborate common issues, approaches and lessons learned across all transport modes (e.g. HMI, "driver" behaviour, ethical decision making, etc.).
- **Address explicitly the ethical and legal issues associated with "driver" and/or vehicle decision making processes** under different circumstances, as well as explore solutions to overcome the ethical and legal challenges relating to connectivity and automation.
- Investigate new "driver" training needs and certification requirements for new technologies/levels of automation, including effects on employment and skills.
- **Assess the regulatory state of art**, with particular reference to any regulatory gap hindering the adoption of automated vehicles (cars, trains, ships, planes).
- **Assess attitudes towards shared modes of transport** and the inclusion of connected, cooperative and automated vehicles as part of fleets.

Research should be validated in a selected number of use cases through testing/trials/demonstrations, involving service providers and end users.

The Commission considers that proposals requesting a contribution from the EU of EUR 3 to 4 million each would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.



Call – Mobility for Growth

Expected Impact

Actions are expected to:

- Support the integration of higher levels of connectivity and automation in transport;
- Contribute to improved levels of safety and security in all modes of transport, in line with the Transport White Paper 2011 (e.g. Vision Zero);
- Contribute to the possible reduction of cost for industry and public authorities through an **improved understanding of requirements and needs of different types of "drivers"/users** in the context of connectivity and automation in all modes of transport;
- **Contribute to a better user acceptance of innovative, cooperative, connected and highly automated transport systems;**
- **Enhance driver awareness and behaviour in a range of complex / urban operating environments.**

Type of action	Research and Innovation action
Deadline	1st stage – 30 January 2018 2nd stage – 19 September 2018
Call identifier	H2020-MG-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-3-3-2018.html



Call – Mobility for Growth

MG-4-1-2018: New regulatory frameworks to enable effective deployment of emerging technologies and business/operating models for all transport modes

Specific Challenge

New forms of shared-use mobility, automated vehicle technologies in all transport modes and innovative concepts such as Mobility as a Service (MaaS) often have to function in the regulatory frameworks that may not be adapted to these solutions and to rapid technological change.

Fragmented, extensive or inadequate regulation can negatively affect businesses and citizens-consumers and could potentially impact on the international competitiveness of the European economy. In addition, protracted regulatory responses might result in belated solutions that are no more adequate to the technology and business/operating models that have in the meantime further evolved.

The challenge is to devise new regulatory approaches, frameworks and governance models through evidence based research. These should be flexible enough to cope with the fast pace of technological change and foster effective deployment of emerging user-centric technologies and business models, while at the same time preserving adequate level of protection with regard to security (including cybersecurity), safety, data protection, social protection, ethics, etc. Regulatory barriers between transport modes should also be identified and analysed with a view to suggest actions which will foster a multimodal transport system.

Scope

Proposals should address several or all of the following:

- **Identification of new technologies, services, business and operating models and mobility solutions (including social innovations) having the potential to disrupt and overhaul the current regulatory approaches in both passenger and freight transport;**
- **Comparative evidence based analysis of different regulatory responses and governance models (both in terms of existing and forthcoming solutions) to disruptive transport technologies and business/operating models across the EU and beyond, identification of best practices and lessons learned;**
- **Analysis of the main economic, political and social (e.g demographic, cultural and historical) variables influencing the regulatory responses;**
- **Identification of the necessary characteristics of regulatory approaches/frameworks and governance models that can accommodate disruptive innovation without compromising on the adequate level of protection** with regard to security (including cybersecurity), safety, data protection, social protection, and which can contribute to a sustainable model of public infrastructure use.
- Analysis of issues of cooperation among public and private parties, in both mandatory and non-mandatory situations as well as data exchange, governance and communication.

In line with the Union's strategy for international cooperation in research and innovation³⁰, international cooperation is encouraged.

Proposals should ensure involvement of policy-makers and business representatives and include actions to promote take up of research results by key stakeholders.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 2 million each would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

Actions in this topic should specifically contribute to the EU's better regulation agenda, which aims to design and evaluate EU policies and laws transparently, with evidence, and backed up by the views of citizens and stakeholders. **Research under this topic should aid regulators and policy makers in updating and building appropriate regulatory responses to the current and future developments in the transport systems by allowing effective introduction of innovative technologies and business models, while at the same time safeguarding adequate level of security, safety, data privacy, and social protection.** The impact should carefully balance the perspective of all stakeholders, economic actors, users, local and national governments.

Type of action	Coordination and support action
Deadline	04 April 2018
Call identifier	H2020-MG-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-4-1-2018.html



Call – Mobility for Growth

MG-4-2-2018: Building Open Science platforms in transport research

Specific Challenge

The rapid development of digital technologies and new collaborative tools are the basis of an on-going transformation and opening up of science and research, referred to as Open science. The idea captures a systemic change to the way science and research have been carried out for the last fifty years: shifting from the standard practices of publishing research results in scientific publications towards sharing and using all available knowledge at an earlier stage in the research process. Open Science covers a wide range of aspects, from skills, researchers' career, evaluation of research, open access to research results, and relevant data infrastructures, all aiming at making science more efficient, better reproducible and more responsive to societal and economic expectations. Two important elements for operationalising Open Science at the European level are mandating Open Access to publications and their underlying data as well as developing and using a European Open Science Cloud for storing, accessing and managing all research data. As these developments are relatively new there is a need to create a common understanding on their practical impact in the area of transport research, identify current practices and devise concrete approaches for operationalising Open Science in transport research, and to adopt them in the form of codes of conduct.

Scope

Proposals should address all of the following:

- **Identify the spectrum of stakeholders and analyse their practices and expectations in implementing various aspects of Open Science in transport research**, including in particular Open Access to publications and data in transport research in Europe and internationally;
- **Map the landscape of existing research data infrastructures and scientific clouds in transport research as well as governance and new operational/business models** being developed to provide better data access in view of their integration within the European Open Science cloud;
- Create a forum for national and European stakeholders – public and private - to exchange ideas and share best practices for operationalising Open Science principles in transport research;
- Identify the main Challenges and opportunities for implementing the various aspects of Open Science in the area of Transport Research, in particular taking into account the specificities of knowledge production and exploitation in the area of transport research including IPR, technology transfer and the dual dimension of data (i.e data that can be attributed both as a private resource used by companies and as a public good);
- Identify and engage international partners for mutual learning and sharing of best practices;
- Design a Code of Conduct for implementing Open Science principles in transport research in Europe;

In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged.

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 2 million each would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

Actions are expected to lead to setting up a community of transport research organisations willing to work on the basis of a commonly agreed Open Science Code of Conduct. Furthermore, actions should contribute to creating a solid knowledge base on the implementation of Open Science approaches in transport research, and in particular on current constraints and bottlenecks in this field. This should lead, amongst other, to improved efficiency, quality and integrity and, when relevant, interdisciplinarity of transport research, speed up the path from research to innovation and promote citizen's engagement in the scientific process.

Type of action	Coordination and support action
Deadline	04 April 2018
Call identifier	H2020-MG-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-4-2-2018.html



Call – Mobility for Growth

MG-4-3-2018: Demographic change and participation of women in transport

Specific Challenge

Societal changes are demanding a much higher attention to specific groups of users with specific needs and expectations for mobility. Only a disaggregated analysis can lead to the satisfaction of all citizens, thus ensuring a large as possible integration of all parts of the population in the society. Women account for half of society, but the specific needs linked to their physical and social characteristics have not been sufficiently assessed.

The resulting **inequalities in mobility opportunities** therefore **need to be thoroughly explored. By identifying the influence of intersectional aspects such as age, social level, ethnic origins, education, family composition the transport system can be adjusted to meet the specific demands of this group and lead to increased social inclusion and equity.**

Scope

Proposals should address all of the following:

- Assessment of the specific transport requirements of women (service supply, infrastructure/vehicle design, safety and security issues...) as well as employment opportunities in the future transport system, according to the technical and organisational development of the sector.
- **Analysis of intersectional aspects such as gender, age, social level, education, ethnic origin, family composition, etc, and of their influence on specific mobility needs and the possibility to increase the participation of women in transport-related jobs.**
- **Perform Gender Impact Assessments of new technologies and business/operational models in order to assess their acceptance and non-discriminatory performance.**
- **Assessing the opinions and attitudes on (including the aptitude in using) new technologies, access to public transport in the context of social and spatial inequalities, the specific features needed for public transport (including diminishing the risk of violence), as well as**
- Future needs for skills and opportunities for professional careers.

The Commission considers that proposals requesting a contribution from the EU between EUR 2 and 4 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

Proposals should provide a new level of understanding and new sets of data to be used in planning future transport systems. They will also demonstrate that the knowledge created by the action and the measures identified to adjust transport traditional functionalities to the specific needs identified will contribute to an inclusive mobility system, leading to a higher level of social equity.

Type of action	Research and Innovation action
Deadline	04 April 2018
Call identifier	H2020-MG-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-4-3-2018.html



Call – Mobility for Growth

MG-4-5-2019: An inclusive digitally interconnected transport system meeting citizens' needs

Specific Challenge

Merging physical transport assets like infrastructure or vehicles with the digital layer, through the Internet of Things (IoT) and big data applications **opens vast possibilities in terms of** the development of new transport services, **business/operating models and social innovations**. This has been exemplified in the rapid development of services such as multimodal travel planners, transportation network companies, Mobility as a Service, public transport on demand, new airline ancillary products, various forms of tracking and tracing and many others.

Digitally based services and applications provide citizens with an increasing level of tailored real-time information and greater choice thus allowing for a travel process that is faster, more comfortable and which gives travellers greater control. These services and applications **can also serve as basis for social innovations in mobility**. In the longer time frame, digitisation of transport promises to lead towards fully personalised services and commercial offers. Despite this, important and often **overlooked aspects are user impact and user's ability and readiness to take advantage of the new opportunities**. Benefiting from digital technology requires specific skills, willingness and ability to assume a new role as an active participant of the digital travel ecosystem. The main challenge is therefore to ensure that all members of society can benefit from digitisation. In order to achieve this, **it is necessary to better understand the needs and attitudes of various users, in particular vulnerable-to-exclusion citizens such as, for example, elderly, low-income, disabled or migrants**, in relation to the requirements brought about by the digitised transport system as well as the skills and strategies necessary for all citizens in order to fully benefit from it.

Scope

Proposals should address several or all of the following:

- Identify the main characteristics of demands that digitally based mobility solutions place on the users;
- **Identify the needs and attitudes of all societal strata of transport users** - in particular vulnerable to exclusion citizens - in the digitised travel ecosystem, taking into account interpersonal and intrapersonal (over time for the same person) variations(age, culture, etc);
- **Identify the obstacles to the appropriation of digital mobility by different user groups and possible nudges to facilitate it, including the potential for social innovations;**
- Investigate user requirements when transport is interrupted, e.g.: due to extreme weather, man-made or technical hazards.
- Investigate gender related differences in the adoption of digitally based transportation products and services;
- Identify skills and strategies needed in order to fully benefit from digitalisation in transport and thus to avoid digital exclusion or digital divide in terms of social and spatial aspects;
- **Analyse differences and particularities in relation to the adoption of new mobility solutions and social innovations** across a representative sample of member states, both in terms of user uptake and service provision;
- **Provide recommendations for policy making** and practical applications for designing an inclusive digital transport system and its related products and services with due regard to data protection and cybersecurity issues; Research should be validated in a selected number of case studies through pilot demonstration, trials and testing involving service providers and end-users. Furthermore, actions should be undertaken in view of ensuring take up of research results by key stakeholders.

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

Expected Impact

Research will help policy-makers **design appropriate regulatory frameworks and social and educational strategies** in order to create the best possible conditions for an inclusive, user friendly digital transport system, taking into account the needs and characteristics of all parts of society, **with particular attention to vulnerable to exclusion citizens**. Moreover, research will also help regional authorities and businesses in designing digital transport solutions that are better tailored to citizens' individual needs.

Type of action	Research and Innovation action
Deadline	24 April 2019
Call identifier	H2020-MG-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-4-5-2019.html



Call – Mobility for Growth

Topics with minor SSH relevance

LC-MG-1-1-2018: InCo flagship on reduction of transport impact on air quality

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-mg-1-1-2018.html>

LC-MG-1-10-2019: Logistics solutions that deal with requirements of the 'on demand economy' and for shared-connected and low-emission logistics operations

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-mg-1-10-2019.html>

MG-2-2-2018: Marine Accident Response

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-2-2-2018.html>

MG-2-6-2019: Moving freight by Water: Sustainable Infrastructure and Innovative Vessels

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-2-6-2019.html>

MG-2-7-2019: Safety in an evolving road mobility environment

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-2-7-2019.html>

MG-4-4-2018-2019: Support for dissemination events in the field of Transport Research

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-4-4-2018-2019.html>



Call – Automated Road Transport

DT-ART-02-2018: Support for networking activities and impact assessment for road automation

Specific Challenge

Besides technological progress in developing new automated driving functions, there are still many challenges and uncertainties related to the deployment of connected and automated vehicles. Many of these challenges can be better addressed when European partners work together and cooperate with international partners. Therefore, a coordinated and harmonised approach to support the deployment of automated driving systems at European and international level is needed. More cooperation is also necessary to assess the impacts of connected and automated driving systems. Several methodologies to assess impacts of connected and automated transport systems have already been developed and applied. However, a commonly agreed methodology to assess the impacts of connected and automated driving systems that would allow for informed decision making does not exist.

Scope

This topic will be implemented through two sub-topics (two types of actions). Proposals should address only one of the two.

Subtopic 1) Research and innovation action: Assessment of impacts, benefits and costs of connected, cooperative and automated driving systems

Proposals should address all the following aspects:

- **Assess the short, medium and long term impacts, benefits and costs of different scenarios/use cases** for connected, cooperative and automated driving systems (for passengers cars, automated urban transport and goods transport) considering the full range of impacts including, but not limited to, **driver behaviour, mobility behaviour, recharging and refuelling behaviour**, accessibility, safety, traffic efficiency, emissions, energy consumption, use of resources, **impact on employment, required skills**, infrastructure wear and land use.
- **Establish a solid multidisciplinary methodology** to assess the long-term impacts of connected and automated driving systems.
- Provide a public toolkit for assessing impacts, benefits and costs of connected and automated systems (including required infrastructures) and decision support system to help authorities to evaluate strategic decisions on urban regulations and planning.

Specific attention should be paid to the transition phase towards higher levels of automation when individual vehicles may operate at different automation levels given the circumstances, and where human and machine operated vehicles are both present in varying penetration degrees.

In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged. In particular, proposals should consider cooperation with projects or partners from the US, Japan, South Korea, Singapore, and/or Australia.

Proposals should foresee twinning with entities participating in projects funded by US DOT to exchange knowledge and experience and exploit synergies. The Commission considers that proposals requesting a contribution from the EU between EUR 4 and 6 million would allow this sub-topic to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Subtopic 2) Coordination and support action: Networking activities to support connected, cooperative and automated driving

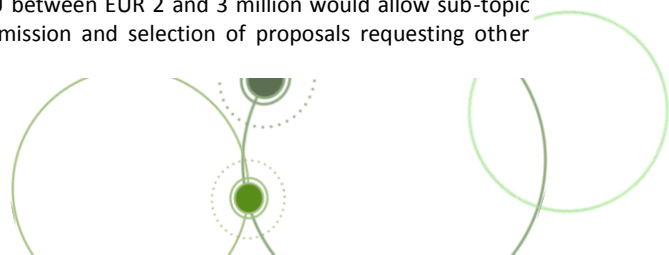
Proposals should address all the following aspects:

- Explore ways to strengthen cooperation and experience exchange amongst European and international stakeholders of connected, cooperative and automated driving in areas such as: research and innovation (e.g. human-machine interface, **social acceptance of automated driving technologies**, digital technologies for automation, impact assessment), global framework and international standards for connectivity and automation technologies, sharing of knowledge and data of large-scale European and national demonstration projects, foster a common evaluation framework across the demonstrations, education and training needs.
- Support programme owners and managers to better coordinate national and multinational funding programmes in the area of connected, cooperative and automated driving, building on past coordination efforts.
- Support ongoing and extend international cooperation activities in the area of cooperative, connected and automated driving (including road automation, standardisation harmonisation and connectivity issues). An extension of the cooperation to countries and regions beyond US and Japan should be explored.
- Provide a forum for European and international stakeholders of road automation to exchange experiences and knowledge on the development and deployment of cooperative, connected and automated mobility systems and to discuss future challenges. Organise conferences and workshops on connected, cooperative and automated driving in Europe. Interactions fostering discussions on best practices and lessons learned of automated transport solutions across all transport modes are encouraged.

In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged. In particular, proposals should consider cooperation with projects or partners from the US, Japan, South Korea, Singapore, and/or Australia.

Proposals should foresee twinning with entities participating in projects funded by US DOT to exchange knowledge and experience and exploit synergies.

The Commission considers that proposals requesting a contribution from the EU between EUR 2 and 3 million would allow sub-topic to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.



Call – Automated Road Transport

Expected Impact

- Enable decision makers to promote the most promising scenarios of connected, cooperative and automated driving systems based on a comprehensive impact assessment and knowledge base.
- **Demonstrate the expected socio-economic and environmental benefits** of future connected, cooperative and automated driving systems and raise awareness and acceptance.
- **Minimise uncertainties related to the development and acceptability of different scenarios** of connected, cooperative and automated driving.
- **Understand which factors and measures can better unlock and foster the adoption** of connected, cooperative and automated vehicles.
- Better visibility, comparability and transferability of research and demonstration activities in Europe and worldwide.
- Closer cooperation between stakeholders within Europe and worldwide on common challenges in the area of connected and automated driving. Better coordination of national and multi-national funding programmes will create synergies and reduce overlaps when setting R&I priorities.
- Support to EU Member States and stakeholders that are undertaking, or planning, larger scale public road tests with connected, cooperative and automated vehicles to exchange learnings and data, exploit synergies and propose common ways on how to leverage pilots towards deployment.
- Higher penetration of automated driving functions in the market, resulting in both increased safety on the roads and lower emissions, and stronger market position of European industry in systems for vehicle automation, including through Galileo and EGNOS.

Type of action	Research and Innovation action, Coordination and support action
Deadline	04 April 2018
Call identifier	H2020-DT-ART-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-art-02-2018.html



Call – Automated Road Transport

DT-ART-03-2019: Human centred design for the new driver role in highly automated vehicles

Specific Challenge

Significant research efforts are addressing driver performance and behaviour in automated driving conditions still requiring the driver to be prepared to assume control (SAE automation level 3 and lower). In highly automated driving conditions (SAE automation level 4) the role of the driver will change dramatically since driver intervention is not required during defined use cases. This means that during a single trip there will be a coexistence of different automated driving functions demanding various degrees of human attention. When a vehicle is in highly automated driving mode the driver may take on different behaviours. Solutions need to be developed and they have to ensure both a safe transfer between use cases with different automation levels and that drivers always have a very clear understanding about the degree of automation enabled in each situation.

Scope

Proposals for research and innovation should focus on the design of safe human-machine interfaces for vehicles with highly automated driving functions and the safe and controlled transfer between use cases of different SAE automation levels (between level 4 to/from levels 3 or 2) for all types of drivers.

The proposed actions should include all of the following aspects:

- Research to characterise driver roles in SAE automation level 4 situations and for the transition between use cases with different automation levels. **Upgrade of comprehensive models for driver behaviour/reaction, awareness, readiness and monitoring. Driver generational effects, considering in particular variations in IT usage experience and age, but also other cultural factors should be taken into account.**
- Impact assessment methods, especially for safety aspects, based on these models. The new relationship between driver and vehicle (mutual cooperation or even handover rather than continuous control) should be reflected, also considering the variety of activities a driver may engage in while the vehicle is in charge. Use cases where an operator controls the vehicle remotely may be included.
- **Develop easily understood solutions making it clear to the driver what is the operational capability (authority) of the automated mode or modes** currently enabled, as well as ensuring safe and reliable function (re-)allocation and corresponding driver/operator readiness. Driver control handover, driver/operator state and impairment are among the aspects that should be considered and the intended driver reaction should be secured.
- Demonstration of concept functionality in real world situations with various use cases and driving environments where automated systems receive and give back control from/to the driver. Proposed actions should build on the knowledge and results of ongoing projects addressing human machine interactions of automated driving systems.

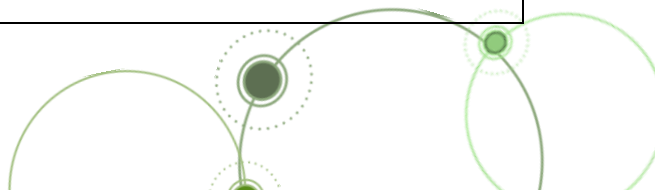
In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged. In particular, proposals should consider cooperation with projects or partners from the US, Japan, South Korea, Singapore, and/or Australia. Proposals should foresee twinning with entities participating in projects funded by US DOT to exchange knowledge and experience and exploit synergies.

The Commission considers that proposals requesting a contribution from the EU between EUR 4 to 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

- Innovative solutions, concepts and algorithms for a safe human-machine interface of highly automated driving functions and for safe and controlled transfer between use cases of different automation levels.
- Reduction of risks for driver behaviour related incidents by ensuring that drivers/operators are adequately alerted, made aware and engaged when the highly automated vehicle encounters situations or use cases that it cannot handle and thus will turn to lower automation levels.
- The research will help achieve the European Transport White Paper "Vision Zero" objective by preventing road accidents caused by human errors. Once on the market the developed concepts and solutions will also contribute to Sustainable Development Goal 3 (Ensure healthy lives and promote well-being for all at all ages; in particular goal 3.6. "By 2020, halve the number of global deaths and injuries from road traffic accidents").

Type of action	Research and Innovation action
Deadline	24 April 2019
Call identifier	H2020-DT-ART-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-art-03-2019.html



Call – Automated Road Transport

DT-ART-04-2019: Developing and testing shared, connected and cooperative automated vehicle fleets in urban areas for the mobility of all

Specific Challenge

Shared, connected and cooperative automated vehicles may become a game changer for urban mobility. They can provide seamless door to door mobility of people and freight delivery services, which can lead to healthier, more accessible, greener and more sustainable cities, as long as they are integrated in an effective public transport system. Since a few years the development of shared automated vehicle pilots are emerging around the world. Today, most of these pilots are small-scale and involve either on-demand ride services or low-speed shuttles operating in controlled environments. In order to accelerate the uptake of high quality and user oriented mobility services, based on shared, connected and cooperative automated vehicles, there is a need for demonstrating these services in real life conditions to test the performance, safety and viability of these **systems and services** and to prove that they are **attractive for and accepted by users**. Furthermore, the potential impacts on reducing CO2 emissions and pollutants, safety and overall transport system costs need to be assessed.

Scope

The proposed actions should include all the following aspects:

- **Thorough analysis of new, emerging business/operating models** and related technologies for shared, connected and cooperative automated vehicle fleets that are complementing existing high-capacity public transportation systems.
- Design innovative shared, connected, cooperative and automated vehicle concepts (road vehicles at SAE level 4 and higher) and the associated **new business/operating models addressing user and customer needs, including cultural aspects**, for mobility of people and/or delivery of goods. **Specific user needs in different regional and operating environments and for different user groups, e.g. elderly, children and users with disabilities should be considered and attractiveness and acceptability by all users should be ensured**. The potential of combining automated urban delivery and people transportation should be addressed.
- Test robustness, reliability and safety of shared highly automated vehicle fleets that are operating in semi-open or open environments focusing on the interaction with other road users, including pedestrians, cyclists and public transport systems. The fleets should consist of electrified vehicles. Synergies with advanced energy efficient, smart and multimodal mobility concepts should be actively developed. Fleet management should include operational optimisation as well as energy management. Fleet tests should consider the entire "functional urban area" and explicitly include feeder services and other collective transport options in peri-urban and low-density urban areas.
- Vehicles should use connectivity technologies to allow communication and cooperation between vehicles, infrastructure and with other road users and to enable automated, smart mobility services, innovative fleet management concepts and higher performance of automated vehicle functions. Proposals should make the best use of EGNOS and Galileo which significantly improve the vehicle positioning availability and reliability. The development of solutions for the next generation of cooperative services by efficiently combining C-ITS and automation for smart, smooth, safe and efficient traffic flows (including the development and testing of "open message definitions" for all CITS stakeholders) would be an asset.
- **Identify and provide for the needs of vulnerable road users** (including their potential redefinition to include non-connected users, out-of-position passengers in automated cars, cyclists, pedestrians, etc.) resulting from this new automated/mixed environment (use of standard & highly automated vehicles).
- Develop architecture, functional and technical requirements for ICT technologies, for secure data collection and processing needed for the operation of connected and cooperative automated vehicles. Develop ways to enhance the optimised use of big data in (road) transport for implementing smart and safe mobility solutions, innovative traveller services and (city) traffic management.
- Fulfil all security requirements to protect the shared automated vehicles to any threats and avoid any conscious manipulations of the information enabling automated driving.
- Assess and demonstrate benefits of the pilot implementation on energy efficiency, traffic flow, safety, **user appreciation** etc, based on holistic modelling solutions.

In line with the Union's strategy for international cooperation in research and innovation, international cooperation is encouraged. In particular, proposals should consider cooperation with projects or partners from the US, Japan, South Korea, Singapore, and/or Australia. Proposals should foresee twinning with entities participating in projects funded by US DOT to exchange knowledge and experience and exploit synergies.

The Commission considers that proposals requesting a contribution from the EU between EUR 15 and 30 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

Proposals will test the overall mobility impact, in particular, how shared mobility solutions using connected and cooperative automated vehicles can contribute to a more sustainable, inclusive, and safe mobility system and help residents of a city/region (in particular less mobile persons, elderly and children) to increase mobility and improve urban freight transport efficiency. Proposed actions will help to reduce the total number of passenger cars and goods km in cities, overall CO2 and air pollutant emissions and energy consumption. They will improve market opportunities for SME's and new-entrants by addressing and developing innovative cross-sector business



Call – Automated Road Transport

models. Actions will create strategic partnering opportunities between public agencies and the private sector for developing sustainable and scalable business models. They will also support the accelerated deployment of electrified vehicles for shared automated mobility services and integrated strategies for a smart and multi-modal mobility system and urban development, including land use and ITS and infrastructure development.

Type of action	Innovation action
Deadline	24 April 2019
Call identifier	H2020-DT-ART-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-art-04-2019.html



LC-GV-03-2019: User centric charging infrastructure

Specific Challenge

The market share of full electric vehicles is still low in many European member states. Several reasons have been identified for this. Charging infrastructure is considered as one of the central reasons when the urban model does not allow for widespread garage availability, or when frequent long range travel is involved. Currently most EV owners have their own garage and live in peri-urban areas. Innovative solutions need to be evaluated and developed to allow EV drivers to have a similar or even better mobility experience than with conventional fossil fuel vehicles in terms of availability, convenience, performance and costs of the necessary charging infrastructure. At the same time, the infrastructure should not affect the noise environment around them, in order not to create resistance to their installation in urban contexts.

In the longer term, electric roads can be considered for further streamlining the user experience and optimising vehicle design, starting from urban and peri-urban applications such as bus, taxi and LDV lanes, for later extension to extra-urban applications.

The challenge will be to support the accelerated deployment of recharging infrastructure, on one hand a slow charging one for cities with low garage availability, on the other to support occasional ultrafast charging for long range travel. The responsible stakeholders need to be incentivized to take clear steps for a wide availability of charging points and to improve the conditions for a broad market acceptance in the electrification of transport.

Scope

Proposals will have to address all following technical areas including demonstration of the final solutions and their interoperability in multiple cities and TEN-T transnational road links:

- **Analysis of subjective perception of charging options and identification of decision influences and concerns of users. The results should provide the basis for strategies or solutions to encourage or incentivize users of different social groups to overcome acceptance barriers in order to accelerate widespread usage of EVs.**
- Attractive and convenient charging infrastructure access with connected vehicle systems avoiding waiting times (through for instance, charging facility reservation and scheduling, integration with route planning of multiple vehicles). **User preferences** like use of renewable energy and avoidance of frequent handling of heavy cables have to be considered. Automated conductive or wireless solutions are expected with highly reliable and interoperable devices. Test methods need to be further optimized, for instance to assess interoperability. Optionally, further extension of the developed stationary wireless charging technology towards urban and periurban "electric road" applications, with the aim of creating an installed base of wireless-ready vehicles to provide the critical mass needed for the deployment of electrified roads at a later stage.
- Transparent, flexible and interconnected payment systems for maximum availability of the charging infrastructure also for drivers who do not regularly use the same car (company/family sharing, commercial car sharing, rental cars, ...) or travel across Europe.
- **User survey about parking habits**, considering for instance how much time is spent at a given location; what type of services are needed or expected during charging; how should the future charging station look like.
- Improvement of the currently deployed or planned superfast charging systems according to the previous survey to convince all car owners of the advantages of electric mobility including a sufficient convenience for long trips. All technical possibilities for optimization, both on the vehicle (like temperature preconditioning), or for energy demand rationalisation (e.g. local renewable power support for solar panels, battery storage for peak shaving and other grid services, demand control by interconnected route management systems for incoming vehicles while taking into account the electricity grid availability and voltage and frequency control constraints in real-time) need to be taken into account.
- Scalable charging infrastructure for ramp-up of expected electric mobility needs in terms of power levels and number of charging posts at one site, adequately managing the impact on the grid.
- Cheap low power DC-Charging for highly efficient connection to future home and office energy systems based on DC-Networks with possibility of V2G by smartening the link between vehicle, charging infrastructure and the grid.
- Low power DC-charging for LEV's in combination with theft-proof parking for two-wheelers.
- **Analysis of market models, regulatory and harmonization recommendations** to foster the deployment of EV charging infrastructure in all member states of the EU. Demand control also for slow charging in public or private parking garages shall be enabled by standardized communication to remove barriers of electricity installations in existing apartment blocks and garages considering smart grid implications.
- Development of planning methods to optimize the location of charging sites, taking in consideration user needs and habits (volume of EVs in the area, type of mobility needs, accessibility to charging points, traffic volume, ...) as well as time and costs associated to the availability and reinforcement of the necessary electricity network with easy scalability according to the different stages of EV penetration. Analysis and cost effective solutions for specific cases like availability of infrastructure in isolated mountain or seaside locations, or for special events, where high peak demand is associated with short periods of use. Consideration for local storage benefits in the different cases studied.

The Commission considers that proposals requesting a contribution from the EU between EUR 8 and 15 million depending on the level of involved demonstration would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.



Call – Green Vehicles

Expected Impact

- **Wide user acceptance beyond early adopters, urban users and garage parkers;**
- Foster investors to invest in charging infrastructure;
- **Determine legal gaps which slow down infrastructure expansion and propose solutions;**
- Develop test methods and set up procedures to improve interoperability issues of vehicle-to-charger and charger-to-infrastructure communication;
- Facilitate grid integration of high-power chargers;
- Improve and standardize charging solutions and payment systems for LEVs for price reduction and **higher market acceptance** in urban environments.

Type of action	Innovation action
Deadline	24 April 2019
Call identifier	H2020-LC-GV-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-gv-03-2019.html



Topics with minor SSH relevance

LC-GV-05-2019: InCo flagship on “Urban mobility and sustainable electrification in large urban areas in developing and emerging economies”

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-gv-05-2019.html>





Societal challenge 5
**Climate action, environment,
resource efficiency and raw
materials**

Net **4** Society

Call – Building a low-carbon, climate resilient future

LC-CLA-01-2018: Supporting the development of climate policies to deliver on the Paris Agreement, through Integrated Assessment Models (IAMs)

Specific Challenge

Under the Paris Agreement (PA), Parties of the UNFCCC have to submit and periodically update Nationally Determined Contributions (NDCs), which represent their undertaking to pursue the objectives the Agreement. Parties have also committed to formulate and communicate their mid-century low greenhouse gas emission development strategies by 2020. The collective progress towards achieving the objectives of the PA will be periodically assessed, with the first ‘global stocktake’ envisaged to take place in 2023. These critical processes for global climate action must be underpinned by authoritative scientific results at national, regional and global level and supported by knowledge co-created through adequate frameworks that enhance legitimacy, inclusion, effectiveness and sustainability. Science should provide the necessary tools and knowledge-base in order to support the above mentioned processes, and contribute to the high impact and quality of the major emitters’ submissions.

Scope

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

- a) **Supporting the design and assessment of climate policies:** Actions should provide new and more comprehensive scientific knowledge on the design, requirements, governance and impacts of climate action at national, European and global level, for the effective implementation of NDCs, the preparation of future action pledges, the development of 2050 decarbonisation strategies in major emitting countries and for supporting the 2023 global stocktake under the UNFCCC. **The potential and feasibility for dynamically increasing decarbonisation ambition over time should be considered, together with related socioeconomic impacts and co-benefits** (for example those related to water, air pollution or avoided impacts of climate change), **also taking into consideration market-driven actions.** This action should be based on the use of ensembles of Integrated Assessment Models (IAMs), covering the entire economy, all greenhouse gases, and the wide range of climate, air quality/environment, energy and other sectoral policies contributing to decarbonisation, and should provide useful information at global and national level. Beyond the EU, proposals should extend their analysis to some major emitters outside Europe and to selected less developed countries.
- b) **Improving Integrated Assessment Models (IAMs):** Actions should further improve the state-of-the-art of IAMs, in order to provide robust and transparent assessments to support the design and evaluation of all mitigation policies – including those on energy efficiency and renewables – in the short to mid-term, as well as to address the challenges and opportunities related to long term decarbonisation with a time horizon beyond 2050. Improvements in one or more of the following areas should be addressed: sectoral coverage across the entire economy (including more accurate representation of bunker fuels and land-based emissions/sinks), inclusion of all greenhouse gases, **representation of issues such as structural and behavioural change and uncertainty, inequality, interaction with other relevant development goals**, negative emission technologies, co-benefits of actions due to avoided impacts and reduced adaptation needs. Furthermore, actions should also improve the geographical coverage of global models including through in-country development of national modelling capacity.

Under both a) and b) subtopics and in line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged with major emitters and with less developed countries requiring support for the design and implementation of current and future NDCs.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 million and 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

The project results are expected to contribute to:

- supporting EU climate policy and the preparation of EU submissions to the UNFCCC and the 2023 global stocktake exercise under the UNFCCC;
- major international scientific assessments such as the IPCC reports;
- enhanced international cooperation
- **fostering innovative policy-making through robust methodologies and tools and reduction of uncertainties;**
- **improved legitimacy of models, methods and tools through greater transparency.**

Type of action	Research and Innovation action
Deadline	1 st stage - 27 February 2018 2 nd stage - 04 September 2018
Call identifier	H2020-LC-CLA-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-cla-01-2018.html

Call – Building a low-carbon, climate resilient future

LC-CLA-03-2018: Climate change impacts in Europe

Specific Challenge

Climate change is likely to make it harder to address inter alia poverty, disease, food and water insecurity in Europe. Rising temperatures and changing precipitation will affect the availability of food, energy and water, leading to likely increased volatility in food prices, and heightened regional tensions, affecting international stability and security. An increased frequency and/or intensity of extreme weather events may adversely affect human, animal and plant health, disrupt the flow of natural resources and commodities, and threaten infrastructure globally. Moreover, the inherent uncertainty of climate impacts is likely to increase risks for the business and financial sectors.

Scope

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

a) Climate change impacts on health in Europe: Actions should review, report and progress on the current state-of-the art knowledge on the links between climate change and impacts on human health in Europe that have thus far been poorly addressed or understood. Actions should also identify associated costs and suggest effective adaptation strategies, quantify health co-benefits from mitigation and early adaptation, target research actions to address key issues and identified research gaps¹⁴ and prioritise those that are of significance for Europe. Actions may, where appropriate, cluster with activities of global collaborative research actions (e.g. Belmont Forum) on climate change and health. Applicants are encouraged to seek synergies with relevant actions under Societal Challenge 1.

b) Global climate change impacts from a European perspective: Actions should consider how direct and indirect impacts beyond European borders will affect supply and value chains of relevance for the European economy and society, and related sectors such as finance, business, infrastructure, resources and commodities. Actions should also consider how these impacts will affect relevant European policies, such as those on climate change, foreign affairs, security, agriculture and/or others, and analyse how perceived associated risks may further impact on Europe. Actions should consider different climate (including high-end) scenarios and undertake a risk analysis for Europe at the most appropriate geographic and time scales.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 million and 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

The project results are expected to contribute to:

- improved capability in assessing impacts of climate change;
- **enabling evidence-based decision making** through better understanding of mitigation and adaptation costs and co-benefits, and of potential new climate-related pressures on the EU;
- enhanced information base relevant for the 2023 global stocktake exercise under the UNFCCC;
- informing major international scientific assessments such as the IPCC reports and the IPBES, as well as to EU and national adaptation strategies and plans;
- cohesive European resilience to climate change.

Type of action	Research and Innovation action
Deadline	1st stage - 27 February 2018 2ndstage - 04 September 2018
Call identifier	H2020-LC-CLA-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-cla-03-2018.html

Call – Building a low-carbon, climate resilient future

LC-CLA-04-2018: Resilience and sustainable reconstruction of historic areas to cope with climate change and hazard events

Specific Challenge

European historic areas and their surroundings, both in urban and rural environments, are increasingly affected by climate-change and various natural hazard events. Increasing their resilience through ‘preparedness’ interventions and securing their sustainable reconstruction in case of damage or destruction is essential to preserve their identity and economic, social and environmental functionality and to seamlessly transmit their historic value to new generations. However, interventions in historic areas are quite difficult and hence costly due to specific characteristics associated with heritage sites (such as artistic values, denser urban fabric, material compatibility requirements, higher vulnerability of materials and structures, difficulty in accessing the damaged areas, high symbolic values for communities involved, traditional lifestyles, etc.). Knowledge- and evidence-based approaches to resilience enhancement and reconstruction approaches are needed to increase the cost-effectiveness of these activities from the whole life cycle perspective.

Scope

Actions should establish how to implement the principle of building back better and safer in carrying out **sustainable reconstruction and recovery interventions of historic areas** where damage has occurred, **thus rendering them more socially, economically and environmentally resilient**, and/or should establish how to proactively enhance the resilience of these areas so that they will better cope with future disasters. Furthermore, actions should:

- develop, deploy and validate tools, information models, strategies and plans for enhancing the resilience of historic areas to cope with disaster events, vulnerability assessment and integrated reconstruction;
- test and pilot novel cost-effective solutions to enhance the resilience of buildings and whole historic areas to natural hazards, including climate change related events, while at the same time fully respecting the historic value of the places;
- **provide science- and evidence-based guidelines and models to local authorities for carrying out sustainable reconstruction within a participatory and community-based context, while adopting new governance and finance models;**
- improve and further develop models to predict direct and indirect impacts of climate, global and environmental change and related risks on historic areas;
- review, map and systematically characterize existing experiences and good practices in Europe and globally, through evidence and common metrics to evaluate and establish their replicability conditions, and recommend how historic areas can be rendered more resilient and better prepared to face future disaster events.

The participation of social sciences and humanities disciplines such as gender studies, architecture, archaeology, cultural anthropology, law, economics, governance, planning, cultural and historical studies, is considered essential to properly address the complex challenges of this topic. Consortia should also include societal stakeholders and community-based partners to find practical and durable solutions.

Actions should take into account activities addressed by other initiatives such as the EU Copernicus Climate Change Service and Copernicus Emergency Management Service, and provide added value.

Actions should envisage resources for clustering with other projects relevant to cultural heritage funded under previous, current and future Horizon 2020 calls within Societal Challenge 5. Proposals should also pay attention to the special call conditions for this topic.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 million and EUR 6 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:

- enhanced resilience and reduced vulnerability of historic areas to climate change and other natural hazards, also accounting for their synergistic impact;
- **improved reconstruction and economic and social recovery of historic areas by local authorities and communities through the use of new knowledge and tools.**

Type of action	Research and Innovation action	
Deadline	1st stage - 27 February 2018	2nd stage - 04 September 2018
Call identifier	H2020-LC-CLA-2018-2019-2020	
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-cla-04-2018.html	

Call – Building a low-carbon, climate resilient future

LC-CLA-05-2019: Human dynamics of climate change

Specific Challenge

As climatic changes increasingly place populations under pressure, human beings are already adapting. However, less developed countries – particularly in Africa – are often less resilient to climate change and require the deployment of appropriate support to adaptation, including in the form of bespoke **climate services tailored to users' needs**. There is some evidence that **climate change may already be playing a role in shaping population migration patterns** around the world (e.g. Africa to Europe). It is important to **make use of the wealth of available socio-economic and geophysical data to better understand these patterns in order to develop appropriate policy responses**.

Scope

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

a) Climate services for Africa: Actions should exploit new, relevant climate data made available by Copernicus and other relevant sources (such as GEOSS) and create dedicated climate services for Africa for at least two of the following sectors: water, energy, land use, health and infrastructure. **Actions should develop and deliver tools/applications which demonstrate clear end-user engagement, consultation and participation**, and which enhance planning and implementation of climate adaptation strategies in Africa. Actions should consider activities addressed by other initiatives such as the Global Framework for Climate Services (GFCS), Copernicus, and development cooperation activities, and provide added value. Actions should further consider the EU-Africa Research and Innovation Partnership on Climate Change and Sustainable Energy.

b) Climate and human migration: **Actions should identify and analyse drivers relating to climate change that may affect human migration and displacement patterns. Actions should – using a multidisciplinary approach – identify and describe climate parameters, develop analytical methodologies, and demonstrate how these relate to human migration patterns, including the probability of migration/forced displacement and design adaptation solutions that may help in alleviating migration pressures at the source. They should also provide guidelines and policy recommendations for the European Agenda on Migration.** Actions may also harness local knowledge and information by engaging with civil society organisations and citizen groups.

For both of the sub-topics, in line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

The participation of social sciences and humanities disciplines is encouraged to address the complex challenges of this topic, including challenges associated with relevant gender issues.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 million and 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

The project results are expected to contribute to:

- better policy making for climate adaptation in partner countries and Europe;
- supporting international scientific assessments such as the IPCC Assessment Reports;
- stronger adaptive capacity and climate resilience.

Type of action	Research and Innovation action
Deadline	1st stage - 19 February 2019 2nd stage - 04 September 2019
Call identifier	H2020-LC-CLA-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-cla-05-2019.html

Call – Building a low-carbon, climate resilient future

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

Specific Challenge

The Paris Agreement notes the importance of taking action to ensure the integrity of all ecosystems and the protection of biodiversity in the context of combatting climate change and adapting to its impacts. An improved understanding of the interactions and feedbacks between ecological processes and climate change, together with evidence-based guidance, is crucial for the development of appropriate solution-oriented strategies and measures for biodiversity conservation and cost-effective ecosystems-based climate change adaptation and mitigation. Furthermore, there are opportunities to let biodiversity and ecosystems benefit multidimensionally from climate change adaptation and mitigation, because intelligent climate policy can simultaneously reduce other environmental stresses, such as air pollution.

Scope

Actions should investigate at all relevant spatial and temporal scales the way that ecological processes, biodiversity (including terrestrial and/or marine ecosystems as appropriate) and ecosystem services are impacted, both directly and indirectly, by climate change. Actions should consider the interactions and feedbacks between climate change and biodiversity, ecosystem functions and services. The vulnerability of biodiversity and ecosystems functions and services to climate change should be investigated and modelled across a range of European (including other European territories) climatic and ecological regions; this includes human activities with relevance to climate change. They **should account for social, ecological and economic aspects and climate change relevant stressors and sources of uncertainty**. These should include tipping points and safe operating spaces. The role of nature-based solutions in enhancing the efficiency and effectiveness of climate change adaptation and mitigation strategies should be assessed and synergies with other pollution-reducing environmental policies be explored. Work should build, as appropriate, on existing knowledge and activities such as relevant FP7/Horizon 2020 projects, European climate adaptation platforms and Copernicus Services, in particular on climate change, land monitoring and marine environmental monitoring, and contribute to long-term monitoring initiatives.

Projects should envisage resources for clustering with projects funded under the same topic and with ongoing and future projects funded under other relevant topics within Societal Challenge 5 and other parts of Horizon 2020.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with CELAC 21 countries.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 5 million to 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

The project results are expected to contribute to:

- more effective, integrated and evidence-based biodiversity conservation strategies and ecosystem management in the face of climate change;
- pushing the EU to the forefront in climate-change predictive capacity through models better accounting for the interactions and feedbacks between biodiversity, ecosystems and the climate system;
- more effective ecosystem-based adaptation and mitigation, through evidence-based design and implementation of systemic nature-based solutions ;
- enhanced ecosystem integrity, functionality, resilience and delivery of services;
- increased investment in nature-based solutions, and ecosystem conservation, restoration and management, to support climate change adaptation and mitigation strategies;
- underpinning the EU Nature Directives, EU Biodiversity Strategy, 7th Environment Action Programme, and the EU Strategy on adaptation to climate change;
- informing major international scientific assessments such as the IPCC reports and the IPBES;
- the protection, restoration and enhancement of natural capital in line with the work of the Convention on Biological Diversity (CBD), the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES), the Intergovernmental Panel on Climate Change (IPCC) and further relevant global processes and organisations.

Type of action	Research and Innovation action
Deadline	1st stage - 19 February 2019 2nd stage - 04 September 2019
Call identifier	H2020-LC-CLA-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-cla-06-2019.html

Call – Building a low-carbon, climate resilient future

LC-CLA-07-2019: The changing cryosphere: uncertainties, risks and opportunities

Specific Challenge

Globally, glaciers and the large ice sheets of Antarctica and Greenland are particularly vulnerable to climate change, risking a significant future contribution to changes in sea levels. At present, there are significant uncertainties, e.g. relating to their stability, which prevent an accurate assessment of their vulnerability. The 'Arctic amplification' of global warming is putting pressure on the ecosystems and communities of the region and having an impact at global level as well. The Arctic's fragile natural ecosystems and societies are under serious threat, and additional human activities, linked to the new economic opportunities that are made possible by climate change, are putting additional pressure on them.

Scope

Actions should aim at developing innovative approaches to address only one of the following sub-topics:

a) Sea-level changes

b) Changes in Arctic biodiversity (Research and Innovation action): Actions should identify and analyse major drivers and implications of changing biodiversity in the Arctic, such as the role of invasive species, and how vulnerable land and/or marine ecosystems are with respect to combined human and natural influences. **Actions should assess the ecosystems' responses to both external and internal factors and how these responses are impacting on indigenous populations and local communities at socio-economic level.** Actions should also identify adaptation strategies in relation to the changes in Arctic ecosystems.

The participation of social sciences and humanities disciplines is important for addressing the complex challenges of this topic.

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

c) Sustainable opportunities in a changing Arctic (Research and Innovation action): **Actions should assess the viability of new economic activities** – such as resource exploitation, shipping and tourism – **and their ecological and socio-economic impacts and feedbacks at various scales**, and their impact on the provision of ecosystem services. **Actions should investigate key processes with high societal and economic impacts and provide appropriate, solution-oriented adaptation and mitigation responses, as well as capacity building for sustainable livelihoods while considering – in a co-design approach – the needs, priorities and perspectives of indigenous populations, local communities and economic actors operating in the region.**

The participation of social sciences and humanities disciplines is essential for addressing the complex challenges of this topic.

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

d) Arctic standards (Coordination and Support action): **The action should propose guidelines and protocols to develop 'Arctic standards', also including the legal framework**, based on the translation of research outcomes into cold-climate technologies and services with commercial potential and the assessment of the sustainability of associated processes and technologies. **The action should cover a wide range of technologies and services that have the potential to bring broad social and economic benefits** within and beyond the Arctic region. The action should also provide requirements on how to design, build, install, and operate equipment and services to safely perform activities in the Arctic and to respond to emergencies.

The participation of standardisation organisations is encouraged.

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

For all of the above sub-topics, in line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with countries – beyond the EU Member States and countries associated to Horizon 2020 – that took part in the first Arctic Science Ministerial of 28 September 2016.

Expected Impact

For projects addressing parts a), b) or c), the project results are expected to contribute to:

- the implementation of the new integrated EU policy for the Arctic;
- the IPCC assessments and other major regional and global initiatives;
- enhanced engagement of and the interaction with residents from local communities and indigenous societies.

For projects addressing part d), the project results are expected to contribute to:

- enhanced stakeholder capability to operate in cold climate environments;
- better servicing of the economic sectors that operate in the Arctic (e.g. shipping, tourism);
- promoting sustainable Arctic opportunities arising from climate change and supporting the leverage of regional (EU) funds into these opportunities;
- supporting the competitiveness of European industry, particularly SMEs, engaging in sustainable development of the Arctic.

Call – Building a low-carbon, climate resilient future

Type of action	Research and Innovation action, Coordination and support action,
Deadline	RIA - 1 st stage - 19 February 2019 2 st stage - 04 September 2019 CSA - 19 February 2019
Call identifier	H2020-LC-CLA-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-cla-07-2019.html

CE-SC5-03-2018: Demonstrating systemic urban development for circular and regenerative cities

Specific Challenge

Cities struggle in their transition to implement a full circular economy model incorporating regenerative practices. There is a clear need for cities to become circular in order to alter urban consumption patterns and value chains, and to stimulate innovation, business opportunities, and job creation in both established and newly created sectors. **New, more flexible systemic urban planning instruments** enabling the design and implementation of circular urban processes **would make urban and peri-urban areas regenerative and facilitate their adaptation to emerging economic, social and environmental challenges.**

Scope

Actions should demonstrate how cities can be transformed into centres of circular innovation and stimulate regenerative practices in both urban and peri-urban areas (including the surrounding industrial areas and commercial ports).

Actions should develop and implement innovative urban planning approaches and instruments (e.g. dynamic and semantic 3D real time flexible geospatial data and planning tools, **innovative governance and legislation enabling new practices**, design approaches, **business models**, etc.) to support and guide the transition towards circular and regenerative cities in terms of their built environment, public space, urban spatial use and programming. They should demonstrate innovative solutions for closing the loop of urban material and resource flows within the nexus of water, energy, food, air, ecosystem services, soil, biomass, waste/wastewater, recyclables and materials and for supporting an increase in the regenerative capacity of the city while limiting pollution of the environment, for example by reducing the emissions of air pollutants. At the same time, these solutions should ensure sound management of trade-offs and synergies among and across sectors. They should include ways of sustainably reusing and (mixed-use) reprogramming of existing buildings, open spaces and (infra)structures. **The action should actively involve public authorities, societal stakeholders and community-based partners such as city-makers, urban (fab-) labs, urban planners, (urban) designers, cultural & creative organisations**, and start-ups in close collaboration with the cities to find practical and durable solutions.

In addition **actions should develop and implement innovative local governance structures** and networks to enhance circular economy innovation in the urban fabric and help prioritise flexible implementation of urban space programming for circular initiatives. Actions should enable the continuous monitoring and optimisation of “urban metabolic” processes and rapid management interventions, where needed, deploying new indicators enabling easy assessment, comparison and sharing of best practice on the ground as well as digital solutions comprising networks of sensors, big data, geo-localisation, observational programmes such as Copernicus and GEOSS, satellite navigation and positioning services offered by EGNOS/Galileo, and citizens’ observatories.

Actions are expected to establish long-term sustainable data platforms securing open, consistent data on the impacts of the deployed approaches, and to ensure interoperability of relevant data infrastructures for effective communication, public consultation, and exchange of experiences.

An interdisciplinary approach, including the participation of applied natural sciences, social sciences and humanities disciplines (such as behavioural economics, gender studies, urban planning and governance) is considered crucial to properly address the complex challenges of this topic.

Proposals should pay attention to the special call conditions for this topic.

To enhance the impact and promote upscaling and replication of these solutions, actions should engage in substantial networking and training activities to disseminate their experience, knowledge and deployment practices to cities that are planning to design and implement similar solutions in a successive phase beyond the duration of the project. To enhance impact, cooperation and synergies with the activities undertaken within the Global Covenant of Mayors for Climate and Energy initiative, and in particular the regional component for Europe (supported by the EC) should be sought where appropriate.

Furthermore, actions should envisage resources for clustering with other ongoing and future projects on sustainable cities through nature-based solutions funded under the 'Smart and Sustainable Cities' call in part 17 of the 2016-2017 Work Programme as well as under the topics SC5-20-2019 and SC5-14-2019 of this Work Programme. They should also ensure that there will be no duplication with work undertaken by relevant projects funded under the topic 'CO-CREATION-02-2016 - User-driven innovation: value creation through design-enabled innovation'.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 10 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:

- measurable reduction of materials, natural resource consumption and environmental footprint in urban and peri-urban areas;
- measurable increase of the regenerative capacity of urban and peri-urban areas due to a measurable increase in material and natural resource creation in cities, as well as increased productivity through maximisation of (multi)-functional use and programming of urban spaces;
- **set of social behavioural, economic, environmental performance and geospatial indicators to monitor and assess the urban and peri-urban circularity and regenerative capacity;**
-

Call – Greening the economy in line with the SDGs

- local governance innovation in response to the needs and concerns of stakeholders and the affected public as well as boosted creativity and entrepreneurship related to circularity and regenerative processes;
- the implementation of the EU Circular Economy Action Plan with a direct link to the urban fabric (built and public space), and the Habitat III New Urban Agenda's commitment to transition to a circular economy.

Type of action	Innovation action
Deadline	1st stage - 27 February 2018 2nd stage - 04 September 2018
Call identifier	H2020-SC5-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ce-sc5-03-2018.html

Call – Greening the economy in line with the SDGs

CE-SC5-04-2019: Building a water-smart economy and society

Specific Challenge

There is a growing demand for water from various economic activities and increasing stress on natural water sources. To secure water for our society, there is therefore a need to make available alternative water resources of various qualities and which are appropriate for different functions and multiple users, and to better exploit water resources and all the valuable substances that could be obtained through the wastewater treatment and reuse process. However, innovations in this domain remain fragmented and/or only experimented at small scales; testing and deployment in operational environments and at scales suitable for encouraging wider uptake is still missing.

Scope

Actions should demonstrate the feasibility of a 'water smart' economy and society in which all available water resources, including surface, groundwater, waste water, and process water, are managed in such a way as to avoid water scarcity and pollution, increase resilience to climate change, appropriately manage water-related risks, and ensure that all valuable substances that could be obtained from waste water treatment processes, or are embedded in used water streams, are recovered.

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

a) **Symbiosis between industry and water utilities:** Actions should demonstrate resource-efficient solutions derived from the systemic exploitation of symbiotic inter-linkages between wastewater treatment in industry and by water utilities. These might address, for instance, the reuse of treated wastewater, the use of substances or energy derived from wastewater treatment, or might demonstrate the concept of dynamic allocation of the right quality of water for the right purpose, while ensuring health and safety. **Innovative solutions do not need to be only technological, but may also encompass other types of innovation such as innovative governance and stakeholder engagement or business models in industrial environments.**

b) **Large scale applications with multiple water users at various relevant scales:** Actions should test and demonstrate systemic innovation in real life, large scale operational environments. Actions should address multiple water users (urban, industrial, rural and agricultural) and various relevant scales (regional/national/international) for:

- stimulating efficient and multiple use, recycling and reuse of water; recovery of energy and materials (such as nutrients, minerals, chemicals and metals) from water;
- managing water demand and efficient allocation;
- exploiting alternative water sources;
- prevention of water pollution and degradation of the aquatic environment and soil; and
- cost-effective and smart management of the water system and infrastructure.

As far as possible, the innovative solutions should include all of the above-mentioned activities. **Actions should also consider: new marketing and financing concepts and strategies to maximise the multiple values of water and increase the attractiveness of the water sector for investors; new governance approaches and decision-making instruments for water managers;** water systems vulnerability approaches and other sustainability assessments (e.g. footprint, Life Cycle Assessment).

The participation of social sciences and humanities, also addressing the gender dimension, is considered crucial to properly address the complex challenges of this topic, especially those related to human behaviour and attitudes towards water, the inter-linkages between policy and implementation, and acceptance of the solutions developed by both the public and other water users.

For both sub-topics, deployment of enabling digital solutions for the monitoring, control and optimisation of data and processes is also encouraged. **Where appropriate, related regulatory and institutional barriers which prevent the wide application of developed innovative solutions should be addressed.** Where technological innovation is concerned, TRL 5-7 should be achieved. **To assure applicability and wide deployment of the innovative water technologies in different conditions (including different water resources, economic, social and regulatory settings) involvement of market take-up partners and/or end users** from a wide range of different European regions is strongly encouraged, as well as SME participation.

The Commission considers that proposals requesting a contribution from the EU of between EUR 10 million and 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.

Expected Impact

The project results are expected to contribute to:

- significantly reduced use of water from freshwater sources;
- improved recovery and use of resources (materials and water itself), including energy;
- mobilisation of water-related investments and synergies with other funding instruments.
- the creation of new business opportunities and increased competitiveness of EU industries;
- supporting, as appropriate, the implementation of EU water policies, the transition to a more circular economy at different scales and economic and social conditions, water security, water use efficiency, enhanced resilience to climate change and achievement of the relevant Sustainable Development Goals;
- the implementation of the objectives of the EIP Water and, where appropriate, supporting the implementation and evaluation of technology verification schemes, including the EU Environmental Technology Verification Pilot (ETV) programme.

Call – Greening the economy in line with the SDGs

Type of action	Innovation action
Deadline	1st stage - 19 February 2019 2nd stage - 04 September 2019
Call identifier	H2020-SC5-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ce-sc5-04-2019.html

Call – Greening the economy in line with the SDGs

SC5-11-2018: Digital solutions for water: linking the physical and digital world for water solutions

Specific Challenge

Modern information and communication technologies (ICT) have provided today's society with a vast array of innovative capabilities to solve several challenges related to resource efficiency, climate change and sustainable development. Harnessing this technology within the water sector creates a more intelligent means of managing and protecting the planet's water resources and lays the foundation of a water-smart society. However, several challenges related to interoperability and standardisation, collection, protection and sharing of data between users, services and infrastructures, intelligent smart metering, integration with other systems, ICT governance and public awareness and acceptance, are hampering the potential of those technologies.

Scope

Actions should develop and test new, robust and cybersecure systems, linking the physical and digital world to ensure tailored, water-smart solutions, to exploit the value of data for the water sector and to foster higher information transparency and accountability. They should cover various water management areas, cycles and value chains, based on an integrated approach of all water resources and water bodies. Actions should combine different types of advanced data and digital technologies in a multidisciplinary environment, including mobile technology, clouds, artificial intelligence, sensors, open source software and analytics. Aspects such as optimisation, prediction, diagnosis, microsystems, micro-/nano-sensors, modelling and visualisation tools, data management plans, assessment and real time monitoring for water quality and quantity, integrated water management, open data policies, enabling institutional frameworks, health issues, vulnerability to changing water conditions and disaster warnings and risk management should also be considered. Actions should capitalise on knowledge acquired through previous FP7/Horizon 2020 projects.

Actions should seek to bring together research and innovation players from the digital and physical spheres to address jointly challenges and opportunities, including regulatory and legislative barriers, data protection issues and opportunities for investments in different application sectors. Activities are expected to focus on Technology Readiness Levels (TRLs) 5-7. **The participation of social sciences and humanities disciplines is crucial to properly address the complex challenges of this topic. To assure applicability and wide deployment of the innovative water technologies in different conditions (including different water resources, economic, social and regulatory settings) involvement of market take-up partners and/or end users from a wide range of different European regions is strongly encouraged.**

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:

- the interoperability of decision support systems through the identification and use of ICT/water vocabularies and ontologies in view of developing or improving ICT/water standards;
- improved decision making on water management, related risks and resource efficiency through increased real-time accuracy of knowledge;
- maximising return on investments through reduced operational costs for water utilities, including reduced costs for water monitoring, improved performance of water infrastructures, and enhanced access to and interoperability of data;
- enhanced public awareness on water consumption and usage savings;
- market development of integrated and cyber-resilient ICT solutions and systems for smart water management, and opening up of a digital single market for water services.
- the implementation of the objectives of the EIP Water, especially, reducing the environmental footprint of the main water-dependant activities and improve their resilience to climate changes and other environmental changes.

Type of action	Innovation action	
Deadline	1 st stage - 27 February 2018	2 nd stage - 04 September 2018
Call identifier	H2020-SC5-2018-2019-2020	
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-11-2018.html	

Call – Greening the economy in line with the SDGs

SC5-12-2018: EU-India water co-operation

Specific Challenge

In recent years, India and Europe have collaborated extensively to enhance and enrich each other's technological and scientific knowledge and management capacities to cope with increasing stress on water resources. Increasing heterogeneity in the uneven distribution of water resources triggered by climate change, extreme water-related events (floods and droughts) and increasing demand due to population growth and economic development add additional stress to water, environment and food security and to the national economy. Many of these water challenges are common to India and some of the EU Member States. Therefore there is a need for a concerted effort of India and EU to address these issues. This will also help in achieving the Sustainable Development Goals' (SDGs) agenda on water.

Scope

This action should develop new and/or adapt the most suitable existing innovative and affordable solutions for Indian conditions, both in urban and rural areas, addressing one or more of the following broad challenges:

- drinking water purification with a focus on emerging pollutants;
- waste water treatment, with scope for resource/energy recovery, reuse, recycle and rainwater harvesting, including bioremediation technologies;
- real time monitoring and control systems in distribution and treatment systems.

Actions should therefore take into account India's water challenges both with regard to quantity and quality. In doing so, allocation of water should be facilitated and the supply should become more competitive or lead to an optimisation of costs; it should also lead to better water management and quality by finding solutions to the treatment of widely varying pollution loads including those from emerging pollutants. The impact of extreme climate and hydrological conditions (monsoon floods) also need to be taken into consideration.

Actions addressing wastewater treatment should focus on sustainable use/reuse of water in rapidly expanding urban areas, as well as smaller cities lacking any type of suitable wastewater treatment. Actions may also address the development of appropriate decentralised water treatment and wastewater treatment and recycling systems, including the improvement of sewage collection and urban drainage systems. Water and energy efficient and cost-effective processes, optimising use and maximising energy and materials recovery from wastewater treatment, reliable monitoring schemes to ensure safe water use and reuse, and simple and affordable operation and maintenance methods also need to be considered.

Actions focusing on drinking water purification should address multiple contaminants or focus on the identification and removal of specific classes of pollutants (e.g. pesticides, fertilisers, geogenic contaminants, etc.).

In actions on wastewater treatment and drinking water purification, the design, development and deployment of sensors and decision support systems for real time monitoring and control of water quantity and quality, should be considered.

In all cases, the involvement of relevant stakeholders, including industry partners, local authorities, water users, research centres and social communities, and consideration of possible gender differences in the use and need of water, is essential in order to enable a strong demonstration component involving transfer of European knowledge, expertise and technology to facilitate future in-house replication. Understanding and assessing the impacts of the developed innovative solutions to the society, in particular for the vulnerable societal groups, should be duly considered. Moreover, in addressing water allocation, the governance of water management and the efficiency of water use, especially for irrigation which is the largest water consumer, should be considered. Actions may also choose to address a combination of the above challenges at river basin scale and should capitalise on knowledge acquired in the projects supported by the joint coordinated EU-India call on water under FP7. Activities are expected to focus on Technology Readiness Levels (TRL) 3 to 6.

In line with the strategy for EU international cooperation in research and innovation (COM(2012) 497), international cooperation is encouraged, in particular with the EU's strategic partners – which India is, as confirmed at the EU-India Summit on 30 March 2016. Actions should include Indian partners in a balanced way. This call should also contribute to the objective stated in the Memorandum of Understanding on water cooperation between India and the EU adopted on 7 October 2016 aiming at strengthening the technological, scientific and management capabilities of India and the EU in the field of water.

Proposals should pay attention to the special call conditions for this topic. Both the Indian Department of Science and Technology (DST) and the Department of Biotechnology (DBT) within Indian Ministry of Science and Technology, are committed to co-fund the Indian entities and thus Indian participants will not be eligible for EU funding. This call text will also be available on the websites of DST and DBT respectively and it will refer to the agreed CoFunding Mechanism (CFM)⁶⁰ between the EC and DST and DBT. Proposals are to be developed jointly with the Indian entities. For funding purposes, the Indian entities must submit the proposal to DST and/or DBT. Evaluation will be done jointly according to the conditions specified in the CFM and respecting the EC peer review rules.

The Commission considers that proposals requesting an overall contribution (including both EU and India funding) of between EUR 3 million and 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. The funding support for the Indian entities will be according to the DST and/or DBT funding guidelines.

Expected Impact

The project results are expected to contribute to:

- improved and efficient wastewater treatment systems, combined with recovery and reuse of energy, substances and treated water;
- improved novel drinking water purification technologies for safe drinking water with easy access at affordable cost both in rural and urban regions;

Call – Greening the economy in line with the SDGs

- improved smart and comprehensive solutions for both quality and quantity monitoring and management of water resources;
- strengthening the Sustainable Development Goals' (SDGs) agenda on water;
- boosting initiatives like the Ganga Rejuvenation Initiative⁶¹, fostering the emergence of quick-win business, affordable, innovative solutions based on integrated Indian and EU best practices;
- creating a level playing field for European and Indian industries and SMEs working in this area, paving the way for a potential joint venture for manufacturing of water treatment technologies and systems

Type of action	Research and Innovation action
Deadline	27 February 2018
Call identifier	H2020-SC5-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-12-2018.html

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

Specific Challenge

Unsustainable, non-resilient urbanisation patterns, the expansion or neglect of urban areas have caused the fragmentation, depletion and destruction of habitats, biodiversity loss and the degradation of ecosystems and their services. Increasing connectivity between existing, modified and new ecosystems and restoring and rehabilitating them within cities and at the urban-rural interface through nature-based solutions, is necessary to enhance ecosystem resilience and adaptive capacity to cope with the effects of climate and global changes and to enable ecosystems to deliver their services for more liveable, healthier and resilient cities.

Scope

Actions should develop models, tools, decision support systems, methodologies, strategies, guidelines, standards and approaches for the design, construction, deployment and monitoring of nature-based solutions and restoration, prevention of further degradation, rehabilitation and maintenance measures for urban and peri-urban ecosystems and the ecological coherence and integrity of cities. Actions should review and capitalise upon existing experiences and good practices in Europe and (for option a) China or (for option b) CELAC. **The strategies and tools should be part of an integrated and ecologically coherent urban planning and city-making process** that would secure a fair and equitable distribution of benefits from the restored urban ecology and limit its exposure to environmental stresses. Methodologies, schemes and indicators should be developed to allow for the assessment of the cost-effectiveness of the restoration measures, also accounting for their possible negative effects. **They should account for the totality of the benefits** delivered by the restored ecosystems in terms of, for example, enhancing cities' climate-proofing and resilience, enhancing mitigation options, **improving** human health and **well-being**, **reducing inequalities** and reducing cities' environmental footprint. **Actions should also dedicate efforts to awareness raising, outreach activities and education of citizens, including school children about the benefits of nature for their social, economic and cultural well-being.**

Actions should bring together European and – depending on the option chosen – Chinese or CELAC research partners, government agencies and urban authorities, private sector and civil society with relevant expertise and competence and foster participatory engagement in urban ecological restoration actions. Further to the eligibility and admissibility conditions applicable to this topic, proposals are encouraged to ensure, to the extent possible, an appropriate balance in terms of effort and/or number of partners between the EU and the international partners, which would correspond to their respective ambition, objectives and envisaged work. This would enhance the impact of the actions and the mutual benefits for both the EU and the international partners.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged. Proposals should pay attention to the special call conditions for this topic.

The participation of social sciences and humanities disciplines, addressing also the gender dimension, is crucial to properly address this topic. Cooperation and synergies with the activities undertaken within the Covenant of Mayors initiative for Climate and Energy initiative (supported by the EC) should be sought where appropriate.

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

a) Strengthening EU-China collaboration (2018)

This topic is part of the EU-China flagship initiative on Environment and Sustainable Urbanisation which aims at promoting substantial coordinated and balanced research and innovation cooperation between the EU and China.

China-based participants have the possibility to apply for funding under the Chinese co-funding mechanism and other Chinese sources.

b) Strengthening EU-CELAC collaboration (2019)

The possibility for participants from some CELAC countries to apply for funding under national co-funding mechanism should be explored.

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:

- restored and functioning urban ecosystems with an enhanced capacity to deliver their services;
- **making a business and investment case for nature-based solutions on the basis of increased evidence about the benefits from restored urban ecosystems with regards to urban liveability, climate change resilience, social inclusion, urban regeneration, public health and well-being;**
- **guidelines for cost effective urban ecosystem restoration and ecological rehabilitation measures and new planning approaches and methods.**

Call – Greening the economy in line with the SDGs

Type of action	Research and Innovation action
Deadline	Call 2018 - 1st stage - 27 February 2018 2nd stage - 04 September 2018 Call 2019 - 1st stage - 19 February 2019 2nd stage - 04 September 2019
Call identifier	H2020-SC5-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-13-2018-2019.html

Call – Greening the economy in line with the SDGs

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

Specific Challenge

It is estimated that by 2050 up to 70% of the world's population will be living in urban areas. **Urbanisation affects human health and well-being through factors such as exposure to pollutants, including noise, disasters, stressors and diseases, urban density, lack of physical activity, degraded ecosystems and erosion of natural capital, which can be exacerbated by climate change.** As acknowledged by the Habitat III New Urban Agenda, **public spaces** play a crucial role in urban interaction and systemic urban innovation and they **need to be designed and managed sustainably and equitably to ensure that the way citizens produce, consume, commute and interact within the urban fabric has a positive impact on their health and quality of life**, enhances resilience to disasters and climate change and reduces the environmental footprint of the cities. **The systemic integration of social, cultural, digital and nature-based innovation in the design, development and governance of public space** has a tremendous potential to transform these spaces into diverse, accessible, safe, inclusive and high quality green areas that increase well-being and health and deliver a fair and equitable distribution of the associated benefits.

Scope

Actions should deliver visionary and integrated solutions (e.g. therapy gardens, urban living rooms, creative streets, city farms) **at the intersection of social, cultural, digital and nature-based innovation to increase citizens' health and well-being in cities. These solutions should address social, cultural, economic and environmental determinants of health and wellbeing** and support urban communities in reducing their exposure to climate-related risks, pollution (including noise), environmental stress and social tensions, including the negative effects of gentrification.

Actions should also demonstrate how the integration of these solutions into innovative land-use management, urban design and planning could reduce health-related environmental burdens in socially deprived neighbourhoods, foster equitable access for all to public spaces, enhance their quality and use and promote sustainable urban mobility patterns.

Actions should test new transition management approaches, governance models, legal frameworks and financing mechanisms to re-design public spaces and urban commons and assess their contribution to improving health and well-being. They should promote multi-stakeholder initiatives, citizens' engagement, co-creation and co-ownership of public spaces. **Optimal and cost-effective use of behavioural games**, networks of sensors, GIS-mapping, big data, observational programmes such as Copernicus and GEOSS, and citizens' observatories should be made as appropriate to enable the integration and visualisation of data for more effective monitoring of the transition towards healthier and happier cities.

The involvement of social sciences and humanities disciplines such as psychology, behavioural science, economics, law, anthropology, sociology, architecture, or design studies, is considered essential to enhance social learning and promote the role of social and cultural innovation in transforming public spaces, with particular attention devoted to gender dynamics and diversity.

To enhance the impact and promote upscaling and replication of these solutions, projects should engage in substantial networking and training actions to disseminate their experience, knowledge and deployment practices to other cities beyond the consortium. To enhance impact cooperation and synergies with the activities undertaken within the Global Covenant of Mayors for Climate and Energy initiative and its regional components (supported by the EC) should be sought where appropriate.

Furthermore, actions should envisage resources for clustering with other ongoing and future projects on sustainable cities through nature-based solutions funded under the 'Smart and Sustainable Cities' call in part 17 of the 2016-2017 Work Programme as well as relevant projects to be funded under topics SC5-20-2019 and CE-SC5-03-2018 of this Work Programme. Cooperation with relevant actions funded under the Horizon 2020 Societal challenge 6 topic 'TRANSFORMATIONS-03-2018-2019: Innovative solutions for inclusive and sustainable urban environments' should also be sought as appropriate.

Funded projects are expected to establish long-term sustainable data platforms securing open, consistent data about the impacts of the deployed approaches and ensure interoperability with other relevant data infrastructures for effective communication, public consultation, exchange of practices, and sharing of experiences.

Proposals should pay attention to the special call conditions for this topic.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 10 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:

- **high quality, multifunctional, public spaces able to integrate digital, social, cultural and nature-based innovation to enhance health and well-being**, while ensuring 'the right to the city' as specified in the Habitat III New Urban Agenda;
- **European cities being world ambassadors of sustainable lifestyles, providing universal access to greener, safe, inclusive and accessible public spaces, also accounting for the gender dimension;**
- **participatory approaches in re-designing and transforming public spaces to increase health and well-being in cities** through innovative public-private-people partnerships (PPPPs);
- **more comprehensive assessment of the sustainability and resilience of cities through the development of health and well-being indicators;**
-

Call – Greening the economy in line with the SDGs

- establishing innovative monitoring systems to measure benefits and capture the multiple co-benefits created by nature-based solutions in terms of health and well-being.

Type of action	Innovation action
Deadline	1st stage - 19 February 2019 2nd stage - 04 September 2019
Call identifier	H2020-SC5-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-14-2019.html

Call – Greening the economy in line with the SDGs

SC5-18-2018: Valuing nature: mainstreaming natural capital in policies and in business decision-making

Specific Challenge

A broad range of economic activities are dependent upon natural capital, but natural assets are not unlimited. However, **many ecosystem services and benefits to society and business**, such as food provision, air and water filtration, disaster risk reduction, pollination, or climate regulation, **are not visible** because they are not priced on markets and hence **not currently accounted for in socio-economic decision-making**. **Incorporating natural capital – and especially ecosystems – into national accounting systems as well as policy and business practices is needed to promote more resource efficient and sustainable choices, and to support smart, sustainable and inclusive growth.**

Further to the work and progress at international level, important results have been achieved at European level under the initiative on Mapping and Assessment of Ecosystems and Services (MAES), as well as on categorising ecosystem services through the Common International Classification of Ecosystem Services (CICES). In addition, the KIP-INCA project aims to design and implement an integrated accounting system for ecosystems and their services in the EU. KIP-INCA aims to develop a comprehensive set of European-level natural capital accounts.

In addition, all businesses impact and depend on natural capital to some extent. The Natural Capital Protocol (NCP) has been published as a framework to help generate robust and actionable information for business managers to inform decisions. National and corporate accounting is still in early phases of development and long-term coherence between these two strands of work is needed.

Scope

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

a) Valuing nature: developing and implementing natural capital and ecosystem accounts in EU Member States and Associated Countries: **Actions should develop and implement natural capital and ecosystem accounts** in Member States/Associated Countries, according to the SEEA-EEA recommendations and the methodological work and guidance of KIPINCA.

Actions should further refine and implement in practice European/international guidance standards in European countries, leading to their replicability.

Actions should exploit available large scale data and link them to the EU layer for more detailed analysis, and experiment with different solutions for biophysical accounts and their valuation and monetisation. **The natural capital and ecosystem services accounts developed should be published for use by different stakeholders and for different policy and business applications.** Actions should promote the inclusion of natural capital and ecosystems services accounting in national statistics.

Actions should involve organisations both from Member States/Associated Countries that are more advanced with natural capital and ecosystem services accounts and from those that are only just starting to deal with such accounts. More experienced participants should primarily share their experience with, provide advice to and mentor less experienced participants, to enable them to rapidly implement and mainstream the methodologies. In addition, more experienced participants may choose to also develop further their own natural capital and ecosystem accounts (for instance, testing new valuation approaches and methods).

Participation and strong commitment from public authorities in charge of natural capital and ecosystem services accounts (for example, Ministries or Environment Agencies), as well as National Statistical Offices or other statistical authorities, is strongly encouraged for the success of this action. Actions should exploit the experience of KIP-INCA partners and the ongoing work of MAES.

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

b) Operationalisation of natural capital accounting in business decisions: Actions should facilitate the implementation of the Natural Capital Protocol at corporate level. They should therefore take stock of the work undertaken by ongoing initiatives, such as European and national platforms on business and biodiversity and the Natural Capital Protocol and should establish a “Valuing Nature Programme and Network”. **The network should bring together work being undertaken by business in relation to natural capital and come up with optimal scientifically rigorous solutions for operationalising and mainstreaming natural capital, including nature-based solutions, green infrastructures and biodiversity, in companies' decision making frameworks and business models. It should aim to build a community of practice through an EU network of networks of businesses, administrations and academia, engaging key stakeholders from business, government, the knowledge and research community and civil society in open source collaboration.** Together they should shape the business perception of the value of nature as a business opportunity and as a means of reducing economic risks and fostering sustainable businesses. This will also incentivise business investments in nature-based solutions. There is a need to stimulate early adoption, since potential first-movers may be risk-averse. This can be mitigated through life-long learning, training and guidance, and by demonstrating the benefits at corporate level.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 2 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:

- **mainstreaming natural capital and ecosystem services accounts at appropriate administrative or corporate levels;**
- **decision-makers acknowledging the macro-economic and the micro-economic perspective of natural capital;**

Call – Greening the economy in line with the SDGs

- **recognition of the value of natural capital and ecosystem services accounts**, attracting private and public funding for further adoption;
- **the acknowledgment, operationalising and mainstreaming of, and accounting for, natural capital**, including nature-based solutions, **and its wider value in public authorities and companies' decision making frameworks and business models.**

Type of action	Coordination and support action
Deadline	27 February 2018
Call identifier	H2020-SC5-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-18-2018.html

SC5-19-2018: International network to promote cultural heritage innovation and diplomacy

Specific Challenge

Over the years, Europe has developed world-renowned knowledge, expertise, practices, skills and technologies to protect, conserve, manage, enhance and leverage value from its rich and diverse cultural heritage. **Cultural heritage** not only provides people with a sense of identity and belonging, it also **brings a large innovation potential to a number of economic sectors such as tourism, cultural industries, urban planning, regional planning, arts and design**. It can also contribute to improving the EU's relations with other regions. Nevertheless, **in some countries cultural heritage is still an underestimated resource and/or is at risk or under threat for various reasons (e.g. lack of awareness, economic crisis, conflicts, natural and anthropogenic hazards, mass tourism, etc.)**.

Scope

Actions should establish an international network that will capitalise on EU expertise to leverage the value of European cultural heritage assets, promote heritage-led innovation for sustainable development and provide expertise and assistance, particularly where cultural heritage is at risk. **The network should include researchers, policy-makers, businesses (including SMEs), societal and cultural institutions**, including NGOs and CSOs, public and private organisations, investors, experts, innovators and citizens. Through a process of continuous dialogue, interaction and sharing of experiences, including with appropriate UN agencies, **the network should:**

- **identify, review, document and promote successful heritage-led initiatives, knowledge, innovative solutions, new governance, finance and business models, innovative regulative frameworks, tools, technologies** (e.g. Earth observation data – EU Copernicus, drones, satellite navigation and positioning, nanomaterials, ICT etc.) **and approaches for monitoring, protecting, preserving and managing cultural heritage**, and promoting its innovation potential for sustainable development, especially where cultural heritage is at risk; to further capitalize on the works of the 2018 European Year of Cultural Heritage, the network should explore possibilities for further pursuance of the innovation relevant outcomes generated during this year;
- **identify specific domains and priorities where further research and innovation is needed, accounting also for the gender dimension;**
- **analyse potential regulatory, economic, social and technical barriers and propose concrete ways to overcome them at the EU and international levels;**
- **develop guidelines, tools and methodologies to leverage cultural heritage potential for diplomacy to improve EU relations with other parts of the world;**
- **conduct capacity building to foster collective management, responsibility and ownership of heritage and awareness raising activities among public authorities, stakeholders and society**, particularly in countries where heritage is at risk, **about the potential of cultural heritage as an investment opportunity with multiple benefits for the economy, society and the environment, rather than as a cost factor.**

The network should involve institutions, organisations and relevant stakeholders from a broad range of EU Member States and Associated countries. In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with EU Neighbourhood countries and with countries in which cultural heritage assets are under threat.

The network should envisage resources for clustering with other projects relevant to cultural heritage funded under previous, current and future Horizon 2020 calls within Societal Challenge 5 in order to take due account of their outcomes. It should also create synergies with other relevant ongoing initiatives such as the JPI Cultural Heritage.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 2.5 million to EUR 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

The project results are expected to contribute to:

- more extensive protection and preservation of cultural heritage, and optimal use of its innovation potential for sustainable development;
- the emergence of a global market for heritage-led sustainable innovation, through EU-wide evidence and increased awareness among investors, practitioners and the public;
- enhanced capacity of third countries to manage, enhance and safeguard cultural heritage, particularly where it is at risk, through provision of EU knowhow and assistance;
- improved cross-fertilisation between the corresponding EU and UN policies and actions relevant to cultural heritage;
- increased support to the new EU Strategy for International Cultural Relations and more effective EU external relations through cultural heritage diplomacy.

Call – Greening the economy in line with the SDGs

Type of action	Coordination and support action
Deadline	27 February 2018
Call identifier	H2020-SC5-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-19-2018.html

Call – Greening the economy in line with the SDGs

SC5-20-2019: Transforming historic urban areas and/or cultural landscapes into hubs of entrepreneurship and social and cultural integration

Specific Challenge

Over the past decades, abandonment and decay of urban, industrial and rural heritage has occurred in many historic urban areas and cultural landscapes due to reduction of economic activities and closing down of industries. This has led to unemployment, disengagement and economic stagnation. Other areas, in contrast, have implemented regeneration processes, yet these have not always been successful as they were based on top-down decision making and implementation without engaging the local population. This has led to breaking up of traditional social structures, gentrification and overreliance on volatile sectors, such as tourism.

Thanks to their symbolic and cultural value, and to their specific urban fabric, **historic areas have the potential to be transformed into hubs of entrepreneurship, creativity, innovation, new lifestyles, and social and cultural integration reaping the opportunities offered by, for instance, emerging creative sectors, digital technologies, the sharing and 'maker' economy, and social innovation. Evidence-based intelligent leveraging of the value of historic and cultural assets can transform challenges into economic, social and cultural opportunities, while fully respecting the identity of the historic urban areas and cultural landscapes.**

Scope

Actions should develop, demonstrate and document strategies, approaches and solutions to re-activate and re-generate historic urban areas and/or cultural landscapes. They should foster innovation by relevant start-ups, cultural and creative industries, including from the digital technologies sector, small scale advanced manufacturing producers and local 'makers', craft workshops, etc. for adaptive re-use and leverage of heritage assets and social integration. Solutions should be co-created, co-managed and co-implemented at the appropriate scale (e.g. for districts, buildings, public spaces etc.) within the broader context of urban and regional development, and involving local populations, research centres, appropriate authorities, innovators, universities, city-makers movements and, where relevant, new population groups. Systemic approaches and methodologies to identify the latent capacities of historic urban areas and to activate them may be developed.

They should assess cultural and heritage values, respect the identity of the places and promote social innovation, also accounting for the gender dimension, economic sustainability, inclusiveness, social cohesion and integration in the long term. Innovation in its various forms (e.g. regulatory, governance, business, finance) should be considered. Synergies with other ongoing relevant projects, such as the European Creative Hubs Network, should be sought where appropriate.

Proposals should pay attention to the special call conditions for this topic.

Actions should envisage resources for clustering with other ongoing and future projects relevant to cultural heritage funded under previous, current and future Horizon 2020 calls within Societal Challenge 5 as well as with relevant projects to be funded under topics CESC5-03-2018 and SC5-14-2019.

The Commission considers that proposals requesting a contribution from the EU of between EUR 7 million and 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:

The project results are expected to contribute to:

- reversing trends of abandonment and neglect of historic heritage in urban areas and landscapes;
- new and tested blueprints for the socially and economically viable regeneration of European historic urban areas and cultural landscapes, with enhanced well-being and quality of life, social cohesion and integration;
- boosting heritage and culture-relevant innovation, creativity, entrepreneurship and light 'reindustrialisation' of historic urban areas and cultural landscapes;
- cross-sector collaboration, creation of job opportunities and skills in cultural and creative sectors and innovative manufacturing linked to historic heritage.

Type of action	Innovation action
Deadline	1st stage - 19 February 2019 2nd stage - 04 September 2019
Call identifier	H2020-SC5-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-20-2019.html

Call – Greening the economy in line with the SDGs

Topics with minor SSH relevance

CE-SC5-08-2018-2019-2020: Raw materials policy support actions for the circular economy

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ce-sc5-08-2018-2019-2020.html>

SC5-17-2018: Towards operational forecasting of earthquakes and early warning capacity for more resilient societies

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-17-2018.html>



Societal challenge 6

**Europe in a changing world:
Inclusive, Innovative and Reflective
Societies**

MIGRATION-01-2019: Understanding migration mobility patterns: elaborating mid and long-term migration scenarios

Specific Challenge

Global migration is growing in scope, complexity and diversity, which requires better preparedness and responses. A deeper understanding of the drivers of migration and of their interrelation with people's propensity to migrate is needed as well as projections and scenarios that are essential for appropriate planning and effective policymaking.

Scope

Patterns, motivations and modalities of migration should be explored, with a focus on new geographies and temporalities. This may include among others the changing nature of flows and factors such as international demand for and supply of labour, sector policies in countries of origin and destination, aging population in industrialised countries, demographic trends in countries of origin, migration propensity, transnational networks, the impact of corruption, shifting representations of Europe, temporary migration and return (both voluntary and forced) and forced movements linked to conflicts, environment-related threats, other relevant geopolitical factors, international development and regional policies, as well as livelihood opportunities (e.g. inequalities, income levels, poor job opportunities, working conditions, traditional gender roles). The movement of third country nationals among the various regions of the EU should also be analysed. Proposals should capture population estimates and synthesise solid data on gross international migration flows, including towards Europe, in order to identify emerging trends and anticipate future patterns. Proposals should address the gender dimension of international migration and large-scale movements of migrants, including minors unaccompanied and with their families. Proposals should also reappraise assumptions about migration and identify key uncertainties. The involvement of refugee and migrant scholars and scientists from relevant backgrounds and disciplines is strongly encouraged.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will enhance the knowledge base on migration-related flows, drivers, attitudes and behaviours in qualitative and quantitative terms. Scenarios and projections will inform evidence-based governance and regulatory frameworks at international and EU levels as well as relevant sector policies in EU Member States, e.g. social, health, education and labour market related policies and the impact on welfare policies and public social security systems. The action will also improve statistical data and methods in cooperation with national statistical institutes, relevant organisations and Eurostat.

Type of action	Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/migration-01-2019.html



MIGRATION-02-2018: Towards forward-looking migration governance: addressing the challenges, assessing capacities and designing future strategies

Specific Challenge

Global migration governance regimes are emerging. There is a pressing need to identify priority areas and strategies to facilitate orderly, safe, regular and responsible migration and mobility as foreseen in the Sustainable Development Goals of Agenda 2030 and the New York Declaration of 2016. The EU is involved in the global effort to design multilevel migration governance models applicable to the Union and to its Member States.

Scope

In the context of evolving EU migration governance and EU global migration-related perspectives and responsibilities, proposals should assess governance models, including recently established partnership instruments, as well as the revision of overarching agreements, their limitations and scale-up potential, including the effects of the external dimension of EU migration policies on countries of origin and transit, and the development for governance indicators as well as a framework migration governance's measurement. The focus should be on moving from emergency and crisis management to long-term evidencebased policy responses that can address the challenges of economic development and large scale population movements. The role of international aid, development agencies, and regional policies, e.g. neighbourhood or ACP-oriented policies, should be assessed. Regulatory issues pertaining to legal migration channels and legal pathways for people in need for protection, irregular migration trajectories, trafficking in human beings and smuggling, voluntary and forced return policies, the durability and sustainability of return to countries of origin, the role of diasporas and of economic, social and political remittances may be covered among others, with a specific focus on gender-related aspects. The development of indicators on migration governance is encouraged. They should assess how local, national, regional and global norms affect the way migration policies diffuse cross-thematically among scales and across time. The analysis of the role and potential of successful bottom-up citizens' initiatives for local migration governance is also encouraged. Inclusion of partners from EU and non-EU transit and destination countries is encouraged, also in consideration of the role played by the EU and its specialised agencies.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will inform policies, programming and actions contributing to EU and global migration governance based on human rights and through multilateral development partnerships, in cooperation with unions, employers, migrant and youth associations, cities and municipalities, among others. It will contribute to developing migration governance structures, policies and instruments within Europe, in the wider neighbourhood and in the global context, including development, investment and trade policies; as well as measuring the SDGs devoted to migration governance. It will also critically accompany and appraise the reform process of the EU's asylum regimes as well as the external dimension of EU migration policies.

Type of action	Research and Innovation action
Deadline	13 March 2018
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/migration-02-2018.html



MIGRATION-03-2019: Social and economic effects of migration in Europe and integration policies

Specific Challenge

A greater understanding of the social and economic effects and impacts of migration in Europe is needed in order to obtain an objective overview of developments and to address misperceptions. In light of recent and current migratory flows, an assessment of integration policies and efforts is equally important for ensuring their effectiveness in promoting the integration and inclusion of migrants in host societies.

Scope

Proposals should take stock of the long-term effects of migration at EU aggregate and cross-national level on economic growth and productivity, employment levels and wages, entrepreneurship, and fiscal and welfare impacts. They should analyse policies related to the integration of migrants, including refugees. Particular attention should be paid to gender and vulnerable groups such as unaccompanied children and stateless persons. Attention should be also paid to economic, human capital and cultural factors in relation to the integration outcomes of different groups of migrants and the social impact of segregation. Furthermore, proposals should analyse the local and interactional dimension of integration processes and their effects on the provision of local services, workplace conditions, productivity and innovation. They should comparatively examine integration policies (labour market, education, health, civil rights, social welfare, housing, family policies, etc.), and the role of transnational institutions and networks in shaping integration at a local scale. In addition, they should estimate the efficiency, effectiveness and social impact of such policies and highlight best practices and relevant benchmarks, building on the extensive knowledge that already exists in the EU2. Finally, an understanding of past and historical experiences of integrating migrant communities, and what these can tell us about current challenges, should also be assessed. Interdisciplinary research with combined insights from disciplines such as sociology, economics, history, anthropology, cultural studies and psychology among others is needed.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will improve the knowledge base on the socio-economic effects of migration. It will provide solutions and recommendations for strengthening the effectiveness of policies targeting the integration of migrants. It will also contribute to building comprehensive strategies for integration across EU Member states, conducive to socially inclusive economic growth.

Type of action	Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/migration-03-2019.html



MIGRATION-05-2018-2020: Mapping and overcoming integration challenges for migrant children

Specific Challenge

At a time where the integration of refugee and migrant children into host societies is most pressing, education systems face multiple challenges due to growing cultural, linguistic and ethnic diversity and to socio-economic inequalities.

Scope

Proposals should generate quantitative and qualitative data and policy recommendations on the integration in schools of pupils (ISCED 0-3) from existing migration cohorts, children of refugees and asylum seekers, and unaccompanied minors, including those residing in hotspots and reception centres. They should take account of the complexity of pupils' background, including of children who are EU long-term residents with migration background and of newcomers, and should assess issues related to gender, identity, achievement, well-being, home-school links and discrimination among others. Ethnological, cultural, and anthropological perspectives should be included. Social and learning environments should be considered as well as strategies to promote resilience, avoid segregation and to enhance children's skills and well-being. Proposals can take an integrated approach, looking at how access to adequate housing, a decent standard of living, protection from all forms of abuse and exploitation, healthcare and psychosocial support, alternative pedagogical approaches and arts affect successful integration in schools. Proposals should also address (several of) the following issues: the time elapsed between arrival to Europe and access to education; year(s) spent out of education as a child; experiences of detention and deportation; governance and funding; roles and attitudes of families, communities, educational centres, civil society and local services, also from a gender perspective; preparedness of schools and teaching staff; language learning and multilingualism; educational and vocational opportunities for those who arrive past the age of compulsory schooling, as well as the role of extra-curricular activities (including sports and leisure) in promoting integration. Refugee and migrant children's lived experience and voice must be taken into account in line with Article 12 of the UN Convention on the rights of the child. Best practices supporting equal life-chances should be identified with the involvement of stakeholders, maximising the potential of existing experiences⁴, including those developed in cooperation with refugee and migrant scholars and scientists.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

Through informing policymakers, families, children themselves, teachers and other stakeholders, the action will support the advancement of effective practices for integrating migrant children in schools. The action will enhance synergies and cooperation amongst the relevant stakeholders, thereby promoting the uptake of innovative practices as well as improving monitoring and data collection. The action will also contribute to the development of the research agenda on education.

Type of action	Research and Innovation action
Deadline	13 March 2018
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/migration-05-2018-2020.html



Call - Migration

DT-MIGRATION-06-2018-2019: Addressing the challenge of migrant integration through ICT-enabled solutions

Specific Challenge

The integration of migrants, including refugees, in many Member States of the European Union and Associated Countries remains a challenge for both public authorities and local communities. ICT-enabled solutions and toolkits for the implementation of inclusion policies by public administrations may facilitate the management of the integration of migrants, improve autonomy and inclusion and therefore the lives of migrants. Such tools may help alleviate the tasks of public administrations and local authorities. They may also analyse available data and provide migrants with information on and easy access to relevant public services specific to their needs or support policy-makers and public administration at all levels in planning and taking decisions on migration-related issues through data analytics and simulation tools. **The specific cultural features, including possible gender differences, the skills and capacities of migrants to express their needs as well as the equity of access to ICT may be considered in this regard.**

Scope

An efficient management of migrant integration requires clear understanding of migrants' personal and family situation, including their legal status, origin, cultural background, skills, language skills, medical records, etc. Once such information is available to public authorities, it can improve societal outcomes to the benefit of both host countries and migrants:

1. the management of migrant integration can be facilitated, e.g. by matching their skills with those needed in the Member States and Associated Countries, by designing tailored training programmes or by creating specific decision support tools;
2. better and customised services can be delivered to match the needs of migrants;
3. more efficient integration strategies can be defined and implemented at local level for a sustainable inclusion of migrants and a fact-based public perception of migration.

Proposals should address at least one of the 3 points above, which should be piloted against a set of clearly defined goals. Processing of personal data of migrants must be conducted in accordance with EU applicable data protection legislation (Directive 95/46/EC which will be replaced as of 25 May 2018 by the GDPR) and existing regulation such as eIDAS. **Proposals should engage all actors and consider the potential for co-creation work with migrant in the design and delivery of services.** In addition, proposals should demonstrate the reusability or scalability at European level and should develop strong and realistic business plans to ensure the long-term sustainability as well as take up of the results by the identified users. **They should also engage multi-disciplinary and multi-sectoral teams** to explore the complexity of this challenge, to identify the necessary changes, and the risks and barriers to their implementation, including cultural questions.

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 4 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

New or enhanced ICT solutions and tools will facilitate the efforts of public administrations at EU, national and local levels to manage the integration of migrants. They will allow for developing and deploying the necessary processes and services in the view of the efficient identification and inclusion of migrants. They will also facilitate communication with migrants and their access to services such as community language teaching, education, training, employment, welfare and healthcare systems within the host communities.

Type of action	Innovation action
Deadline	Call 2018 - 13 March 2018 Call 2019 - 14 March 2019
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-migration-06-2018-2019.html



MIGRATION-07-2019: International protection of refugees in a comparative perspective

Specific Challenge

While policy areas such as development or trade benefit from global governance structures, a global refugee governance regime is still in its infancy. The challenge is to safeguard international law standards on the treatment of asylum seekers and internally displaced persons, address imbalances in sharing responsibilities, and ensure the EU plays a key role globally while also aligning the reform of its common asylum system to feed into the emerging regime of global asylum governance.

Scope

Proposals should examine the processes and content of the emerging international protection system, e.g. following the United Nations commitment for the adoption of a global asylum compact as well as its implementation in comparative perspective, with special focus on the EU's role and engagement. They should examine how sharing responsibilities, transferring skills and capabilities, can be organised as well as the compatibility of the emerging global asylum regime with international law, including international conventions on refugees and human rights. The EU arrangements with refugees' origin and transit countries should be assessed. Proposals should advise on the future development of asylum policies and their implementation both globally and within the EU, also addressing issues around both gender issues and equality. They should include comparative assessment of existing legal responses to protection needs and explore future options and their compatibility with international refugee law, with a view to also identifying durable solutions. Particular attention should be paid to the protection of vulnerable groups such as minors, unaccompanied or with their families, including from all forms of abuse and exploitation, and women and girls from gender-based violence and discrimination. International cooperation is encouraged, in particular with Canada, Brazil, South Africa and Jordan, as well as relevant international organisations. Furthermore, the involvement of refugee and migrant scientists and scholars from relevant disciplines is strongly encouraged.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will significantly advance the knowledge base on global migration and asylum governance by evaluating the process, discourses and outcomes of the planned compact on refugees. The action will assist European policymakers with identifying suitable strategies for engagement in the process leading to the implementation of the global refugee compact. They will also inform the EU's reform process of its common asylum system.

Type of action	Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/migration-07-2019.html



MIGRATION-08-2018: Addressing the challenge of forced displacement

Specific Challenge

Tens of millions of people live in forced displacement, many of them in protracted refugee and displacement situations for long periods of time and even generations. This is often accepted, albeit reluctantly, as a semi-permanent state of affairs given that return as a solution to forced displacement rarely takes place. The situation affects life trajectories of displaced people and poses multiple challenges for social, economic, urban and environmental services and for local investments and labour markets.

Scope:

Proposals should investigate the medium and long-term socioeconomic dimensions of mass displacement when forcibly displaced persons concentrate in camps and hosting areas or settle in unprotected and underprepared urban settings. They should also consider the sociopsychological dimensions of forced displacement and gender-related issues. Through comparative research inside and outside Europe on reception and settlement strategies and their impact on livelihoods, proposals should assess medium and long-term trends and impacts and analyse opportunities and challenges for displaced people and for hosting communities as well as the potential for and resistance to the integration of displaced persons. They should also assess existing and historical practices and develop solutions to ease the pressure on hosting communities. The interface between responses to refugee emergencies, local integration and development should be explored, including testing of innovative practices to foster dialogue and build trust and resilience among refugees and host communities alike.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will identify solutions for protracted displacement situations, also in the framework of the EU Partnership Agreements and of the United Nations and the EU migration and refugee compacts. By mapping the dynamics of interactions between the displaced and the host community and bringing it to the attention of policymakers, it will enhance policy responses to integration needs

Type of action	Research and Innovation action
Deadline	13 March 2018
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/migration-08-2018.html



Call – Socioeconomic and cultural transformations

TRANSFORMATIONS-01-2018: Research for inclusive growth: addressing the socioeconomic effects of technological transformations

Specific Challenge

Technological transformations such as automation, robotisation and digitisation have profound socioeconomic effects. They create both opportunities and challenges for the future of work, employment and productivity. At the same time, they have an impact on welfare systems and social security, on the content of skills and their acquisition, on availability and type of jobs, on occupational health and safety, and on issues related to personal and social well-being and distributive fairness. Research is needed to assess the effects of these mutations and to propose policies and interventions aimed at socially inclusive growth.

Scope

Proposals should comprehensively analyse, Europe-wide and comparatively, the effects of technological transformations on employment and labour markets. They should trace changes in the content of work and the new skills in demand. To this end, they should explore ways of measuring new skills and provide verifiable data of trusted quality. They should look at how education and training systems could be transformed in order to address evolutions in the content and organisation of work. Proposals should equally take stock of the rise of digital platforms and the platform economy in European countries and **examine associated legal, social and economic challenges and prospects. Historical, comparative perspectives on how previous industrial revolutions impacted European societies should complement the analyses.**

Furthermore, projects should evaluate the implications for social mobility and labour market polarisation (in job quality, wages, social security coverage etc.) arising from the technological changes. They should assess tax and benefits policies that could lead to a fairer distribution of gains. Gender-related aspects should be taken into account as needed. In the context of evolving patterns of labour market participation and divergent access to social security, research may explore the benefits or challenges of a universal basic income. **Proposals should also study the social investment and social protection policies and inclusive business models (e.g. social economy, social enterprises) that can lead to human capital growth and productivity gains while promoting access to labour markets and social wellbeing.** Further elements that may be explored pertain to occupational health and safety issues resulting from technological transformations. This may include the relationship between technology, productivity gains and work-life balance including the availability and use of non-work, discretionary time.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will address the **multifaceted social and economic impacts of the technological transformations** and will contribute to promoting social inclusion, economic development, fairness and well-being. It will also identify social investment policies necessary for kick-starting an era of higher skills and productivity and for reaping the benefits of technological advances. Results will pave the way for a robust European strategy for socially cohesive growth and economic competitiveness.

Type of action	Research and Innovation action
Deadline	13 March 2018
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/transfor-mations-01-2018.html



Call – Socioeconomic and cultural transformations

DT-TRANSFORMATIONS-02-2018-2019-2020: Transformative impact of disruptive technologies in public services

Specific Challenge

The challenge is to assess the potential benefits and risks of using disruptive technologies in public administrations as well as the social impact, including the impact on public servants, of using them for government processes and governance (e.g. for registers, for archiving, for decision-making processes, etc.). In addition, **the political, socioeconomic, legal and cultural implications of disruptive technologies and their acceptance** are important not only for public administrations, but also for citizens.

Scope

The use of disruptive technologies (such as block-chain, big data analytics, Internet of Things, virtual reality, augmented reality, artificial intelligence, algorithmic techniques, simulations and gamification) in public administrations, public goods, public governance, public engagement, public-private partnerships, public third sector partnerships and policy impact assessment is growing and can be very beneficial. Yet, the real potential impact of such technologies and the ways in which they can disrupt the existing landscape of public services and legal procedures and can replace present solutions and processes are largely unknown. As a result, deploying these disruptive technologies in public administration requires a thorough assessment of their potential impact, benefits and risks for the delivery of public goods. **Proposals should pilot the technology and should engage multidisciplinary partners, stakeholders and users to examine how emerging technologies can impact the public sector** (including the impact on public servants and the relation between public services and citizens) and explore in a wide-ranging fashion the issues surrounding the use of these technologies in the public sector.

Proposals should also lead to the development of business plans that would ensure the longterm sustainability of the services offered based on the used technology.

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 4 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 action will enable public authorities to develop pathways for the introduction of disruptive technologies while also addressing the societal challenges raised by such technologies. **Based on a thorough understanding of users' needs**, the action will enhance knowledge on digital democracy; develop new ways of providing public services, of ensuring public governance and of boosting public engagement with the help of disruptive technologies. It will also contribute to developing new practices, to optimising work processes and to integrating evidence-based decision-making processes in public services and in services such as health, education, social welfare and mobility.

Type of action	Research and Innovation action
Deadline	Call 2018 - 13 March 2018 Call 2019 - 14 March 2019
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-transformations-02-2018-2019-2020.html



Call – Socioeconomic and cultural transformations

TRANSFORMATIONS-03-2018-2019: Innovative solutions for inclusive and sustainable urban environments

Specific Challenge

The increasing percentage of people living in urban areas and the impact of digital technologies on public services make good governance, inclusive policies, smart planning and social and environmental sustainability ever more important for ensuring the quality of human life. Urban environments and agglomeration effects provide an ecosystem for economic growth and innovation. While the impact of the recent financial crisis on European urban areas is by no means uniform, it has led in many instances to rising socio-economic inequalities that are affecting social cohesion and resilience. **The challenge is to identify the main drivers of inequalities in different urban and peri-urban contexts** and to identify best practices and initiatives, including digital solutions and alternative participatory growth models, with potential for upscaling that can promote upward social mobility, social inclusion and cohesion, resilience and sustainable development.

Scope

a) Coordination and Support Action (2018)

The Urban Research Platform should bring together researchers, policy-makers and other experts on equitable, inclusive and sustainable urban development. It should map, assess, distil and communicate findings and recommendations from the many relevant projects on these issues funded under FP7 and H2020 and translate these into clear and applicable policy recommendations. It should facilitate knowledge sharing and connectivity between researchers, policy makers and practitioners.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 1.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b) Research and Innovation action (2019)

Proposals should assess the scale, dimensions and drivers of socio-economic inequalities in urban and peri-urban settings across different city typologies, across Europe and across demographic diversities, paying particular attention to gender differences. They should assess the effectiveness at local level of relevant policies, strategies, planning practices and other interventions aimed at promoting social inclusion, cohesion and resilience in urban environments, including new and participatory models of growth that foster sustainable and equitable prosperity. Findings should be communicated also in the form of clearly formulated policy recommendations.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

By linking research, innovation and policy, the action will support urban strategies, policies and planning practices to promote equitable, inclusive and sustainable growth, including the uptake of new, participatory and alternative growth models. It will contribute to the advancement of the EU Urban Agenda and the Sustainable Development Goal dedicated to making cities inclusive, safe, resilient and sustainable. It will also inform the continuous development and implementation of Smart Specialisation as well as the urban dimension of cohesion policy.

Type of action	Coordination and Support action; Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/transformations-03-2018-2019.html



Call – Socioeconomic and cultural transformations

TRANSFORMATIONS-04-2019-2020: Innovative approaches to urban and regional development through cultural tourism

Specific Challenge

The various forms of cultural tourism in Europe are important drivers of growth, jobs and economic development of European regions and urban areas. They also contribute, by driving intercultural understanding and social development in Europe through discovering various types of cultural heritage, to the understanding of other peoples' identities and values. However, although cultural tourism by its nature invites cross border regional and local cooperation, its full innovation potential in this respect is not yet fully explored and exploited. The level of development of cultural tourism between certain regions and sites is still unbalanced, with deprived remote, peripheral or deindustrialised areas lagging behind whereas high demand areas being overexploited in an unsustainable manner. There is also a significant knowledge gap in terms of availability of both quantitative and qualitative data on the phenomenon of cultural heritage tourism and on understanding its contribution towards cultural Europeanisation and economic and social development in Europe.

Scope

a) Research and Innovation action (2019)

Proposals should comparatively assess how the presence, development, decline or absence of cultural tourism has affected the development of European regions and urban areas. They should investigate motives for cultural tourism and assess the effectiveness and sustainability of multilevel strategies, policies, trends and practices in attracting, managing and diversifying cultural tourism in Europe in view of identifying best practices that should be communicated to policymakers and practitioners. This should include considerations of specific strategies to promote cultural tourism at a regional, national and European level, including use of structural investment funds where appropriate. Minority cultures and regions as well as urban areas currently less attractive to cultural tourism should receive special attention. **Historical perspectives, as well as comparison with lessons learned at international level on the emergence of particular forms of cultural tourism or reasons for cultural tourism in particular areas should also be investigated.** Innovative methods and techniques, including statistical tools and indicators, for measuring and assessing various practices and impacts of cultural tourism should be developed and tested. Proposals should also deploy place-based and participatory approaches to investigate the relation between intra-European cultural tourism and Europeanisation and whether it impacts identities and belonging. The Commission considers that proposals requesting a contribution from the EU in the order of EUR 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b) Innovation action (2020)

Expected Impact

The action will improve policies and practices on cultural tourism at various levels. It will also provide strategic guidance at European level concerning the efficient use of European Structural Investment Funds. In addition, it will contribute to the establishment of partnerships between public and private stakeholders in this area. Creation of innovative quantitative/statistical as well as qualitative tools and methods will improve available data on and understanding of the impact of cultural tourism on European economic and social development and on cultural Europeanisation.

Type of action	Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/transfor-mations-04-2019-2020.html



Call – Socioeconomic and cultural transformations

TRANSFORMATIONS-05-2018: Cities as a platform for citizen-driven innovation

Specific Challenge

Public institutions in Europe are increasingly challenged to find new ways to provide public value in an open, transparent way. In a growing number of small and large cities across Europe, citizens are engaged and mobilised to demonstrate their ability in creating innovative solutions for important social issues. **The challenge is to capture the creativity of these local solutions and their potential opportunities, both from a social and a market perspective, including the potential for sustaining diverse and alternative economies, slow economies among them.**

Scope

Proposals should capture successful innovative practices that are emerging in Europe particularly from those urban areas that effectively absorb, develop and create new knowledge and ideas, and turn this knowledge into social and economic development. In particular, they **should take stock of how citizens are increasingly engaging in the experimentation and the development of new solutions blending technological, non-tech, cultural and social practices, e.g., frugal technologies.** The issue is how to scale up these community-driven approaches without compromising their participatory character. Citizen-driven innovation also increases the possibilities for a broader range of people to become directly involved in all stages of social action and innovation, thus enhancing co-creation while boosting equal opportunities and promoting social integration. **Proposals should also assess how citizen-driven collaborative innovation can help overcome the lack of equity as regards both the access to ICT solutions and the concrete involvement in the innovation process of traditionally underrepresented social groups, particularly in those contexts affected by socio-economic and ethnic differences and by gender disparities.** Proposals should also deal with approaches able to attract different types of stakeholders involved in the innovation value chain, starting from schools and universities, public administrations, and private organizations as well.

The Commission considers that a platform bringing together hubs, incubators, co-creation spaces etc. and requesting a contribution of EUR 1 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 action will enhance scaling-up and expand opportunities for innovations created by citizens across Europe. It will provide a wider European scale to innovative practices based on experimentation, particularly testing and engaging in local cocreation, in living labs, in designing city experimental areas bringing new opportunities to light. It will provide policy-relevant solutions to local governments on how to enable citizen-driven innovation to develop and strengthen common welfare. It will allow for a smoother sharing of best practices between European urban areas, thus also enhancing community building, and move beyond traditional innovation processes that often exclude the end-user perspective, and thereby contribute to sustainable growth and employment.

Type of action	Coordination and support action
Deadline	13 March 2018
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/transformations-05-2018.html



Call – Socioeconomic and cultural transformations

TRANSFORMATIONS-06-2018: Inclusive and sustainable growth through cultural and creative industries and the arts

Specific Challenge

The development of cultural and creative industries (CCIs) is vital for a vibrant economy and as a means of revitalising EU regions. The CCIs employ 7.5% of the EU's workforce and add around EUR 500 billion to GDP. CCIs also contribute significantly to youth employment and were remarkably resilient in the context of the economic crisis. However, they still do not benefit from the support of a comprehensive sectorial policy scheme in most Member States and Associated Countries or at the EU level.

Scope

Proposals should develop a comprehensive understanding of CCIs, improving indicators at national and at EU level. **Using multidisciplinary qualitative and quantitative research approaches as relevant, they should assess knowledge gaps on the role of specific skills (including digital and artistic) and traditional crafts, education and training, and design and creativity.** Proposals should explore the conditions for a successful CCI sector, considering business models, resilient strategies and innovative solutions to boost sustainable employment and growth in the sector, and their interactions with research and development processes, especially for the self-employed and micro enterprises. **The impact of employment patterns, also considering its gendered dimensions, digitisation, financing models, tax incentives and IPR protection** across sectors and the impact of national and regional Smart Specialisation Strategies should be addressed. **Proposals should also assess how cultural and creative industries and the arts relate to and represent cultural diversity and how and to what extent they promote the access of all citizens to their experiences, services and products.** Cocreation and stakeholder participation are considered important approaches to this topic.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will formulate recommendations in support of regional, national and European policies in the field of cultural and creative industries. It will inform, mobilise and connect relevant sectorial and policy stakeholders and increase awareness of the economic and societal issues at stake. It will also improve statistical data and quantitative and qualitative methods in cooperation, when appropriate, with national statistical institutes, relevant international organisations, networks, research infrastructures and Eurostat with a view of enabling short, medium and long term tracking of national and EU performance in CCIs.

Type of action	Research and Innovation action
Deadline	13 March 2018
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/transfor-mations-06-2018.html



Call – Socioeconomic and cultural transformations

DT-TRANSFORMATIONS-07-2019: The impact of technological transformations on children and youth

Specific Challenge

The ICT are generally valued in terms of skill development, learning and future employability of young generations. Educational and training institutions are getting equipped with ICT tools and educators are trained for designing activities aimed at digital literacy and for making use of media for educational purposes. The time children and young people spend on ICT has been increasing in school, at home and for leisure. However, research on the impact of ICT on health, lifestyles, wellbeing, safety and security has identified potential threats. Moreover, the quantity and quality of digital media use vary accordingly to family backgrounds, with the risk of widening the educational divide between children from favoured and disadvantaged groups. **The challenge is to develop a solid and independent multidisciplinary and longitudinal knowledge base that explains under which conditions harmful versus beneficial effects occur so that effective social, educational, health and online safety policies, practices and market regulation can be developed.**

Scope

a) Research and Innovation action

Proposals should assess the online behaviour of children and young people as well as their use of digital content and devices by socio-economic, gender and age group, with attention to motivations for using ICT at home, for leisure and in schools or training institutions. Robust methodologies for measuring and explaining long-term impacts in areas such as skills and competencies (i.e. digital and media literacy, innovation and creativity, learning and socioemotional competencies and more specific labour market relevant skills), wellbeing and (mental) health or other relevant aspects of brain development should be developed and tested across EU level. Methodologies should focus on understanding why and how some children and adolescents benefit from ICT use while others seem to be impacted negatively. Evidencebased models identifying and analysing at-risk groups can be developed. **Proposals should take into account diversity as appropriate (age, cultural, social and economic background, gender etc.) and address the impact of ICT use on education inequalities.** (Lack of) equity of access to ICT across social groups should also be considered. Children and young people should be active collaborators in the project.

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

b) Coordination and Support action

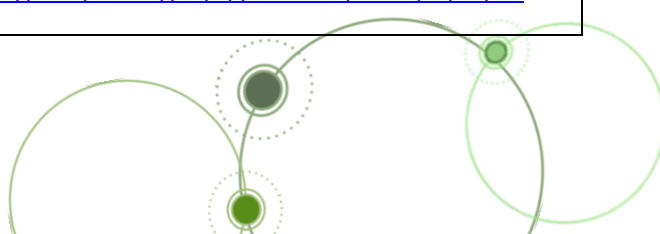
This coordination and support action should aim at the establishment of a Pan-European platform to co-ordinate research activities in the EU Member States and Associated Countries with the purpose of developing a knowledge base, and filling current gaps, into **how children and young people behave and interact online as well as the risks they may encounter while online. Proposals should pay particular attention to the vulnerability of children and young people in the digital environment and propose solutions for building online resilience, while also taking cultural and gender-related issues into account.** Through the proposed platform, **researchers across different countries, disciplines and approaches should share existing knowledge, fill research gaps, build capacity and work towards a consensual framework for future work.** Based on the evidence base, policy recommendations should be developed on how to best protect and ensure positive online experiences for children and young people. In addition, emerging issues such as the rise of hate speech and radicalisation should be addressed.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 1.5 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

Explanatory models will inform relevant stakeholders and practitioners on the long-term effects of ICT on child development and on practices that maximise risks (risk factors), minimise risks (resilience factors) and maximise benefits (enhancing factors). The action will contribute to better regulation (e.g. labelling, evaluation of ICT educational tools, protection of online users) and to a safer and more beneficial use of digital technologies at home, for leisure and in educational settings by children and young people. It will formulate recommendations in support of national and European policies in the field. The action will enhance cooperation between schools and families (school-community partnership) in ensuring safe and productive ways of using ICTs. It will also improve statistical data, generate innovative quantitative and qualitative methods as needed, and expand the knowledge base on in-depth case studies.

Type of action	Coordination and Support action; Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-transformations-07-2019.html



Call – Socioeconomic and cultural transformations

TRANSFORMATIONS-08-2019: The societal value of culture and the impact of cultural policies in Europe

Specific Challenge

Culture has been an important element of public policy for social, cultural and political cohesion and inclusion throughout European history, and its potential could be significantly enhanced. Although it is often seen today from the angle of economic value added, culture generates additional societal value in terms of well-being and by promoting identity and belonging, inclusiveness, tolerance and cohesion. Culture is also a source of creativity and innovation. **The challenge is to develop new perspectives and improved methodologies for capturing the wider societal value of culture, including but also beyond its economic impact. Improved cultural value measurements and case studies also need to be developed in support of effective and inclusive policies and institutional frameworks that offer a convincing vision for citizens to cope with current cultural and societal transformations.** In order to contextualise the debate on the societal value of culture, part of the challenge is to comparatively study the visions that underlie cultural policies as held by policy-makers and as embedded in institutions responsible for designing and implementing these policies at European, national and local levels.

Scope

Proposals should assess and develop appropriate methodologies and perform comparative qualitative, participative and statistical analyses at national and EU level to map the various forms of cultural engagement, assess the role of cultural participation as a source of wellbeing, and identify the benefits of cultural engagement across population segments. The historical role of culture in integrating and dividing Europe should be addressed with a view to learning more about the specific conditions in which cultural integration occurs. The nature and degree of the contributions stemming from cultural engagement to intercultural dialogue, cultural identity and community building should also be assessed. On the basis of innovative approaches and a representative geographic coverage of different parts of Europe, proposals should explain how cultural values are constructed in the age of social media, internet and television across different socio-economic groups. They should also investigate how urbanisation, spatial and social segregation, gender and rising diversity in European societies influence the formation of cultural values. In addition, proposals should assess the goals, strategies and effectiveness of cultural policies and institutions in evoking, transferring and maintaining cultural value, as well as addressing issues such as diversity and inclusion.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will provide new methodologies for capturing the societal value of culture in contemporary societies. It will improve statistical data and methods for capturing cultural impacts in cooperation, when appropriate, with national statistical institutes, relevant international organisations, networks, research infrastructures and Eurostat. It will also equip policymakers with effective tools for measuring, understanding and enhancing the impact of cultural policies. Participatory and co-creation approaches involving a wide range of stakeholders will contribute to innovative scientific and policy results.

Type of action	Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/transformations-08-2019.html



Call – Socioeconomic and cultural transformations

SU-TRANSFORMATIONS-09-2018: Social platform on endangered cultural heritage and on illicit trafficking of cultural goods

Specific Challenge

Initiatives to protect endangered cultural heritage and to stop their illicit trade are multiplying, with international bodies, the EU, national governments and other institutions developing useful, though mainly uncoordinated, initiatives. The challenge is to take stock of ongoing initiatives, promote mutual learning and coordination, and identify knowledge and intervention gaps.

Scope

The platform should bring together the research community, public and private actors, and policy makers at national and international levels working on issues related to the illicit trafficking of cultural goods and on the protection, preservation or reconstruction of cultural heritage in danger. Traffic routes, provenance research (including satellite imagery), economic aspects (including links to terrorism), heritage memory preservation (including safe heavens and 3D reconstruction), return and restitution, and other responses such as legislation, training, and awareness raising programmes for specialised communities (art curators, galleries, collectors and dealers) and the general public should be considered. The platform should map past and ongoing research, collect, analyse and promote best practices from Europe and beyond, and become a major European reference for transnational and interdisciplinary networking in this policy area.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 1.5 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 action will facilitate the uptake and dissemination of research and best practices, thereby contributing to the development of strategic and integrated European and international policies and interventions. It will develop toolkits and recommendations for a variety of stakeholders. It will also build a consensus on future needs and support the EU in developing an innovative and focused research agenda on endangered cultural heritage.

Type of action	Coordination and support action
Deadline	13 March 2018
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-transformations-09-2018.html



Call – Socioeconomic and cultural transformations

TRANSFORMATIONS-14-2018: Supply and demand-oriented economic policies to boost robust growth in Europe – Addressing the social and economic challenges in Europe

Specific Challenge

Years after the crisis and near-zero interest rates, resilient economic growth is still low in Europe. Boosting economic growth requires concerted actions to simultaneously stimulate supply and demand side economic policies. From the supply side, the “productivity puzzle”, namely the deceleration of productivity growth despite technological advances, has regained the attention of policy and academic communities. With a view to the next decades that will bring far-reaching demographic changes, this situation will become problematic: shrinking working-age populations with fast-increasing numbers of older people and considerations on inter-generational fairness will make strong productivity gains ever more essential. Re-acceleration of productivity growth through creating a strong knowledge base is hence key for maintaining the EU's current economic and welfare position. At the same time, the ways in which knowledge-driven economies work in their national contexts and interact internationally have also changed. Therefore, productivity and growth cannot be addressed without taking into account with greater precision the impact of globalisation on national economies. **To understand productivity dynamism, one needs to study its micro foundations (intangible assets, market entry, digitalisation) and the role of public sector intangibles (culture, education, skills)** to identify their role in the growth-productivity relationship in Europe. Availability of data and official statistics for comparative economic research on these challenges is essential. Data provision and its take up in the official statistical systems in Europe is central with a view to supporting policy making. From the demand side angle, weak economic performance may reflect an unusually prolonged shortfall of aggregate demand that may have given rise to what has been called "secular stagnation". Against this backdrop, the question that arises is **what government demand policies can do to boost economic growth, and how the fiscal and monetary policy can have a redefined role in this low growth environment.**

Scope

Building on past economic research in the fields of productivity and growth measurement, proposals should analyse the underlying reasons for the "productivity puzzle", together with the impact of globalisation and demographic change on national economies, and the distribution of income flows generated by global value chains (for example by the mobility of intangible assets, the role of Multi-National Firms). Proposals should also examine the degree to which productivity may be inadequately measured due to data problems and conceptual gaps. Furthermore, **attention should be paid to both alternative explanations and the micro and macro-economic underpinnings of growth and productivity in a global context.** In this vein, **the barriers for low entry and weak dynamism (finance, skills, knowledge diffusion, scaling-up) in European SMEs and start-ups should be elucidated. Understanding the role of the government sector and its intangibles for European growth and productivity dynamism is also important.**

Research should pay strong attention to improved or even new measurements and accompanying macro- and firm-level statistics on productivity, intangible assets and global value chains and their interactions. Thus, **collaborative statistical and economic research** should integrate the new and improved statistics and data in the official statistical system in a sustainable fashion. Along with better measurement and statistics, the combined effects of globalisation and technological change in terms of their distributional impacts through labour market dynamics and innovation remain central questions to be addressed.

Furthermore, **proposals should focus on understanding whether the growth stagnation of the past years is truly "secular" or not and, what kind of fiscal and monetary policy tools** e.g. interest rate policies, **would be well equipped to support growth-enhancing reforms. Proposals should focus on understanding whether demand stabilisation policies have changed since the crisis what the role of fiscal and monetary policies,** e.g. the role of balance sheet policies, would be with a view to boosting aggregate demand.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

This research action will foster new economic policy thinking and bring about new statistical advances concerning how to address the challenges of maintaining productivity in an ageing society with intergenerational fairness, investment, globalisation and macroeconomic policies, and will thereby address key concerns of citizens in Europe. The research will improve the European statistical systems and policy design in key economic areas.



Call – Socioeconomic and cultural transformations

Type of action	Research and Innovation action
Deadline	13 March 2018
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/transformations-14-2018.html

Topics with minor SSH relevance

DT-TRANSFORMATIONS-11-2019: Collaborative approaches to cultural heritage for social cohesion

<https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-transformations-11-2019.html>

DT-TRANSFORMATIONS-12-2018-2020: Curation of digital assets and advanced digitisation

<https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-transformations-12-2018-2020.html>

TRANSFORMATIONS-13-2019: Using big data approaches in research and innovation policy making

<https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/transformations-13-2019.html>



GOVERNANCE-01-2019: Trust in governance

Specific Challenge

Trust is a fundamental condition for a fair and cooperative society. It also plays an important part in contributing to social capital. While a degree of distrust may be required for a well-functioning democracy, waning trust in governments and other institutions and in the EU can impact European governance in multiple ways. The challenge is to restore and improve trust as a basis for sustainable and legitimate governance.

Scope

Proposals should reappraise definitions of and approaches to trust in and between governments, in public authorities and other public institutions as well as in private actors having due regard to the philosophical, ethical and psychological foundations of trust and trustworthiness. This should include amongst others the EU, the Euro, political parties and financial systems, and may include markets and regulatory institutions, the media as well scientific expertise and institutions. Proposals should also investigate possible correlations between the levels of trust in national governments and in the EU as well as their underlying dynamics. The relationship between trust and distrust should be clarified to identify which levels are conducive to stable, sustainable and fair social relations and governance as well as the thriving of citizens. Factors contributing to and affecting trust in governance at various levels, including transparency and accountability, should be investigated too.

Proposals should identify potential thresholds of decreasing levels of trust, i.e. junctures when distrust becomes a game changer. They should also investigate, both empirically and normatively, possible relationships between trust and inequalities, trust and legitimacy as well as between trust and the quality of democracy. Possible correlations between trust, social inclusion and belonging should also be considered. In addition, research may consider whether and under what conditions participatory practices beyond electoral participation are trust enhancing including transparent and open decision-making. The role of civil society in the underlying dynamics of trust building should be investigated too. In addressing the issues above, experimental research should be performed as relevant. The action should also develop criteria, indicators and early warning mechanisms for detecting weak signals of decreasing trust. The role of the media, including social media, language, news generation and new phenomena such as fake news should be examined. Scenarios on consequences of (further) decreasing trust should be developed which may draw on experiences from outside Europe where relevant.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

By enhancing the knowledge base on trust, including the factors determining changes in trust, the action will feed into various initiatives to restore and improve trust in governance and enhance the quality of democracy. It will also contribute to improving trust in science and to constructing trust-enhancing narratives for national governments and EU governance

Type of action	Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/governance-01-2019.html



GOVERNANCE-02-2018-2019: Past, present and future of differentiation in European governance

Specific Challenge

Recent challenges faced by the EU raise the question of whether Member States will continue on the same integrationist track. Differentiation, which has been core to the constitutional architecture of the EU, has gained prominence in the light of recent manifestations of centrifugal forces. The challenge is to ascertain whether and how much differentiation is necessary, conducive, sustainable and acceptable as well as how future approaches towards differentiation fare in the light of these findings.

Scope

a) Research and Innovation Action (2018)

Proposals should analyse the causes and effects of differentiated integration and under what conditions it facilitates policy-making, problem solving and policy implementation. They should also situate differentiated governance in its historical context and draw on previous experiences with differentiated governance and its relation to the experience of societal crises, as well as changes to the EU including enlargement. This should include in-depth comparative explorations of the philosophical foundations of different visions and conceptualisations of integration and differentiation as well as reappraising existing models and developing novel theories. Ramifications of different degrees and types of differentiation for narratives on European constitutionalism and identity should also be considered as well as the effects that these may have for potential accession countries. Opportunities, benefits and risks of more or less differentiation, both normatively and empirically, also including implications for democratic governance, should be studied. Consideration could be given to the perspectives for regional and local authorities. Historical and contemporary visions for Europe should be considered in their relation to differentiated integration.

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

b) Coordination and Support Action (2019)

The coordination and support action should establish a research network aiming to support policy-making on differentiation both in advising on appropriate approaches to differentiation tendencies and proposals, but also with a view to better anticipating and preparing the EU for future differentiation scenarios²¹.

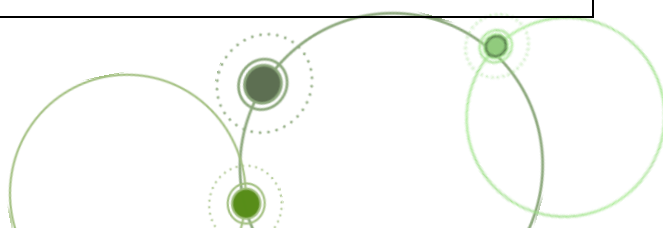
To this end, it should take stock of and synthesise the results of research actions conducted at EU level and at other levels as relevant (e.g. national and regional). Collaboration with the projects funded under the research and innovation action under point a) in this topic is strongly encouraged.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 1.5 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 actions will support policy decisions on different levels of differentiations across a comprehensive range of policy areas, thereby improving EU's capacity and resilience when it comes to constructively approaching and designing future differentiation scenarios. They will provide a comprehensive knowledge base upon which scenarios and models of future differentiation will be devised. By mobilising and linking experts and relevant stakeholders, the actions will contribute to linking research and policy in the area of differentiation.

Type of action	Research and Innovation action, Coordination and support action
Deadline	Call 2018 - 13 March 2018 Call 2019 - 14 March 2019
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/governance-02-2018-2019.html



GOVERNANCE-03-2018: Addressing populism and boosting civic and democratic engagement

Specific Challenge

Mainstream political parties are being increasingly perceived as not addressing adequately the challenges faced by the EU and its Member States. At the same time, support for populist parties, movements and ideas is on the rise. The challenge is to analyse the phenomenon of populism and its consequences for European democracies and the European project. In addition, innovative ways of understanding and addressing the causes of populism as well as strategies for strengthening democratic values and practices need to be identified.

Scope

Proposals should analyse populism comprehensively, drawing also on historical and comparative perspectives, philosophical, sociological, cultural and gender-based explanations, and foresight. They should also examine whether and how populism is related to structural socio-economic mutations or destabilisations of politico-economic paradigms. The evolving character and emergence of new political parties as well as the role played by both traditional and social media and public opinion should be studied, including changes in political and social functions over time. The significance of charismatic leaders for the cause of populism should also be considered as well as other factors such as perceptions of elitism and establishments, which may attract citizens to populist movements. A central question should be how the potential of groups under-represented in public affairs, particularly younger citizens, to engage in public affairs and their civil responsibilities could be harnessed for constructive democratic engagement. The role of schools, local communities and digital media should be considered as well as new forms participation.

Proposals should also assess to what extent populism in Europe is tied up with negative orientations (e.g. anti-globalisation, anti-EU, anti-immigrants, anti-minorities), a sense of nostalgia or nativeness, and nationalist ideologies. Research should also investigate in which ways populism in Europe may be a transnational phenomenon and how it may have been affected by European integration. Comparisons between manifestations of populism inside and outside Europe, and over time, may be made. Research should also assess actions that have been taken to counter populism as well as how populism affects the policy-making process.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will enhance the knowledge base on populism in comparative and historical perspective. It will develop indicators as well as medium to long-term scenarios on the consequences of populism, which will support policies, narrative construction and other actions to address the phenomenon.

Type of action	Research and Innovation action
Deadline	13 March 2018
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/governance-03-2018.html



GOVERNANCE-04-2019: Enhancing social rights and EU citizenship

Specific Challenge

Boosting social rights can help address divergence in social trends among Member States and reduce the risk of socio-economic shocks. At the same time, social rights are essential for the full realisation of EU citizenship and reaching the EU's targets in reducing poverty and social exclusion. By mitigating social risks and by assisting people with transitions and vulnerabilities, social rights can boost trust to public governance. The challenge is to integrate the social dimension into European policies and to connect it with European citizenship going beyond the traditional focus on mobile citizens to look also at those who are "immobile".

Scope

Proposals should examine how European citizens have been exercising social rights (e.g. to social protection, housing, health, education, access to labour markets, working conditions, including health and safety at work, mobility) in the wake of the economic crisis. The role of the Member States in protecting social rights should be considered as well as the situation of underrepresented and vulnerable groups, including gender aspects. Proposals should analyse how the EU supports citizens' access to social rights and policy levers to foster upward social convergence in the design of employment policies and social protection systems. They should equally establish the relationship between social policy instruments in Member States and outcomes in terms of social inclusion and fairness and should identify policy priorities. Furthermore, they should assess EU social indicators such as the at-risk-of-poverty rate, material deprivation and quasi-joblessness, thereby aiming to strengthen the statistical base. Developments concerning the European Pillar of Social Rights should be studied, including how they can contribute to the exercise of social rights and to social cohesion. The European Pillar of Social Rights brings forward key social rights of citizens structured around three categories: equal opportunities and access to the labour market, fair working conditions, and social protection and inclusion. The merits or pitfalls of harmonisation in social policy among Member States should be investigated. Proposals should also explore conceptualisations and possible content of social citizenship and may consider citizens' own perceptions and understandings of the social dimension of citizenship. Furthermore, attention should be given to the complex links between the exercise of social rights of European citizens and developments in terms of economic growth, inequality trends and social well-being. Studies should also include a historical and comparative dimension when examining the interplay between these factors in European countries.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will contribute to advancing the state of the art and normative content of EU social citizenship. It will also contribute to the implementation of the European Pillar of Social Rights. It will put forward recommendations on the exercise of EU social rights as an integral part of EU citizenship and on upward convergence. It will also contribute to constructing narratives of European citizenship.

Type of action	Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/governance-04-2019.html



Call – Governance for the future

DT-GOVERNANCE-05-2018-2019-2020: New forms of delivering public goods and inclusive public services

Specific Challenge

Governance is being transformed by new approaches to delivering public services which allow for the involvement of citizens and various other actors. The challenge is to critically assess and support as needed this transformation based on an open collaboration and innovation platform supported by ICT ('government as a platform') and on an open environment and ecosystem with clear frameworks and guidelines for modular services quality ('government as a service') in accordance with the EU eGovernment Action Plan 2016-2020 22 and the European Interoperability Framework Implementation Strategy.

In particular, to deliver better public services, public administrations need to regroup resources together under common infrastructures at the European level that serve the needs of various actors and enable the participation of all relevant communities. In addition, to ensure a cost efficient provision of inclusive digital services, there is a pressing need to identify gaps in accessibility solutions, to establish related best practices, and to promote training, awareness raising and capacity building.

Scope

In a context of open government and digital democracy, the role of the government is changing due to its use of ICT and to the increasing pervasiveness of ICT across all parts of society. In addition to being a manager of societal assets, government is becoming a provider of tools, opportunities, guidance and incentives for co-creation as well as a guarantor of public value over the longer term.

a) Research and Innovation action

Proposals should develop and demonstrate the potential for sharing common services with different actors (public and private and third sectors) to achieve efficiency and effectiveness in these collaborations. **The proposals should also evaluate the role and responsibility of the public authorities and of the other actors delivering public goods and services in the new governance model and the related partnerships**, including in terms of the challenges of ensuring secure access and use. Evidence of the benefits of the full implementation of the once-only and digital-by-default principles and user centricity should also be taken into account.

Proposals should also lead to the development of business plans that would ensure the longterm sustainability of the new governance model. **They should engage multi-disciplinary and multi-sectoral teams to explore the complexity of this challenge and to identify the necessary changes as well as the legal, cultural and managerial risks and barriers to its implementation.**

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b) Coordination and Support Action

For a cost efficient provision of inclusive digital services, the proposed action will:

1. identify gaps in the current accessibility solutions and establish related best practices,
2. **promote training, awareness raising, and capacity building.**

The Commission considers that proposals requesting a contribution from the EU of between EUR 1 and 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

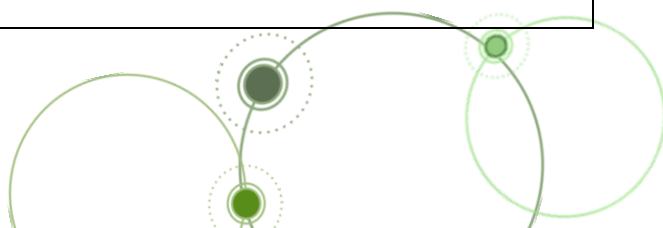
Expected Impact

Solutions for opening up and connecting public administration data and services will have a measurable impact for both businesses and citizens, leading to efficiency gains. The actions will provide for all the elements required to facilitate the migration of public administrations towards forward-looking models for the co-delivery of public services.

The actions will provide evidence of how the open government approach may reinforce trust in public institutions, which is strongly associated with citizens' satisfaction from full deployment of inclusive digital government. The actions will also contribute to establishing a culture of co-creation and co-delivery, transparency, accountability and trustworthiness as well as of continuous consultation promoting overall digital accessibility.

In addition, to support the implementation of the Web Accessibility Directive, enhanced cooperation on digital accessibility between various stakeholders will result in scalable and more affordable accessibility solutions. Overall, the actions will contribute to the widespread recognition of the need for and benefits of an inclusive Digital Single Market.

Type of action	Coordination and support action, Research and Innovation action
Deadline	Call 2018 - 13 March 2018 Call 2019 - 14 March 2019
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-governance-05-2018-2019-2020.html



Call – Governance for the future

GOVERNANCE-06-2018: Trends and forward-looking scenarios in global governance

Specific Challenge

Recent trends in nationalism, protectionism and regionalism are affecting international commitments and policies. They also put added pressure on the political and operational capacities of global governance institutions created in the mid-twentieth century for critical yet partly different purposes. This raises the prospects of shifts, including in responsibility, in global and transnational governance. The challenge is to identify coherent responses and to effectively coordinate their implementation with stakeholders.

Scope

Proposals should assess contemporary and historical developments in key institutions (e.g. United Nations, North Atlantic Treaty Organisation, World Trade Organisation, Organisation for Security and Cooperation), **regimes, processes and partnerships that aim at contributing to collective action and sharing responsibilities in taking on global problem solving**. They should also investigate the EU's role in these processes. In addition, **proposals should assess challenges faced by global governance** such as representativeness, diverging interests, trust, allocating responsibilities and legitimacy as well as difficulties related to the implementation of agreements. Responses to past challenges should also be assessed. Scenarios of stagnation, transformation or fragmentation should be considered. The impact on the implementation of the EU Global Strategy and on the achievement of the climate goals of the Paris Agreement and the Sustainable Development Goals of Agenda 2030 should be addressed. The role played by non-state actors, including from the civil and private sectors may also be addressed. Relevant actors (e.g. researchers, policymakers, civil society representatives) should be involved to ensure mutual learning and take-up of results. Due to the specific challenge of this topic, participation of international partners strategically targeted by the EU is encouraged to ensure joint mapping, scenario design and policy recommendations.

The Commission considers that proposals requesting a contribution from the EU in the order 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 other amounts.

Expected Impact

The action will equip relevant EU actors and partners with knowledge and tools for navigating and influencing effectively the emerging and future shifts in global and transnational governance, thereby increasing their readiness, resilience and capacities for developing globally coordinated strategies.

Type of action	Research and Innovation action
Deadline	13 March 2018
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/governance-06-2018.html



Call – Governance for the future

GOVERNANCE-08-2018: Partnering for viability assessments of innovative solutions for markets outside Europe

Specific Challenge

New and emerging markets outside Europe offer huge opportunities for the European industry. To compete effectively in these markets, European companies and especially SMEs need to develop partnerships with innovation players in these economies from early on and to develop receptiveness for local success. This is **crucial to better understand the specific market context and the consequent needs and demands of emerging users and consumers**. The end goal is to bring a new product, service or process to the foreign market, possibly through an innovative application of existing technologies, methodologies, or business processes.

Scope

This action will enhance the evidence base for EU R&I policy through in-depth analyses of the outcomes, experiences and impacts of a critical number of viability assessment projects of innovative solutions for markets outside Europe.

The assessment projects will be selected following a series of open calls organised by the action. The proposal for undertaking the action should define the organisational process for selecting the assessment projects for which financial support will be granted, including the process of selecting, allocating and reporting on the use of independent experts and ensuring no conflicts of interest.

At least 80% of the EU funding shall be allocated to financial support for the third parties carrying out the selected assessment projects. The series of open calls shall address markets of developing countries, large emerging economies (Brazil, Russia, India, China, Mexico) and developed countries with roughly the same allocation for each of these three country category.

The calls should specify that each assessment project should include a wide variety of activities to explore the practical, technological and commercial viability of an innovative solution in particular in terms of how it needs to meet local conditions and demands.

The proposal must clearly detail a fixed and exhaustive list of the different types of activities for which a third party may receive financial support such as market studies, partner search and networking, approaches for client/user involvement including societal, behavioural and cultural aspects, and other activities aimed at overcoming barriers for market introduction and uptake.

The proposal must clearly detail the criteria for awarding financial support and simple and comprehensive criteria for calculating the exact amount of such support, which may not exceed EUR 60 000 for each assessment project. The award criteria must be objective and non-discriminatory.

Each assessment project shall be led by an entity established in an EU Member State or Horizon 2020 Associated Country and shall involve at least one entity not established in an EU Member State or Horizon 2020 Associated Country. The proposal shall specify whether and how the latter would be funded according to its type of involvement (e.g. subcontractor, cooperation agreement) and its geographic origin (country automatically eligible for funding or not according to Horizon 2020 rules). Highly innovative SMEs with clear commercial ambitions and potential for high growth and internationalisation shall be targeted in particular.

The open calls must be published widely, including on the Horizon 2020 Participants Portal and through National Contact Points, and Horizon 2020 standards with respect to transparency, equal treatment, no conflict of interest and respect of confidentiality must be adhered to. The results of the calls must be published without delay, including, for each assessment project, a description of the project, the legal name and country of the third party, the start date and duration of the project, and the amount of the award.

The proposal should specify how it will promote the calls, how it will monitor and report on call results and how it will assess the quality of the outcomes and experiences from the assessment projects, as well as how it will provide regular in-depth analyses and which indicators will be used for measuring the impacts achieved. **Analyses should draw up R&I policy conclusions on questions such as which additional joint R&I activities in third countries should be supported, what framework conditions for R&I cooperation need improving, and what further R&I support services should be implemented.**

The Commission considers that a proposal requesting a contribution from the EU of up to EUR 9 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting another amount. The selected beneficiary or beneficiaries should have a solid operational and financial capacity.

Expected Impact

- Economic growth and job creation, both in Europe and in the target countries, as well as additional societal and environmental benefits.
- Increased European economic and industrial competitiveness and excellence and participation in international value chains.
- Inclusion of locally developed and accepted technology and business models, including through co-creation with innovation players in the target countries.
- Greater availability, uptake and use of innovative solutions responding to the specific local needs and circumstances of the target countries and markets.
- R&I policy conclusions based on better connections and larger insights into market conditions outside Europe.



Call – Governance for the future

Type of action	Coordination and support action
Deadline	13 March 2018
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/governance-08-2018.html



Call – Governance for the future

SU-GOVERNANCE-10-2019: Drivers and contexts of violent extremism in the broader MENA region and the Balkans

Specific Challenge

Parts of the broader Middle East and North Africa (MENA) region and of the Balkans have been experiencing ethnic, religious and territorial conflicts and civil wars as well as a rise in violent extremism fuelled or justified also by religious interpretations. **More empirical and interdisciplinary research is needed to understand the various historical, geopolitical, socioeconomic, ideological, cultural, psychological, and demographic factors that drive these conflicts and violent extremism in these regions.** The various ways in which these phenomena impact Europe also need closer scrutiny.

Scope

Proposals should produce country and regional analyses of the interplay between religion, politics and identity. This should include country and regional comparisons. **Religious extremism in particular should be addressed from angles such as drivers, narratives, authority figures and formal leadership.** Radical interpretations and appropriations of religion to justify violent extremism as well as their impact on individual rights (including women's rights and gender issues more broadly) should be studied. Links to recent developments with an impact on Europe - such as the issue of foreign fighters and the role of diasporas and community leaders - should be assessed.

Concrete proposals should be made on which preventive measures are effective and should be stepped up. In particular, research should examine to what extent this is the case with measures such as strengthening moderate voices among religious and other communities, fostering education and inclusion as tools for reconciliation, promoting online media literacy and countering radical propaganda. Proposals should involve relevant actors (e.g. policymakers, religious leaders, representatives of civil society) to ensure mutual learning and take-up of results.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

The action will improve the knowledge base on violent extremism in the broader MENA region and the Balkans. It will ensure a step-up in mutual learning between the EU and third countries in light of common challenges.

Type of action	Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-governance-10-2019.html



SU-GOVERNANCE-11-2018: Extreme ideologies and polarisation

Specific Challenge

Extreme ideologies can lead to social disruption, distrust and lack of empathy, diminished civic capacity, social tensions, clashes, hate speech, hate crime, conflicts and violence. The challenge is to produce a solid knowledge base on how extreme ideologies and accompanying behaviours affect the social fabric, bonds and cohesion of our societies, communities and cities. A better, more operational understanding of why, when and how extreme ideologies lead to societal polarisation is needed.

Scope

Proposals should take stock of available knowledge, lessons learned and solutions from existing EU, national and local research and practice on extreme and polarising ideologies and societal tendencies towards radicalisation in Europe. They should systematise knowledge on the drivers of these radical ideologies and tendencies, on the possible links with other types of polarisations (e.g. socio-economic inequalities, stigmatisation, discrimination or affective polarisation) and on political, socioeconomic and cultural consequences. Historic and cultural roots of extreme ideologies should also be investigated. The impact of traditional and new media and of political discourses should be addressed. Proposals should also explore the interconnection between various types of extreme ideologies, in particular how they impact and spur one another and the impact they have on democratic debate. An integral analytical framework as well as models and cross-national indicators on polarisation should be developed. Analysis of social, economic, education, culture and youth policies etc. and initiatives set up at EU, national and local levels to counteract polarisation should be undertaken to assess effectiveness and possible gaps. Involvement of a variety of stakeholders including civil society groups is expected, and best practices for mitigating and decreasing polarisation, including practices linked to social innovation, should be identified and disseminated to relevant actors.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 1.5 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 action will equip key actors, institutions and organisations with knowledge and tools that allow for improved analysis, forecast, interventions and policies aimed at addressing polarisation and extreme ideologies. Concrete solutions for abating the sense of antagonism, fostering meaningful debates and expanding the spectrum of commonalities among people will contribute to decreasing the degree of polarisation in at-risk contexts.

Type of action	Research and Innovation action
Deadline	13 March 2018
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-governance-11-2018.html



Call – Governance for the future

DT-GOVERNANCE-13-2019: Digitisation, Digital Single Market and European culture: new challenges for creativity, intellectual property rights and copyright

Specific Challenge

The consequences of digitisation and of the implementation of the Digital Single Market on cultural diversity, on access to culture and on the creation of cultural value need to be better monitored and understood, also through joint efforts by researchers, practitioners and policy-makers. Beyond the issue of portability of cultural content, coping strategies related to legislation on intellectual property rights (IPR) and copyright at European and national levels are at the heart of current creative practices and business opportunities in the cultural and creative sectors and, as such, deserve in-depth scrutiny. Innovative solutions for measuring the impact of digitisation and of the digital market on culture are also needed. In addition, an important knowledge gap exists when it comes to the adaptive or alternative strategies of different cultural institutions and of various creative and artistic communities.

Scope

Proposals should assess the impact of digitisation on access to European cultural goods and services. Proposals should also consider whether increasing digitisation of cultural works may have contributed towards the democratisation of cultural creativity and influenced the formation of social identities in the EU, and whether IPR and copyright may have helped or hindered this process. They should provide a comparative cross-national mapping of differences in the governance and implementation of processes for IPR and copyright harmonisation and for the improvement of digital access to culture. With the aim to provide contextualised new evidence, proposals should deploy participatory research approaches targeted to specific creative and cultural sectors, interest groups, and creative and artistic communities and networks. They should also develop innovative solutions to address practices and bottlenecks jeopardising IPR and copyright protection on the one hand and erecting barriers for creative practices or culture-based business or employment opportunities on the other hand. Copyright and IPR protection and pricing policies should be assessed with a view to maximising access and stimulating creativity, creative (re)use and production. Proposals should evaluate the importance of the Digital Single Market for the for-profit, non-profit and mixed cultural and creative activities in Europe.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 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

By providing qualitative and quantitative analysis and by proposing solutions, business models and policy recommendations, the action will contribute to a better understanding of regulation and fairer accessibility of digitised cultural goods and services. It will also advise on appropriate levels of harmonisation of copyright and IPR, thereby contributing to the development and deepening of the Digital Single Market.

Type of action	Research and Innovation action
Deadline	14 March 2019
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-governance-13-2019.html



Call – Governance for the future

GOVERNANCE-15-2018: Taking lessons from the practices of interdisciplinarity in Europe

Specific Challenge

“Social sciences and humanities research will be fully integrated into each of the priorities of Horizon 2020 and each of the specific objectives and will contribute to the evidence base for policy making at international, Union, national, regional and local level. In relation to societal challenges, social sciences and humanities (SSH) will be mainstreamed as an essential element of the activities needed to tackle each of the societal challenges to enhance their impact”.

This statement in the Horizon 2020 regulation opens the way to an ambitious policy of SSH integration and its measurement and impact. Beyond the actual practices of “SSH integration” within Horizon 2020 already monitored by the European Commission **this Coordination and Support Action should look at integration/interdisciplinarity practices within and outside of Horizon 2020 both between SSH and other sciences as well as between the diverse disciplines within the social sciences and humanities**, in Europe and, where relevant at national or local level. The challenge is to learn and further build on these practices.

Scope

Interdisciplinarity for this topic means interdisciplinarity between SSH and other sciences as well as interdisciplinarity between the diverse disciplines within the social sciences, humanities and the arts. Furthermore, the European Commission supports a genuine integration of SSH, meaning that the SSH are not an “add-on” to other sciences but are fully mobilised, like other sciences, in building collectively the relevant scientific interdisciplinary questions for answering Europe’s societal challenges. Finally, the Commission recognises that interdisciplinarity between SSH and other sciences is only one among several scientific approaches (i.e. mono-disciplinarity and other kinds of interdisciplinarity) and therefore that the policy to support “SSH integration” needs to be justified and selective.

The scope of this topic is thus neither concentrated on the epistemology of interdisciplinarity, nor on the ad hoc contribution of SSH to other sciences, but **is rather meant for SSH experts**, in close cooperation with experts from other sciences, **to take a leading role in analysing the actual practices and potential of interdisciplinarity in Europe**, inside and outside Horizon 2020, as well as their outputs and impacts.

Proposals should be able to scan a wide array of practices and indicators of interdisciplinarity between SSH and non-SSH sciences in Europe, whether at national level or at bilateral or multilateral level, including third countries where relevant. They should analyse best practices but also instances of failed attempts at such interdisciplinarity. On this basis, they should try to give better socio-institutional accounts of various types of interdisciplinarity and their outputs and impacts. They **should analyse the conditions for supporting meaningful interdisciplinarity between SSH and other sciences, including through evaluations of programmes and projects and researchers’ career development**, and suggest whether new kinds of tools or institutional solutions could become, in a feedback loop, relevant within the Framework Programme or outside it. **Based on empirical evidence of existing or nascent interdisciplinary cooperation between SSH and other sciences, proposals should also assess the potential for interdisciplinarity for responding to the different societal challenges** that Europe needs to tackle, in areas like health, food and agriculture, energy and climate change, technological innovation, security or any other relevant emerging area. They should thus point to established, nascent or potential areas where interdisciplinarity between SSH and other sciences could be more adequately supported.

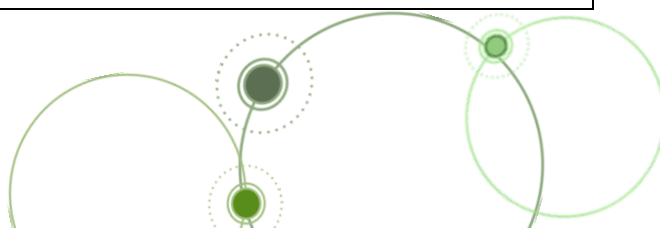
The Commission considers that proposals requesting a contribution from the EU in the order of EUR 1.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

The action will contribute to developing a policy for integration/interdisciplinarity between SSH and other sciences at European level based on empirical experiences of this kind of interdisciplinarity. It will also allow the identification of areas or issues which show potential for genuine interdisciplinary cooperation between SSH and other sciences, which would deserve to be supported in the future in order to meet Europe’s societal challenges.

Type of Action: Coordination and support action

Type of action	Coordination and support action
Deadline	13 March 2018
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/governance-15-2018.html





Societal challenge 7

Secure societies

Protecting freedom and security of
Europe and its citizens

Call – Protecting the infrastructure of Europe

SU-INFRA02-2019: Security for smart and safe cities, including for public spaces

Specific Challenge

In the cities, public spaces such as malls, open crowded gathering areas and events, and non-restricted areas of transport infrastructures, constitute “soft targets”, that is potential, numerous targets spread across the urban area and subject to “low cost” attacks strongly impacting the citizens. The generation, processing and sharing of large quantities of data in smart cities make urban systems and services potentially more responsive, and able to act upon real-time data. On the one hand, smart cities provide for improving the security of open and crowded areas against threats (incl. terrorist threats) and risks, by leveraging wide networks of detection and prevention capabilities that can be combined with human response to crisis to enhance first responders' actions. On the other hand, the distinct smart technological and communication environments (urban, transport infrastructures, companies, industry) within a smart city require a common cybersecurity management approach.

Scope

The security and good operation of a smart and safe city relies on interconnected, complex and interdependent networks and systems: public transportation networks, energy, communication, transactional infrastructure, civil security and law enforcement agencies, road traffic, public interest networks and services.

Such networks provide with an efficient infrastructure for detection resources and "big data" collection. The screening of such data are being used by security practitioners to enhance their capabilities and performances. For instance, crowd protection and the security of public and government buildings can be improved through the identification of threats or of crime perpetrators, and the early detection of dangerous devices or products; first responders may get quicker on site by calculating in real time the shorter possible route to the scene of disaster.

Proposals under this topic should develop and integrate experimentally, in situ, the components of an open platform for sharing and managing information between public service operators and security practitioners of a large, smart city. The proposed pilots should consider how to combine, inter alia:

- Methods to detect weapons, explosives, toxic substances
- Systems for video surveillance
- Methods to identify, and neutralize crime perpetrators whilst minimizing intrusion into crowded areas

In designing the platform, proposals should:

- involve actively the security actors of the city area, their coordination and governance;
- solve interoperability issues, and ensure the interconnection and integration of the city smart systems with the systems supporting the security practitioners locally, including through modelling and simulating their interdependence;
- enhance the security of city smart systems, notably in terms of access control (e.g. with digital security measures such as layered authentication and access), secure communication and data storage, and address their possible misuse by criminals;
- consider new concepts of operation resulting from novel monitoring methods, data provided by extensive networks of sensors and social media;
- consider mitigation strategies in the context of a variety of scenarios in order to increase resilience;
- integrate modules to simulate security incidents, and their consequences;
- integrate modules to measure the quantitative and qualitative impact of the platform on security;
- provide for the sharing, consolidation and analysis of multi-sourced data.

The proposals should also address at least one of the following key issues:

- Simulation, detection and analysis of the additional security threats and risks created through the interconnection of smart systems (e.g. Internet of Things (IoT), in particular those IoT objects used by security practitioners) and smart infrastructures (e.g. smart (government) buildings, smart railways, smart ports, smart factories, smart bridges, smart hospitals, large gathering of people in smart infrastructure) within a smart city;
- Delivery of a cyber-security framework to ease collaboration across all smart cities stakeholders, from urban planners to infrastructure operators, security practitioners, IT supervisors and providers across smart organizations within the city;
- Support and implementation of a common approach to securing and managing in a reliable and untamperable manner the data from all the smart infrastructures and systems hosted in a smart city supporting the citizens, the public authorities, the security practitioners, and the urban economy in creating transparent, efficient, accountable cyber-secure data-handling processes, in line with data protection legislation.

Digital security awareness should be integrated into the eco-system of humans, competences, services and solutions which should be able to adapt rapidly to the evolutions of cyber-threats or even to surpass them.

The centre of gravity for technology development with actions funded under this topic is expected to be up to TRL 7 – see General Annex G of the Horizon 2020 Work Programme.

Solutions are to be developed in compliance with fundamental rights, privacy and data protection, especially as the development of big data creates specific challenges. Therefore, full compliance with data protection legislations must be ensured in exploiting big data. Societal aspects (e.g. perception of security, possible effects of technological solutions on societal resilience) have to be taken into account in a comprehensive and thorough manner.



Call – Protecting the infrastructure of Europe

Projects should also foresee activities and envisage resources for cooperating with other projects funded under this topic and with other relevant projects in the field funded by Horizon 2020.

The Commission considers that proposals requesting a contribution from the EU of about 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

- Creation of dedicated, harmonised, advance cybersecurity solutions for smart cities adopting common approaches with all involved stakeholders (e.g. administrators of smart city/port/transport) balancing their – sometimes conflicting – goals (e.g. urban development, efficiency, growth, competitiveness, resilience).
- In situ demonstrations of efficient and cost-effective solutions to the largest audience, beyond the project participants.
- An easier level of integration by developing a holistic cyber-security framework for smart cities that benefits all smart infrastructures hosted within it (e.g. smart buildings, smart ports, smart railways, smart logistics).
- IoT ecosystems (rather than distributed IoT infrastructures) built adopting common approaches in their cybersecurity management, achieving economies of scale (e.g. avoiding duplication of efforts in the analysis of IoT data, selection of cybersecurity controls).
- Novel concepts of operations taking account of multiple, heterogeneous data sources and the social media.
- Novel tools and systemic approaches to protect citizens against threats to soft targets in a Smart City.

Type of action	Innovation action
Deadline	22 August 2019
Call identifier	H2020-SU-INFRA-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-infra02-2019.html



SU-DRS01-2018-2019-2020: Human factors, and social, societal, and organisational aspects for disaster-resilient societies

Specific Challenge

The resilience of societies heavily depends on how their citizens behave individually or collectively, and how governments and civil society organisations design and implement policies for mitigating risks, preparing for, reacting to, overcoming, and learning from disasters. The spread of new technologies and media are inducing dramatic changes in how individuals and communities behave, and they are affecting societies in unpredictable ways. Building the resilience of society and citizens requires a better understanding and implementation of these new technologies, media and tools, and their capacity to raise disaster risk awareness, to improve citizen understanding of risks, to build a culture of risks in society, to enable an effective response from affected populations, to improve functional organisation in most fragile and vulnerable environments, and to increase the resilience of health services, social services, education, and governance, in line with target (d) of the Sendai Framework on critical infrastructure and disruption of basic services.

Scope

Proposals are invited to address related research and innovation issues, in particular:

Recent disasters related either to natural causes (including climate-related hazards) or to terrorist attacks have shown gaps in the level of preparedness of European society for disasters, and therefore highlighted the importance of increasing risk awareness, and hence resilience among people and decision-makers in Europe. There is much that can be learned from certain countries with a high level of risk of natural disasters (e.g. Japan with high-levels of risks of earthquakes, volcanic events, and tsunamis) and where risk awareness is high. **Research is required with a view to how cultural changes among individuals, business managers, government officials, and communities can create a resilient society in Europe**, in line with the Sendai Framework for Disaster Risk Reduction.

Over the past few years several ways to exploit social media and other crowd-sourced data in emergency situations have been studied, and some put in place, but their impacts are not well known. Research is needed to assess such practices for different disaster scenarios (natural hazards, industrial disasters, terrorist threats) involving different actors, including first responders, city authorities and citizens. **Research should analyse both the positive and negative roles of social media and crowd-sourced data in crisis situations.** For instance in the wake of a terror attack or natural disaster they offer a quick and easy way to relieve friends and family from worry (where networks are not down), and they generate valuable information about the affected area in the first moments after a disaster; they have been used to spread early warnings and important safety information. However, social media may also be used to spread false statements and to overstate threats, so the validation processes of information should also be addressed. Social media itself is reliant upon the functioning of critical infrastructure such as phone networks and may not always be available. Research should also address solutions for communication between first responders and the victims and citizens in the affected area.

Research on risk awareness should encompass the whole of the disaster management cycle, from prevention (e.g. through education) and preparedness (knowing how to react), emergency management (collaboration and communication before and during an event), response (empowering citizens to act efficiently by themselves according to more effective practices and following established guidelines), and recovery (knowledge to build back better). Researchers should take into account tangible and intangible cultural heritage, traditional know-how, land use, construction technologies, and other local knowledge which is a valuable source of information for the local communities and can help prevent the creation of new risks, to reduce existing risks, to prepare for and to respond to disasters and to build back better.

Sub-issues to be addressed are diversity in risk perception (as a result of e.g. geography (within Europe), attitudes, institutional and social trust, gender and socio-economic contexts), in vulnerabilities and in understanding responses to crises in order to propose new approaches and strategies for community awareness, for leadership, and for crisis readiness and management with a particular emphasis on the use of new technologies.

For achieving disaster-resilient societies that cope with disasters and build back better, the research community needs to transfer research outputs in an appropriate manner to meet citizen expectations given the current levels of risk acceptance, risk awareness, and involvement of civil society organisations in a mediating role.

Civil society organisations, first responders, (national, regional, local, and city) authorities are invited to propose strategies, processes, and methods to enable citizens better to access research results related to disaster resilience, and to prepare the ground for exercises involving citizens. **These strategies, processes, and methods should be tested with citizens and communities representative of European diversity and for different types of disaster, in particular with regards to citizens' individual capacities and their involvement in checking and validating proposed tools, technologies and processes for disaster management. Studies will assess the value of raising awareness about relevant research among citizens and communities.**

Proposals should be submitted by consortia involving relevant security practitioners and civil society organisations. **Research should contribute to the understanding of society's awareness to risks in Europe in order to provide recommendations for the development of a culture of improved preparedness, adaptability, and resilience to risks**, including the use of social media and crowd-sourced data, and the involvement of the citizens in the investigations and possible validation of tools and methods.

In line with the objectives of the Union's strategy for international cooperation in research and innovation (COM(2012)497), international cooperation according to the current rules of participation is encouraged (but not mandatory).



Call – Security

The Commission considers that proposals requesting a contribution from the EU of about EUR 5 million would allow this specific challenge to be addressed appropriately through multidisciplinary projects confronting different schools of thoughts. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

As a result of this action, Member States and Regional authorities as well as City and Metropolitan authorities should benefit from recommendations and tools aimed at improving the adaptability and preparedness of societies to different disaster risks, including:

- Comparative analysis of the European diversity in terms of risk-perception amongst citizens, and of vulnerabilities;
- Comparative analysis of different approaches to adapt to, and be prepared for risks in different countries (both within and outside the European Union), and among communities in precarious socio-economic conditions;
- Advances through the cross-fertilisation of concepts resulting from the collision of different ways of thinking and of different approaches developed by various partners in the proposals;
- Identification of existing tools and guidelines for an improved prevention (including risk understanding and communication), preparedness (including training involving citizens), alert systems and their recognition by citizens, responses using citizen's competencies and local knowledge, and recovery;
- Improved information exchanges among different actors involved, including first responders, local authorities, schools, and citizen representatives;
- Field-validation of different approaches related to different disaster risks involving the above actors, in representative urban and non-urban environments, including in areas where precarious socio-economic conditions prevail;
- Intensive sharing, among communities, of good practices and of learnings resulting from citizen-scientist interaction;
- A consolidated, common European understanding of disaster resilience.

Type of action	Research and Innovation action
Deadline	Call 2018 - 23 August 2018 Call 2019 - 22 August 2019
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-drs01-2018-2019-2020.html



SU-DRS02-2018-2019-2020: Technologies for first responders

Specific Challenge

Resilience is critical to allow authorities to take proper measures in response to severe disasters, both natural (including climate-related extreme events) and manmade. Innovation for disaster-resilient societies may draw from novel technologies, provided that they are affordable, accepted by the citizens, and customized and implemented for the (cross-sectoral) needs of first responders.

Scope

Proposals are invited to propose novel solutions improving the protection of first responders against multiple and unexpected dangers, or enhancing their capacities by addressing related research and innovation issues, in particular:

Sub-topic 1: [2018] Victim-detection technologies

The quick detection of victims potentially trapped in buildings as a result of all sorts of disasters of natural, accidental, or man-made or of terrorist origins is a major issue for first responders. Novel technologies should enable them to save the time taken to detect victims who are not visible, enabling more efficient and faster rescue operations leading to higher chances of saving lives and reducing injuries.

Sub-topic 2: [2019] Innovation for rapid and accurate pathogens detection

Novel technologies are required by first responders for the rapid and accurate detection of pathogens, as well as tools for joint epidemiological and criminal risk and threat assessment and investigation.

Sub-topic 3: [2020] Methods and guidelines for pre-hospital life support and triage

Sub-topic: [2018-2019-2020] Open

Other technologies for use by first responders may be subject of proposals provided that they involve a large number of first responders' organisations (see eligibility and admissibility conditions.) For instance, but not exclusively: communicating and smart wearables for first responders and K9 units including light-weight energy sources; situational awareness and risk mitigation systems for first responders using UAV and robots, connected and swarms of drones; systems based on the Internet of Things; solutions based on augmented or virtual reality; systems communication solutions between first responders and victims; risk anticipation and early warning technologies; mitigation, physical response or counteracting technologies; etc.

Any novel technology or methodology under this topic should be tested and validated, not just in laboratories but also in training installations and through in-situ experimental deployment. They therefore need to be quick to deploy, bases on resilient and robust communication infrastructure. **First responders, including through interdisciplinary teams** (e.g. involving medical emergency services, public health authorities, **law enforcement team**, civil protection professionals, etc.) **need to be involved in these activities**. Proposals should address the participation of first responders in a systematic manner, and propose new methods on how to involve them and to organise their interaction with researchers when developing, testing, and validating technologies and methods.

Solutions are to be developed in compliance with European societal values, fundamental rights and applicable legislation, including in the area of privacy, personal data protection and free movement of persons. Societal aspects (e.g. perception of security, possible effects of technological solutions on societal resilience, gender diversity) have to be taken into account in a comprehensive and thorough manner.

In line with the objectives of the Union's strategy for international cooperation in research and innovation (COM(2012)497), international cooperation according to the current rules of participation is encouraged (but not mandatory), in particular with Japanese or Korean research centres.

Co-funding opportunities from the Japan Science and Technology Agency exist for Japanese partners.

For more information, please consult http://www.jst.go.jp/sicp/announce_eujoint_04_GeneralInfo.html.

Co-funding opportunities from the Korean MSIP/NRF exist for Korean partners.

For more information on Korea, please consult

<http://www.nrf.re.kr/eng/main> and http://www.nrf.re.kr/biz/info/notice/view?nts_no=82388&biz_no=116&search_type=ALL&search_keyword=EU&page=

The centre of gravity for technology development with actions funded under this topic is expected to be up to TRL 4 to 6 – see General Annex G of the Horizon 2020 Work Programme.

The Commission considers that proposals requesting a contribution from the EU of about 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

As a result of this action, first responders should benefit from:

- Novel tools, technologies, guidelines and methods aimed at facilitating their operations
- New knowledge about field-validation of different tools, technologies and approaches involving first responders in (real-life) scenarios



Call – Security

Type of action	Research and Innovation action
Deadline	Call 2018 - 23 August 2018 Call 2019 - 22 August 2019
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-drs02-2018-2019-2020.html



SU-FCT01-2018-2019-2020: Human factors, and social, societal, and organisational aspects to solve issues in fighting against crime and terrorism

Specific Challenge

The free and democratic EU society, based on the rule of law, mobility across national borders, globalised communication and finance infrastructure, provides many opportunities to its people. However, the benefits come along with risks related to crime and terrorism, a significant number of which have cross-border impacts within the EU. Security is a key factor to ensure a high quality of life and to protect our infrastructure through preventing and tackling common threats. The EU must play its part to help prevent, investigate and/or mitigate the impact of criminal acts, whilst protecting fundamental rights. The consistent efforts made by EU Member States and the EU to that effect are not enough, especially when criminal groups and their activities extend far beyond national borders.

Scope

The Lisbon Treaty enables the EU to act to develop itself as an area of freedom, security and justice. The EU Security Union is now in the building, and requires an EU-wide approach to security that integrates prevention, investigation and mitigation capabilities in the area of the fight against crime.

The globalisation of communications and finance infrastructure allows crime to develop and take new forms. Trafficking in human beings for all forms of exploitation purposes is a serious and organised crime often with cross-border dimension, violating fundamental rights of the individuals and creating a security challenge. Prevention of child sexual abuse and exploitation is another area where research is acutely needed. The use of the internet as a platform for child sex offenders to communicate, store and share child sexual exploitation material and to hunt for new victims continues to be one of the internet's most abhorrent aspects. Cybercriminality, as a whole, is not satisfactorily understood nor properly addressed; the constantly expanding attack surface combined with the ever increasing number of attack vectors requires a more structured approach. Radicalisation is yet another challenge of our society that requires a multi-disciplinary approach, with policy recommendations and practical solutions to be implemented by a variety of policy-makers and practitioners.

Proposed approaches need to rely on existing knowledge and to exclude approaches that have previously failed. **The societal dimension of fight against crime and terrorism should be at the core of the proposed activities.** Proposals should be submitted by consortia involving relevant security practitioners and civil society organisations, each under only one of the following sub-topics:

Sub-topic 1: [2018] New methods to prevent, investigate and mitigate trafficking of human beings and child sexual exploitation – and on the protection of victims

Globalisation and technological developments facilitate trafficking in human beings and child sexual exploitation. A variety of **preventive measures, as well as measures to ensure adequate victim protection and assistance are needed, that build upon advances in social sciences and humanities.**

Proposals in this subtopic should address both phenomena in a balanced way. They should ensure that the research focuses on prevention, investigation and/or assistance related to all victims of trafficking and not only addressing child trafficking. In the same way, the proposals should cover any area concerning prevention, investigation and/or assistance to victims of child sexual exploitation, not only the assistance to victims of child sexual exploitation resulting from trafficking.

With respect to the trafficking of human beings, research should bear on:

- preventing the phenomenon and to reduce the demand for all forms of exploitation in the trafficking chain and its legal and illegal sectors. The analysis of possible involvement of organized crime groups implicated in trafficking of human beings in other crimes as well (e.g., financial crimes) is recommended;
- new approaches to investigate cases involving the trafficking of human beings;
- new approaches to mitigate the impact on victims in the short and long term.

Regarding child sexual exploitation:

- how to address new threats, such as live-streaming of child abuse and coercion and extortion of victims that have escalated in the last years;
- how to provide law enforcement with effective means to detect, investigate and bring down the many peer-to-peer networks and the growing number of forums on the darknet that facilitate the exchange of child sexual exploitation material and support offenders;
- how to help victims of abuse during criminal investigations and court procedures;
- how to help the victims in the long term, to help them deal with the effects;
- how to reduce risks of (re-)offending by better understanding the behaviour of abusers and potential abusers.

Sub-topic 2: [2019] Understanding the drivers of cybercriminality, and new methods to prevent, investigate and mitigate cybercriminal behaviour

The Internet of Things, the ever increasing number of internet-facing devices may pose substantial threats to (cyber)security as the internet has become a target for cybercriminals. The key challenge in this respect is to determine what the drivers of new forms of cyber criminality are and how they might be prevented and mitigated. The dissemination of "cybercrime-as-a-service" business models is an important enabler for crime and poses significant challenges to security. The increasing variety of such services, the modalities through which they



are offered and the connections with different criminal activities need to be investigated to understand their trends and thus to allow for prevention and law enforcement.

Human factors determining online behaviour as described for instance by the online disinhibition effect (individuals acting more boldly online, being less inhibited and with their judgment impaired) are drivers for cybercrime as individuals feel disconnected from the actual crime or do not even perceive it as a crime. Recent trends also indicate a growth in cyber juvenile delinquency and a rise in adolescent hacking.

These developments call for further research in domains such as psychology, criminology, anthropology, neurobiology and cyber psychology to understand better the factors contributing to it and to devise preventive and deterrence measures, including providing alternatives to harness the potential of these young talents for cybersecurity and technologies.

Sub-topic 3: [2020] Developing comprehensive multi-disciplinary and multi-agency approaches to prevent and counter violent radicalisation and terrorism in the EU

Sub-topic: [2018-2019] Open

Proposals analysing and recommending other ways to solve human, social, and societal issues in fighting against crime and terrorism, and supported by large numbers of practitioners, are invited to apply under this sub-topic (see eligibility and admissibility conditions.)

Proposals should lead to solutions developed in compliance with European societal values, fundamental rights and applicable legislation, including in the area of privacy, protection of personal data and free movement of persons. Societal aspects (e.g. perception of security, possible side effects of technological solutions, societal resilience, gender-related behaviours) have to be addressed in a comprehensive and thorough manner.

The Commission considers that proposals requesting a contribution from the EU of about EUR 5 million would allow this specific challenge to be addressed appropriately through multidisciplinary projects confronting different schools of thought. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

Medium term:

- improved and consolidated knowledge among EU Law Enforcement Agencies officers on the issues addressed in this topic;
- exchange of experiences among EU Law Enforcement Agencies about human, social and societal aspects of security problems and their remedies;
- policy-making toolkits for security policy-makers, to support the establishment of a European Security Model;
- toolkits for EU Law Enforcement Agencies and/or civil society organisations, validated against practitioners' needs and requirements to facilitate their daily operations.

Long term:

- European common approaches for assessing risks/threats, and identifying and deploying relevant security measures, which take into account legal and ethical rules of operation, cost-benefit considerations, as well as fundamental rights such as the rights to privacy, to protection of personal data and the free movement of persons;
- support towards the implementation of the European Security Union by strengthening the perception by citizens of the EU as an area of freedom, justice and security;
- advances through the cross-fertilisation of concepts resulting from the collision of different ways of thinking and of different approaches developed by various partners in the proposals.

Type of action	Research and Innovation action
Deadline	Call 2018 - 23 August 2018 Call 2019 - 22 August 2019
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-fct01-2018-2019-2020.html



SU-FCT02-2018-2019-2020: Technologies to enhance the fight against crime and terrorism

Specific Challenge

Organized crime and terrorist organisations are often at the forefront of technological innovation in planning, executing and concealing their criminal activities and the revenues stemming from them. Law Enforcement Agencies (LEAs) are often lagging behind when tackling criminal activities supported by advanced technologies.

Scope

There is a growing need to focus on technology opportunities provided by new and emerging technologies. To this end, it is necessary to identify new knowledge and targeted technologies for fighting old, new and evolving forms of criminal and terrorist behaviour supported by advanced technologies. Challenges are numerous. In conventional investigations, rapid and near real-time forensics is often crucial for preventing subsequent attacks or crimes. A consequence of the increasing digitisation of society and ever increasing adoption levels is that virtually any type of crime has a digital forensics component, which is a challenge in itself. Money-flow tracking represents yet another challenge. The issues of location and jurisdiction need to be addressed, taking into account highly probable crossborder nature of such crimes.

Proposals should be submitted under only one of the following sub-topics:

Sub-topic 1: [2019] Trace qualification

Forensic analysis of trace material can be extremely helpful in the initial phase of investigation, if the answers are rapid (near real-time), at an acceptable cost and compliant with criminal justice. Novel robotized or automated tools for forensic analysis should be developed. There is a need for a better knowledge and interpretation of: trace composition, time when they were left, cause of their origin (crime-related or inoffensive), etc.

Sub-topic 2: [2018] Digital forensics in the context of criminal investigations

New forensic tools, techniques and methodologies are needed, based on common practices, standards, protocols and/or interoperability requirements that allow for rapid retrieval, storage, analysis and validation of digital evidence (including the one stored in the cloud) that upholds in court, and enables investigations to identify perpetrators as well as victims, in particular in cases of child sexual abuses. They should focus on data gathering, data exploitation, and speedy exchange of information. All types of crime, terrorist activities and propaganda, and malicious acts by foreign-state perpetrators are concerned. Research in this domain should take into account new and emerging trends (for instance, abuse of encryption for criminal or terrorist purposes), while fully respecting fundamental rights such as the right to privacy and the right to protection of personal data.

Sub-topic 3: [2020] Money flows tracking

Sub-topic: [2018-2019-2020] Open

Proposals addressing other issues relevant to this challenge (for instance: technologies to improve LEAs capabilities (including augmented reality); autonomous systems to improve the fight against crime and terrorism; technologies to support better protection of public figures; tracking and monitoring technologies, including automated prevention of uploading terrorism-related content; capabilities to detect the widest possible range of threats and concealments (including complex concealed weapons)) and supported by a large number of practitioners are invited to apply under this sub-topic (see eligibility and admissibility conditions).

In all sub-topics and in order to facilitate the EU-wide take-up of new technologies, proposers are encouraged to include the design of innovative curricula for LEAs training and (joint) exercises, and of information packages for the wider public and civil society organisations.

Proposals should lead to solutions developed in compliance with European societal values, fundamental rights and applicable legislation including in the area of privacy and protection of personal data. Societal aspects (e.g. perception of security, possible side effects of technological solutions, societal resilience) have to be addressed in a comprehensive and thorough manner.

The centre of gravity for technology development with actions funded under this topic is expected to be up to TRL 4 to 6 – see General Annex G of the Horizon 2020 Work Programme.

The Commission considers that proposals requesting a contribution from the EU of about 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

Medium term

- novel, user-friendly technologies, tools and/or systems, addressing traditional or emerging forms of crime and terrorism at acceptable costs;
- improved investigation capabilities, especially regarding quality and speed;
- increased efficiency and effectiveness of the information sharing among EU LEAs.

Long term:

- prevention/reduction of criminal and terrorist threats;
- harmonisation of information formats at international level, improved cross-border acceptance and exchange of court-proof evidence, standardised evidence collection and harmonised procedures in the investigation of trans-border crimes in full compliance with applicable legislation on protection of personal data.



Call – Security

Type of action	Research and Innovation action
Deadline	Call 2018 - 23 August 2018 Call 2019 - 22 August 2019
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-fct02-2018-2019-2020.html



SU-FCT03-2018-2019-2020: Information and data stream management to fight against (cyber)crime and terrorism

Specific Challenge

Large amounts of data and information from a variety of origins have become available to practitioners involved in fighting crime and terrorism. Full advantage is not currently taken of the most advanced techniques for Big Data analysis, and artificial intelligence.

Scope

The amount of data generated and gathered in the frame of (cyber)crime investigations increases exponentially, thereby creating a considerable challenge for law enforcement. The effectiveness of law enforcement action depends on capabilities to improve the quality of data, and to convert voluminous and heterogeneous data sets (images, videos, geospatial intelligence, communication data, traffic data, financial transactions related data, etc.) into actionable intelligence. These capabilities could be significantly enhanced by the use of domain-specific tools, i.e. Big Data analysis applications designed for the needs of crime investigators (pre-processing, processing and analysis, visualisation, etc.). Furthermore, predictive analytics would greatly benefit from open source intelligence gathering, social network and darknet data analysis, and allow for resource-efficient, effective and proactive law enforcement.

Examples of trends in cybercrime are numerous. The Internet of Things can potentially connect practically everything, thus also potentially making everything more vulnerable. Wearable devices make us traceable, 3D printers can produce weapons, autonomous cars provide opportunities for kidnappers, teleworking opens doors for cyber-espionage etc. Cybercriminals follow the technological development and benefit from it, while measures for countering cybercrime are often one step behind. Law Enforcement Agencies would benefit from new means of preventing and countering new kinds of crime, building on the comprehensive trend analysis of emerging cybercrime activities based on past of (cyber)criminal activities, on technological developments, and on trends in the society.

Criminal and terrorist acts are usually subsequent to patterns of abnormal behaviour. Behavioural/anomaly detection systems (using a large variety of sensors) and methodologies require the analysis and processing of enormous quantities of data, together with improved imaging techniques to allow for the identification of suspicious events or of criminals. Such systems should operate in near real-time and at similar distances as a surveillance camera. They should also comply with privacy requirements and the respect of fundamental rights such as the right to privacy and the right to protection of personal data.

Proposals are invited from consortia involving relevant security practitioners, civil society organisations, and the appropriate balance of IT specialists, psychologists, sociologists, linguists, etc. exploiting Big Data and predictive analytics that both (a) characterise trends in cybercrime and in cybercriminal organizations (based on a profound analysis of current and emerging cybercriminal organizational types and structures), and (b) enhance citizens' security against terrorist attacks in places considered as soft targets, including crowded areas (stations, shopping malls, entertainment venues, etc.).

Proposals should lead to solutions developed in compliance with European societal values, fundamental rights and applicable legislation including in the area of privacy and protection of personal data. Societal aspects (e.g. perception of security, possible side effects of technological solutions, societal resilience) have to be addressed in a comprehensive and thorough manner.

The centre of gravity for technology development with actions funded under this topic is expected to be up to TRL 5 to 7 – see General Annex G of the Horizon 2020 Work Programme.

The Commission considers that proposals requesting a contribution from the EU of about 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

Medium term:

- improved support for the work of Law Enforcement Agencies in managing Big Data, i.e. in extracting, combining, analysing and visualising large amounts of structured and unstructured data in the context of criminal investigations;
- increased awareness regarding the state of the art and trends in cybercriminal activities (short-, mid- and long-term);
- in-depth knowledge of means of preventing and countering emerging and future cybercriminal activities;
- improved capabilities to combine and analyse in near-real-time large volumes of heterogeneous data to anticipate criminal events;
- shorter delays between the emergence of new cybercrime activities and the deployment of countermeasures.

Long term:

- a European, common strategic approach for preventing and countering an emerging cybercrime activity in its early stage of development;
- a European, common strategic approach for processing and combining huge amounts of data in the context of crowd protection in full compliance with applicable legislation on protection of personal data.



Call – Security

Type of action	Innovation action
Deadline	Call 2018 - 23 August 2018 Call 2019 - 22 August 2019
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-fct03-2018-2019-2020.html



SU-BES01-2018-2019-2020: Human factors, and social, societal, and organisational aspects of border and external security

Specific Challenge

Border and external security may depend on a variety of human factors, and social and societal issues including gender. The adoption of appropriate organisational measures and the deeper understanding of how novel technologies and social media impact border control are required. One main challenge is to manage the flow of travellers and goods arriving at our external borders, while at the same time tackling irregular migration and enhancing our internal security. Any novel technology or organisational measure will need to be accepted by the European citizens. For the purpose of this topic, 'migration' does not refer to persons enjoying the right of free movement under Article 21 TFUE and secondary legislation (i.e. Union citizens and their family members, independently of their nationality).

Scope

Proposals (which should take into account already existing tools) are invited to address related research and innovation issues, each under only one of the following sub-topics:

Sub-topic 1: [2018] Detecting security threats possibly resulting from certain perceptions abroad, that deviate from the reality of the EU
Research should investigate how to better detect and understand how the EU is perceived in countries abroad by analysing e.g. social media data, how such perception could possibly lead to threats and security issues on its citizens and territories, and how such perceptions can be avoided or even actively and effectively counteracted through various measures. In line with the objectives of the Union's strategy for international cooperation in research and innovation (COM(2012)497), international cooperation according to the current rules of participation is encouraged.

Sub-topic 2: [2019] Modelling, predicting, and dealing with migration flows to avoid tensions and violence

Better modelling and predicting migration flows, based on a sound analysis and taking into account gender aspects, is required for high-level strategic decision-making, to plan and implement operational activities. **For the management of the migratory flow,** including relocations within the EU, **it is necessary to map public sentiment, including perceptions of migration,** by analysing data available from many different governmental or public sources, and **by developing socio-economic indicators of integration strategies.** **Proposals should be solution-oriented and propose convincingly how to better deal with such flows and to reduce risks of tensions and violence among migrants and European citizens.**

Sub-topic 3: [2020] Developing indicators of threats at the EU external borders on the basis of sound risk and vulnerability assessment methodologies

Sub-topic: [2018-2019] Open

Proposals addressing other issues relevant to this challenge, based on a sound rationale, and supported by a large number of relevant practitioners are invited to apply under this sub-topic (see eligibility and admissibility conditions.)

Proposals should lead to solutions developed, tested and validated in compliance with European societal values, fundamental rights (including gender equality) and applicable legislation including in the area of free movement of persons, privacy and protection of personal data. Societal aspects (e.g. perception of security, possible side effects of technological solutions, societal resilience) have to be analysed in a comprehensive and thorough manner with a view to facilitating future acceptance of such solutions.

Proposals should pursue truly innovative approaches. They should be submitted by consortia also involving civil society organisations.

Synergies are encouraged with the work for the knowledge centre on migration and demography set up by the Commission <https://ec.europa.eu/jrc/en/migration-and-demography>

The Commission considers that proposals requesting a contribution from the EU of about 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

- Knowledge and evidence-based support to policy developments, with fitness for purpose validated by policy-makers and by practitioners and in cooperation with civil-society organisations in the Member States, the Associated Countries, and abroad where appropriate.
- Methods to better manage the complexity (from reducing the incentives for irregular migration, to the analysis and sharing of best practices, and towards an effective application of common rules...) of the issues, with fitness for purpose validated by practitioners and civil-society organisations.
- Advances through the cross-fertilisation of concepts resulting from the collision of different ways of thinking and of different approaches developed by various partners in the proposals.



Call – Security

Type of action	Research and Innovation action
Deadline	Call 2018 - 23 August 2018 Call 2019 - 22 August 2019
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-bes01-2018-2019-2020.html



SU-DS01-2018: Cybersecurity preparedness -cyber range, simulation and economics

Specific Challenge

The digital infrastructure, upon which other sectors, businesses and society at large critically depend, must be resilient and trustworthy, and must remain secure despite the escalating cyber-threats. New technologies and their novel combinations require innovative ways to implement security measures and to make new security-related assumptions, identifying "zero-day" or potential unknown vulnerabilities, forecasting new threats (plus their cascading effects) and emerging attacks, and managing cyber risks. Many organisations are unable to forecast and/or estimate the impacts of a cyber-risk. This results often in insufficient and/or irrelevant investments to ensure a more cyber secure environment. In addition, cybersecurity experts and professionals need to continuously adapt their expertise to a constantly evolving landscape with increasingly sophisticated and novel cyber-attacks, a widening surface of exposed ICT systems and services and a set of relevant changing legislation. In a connected EU society, there is an urgent need for highly competent cybersecurity professionals, and security experts need to be in a constant learning process, to match the quick rate of evolution of the cyber threats, attacks and vulnerabilities. Cybersecurity skills need to be continuously advanced at all levels (e.g. security officers, operators, developers, integrators, administrators, end users) in order to enable cybersecurity, digital privacy and personal data protection within the EU Digital Single Market.

Scope

As a continuation of topic DS-07-2017 "Addressing advanced cyber security threats and threat actors", where cyber range is partially addressed, proposals are called to deliver extended capabilities of cyber ranges (e.g. piloting of networked cyber-ranges; extension of the cyber-ranges network, adding domain specificities like cyber range for IoT and/or for Industrial Control Systems such as SCADA). The proposals should develop, test and validate highly customizable dynamic simulators serving as knowledge-based platforms accompanied with mechanisms for real time interactions and information sharing, feedback loops, developments and adjustments of exercises. These simulation platforms will help professionals responsible for cybersecurity in organizations to collaboratively improve their ability in handling and forecasting security incidents, complex attacks and propagated vulnerabilities, based upon targeted scenarios and exercises. Proposals are encouraged to bring shared approaches to express and transform user needs into actual experiments and cyber exercises (e.g. capture-the-flag) and to develop/integrate/parameterise appropriate tools and methods for supporting current and future generated evidence-based simulation scenarios. **The proposed cyber range model should be validated across one critical economic sector, involving as many as possible relevant stakeholders from its supply chain.** Proposals should consider the specific needs of end-users, private and public security end-users alike. Proposals are encouraged to include public security end-users and/or private end-users, and to create operational links to the Computer Emergency Response Teams (CERTs) / Computer Security Incident Response Teams (CSIRTs) network across the EU. Proposals should also develop, test and validate operational ways to continuously analyse the information collected by CERTs and/or CSIRTs and all relevant cybersecurity data. This analysis should feed their risk analysis models (which need to comply with relevant standards e.g. ISO27001, ISO27005 and relevant EU cybersecurity legislation) **in order to derive appropriate econometric models** that can be used by public/private organisations/companies (e.g. insurance companies, SMEs, governmental bodies). These econometric models should assist them to select realistic, affordable baseline cybersecurity measures that will improve their security, resilience and sustainability, and should also help in identifying the cost and time to recover following a cyber-attack. In addition, the proposals should show that the econometric models contribute to: (i) identifying affordable security controls that are needed to protect valuable organization assets, (ii) promoting the development of cyber insurance and liability policies/contracts and (iii) fostering service level agreements addressing security, privacy and personal data protection requirements and policies. Proposals should bring innovative solutions to enforce and encourage accountability of security as a shared responsibility. **Proposals should also include (but should not be limited to) the delivery of solutions for specific social aspects of digital security** related to training, in particular practical, operational and hands-on training, including: (i) increasing the dynamics of the training and awareness methods, to match/exceed the same rate of evolution of the cyber attackers, that is to say new methods of awareness/training offering more qualification tracks to fully and efficiently integrate ICT security workers and employers in the European e-Skills market; and (ii) integrating awareness into the eco-system of humans, competences, services and solutions which are able to rapidly adapt to the evolutions of cyber-attackers or even surpass them. Participation of SMEs is strongly encouraged. The outcome of the proposal is expected to lead to development up to Technology Readiness level (TRL) 7; please see Annex G of the General Annexes. The Commission considers that proposals requesting a contribution from the EU of between EUR 5 and 6 million would allow the specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Projects should also foresee activities and envisage resources for clustering with other projects funded under this topic and with other relevant projects in the field funded by H2020.

Expected Impact

Short-term:

- Professionals better prepared to detect, block and mitigate emerging cyberattacks;
- End-users of cybersecurity products and services more involved into expressing actual needs to developers/vendors, through cyber range and simulation;



- More organized collaboration between a network of cyber ranges and Europe-wide initiatives such as the CERTs/CSIRTs cooperation network of the NIS directive.
- Improved risks analysis models to be used by public/private organisations, through the use of economics for evidence-based cybersecurity and data privacy;
- **Appropriate econometric models able to learn from cyber incident data on a wide scale;**
- **Improved knowledge on how organisations can make the right investment to secure their operations against cyber-attacks (e.g. where they result in personal data breaches), using economics for evidence-based cybersecurity and data privacy;**

Medium and long term:

- Improved resilience of ICT systems/infrastructures and reduced time and cost in infrastructures for training users;
- EU member states better prepared to face malware campaigns and to take down malicious infrastructures; improved EU-skills market;
- Better preparedness to put in place cybersecurity measures and identify the necessary resources for recovering after a cyber-attack;
- Improved security, resilience and sustainability of organisations

Type of action	Innovation action
Deadline	23 August 2018
Call identifier	H2020-SU-DS-2018-2019-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-ds01-2018.html



Topics with minor SSH relevance

SU-DS03-2019-2020: Digital Security and privacy for citizens and Small and Medium Enterprises and Micro Enterprises

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-ds03-2019-2020.html>

SU-DS04-2018-2020: Cybersecurity in the Electrical Power and Energy System (EPES): an armour against cyber and privacy attacks and data breaches

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-ds04-2018-2020.html>

SU-DS05-2018-2019: Digital security, privacy, data protection and accountability in critical sectors

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-ds05-2018-2019.html>





Leadership in Enabling and Industrial Technologies

Information and Communication Technologies

Net **4** Society

ICT-09-2019-2020: Robotics in Application Areas

Specific challenge

While robots originated in large-scale mass manufacturing, they are now spreading to more and more application areas. In these new settings, robots are often faced with new technical and non-technical challenges. The purpose of this topic is to address such issues in a modular and open way, and reduce the barriers that prevent a more widespread adoption of robots. Four Priority Areas (PAs) are targeted: healthcare, inspection and maintenance of infrastructure, agri-food, and agile production.

User needs, ethical, legal, societal and economic aspects should be addressed in order to raise awareness and take-up by citizens and businesses. Privacy and cybersecurity issues, including security by design and data integrity should also be addressed, where appropriate.

Scope

a) Research and Innovation boosting promising robotics applications

Innovative approaches to hard research problems in relation to applications of robotics in promising new areas are particularly encouraged. **Proposals are expected to enable substantially improved solutions to challenging technical issues, with a view of take-up in applications with high socio-economic impact.** Driven by application needs, the work can start from research at low TRL, but proposals are expected to validate their results in realistic environments in order to demonstrate the potential for take-up in the selected application(s).

The call is open to all robotics-related research topics and to all new application areas. Excluded are the four priority areas which are already covered elsewhere in this work programme: healthcare, inspection and maintenance of infrastructure, agri-food and agile production. Proposals will be expected to plan efforts to connect and cooperate with the DIHs, Platforms and other relevant activities of this work programme, as appropriate.

The Commission considers that proposals requesting a contribution from the EU between €3 million and €5 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b) Innovation Actions - Robotics for infrastructure inspection and maintenance

Establish large-scale pilots capable of demonstrating the use of robotics at scale in actual or highly realistic operating environments; showcase advanced prototype applications built around platforms operating in real or near-real environments and demonstrate high levels of socio-economic impact.

Through large-scale pilots, proposals are expected to make a significant step forward in platform development in the area of infrastructure inspection and maintenance. Starting from suitable reference architectures, platform interfaces are defined, tested via piloting, and supported via ecosystem building preparing their roll-out, and are being evolved over time into standards.

Each proposal is expected to establish large scale pilots. They are expected to: consider utilising existing infrastructure and links to other European, national or private funding-sources; identify the long-term sustainability of the pilot; develop scalable technical solutions capable of meeting performance targets; develop metrics and performance measures for the pilot; engage relevant industry stakeholders, including SMEs, in the provision and operation of the pilot. Proposals will be expected to dedicate resources to disseminate best practice and coordinate access to platforms and demonstrators, in particular in connecting with the Robotics DIHs and Core Technologies actions and other relevant activities, in H2020 and beyond.

Pilots are expected to address both technical and non-technical issues, such as socio-economic impact, novel business models, legal and regulatory, ethical and cyber-security issues and connections to Big Data and IoT.

The Commission considers that proposals requesting a contribution from the EU between €7 million and €9 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

c) Robotics Competitions

Competitions aims at reducing technical and commercial risks by allowing commercial and technical performance data to be gathered and assessed. They provide a real or near-real operating environment for long-term trials and the testing of deployment strategies.

Proposals (CSA) should address the delivery of challenge-led, robotics competitions focusing on the four application areas prioritised: Healthcare, Infrastructure Inspection and Maintenance, Agri-Food, and Agile Production. **Besides the technological objectives, proposals are also expected to stimulate public engagement and engage with the Robotics DIHs. Proposals should address all aspects of running competitions as public events, and engage with the media and public. Proposals should seek to mobilise external partners in sponsoring and setting up the competitions.**

Expected impact

- a)
 - Strengthening European excellence in Robotics S&T
 - Boosting the use of robotics in promising application areas
 - Opening up new markets for robotics
 - Lowering barriers in the deployment of robotics-based solutions.
- b)
 - Demonstration of the potential for robotics to impact at scale in the chosen application areas prioritised in this call (infrastructure inspection and maintenance).
 - Reduction of technical and commercial risk in the deployment of services based on robotic actors within the selected application



Call – Information and Communication Technologies

area.

- Greater understanding from the application stakeholders of the potential for deploying robotics.
- Demonstration of platforms operating over extended time periods in near realistic environments and promotion of their use.
- Develop the eco-system around the prioritised application areas to stimulate deployment.
- Contribution to the development of open, industry-led or de facto standards

c)

- Greater public exposure to actual robotics capability.
- Greater engagement with competitions from commercial organisations in the four prioritised application areas: Healthcare, Infrastructure Inspection and Maintenance, Agri-Food and Agile Production.

Type of action	Coordination and support action , Innovation action , Research and Innovation action
Deadline	28 March 2019
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-09-2019-2020.html



Call – Information and Communication Technologies

ICT-10-2019-2020: Robotics Core Technology

Specific challenge

Autonomy in robotic systems is built on a combination of four core technologies:

AI and Cognition: AI provides tools to make systems cognitive. Cognition equips robots with the ability to interact with people and environments, to learn and to categorise, to make decisions and to derive knowledge.

Cognitive Mechatronics: Mechatronic systems where sensing and actuation are closely coupled with cognitive systems are expected to deliver improved control, motion, interaction, adaptation and learning, and safer systems.

Socially cooperative human-robot interaction: Cooperative human-robot interaction is critical in many work environments from collaborative support, e.g. passing tools to a worker, to the design of exo-skeletons able to provide motion that is sympathetic to the user.

Model-based design and configuration tools: Deploying robotics at scale in application areas where tasks need to be defined by the user requires easy-to-use configuration tools. Embedding and sharing of knowledge between tools is essential, as is standardisation across the interfaces to connect systems and modules (taking into account cybersecurity issues, including security by design and data integrity).

Scope

Proposals should address one of the four core technologies and target the development of core technology modules (modular, open and non-proprietary) and tool kits for use in deployable system platforms that meet the requirements of applications in the following four prioritised application areas: Healthcare, Infrastructure Inspection and Maintenance, Agri-Food and Agile Production. Proposals will be required to dedicate resource for connecting with the DIH actions arising from DT-04-2018.

The Commission considers that proposals requesting a contribution from the EU of between €5 million and €10 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact

- Improved technical capability in each of the core technologies over the current state of the art.
- A greater range of applications in the prioritised application areas that can be demonstrated at TRL 3 and above.
- The lowering of technical barriers within the prioritised applications areas.

Type of action	Research and Innovation action
Deadline	28 March 2019
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-10-2019-2020.html



ICT-13-2018-2019: Supporting the emergence of data markets and the data economy

Specific challenge

The lack of trusted and secure platforms and privacy-aware analytics methods for secure sharing of personal data and proprietary/commercial/industrial data hampers the creation of a data market and data economy by limiting data sharing mostly to open data. This need strongly emerges from recent evidence from stakeholders, both for personal data platforms and for industrial data platforms. The lack of ICT and Data skills seriously limits the capacity of Europe to respond to the digitisation challenge of industry. Specific attention needs to be put in involving SMEs and give them access to data and technology. IT standardisation faces new challenges as technologies converge and federated systems arise, creating new gaps in interoperability.

All grants under this topic will be subject to Article 30.3 of the grant agreement (Commission right to object to transfers or licensing).

Scope

a) Innovation Actions for setting up and operating platforms for secure and controlled sharing of "closed data" (proprietary and/or personal data). **The actions should address the necessary technical, organisational, legal and commercial aspects of data sharing/brokerage/trading, and build on existing computing platforms.** Proposals shall address one or both of the following sub-topics:

- **Personal data platforms shall ensure respect of prevailing legislation** and allow data subjects and data owners to remain in control of their data and its subsequent use. Solutions should preserve utility for data analysis and allow for the management of privacy / utility trade-offs, metadata privacy, including query privacy. **Solutions should also develop privacy metrics that are easy to understand for data subjects and contribute to the economic value of data** by allowing privacy-preserving integration of independently developed data sources.
- **Industrial data platforms shall enable and facilitate trusted and secure sharing and trading of proprietary/commercial data assets with automated and robust controls on compliance (including automated contracting) of legal rights and fair remuneration of data owners.**

The actions are required to link to and bring in industrial data providers (not necessarily as consortium members) that will populate the platforms. Conditions of use and practical arrangements of data sharing should be regulated.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 6 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b) Research and Innovation Actions to advance the state of the art in the scalability and computational efficiency of methods for securing desired levels of privacy of personal data and/or confidentiality of commercial data, particularly when they are combined from multiple owners. **Proposals shall also analyse and address, as appropriate, privacy/confidentiality threat models and/or incentive models for the sharing of data assets.**

c) CSA proposals are invited to cover both of the following tasks:

- **Support the emergence of a data economy by ensuring SME inclusion, entrepreneurial support and trust-building, address the data skills gap.** The CSA action shall liaise with and complement related initiatives, and shall support and work in collaboration with the platforms under ICT-13 a).
- In line with the Communication on ICT Standardisation Priorities for the Digital Single Market, promote standardization, interoperability and policy support in the field of data and federated/networked computing systems.

One CSA will be funded. The Commission considers that proposals requesting a contribution from the EU of EUR 3 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact

a) and b)

- Personal data protection is improved, and compliance with the General Data Protection Regulation (and other relevant legislation) is made easier for economic operators
- **Citizens' trust is improved as privacy-aware transparency and control features are increasingly streamlined across data platforms and Big Data applications.**
- Better value-creation from personal and proprietary/industrial data.
- 20% annual increase in the number of data provider organisations in the personal and industrial data platforms
- 30% annual increase in the number of data user/buyer organisations using industrial data platforms
- 50% annual increase in number of users (data subjects) in the personal data platforms
- 20% annual increase in volume of business (turnover) channelled through the platforms

c)

- **Demonstrated success stories among clients as a result of the services offered by the CSA and at least 50 clients (e.g. start-ups, SMEs) served annually in partner finding, matchmaking, venture capital raising, training, coaching etc.**
- Improved standardisation and interoperability especially in the context of cross-sector applications and technology convergence (data, Cloud, IoT, connectivity a.o.)



Call – Information and Communication Technologies

Type of action	Research and Innovation action, Coordination and support action, Innovation action
Deadline	Call 2018 - 17 April 2018 Call 2019 - 28 March 2019
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-13-2018-2019.html



ICT-24-2018-2019: Next Generation Internet - An Open Internet Initiative

Specific challenge

This initiative aims at developing a more human-centric Internet supporting values of openness, cooperation across borders, decentralisation, inclusiveness and protection of privacy; giving the control back to the users in order to increase trust in the Internet. It should provide more transparent services, more intelligence, greater involvement and participation, leading towards an Internet that is more open, robust and dependable, more interoperable and more supportive of social innovation.

Scope

Involving today's best Internet innovators to address technological opportunities arising from cross-links and advances in various research fields ranging from network infrastructures to platforms, from application domains to social innovation. Beyond research, the scope includes validation and testing of market traction with minimum viable products and services, of new economic, mobility and social models, and involves users and market actors at an early stage. Multi-disciplinary approaches are encouraged when relevant. Eventually this initiative should influence Internet governance and related policies.

a) Research and Innovation Actions

Each Research and Innovation Action (R&I Action) will focus on a given research domain supporting the objective of a human-centric Internet. It will build a European ecosystem of researchers, innovators and technology developers by selecting and providing financial support to the best projects submitted by third parties in a competitive manner.

Through an agile and flexible process, 'R&I Actions' will focus their support on third party projects from outstanding academic research groups, hi-tech startups and SMEs, so that multiple third parties will be funded in parallel contributing to the same research area, using short research cycles targeting the most promising ideas. Each of the selected third parties projects will pursue its own objectives, while the 'R&I Action' will provide the programme logic and vision, the necessary technical support, as well as coaching and mentoring, in order that the collection of third party projects contributes towards a significant advancement and impact in the research domain. The focus will be on advanced research that is linked to relevant use cases and that can be brought quickly to the market; apps and services that innovate without a research component are not covered by this model.

Beneficiaries shall make explicit the intervention logic for their specific research domain, their capacity to attract top Internet talents, to deliver a solid value-adding services package to the third party projects, as well as their expertise and capacity in managing the full life-cycle of the open calls transparently. They should explore synergies with other research and innovation actions, supported at regional, national or European level, to increase the overall impact.

For grants awarded under this topic for Research and Innovation actions beneficiaries may provide support to third parties as described in part K of the General Annexes of the Work Programme. The support to third parties can only be provided in the form of grants. The respective options of Article 15.1 and Article 15.3 of the Model Grant Agreement will be applied.

For the call closing in 2018 'R&I Actions' in the following three sub-topics will be called for. **Proposals should address only one of these sub-topics.**

i) Privacy and trust enhancing technologies: as sensors, objects, devices, AI-based algorithms, etc., are incorporated in our digital environment, develop robust and easy to use technologies to help users increase trust and achieve greater control when sharing their personal data, attributes and information.

ii) Decentralized data governance: leveraging on distributed open hardware and software ecosystems based on blockchains, distributed ledger technology, open data and peer-to-peer technologies. **Attention should be paid to ethical, legal and privacy issues, as well as to the concepts of autonomy, data sovereignty and ownership, values and regulations.**

iii) Discovery and identification technologies: to search and access large heterogeneous data sources, services, objects and sensors, devices, multi-media content, etc. and which may include aspects of numbering; providing contextual querying, personalised information retrieval and increased quality of experience.

'R&I Actions' should encourage, when relevant, open source software and open hardware design, access to data, standardisation activities, access to testing and operational infrastructure as well as an IPR regime ensuring lasting impact and reusability of results.

The Commission considers that proposals requesting a contribution from the EU 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. As a reference, 80% of the EU funding should be allocated to financial support to the third parties, through projects typically in the EUR 50 000 to 200 00034 range with duration of 9 to 12 months. Each 'R&I Action' is expected to run several cycles of third party projects, which requires an overall duration of 24 to 36 months.

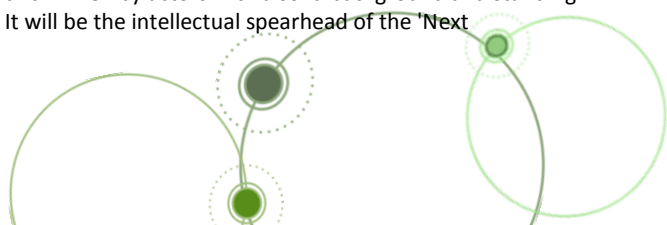
In the call closing in 2018, at least one proposal will be selected in each of the three sub-topics. Another three sub-topics will be identified for the forthcoming call closing 2019; the new sub-topics will be published by the European Commission in the update to the work programme 2019 that will be done before the call is published.

b) Coordination and Support Actions

Coordination and Support Actions are called for in the following three sub-topics. Proposals should address only one of these sub-topics. At least one proposal will be selected in each of the three sub-topics.

iv) 'Technology Strategy & Policy': will engage leading-edge Internet stakeholders and will identify emerging research trends and policy needs, through a continuous public online consultation, open stakeholder engagement, fora and debates, and data analysis.

It should also use the most innovative approaches and technologies, and unconventional ways to maximise involvement of those stakeholders who are new to community programmes and who will actually drive the evolution of the Internet. It should map and cooperate with national/regional initiatives and global activities where relevant. Driven by actors with a solid background and standing in today's NGI community, it aims at sustainability right from the beginning. It will be the intellectual spearhead of the 'Next



Call – Information and Communication Technologies

Generation Internet – An Open Internet Initiative' and will closely engage with the other actions supported in this topic.

These activities could partially be implemented through small prizes; the maximum budget the project can devote to prizes is Euro 300.000. For grants awarded under this sub-topic beneficiaries may provide support to third parties as described in part K of the General Annexes of the Work Programme. The support to third parties can only be provided in the form of prizes. The respective options of Article 15.2 and Article 15.3 of the Model Grant Agreement will be applied.

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

v) 'Technology Harvest & Transfer': will support 'R&I Actions' and their third parties in ensuring the best use of the outcomes created by delivering specific exploitation strategies, including follow-up investment opportunities, industry relations, IPR/knowledge transfers, tech-transfer services to digital innovation hubs, mentoring / coaching services and linkage to national IPR exploitation programmes, in a most innovative and effective way. It will also support impact assessment at the level of the 'Next Generation Internet – An Open Internet Initiative' topic.

The 'Technology Harvest & Transfer' action shall start no earlier than 6 months after the start of the first 'R&I Actions' in 2018. The Commission considers that proposals with a duration of three years and requesting a contribution from the EU of EUR 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other durations or amounts.

vi) 'Outreach Office': will execute the programme communication strategy, branding and marketing activities, including extensive online and social media presence and events, establishing a positive brand image among young researchers, innovators, policy makers and people at large. Centralised, more efficient and professional, it will lead communications towards the outside world but also coach all actions under this topic in effective communications and marketing.

The Commission considers that proposals with a duration of three years and requesting a contribution from the EU of EUR 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other durations or amounts.

Expected impact

Proposals should provide appropriate metrics for the claimed impacts.

- **Shape a more human-centric evolution of the Internet.**
- Create a European ecosystem of top researchers, hi-tech startups and SMEs with the capacity to set the course of Internet evolution.
- **Generate new business opportunities and new Internet companies with maximum growth and impact chances.**
- For sub-topics i, ii and iii: Integrating research and innovation communities; development of common visions and enhanced science – industry collaborations in each of the technology domains.
- For sub-topic iv: European research and innovation leaders driving the debate for a human-centric Internet research and policy strategy.
- **For sub-topic v: New Internet applications / services, business models and innovation processes strengthening the position of European ICT industry in the Internet market.**
- For sub-topic vi: global visibility in the media of the debate on a human-centric Internet; citizens' priorities influencing the evolution of the Internet.

Type of action	CSA Coordination and support action, RIA Research and Innovation action
Deadline	CSA, RIA - 17 April 2018 RIA - 28 March 2019
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-24-2018-2019.html



Call – Information and Communication Technologies

ICT-27-2018-2020: Internet of Things

Specific challenge

Internet of Things (IoT) technologies and applications are bringing fundamental changes to all sectors of activity and are therefore an essential element of the Next Generation Internet. The challenge is to leverage EU technological strength to develop the next generation of IoT devices and systems that build on enhanced sensing/actuating, reasoning capabilities and computational power to the edges, but also new capabilities on the backend, such as artificial intelligence, deep semantic interoperability and novel contractual arrangements like Blockchains.

Scope

Coordination and Support Actions

A support action which will support IoT policies under the Digitising European Industry strategy especially in the context of human-centered IoT. In particular, it should analyse and evaluate security and privacy concepts across on-going and new European projects and initiatives in the IoT Focus Area and carry out trend scouting for future research and innovation policy through liaising with academic, industrial and policy stakeholders. The approach should include to build and sustain a vibrant network of IoT technology providers in Europe as well as ensuring the end-user trust in the security concerns as well respect for privacy.

The CSA will analyse and compile trends in IoT research and innovation with the aim to define research roadmap for future IoT related activities. The CSA shall evaluate and take into account emerging business models and shall support consensus building both with suppliers and users across Europe. It shall disseminate and seek support for results from a broad range of stakeholders in the IoT domain and relevant areas of the Next Generation Internet (NGI) initiative.

The Commission considers that proposals requesting a contribution from the EU of EUR 1.5 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected impact

Broad consensus on a strategy on human-centred IoT evolution improving usability and user acceptance, notably through strengthened security, privacy and user trust.

- Identified roadmap that enables taking the right measures to put Europe in the lead for IoT research and innovation through a long-term evolution of IoT platform strategy and through scientific progress enabling novel, future semi-autonomous IoT applications.
- Capacity to create and sustain a vibrant technology cluster involving all stakeholders including industry, technology, and end-users.

Type of action	Coordination and support action
Deadline	17 April 2018
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-27-2018-2020.html



ICT-28-2018: Future Hyper-connected Sociality

Specific challenge

Future social networks, media and platforms will become the way our societies operate for communication, exchange, business, creation, learning and knowledge acquisition. The challenge is to mobilise a positive vision as to the role that Social Media will increasingly play in all these areas, and to overcome today's critical issues about trust and governance through democratic reputation mechanisms, and user experience.

Scope

Analysing and building the foundation of next generation Social Media platforms towards a "Global Social Sphere", based on peer-to-peer/decentralised, community approaches and free/open source principles. **This foundation shall enhance the role of prosumers, communities and small businesses, mastering technological barriers, introducing innovative and participatory forms of quality journalism, and using various data in a secure manner.** These activities should contribute to overcome the current accumulation of power by central intermediaries often located outside Europe. Proposals are invited for one of the following four subtopics:

Innovation Action

Trustful and Secure Data Ecosystem for Social Media and Media.

a) Content verification - Development of intermediary-free solutions addressing information veracity for Social Media. The solutions to be developed shall contribute to the understanding of information cascades, the spreading of information and the identification of information sources, the openness of algorithms and users' access to and control of their personal data (such as profiles, images, videos, biometrical, geolocation data and local data). Proposals are expected to develop and pilot solutions with a large existing community of citizens, and consortia may include inter alia partners from media, social media, distributed architectures, security and blockchain developers. Linked to this and in order to allow mastering better the complexity for users of Social Media, a Digital Companion interaction component may also be realised. The actions on this subtopic will cooperate for setting-up the basis of an observatory as described in d).

b) Secure Data Ecosystem - Creation of media and social media data business and innovation ecosystem to ensure privacy and secure sharing, as well as fair trade of federated media relevant data produced by media, social media and operators from other industrial sectors across Europe. The involvement of non-media sectors is considered critical to achieve volume and variety of data sets comparable with the ones of leading content aggregators. **The action should address the necessary technical, organisational, legal and commercial aspects of data sharing/brokerage/trading to enable data-driven services.** The action must also develop pilots to demonstrate the potential and sustainability of the federated data solution.

Research and Innovation Action

c) **Support of new Social Media initiatives, and transition to peer-to-peer federated social networks based on smart decentralised architectures. This should be carried out by multidisciplinary and cross-sectorial consortia (technologist, sociologists, artists,...), including inter alia academic and industry partners focussing on web media, platform and application development.** Proposals should include the creation of an open decentralised platform exploiting the added value derived from data aggregation and data analytics, exploring possible applications of blockchain technologies and enabling the development of innovative services and novel forms of distribution of media content. This includes research and innovation on open API, interface design, content production, consumer/prosumer business models including crowd-sourcing models for identification and rewarding of user generated content, open management and portability of profiles, gaming and art aspects. Proposals may also consider aspects of a "Social Networks of Objects", integrating latest European advancements on smart objects, big data, autonomous systems, real-time geolocation⁴¹ and augmented/virtual reality. Proposals should include demonstrations and validation, also leveraging on concepts and technologies addressed elsewhere in the NGI programme.

Coordination and Support Action

d) **Support of Social Media ecosystem community building between different Social Media actors such as developers, designers, users of all ages, artists, entrepreneurs, researchers,** at European and national level, also linking to important international initiatives. **This should include a dynamic app-based tool for community-mapping and an analysis of a future hyper-connected society, considering societal, economic, educational, legal and community-based self-regulation aspects.** In addition, the action shall establish with actions on Content Verification under subtopic a) the basis for an observatory on information veracity and best Social Media practices.

The Commission considers that proposals requesting a contribution from the EU of maximum 2,5 MEUR for subtopic a), 5 MEUR for subtopic b) and c) and 1 MEUR for subtopic d) would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

At least one proposal will be selected for subtopics a) and b). Proposals should clearly state which subtopic they address.

Expected impact



Call – Information and Communication Technologies

- Increased trust and improved governance and value for Social Media and Media
- New federated Social Media platforms and innovative media data driven services
- Societal change towards digital literacy and citizen participation

Type of action	Innovation action, Research and Innovation action, Coordination and support action
Deadline	17 April 2018
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-28-2018.html



ICT-29-2018: A multilingual Next Generation Internet

Specific challenge

The activities under this topic will support technology-enabled multilingualism for an inclusive Digital Single Market. Every European should be able to access content and engage in written and spoken communication activities without language being a barrier. Content and services, such as those provided by public administrations, are not available in multiple languages. Linguistic fragmentation means that many citizens and businesses cannot fully engage in online activities and benefit from online content and services. The sheer volume of content, the diversity of content types and modalities as well as the diversity of languages in Europe makes the effective roll-out and provision of multilingual solutions challenging.

Scope

The actions will address technological challenges (for language resources and interoperable language tools) and support coordination and networking by exploiting excellences and synergies with activities carried out in the Member States and Associated Countries. They will push research results to those who need them and support technology transfer and breakthroughs.

a) Innovation Action: A European Language Grid

The action shall:

- i. develop the architecture and components for a public, open and interoperable grid connecting resources and tools, sharing and combining resources to support effective development and deployment of language technologies (software and services) across Europe. It shall provide easy access to basic natural language processing tools and services for European languages. The action shall cater for both consolidation of existing and a seamless inclusion of new resources and tools available for free or/and for a fee, enabling providers to control access rights reflecting their policies. The end-users of the grid shall be closely involved in the process.
- ii. coordinate the work of the European Language grid and all actions supported under this topic and address the interoperability issues. It shall identify barriers for deploying multilingual services and establishing language infrastructure at European scale, including any skills gap. **The action shall address legal and organisational obstacles, facilitate coordination** between various European, national and regional activities through a structured dialogue and the establishment and exchange of best practices.
- iii. pilot the European Language Grid in specific sectors of high commercial and/or societal impact, through small scale demonstrators geared towards an innovative integration of language technologies in specific operating processes/operations. **The action shall provide facilities for collaboration, technical and linguistic guidance, access to open-source tools and open language resources (available through the grid), access to venture capital, and promotion and dissemination events.** The results of all small scale demonstrators should be made available through the European Language grid under appropriate licensing conditions. The action shall select these small scale demonstrators through the use of financial support to third parties. Up to 30% of the EU funding of the action should be allocated to the financial support of these third parties, typically of the size of EUR 100 000 to 200 000 per third party⁴² and a duration of about 9 to 12 months. Financial support to third parties should in line with the conditions set out in Part K of the General Annexes.
- iv. establish competence centres / nodes in Member and Associated States. It shall build on the previous EC-funded actions within the FP7, H2020 and CEF43.

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

b) Research and Innovation Action: Domain-specific/challenge-oriented Human Language Technology

The actions shall

Advance the state of art in Human Language Technologies through well-identified mission-oriented challenges involving researchers and industrial users of language technologies. Each proposal should address a specific sector of high commercial and/or societal impact or a technological challenge common/relevant to several sectors. **Proposers should include a detailed analysis of the expected advances in terms of language technology-related research.** The actions should address concrete real-life issues defined by industrial users. The proposals must convincingly argue the demand for the proposed solution and provide clear indicators to benchmark the research results. **The projects shall create a sustainable ecosystem of multilingual applications and services tailored for the specific needs of the addressed sector.**

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

Expected impact

- Provide European research and language technology industry with a better access to and usage of quality language resources and tools;
- Increase in the quality and coverage of multilingual solutions used by industrial players in sectors relevant to the emergence of the Digital Single Market;
- Increase in the uptake of language technologies in Europe in various sectors;
- Cost savings for private and public sector users of language technology solutions.



Call – Information and Communication Technologies

Type of action	Research and Innovation action, Innovation action
Deadline	17 April 2018
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-29-2018.html



ICT-30-2019-2020: An empowering, inclusive Next Generation Internet

Specific challenge

Every citizen, from all walks of life, should be able to fully take part in the Digital Single Market. This means that the Next Generation Internet will have to empower users, including its most vulnerable or disabled one, to have access to the same digital learning opportunities, in forms that are accessible, perceivable and understandable by everybody.

Scope

The objective is to support actions on smarter, open, trusted and personalised learning solutions to optimise digital learning and to allow learners to engage and interact with content and with peers.

a. Innovation Action: Digital Learning Incubator

The objective of this action is to **advance personalised and inclusive digital learning through a fast-paced adoption cycle of technological and methodological solutions**. The work will build on cross-links and advances in the various NGI technologies (such as machine-learning, AR/VR, AI) research fields and foster synergies between all the relevant market players, researchers and educational agents working on promising and innovative products. The action will be based on a "push and pull" strategy whereby the research actors push the best research projects to enter the innovation cycle and the market actors pull for the ideas with best market traction.

The action will:

- set up an Incubator bringing together all relevant stakeholders to form strategic alliances that can jointly achieve fast-paced breakthroughs in the area of personalised and inclusive learning online. The Incubator will allow fast-track experimentations in form of small scale projects, providing access to knowledge, research prototypes, learning resources and data to parties interested to conduct these experimentations.
- launch open calls for highly promising small scale projects to work on a topic/challenge set out in a roadmap. It shall foresee suitable arrangements for organizing the corresponding competitive evaluation and selection.

The action shall select these small scale projects through the use of financial support to third parties. Up to 90% of the EU funding of the action should be allocated to the financial support of these third parties, typically of the size of EUR 100 000 to 200 000 per third party and a duration of about 9 to 12 months. Financial support to third parties should in line with the conditions set out in Part K of the General Annexes.

The Commission considers that up to 1 proposal requesting a contribution from the EU of around 7 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

b. Coordination and support action in the area of Digital Learning

The action will:

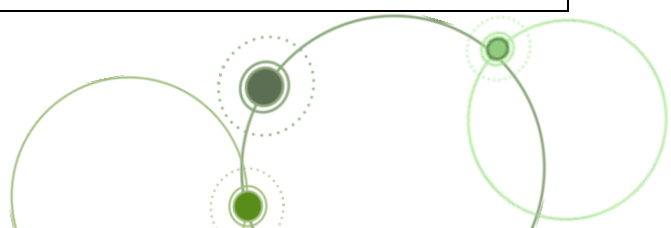
- stimulate the collaboration between all EU-funded FP7 and H2020 projects on digital learning, analyse the outcomes and best practices carried out in these projects, support the dissemination of their results as well as ensure their integration within the Next Generation Initiative and link with other support measures.
- **identify: a) emerging research challenges, notably those arising from digital certification of learning outcomes and blockchain technologies and their uptake for a more inclusive and personalised learning; b) address legal, organisational and technological challenges underpinning the uptake of the proposed solutions, notably in relation to their scalability; c) make policy recommendations in view of the priorities of the next programme for research, innovation and deployment.**

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

Expected impact

- **Increase in the overall uptake of technology for personalised and inclusive learning for all, regardless of their age, gender or other socioeconomic factors.**
- Increase in the number of distributed learning solutions for children with special educational needs.
- Increase in the number of start-ups/SME's deploying personalised and inclusive learning solutions to the market.

Type of action	CSA Coordination and support action, IA Innovation action
Deadline	28 March 2019
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-30-2019-2020.html



ICT-32-2018: STARTS – The Arts stimulating innovation

Specific challenge

The ever-increasing role of technology in our daily life offers huge potential for added value for our society. Artists can help unleash this potential. They can help shape a better relation of technology and humans and stimulate human-centred innovation through their transversal competencies and unconventional thinking. The challenge of the S+T+ARTS=STARTS program – innovation at the nexus of Science, Technology and the Arts - is to better address innovation in industry and society by engaging artists in European R&I projects to explore unconventional art-inspired solutions to industrial/societal problems.

Scope

The topic will support art-driven innovation in European R&I projects by inclusion of artists in research consortia.

a) STARTS lighthouse pilots (RIA instrument) will explore art-inspired solutions to industrial/societal challenges in two chosen areas. Pilots will engage industry, technology, end-users, and artists in a broad artistic exploration of technologies with the aim of creating novel products, processes and services that respond better to human needs. The added value of artistic practices to realise unexpected solutions via artistic exploration must be clearly put forward in the two light house pilots.

(i) Lighthouse pilot in 'art-inspired interactive human-centred environments' created by digital objects and novel media, like IoT, augmented reality or social media. The pilot will explore how these digital objects and media can lead – via artistic exploration – to novel experiences and new models for creativity and thereby to unexpected solutions for challenges in the city, in the home or for mobility.

(ii) Lighthouse pilot in 'art-inspired urban manufacturing' driven by de-centralised digitally-enabled production systems and co-creation in urban environments. The pilot will explore how digitally-enabled small-scale production/manufacturing systems and networks combined with artistic exploration and creativity in design and process - can revive the social, ecological and economic urban space and lead to unexpected products and services in an urban environment.

It is expected to fund one lighthouse pilot in each of the two chosen areas (i) and (ii). For grants awarded under this topic for Research and Innovation Actions at least 30% of the EU funding requested shall be allocated to contributions to the work by artists and creatives.

For grants awarded under this topic for Research and Innovation Actions beneficiaries may provide support to third parties as described in part K of the General Annexes of the Work Programme. The support to third parties can only be provided in the form of grants. The respective options of Article 15.1 and Article 15.3 of the Model Grant Agreement will be applied. Third party support is expected to help cover the work of artists and creatives.

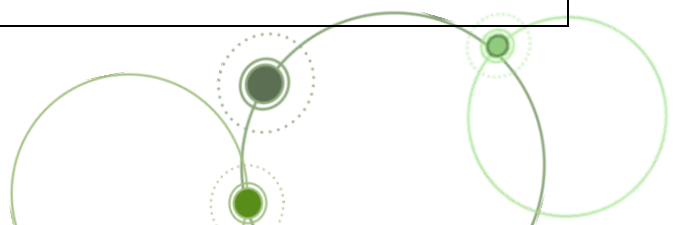
b) Coordination and Support Action (CSA instrument) to create a STARTS ecosystem by coordinating artistic and innovation relevant aspects of the two lighthouse pilots and of other European/international R&I projects that put artists and creatives at the centre of innovation. Tasks comprise analysing and helping implement best practices for including artists in R&I, organising events, providing online spaces for artists and technologists to meet, presenting the results from art-technology collaborations in exhibitions that are highly visible in the art world and in industry, and assisting European research teams to learn from art and design thinking as a strategy for innovation.. It is expected to fund one Coordination and Support Action.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 4 million for each of the two light house pilots for Research and Innovation Actions and of up to EUR 1 million for maximum one Coordination and Support Action would allow the areas to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. All proposals under a) and b) should target a duration of 3 years.

Expected impact

- The demonstration of value-added to industry and society in having artists contribute to the development of radically new products, services and processes.
- Signalling effect for future uptake of art-driven solutions to concrete industrial and societal challenges and art-driven user-centred products and services.
- Efficient working models how art-technology collaboration can contribute to innovative processes in research, industry and society.
- Burgeoning STARTS ecosystem involving industry, technology, research, end-users, societal stakeholders, and the Art world that reconciles and unites the goals and thinking of industry and technology with that of the Art world.

Type of action	Coordination and support action, Research and Innovation action
Deadline	17 April 2018
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-32-2018.html



ICT-33-2019: Startup Europe for Growth and Innovation Radar

Specific challenge

The challenge is to scale up innovative businesses across the EU, detect high potential innovations and support innovators in going to market. Actions under this heading reinforce the Startup Europe⁴⁷ and Innovation Radar initiatives and link to the activities of the European Innovation Council in a complementary way by targeting exclusively ICT innovators that are not supported by the EIC.

Scope

Actions should help startups and scaleups achieve market success and mature the innovation excellence of high potential innovators. Actions should support the creation of new jobs and high growth businesses and support their growth on a pan-European and international level. Innovators identified, promoted and supported by the Innovation Radar are expected to enrich and benefit from the Startup Europe ecosystem. Projects should demonstrate sustainability of proposed actions beyond the life of the project. Where appropriate, the projects should seek synergies with ESIF funds or ESIF supported actions in order to improve the synergies between H2020 and ESIF.

a. Innovation actions

Connecting local tech startup ecosystems and supporting cross-border activities: among the 4-5 startups ecosystems connected by each project, at least half of them will be located in less developed ecosystems. The project should develop a single online entry point to each one of the ecosystems and connect them to the Startup Europe one-stop-shop. Cross-border activities will include: connecting tech entrepreneurs with e.g. potential investors, business partners, accessing skills and services helping startups soft land in new international markets. Particular focus will be placed on stimulating partnerships between scaleups and corporates with a view to procurement, mergers or acquisitions. Similar attention will be placed to support SMEs, startups and scaleups, wherever situated in Europe, to access public procurement opportunities across borders.

b. Coordination and support actions

- **Provide targeted and tailored support to SMEs, startups, scaleups, spinoffs and market-oriented researchers planning to launch a spin-off**, who are supported by EU funded ICT projects and are delivering market-creating innovations that have scale-up potential.
- Insight and intelligence from the Innovation Radar is to be used to detect EU-funded innovators who face the biggest market opportunities (enhancement of Innovation Radar data by merging with relevant third party data sources is welcomed).
- **Support is expected to include mentoring, coaching, investor readiness training, coaching on how to bid for public procurement sales opportunities, connecting innovators with potential customers, business partners and investors** (Business Angels, Venture Capital, Crowdfunding and other relevant forms of financing).

Expected impact

Proposals should address the following and provide appropriate metrics for measuring success with respect to a defined baseline:

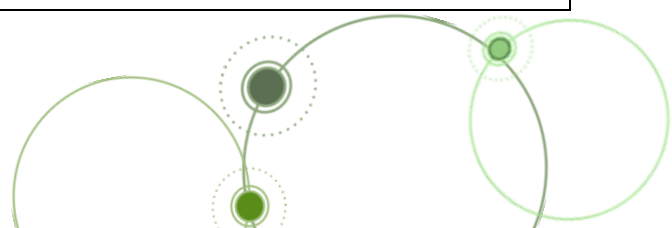
a. Innovation actions

- Increased connectedness among members of tech startup ecosystems and their companies (startups and scaleups) and to the larger European business ecosystem seeking maximum synergies;
- Increased access to customers, private and public, better access to qualified employees, access to the right combination of finance and prospects for scaling up across border;
- Stimulate European investments in digital sectors through increasing the number of cross-border investments; Demonstrate sustainability of proposed actions beyond the life of the project.

b. Coordination and Support actions

- Increase the number of digital technology based spin-offs, startups and scale-ups or successfully transferred technology from EU funded projects;
- Enable innovative ICT based companies or technology to reach investment maturity and market introduction readiness, and/or winning for the first time public procurement contracts across the EU.

Type of action	Innovation action, Coordination and support action
Deadline	28 March 2019
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-33-2019.html



ICT-35-2018: Fintech: Support to experimentation frameworks and regulatory compliance

Specific challenge

"Fintech" is at the confluence of various digital technologies, financial areas and the entrepreneurial landscape, with many startups and scaleups proposing disrupting services. The challenge is to increase the role Europe play in Fintech so that EU startups can better scale-up across Europe and at global level. Facilitating the interactions between innovators, supervisors and regulators is particularly relevant in this context.

Scope

- **Bring together a group of regulatory or supervisory bodies, and other relevant organisations to investigate new approaches for piloting innovative Fintech solutions, anticipating risks, and facilitating the operations of Fintech firms that want to grow and scale-up across Europe.**
- **Build capacity and expertise regarding new technologies and models to support early understanding for regulators or supervisors and to offer specific advice to Fintech firms that want to grow and scale-up across Europe. Such regulatory advice would be provided by pools of experts. It should in particular support common understanding and interpretation of data-related policies and rules.**
- Support the cross-border networking of ecosystems, hubs and accelerators focusing on Fintech, in particular to help startups appraise regulatory issues, to engage with other stakeholders like established financial or insurance firms and to identify opportunities for innovation procurements in Fintech.
- **Envisage possible actions and technical solutions to evaluate the impact of regulation and facilitate regulatory compliance in financial areas. This could concern in particular initiatives based on distributed ledger technologies, advanced regtech solutions or algorithmic regulation.**

Expected impact

- Reinforce the position of Europe amongst leaders in Fintech, encouraging cross border collaboration and practical approaches for Fintech experimentation frameworks; enabling Fintech firms to grow and scale-up across Europe.
- Develop common understanding, interpretation and expertise regarding technology evolution and Fintech-related regulations and policies, in particular those concerning data.
- Put Europe in the lead for innovating in regulation, appraising the impact of regulation and facilitating regulatory compliance.

Type of action	Coordination and support action
Deadline	17 April 2018
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-35-2018.html



SU-ICT-01-2018: Dynamic countering of cyber-attacks

Specific challenge

The prevention of and the protection against attacks that target modern ICT components, complex ICT infrastructures and emerging technologies (e.g. IoT) remains a difficult task. The complexity of heterogeneous collections of hardware and software components finds its roots in the diversity of development contexts and of levels of maturity, in the growing means of networked interactions, in the massive exchange of information and data, and in the varied schedules of systems lifecycles that generate highly dynamic behaviours. The increase of encrypted flows over the Internet should lead to adopt new techniques for detection of suspicious cyber activities and traffic patterns, and for classification of flows, while keeping privacy and confidentiality. Another relevant challenge is to use machine learning and analytics for cybersecurity.

Scope

Proposals are invited against at least one of the following two subtopics:

a) Cyber-attacks management - advanced assurance and protection

Innovative, integrated and holistic approaches in order to minimize attack surfaces through appropriate configuration of system elements, trusted and verifiable computation systems and environments, secure runtime environments, as well as assurance, advanced verification tools and secure-by-design methods. **This may entail a whole series of activities, including behavioural, social and human aspects in the engineering process until developed systems and processes address the planned security/privacy/accountability properties.**

Proposals should explore how recent progress in artificial intelligence, in deep learning and in other related technologies can be used to provide breakthroughs in the fight against cyber-attacks (e.g. recognition of malicious activities on the network). Deep learning applications may also be used for cyber threat intelligence in anticipation of cyberattacks to identify malicious activity trends in the cyber space and correlate with attackers' information, tools and techniques.

Proposals may also cover secure execution environments not only including the execution platforms themselves plus the operating systems, but also the mechanisms (e.g. security supporting services, authentication/access control mechanisms) that ensure an adequate level of security, privacy and accountability in the execution of all processes.

Proposals are encouraged to provide mechanisms for informing the users on their security/privacy levels, for providing warnings and assisting them in handling security and privacy related incidents.

b) Cyber-attacks management – advanced response and recovery

Innovative capabilities to dynamically support human operators (e.g. Incident Response professionals), in controlling response and recovery actions, including information visualization. The capabilities should include the assessment how attacks propagate in a particular infrastructure and/or across interconnected infrastructures (e.g. attack-defence graphs) and what the best measures are to withstand and recover from a threat/attack, including the convergence with measures beyond cyber that can be needed (e.g. security policies).

Proposals should address the use of -and the contribution to- appropriate threat intelligence sources as well as the share of information with relevant parties (e.g. industry cooperation groups, Computer Security Incident Response Teams - CSIRTs).

Proposals should explore forensics, penetration testing, investigation and attack attribution services -local or remote- to achieve proper identification and better protection against future attacks and zero-day vulnerabilities. Approaches can include the combination of massive data and logs collection from various sources (e.g. network traffic, dark web) to facilitate investigation on security alerts and to find suspicious files trajectories in order to have the most appropriate response. Efficient utilization of both structured data (e.g. logs) and unstructured data (e.g. data coming from social networks such as pictures, tweets, discussions on forums) should be addressed.

Applicants should also consider the efficient handling (e.g. classification, anomaly detection) of encrypted network traffic and in particular where data stays encrypted, while keeping compliance with end user's privacy requirements.

Proposals need to consider dynamic, evidence based security and privacy risk assessment methodologies and management tools targeting emerging/advanced technologies (e.g. IoT, virtualised and service-oriented systems/networks).

Proposals are encouraged to provide mechanisms for informing the users on their security/privacy levels, for providing warnings and assisting them in handling security and privacy related incidents.

The outcome of the proposal is expected to lead to development up to Technology Readiness level (TRL) 6; please see Annex G of the General Annexes.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 and 5 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

For grants awarded under this topic for Innovation Action the Commission or Agency may object to a transfer of ownership or the exclusive licensing of results to a third party established in a third country not associated to Horizon



Call – Cybersecurity

Expected impact

Short/medium term

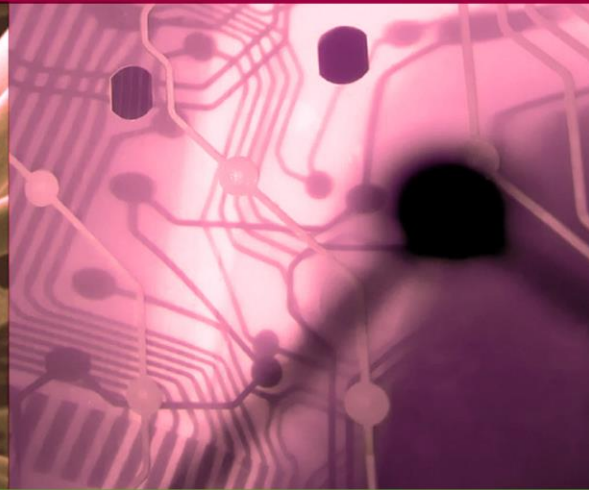
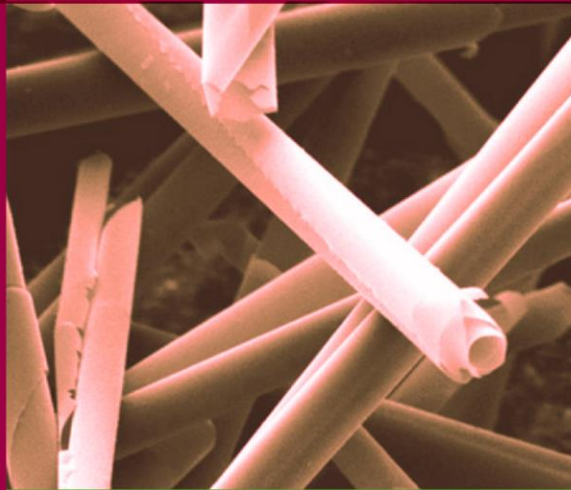
- Enhanced protection against novel advanced threats.
- Advanced technologies and services to manage complex cyber-attacks and to reduce the impact of breaches.
- The technological and operational enablers of co-operation in response and recovery will contribute to the development of the CSIRT Network across the EU, which is one of the key targets of the NIS Directive.

Long term

- Robust, transversal and scalable ICT infrastructures resilient to cyber-attacks that can underpin relevant domain specific ICT systems (e.g. for energy) providing them with sustainable cybersecurity, digital privacy and accountability.

Type of action	Innovation action
Deadline	28 August 2018
Call identifier	H2020-ICT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-ict-01-2018.html





Leadership in Enabling and Industrial Technologies

Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

Net **4** Society

Call – Foundations for tomorrow’s industry

NMBP-13-2018: Risk Governance of nanotechnology

Specific challenge

Significant progress has been achieved in relation to research regarding the safety of engineered nanomaterials and the transfer of this knowledge into regulation. Still, more needs to be done as nanotechnology reaches the market. **To fill this gap, transdisciplinary risk governance is required based on a clear understanding of risk, its management practices and the societal risk perception by all stakeholders.** It should propose and apply clear criteria for risk evaluation and acceptance and for transfer of acceptable risk. It should develop reinforced decision making tools incorporating those aspects and facilitate risk communication to relevant stakeholders, including industry, regulators, insurance companies and the general public.

Scope

- Data and information management and framework tools with regard to the safety of nanomaterials for risk assessment, hazard and exposure, human health and environment, and risk mitigation including regulatory aspects of safe-by-design;
- Responsible communication with stakeholders and the civil society based on good quality information and valuable feedback;
- **Plans for future scientific and regulatory research paying attention to social, ethical and environmental aspects, to achieve completeness, consistency, maximum synergy of actions and international cooperation;**
- Mechanisms to monitor progress in several industrial sectors and to revise plans.

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 4 and achieve TRL 6 at the end of the project.

The Commission considers that proposals requesting a contribution from the EU around 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

- A transparent, self-sustained and science-based risk governance council;
- **Governance framework tools for managing possible nanotechnologies risks in regard to social, environmental and economic benefits;**
- Availability of high quality data for industry and regulators decision making;
- Sustainable solutions demonstrated at a level that will allow both consistent integration of scientific results and regulatory application of scientifically sound concepts;
- Consistency of science based risk management approaches in all EU Member States and synergy with similar actions internationally.

Type of action	Research and Innovation action
Deadline	1st stage - 23 January 2018 2nd stage - 04 September 2019
Call identifier	H2020-NMBP-TO-IND-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/nmbp-13-2018.html



Call – Transforming European industry

DT-FOF-01-2018: Skills needed for new Manufacturing jobs

Specific challenge

Breakthrough education and training paradigms for continuous training of the existing workforce are needed, that will enable the European industrial workforce to develop new skills and competences in a quick and efficient way. This should put workers, both women and men, at the forefront of innovation and drive industry towards a smooth transition to the use of increasingly sophisticated machines and new technologies.

Advanced Manufacturing, one of the six Key Enabling Technologies (KETs), is a highly innovative sector in Europe. In line with the New Skills Agenda for Europe, there is a need to strengthen human capital, employability and competitiveness for this KET. The Blueprint for Sectoral Cooperation on skills is one of the ten actions in this Agenda. This topic will support the implementation of the Blueprint beyond Additive Manufacturing within several areas from the Factories of the Future priorities.

Scope

- Identify shortages and mismatches in technical and non-technical skills, knowledge and competences in Advanced Manufacturing (including digital capabilities);
- Map the most relevant existing national initiatives upskilling the existing workforce in order to develop an EU wide strategy;
- Put in place activities related to lifelong learning and granting of qualification for personnel in industrial settings. Develop real case scenarios providing efficient methodologies that can be applied in a variety of industrial areas;
- **Innovative and hands-on approaches, including Social Sciences and Humanities (SSH) elements, in upskilling of the existing workforce and attracting more women to the field, through training activities (including training of trainers) and knowledge management with direct involvement of senior employees. On-site, modular and e-learning education should be offered free of charge for re-use;**
- Exchange of information between industry, trade unions, educational centres, national employment agencies at European scale.

Proposals are also encouraged to seek synergies with national initiatives funded under the European Social Fund, projects from the Skills Alliances and, where relevant, other future initiatives launched at European level.

The Commission considers that proposals requesting a contribution from the EU between EUR 1 and 2 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

- Real and measurable steps towards the reduction of identified skill gaps leading to the upskilling of the existing workforce in Europe and, as a consequence, increased innovation performance in the industry concerned;
- At least 15 new job profiles per industrial area analysed, leading to a longer work life for jobholders;
- Close and continuous engagement between relevant industry, trade union, academia, educational centres (including vocational schools) across Europe to stimulate networks in the European Research Area as a whole.

Type of action	Coordination and support action
Deadline	22 February 2018
Call identifier	H2020-NMBP-TR-IND-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-fof-01-2018.html



Call – Transforming European industry

DT-FOF-05-2019: Open Innovation for collaborative production engineering

Specific challenge

The transfer to industrial companies of the Do It Yourself (DIY), fablabs, micro-factories and makers approaches can pioneer ways towards engineering solutions throughout the whole value chain. These innovative methods can lead to new processes, machines and products with new functionalities and shorter time to market.

Industry is not yet widely using such innovative approaches to engage consumers and respond to societal needs, also taking into account the individual preferences of women and men. Collaborative production liaising companies, especially SMEs, with these new approaches can however create Open Innovation networks that can unroll a wide range of entirely new business opportunities for the benefit of consumers.

Scope

Proposals should particularly cover consumer-goods sectors and couple design, creativity and knowledge with a customer-driven production. The co-creation of products in both ends of the value chain represents customer involvement in the production. In particular, proposals should cover at least three out of the following areas:

- Novel approaches to capitalise on the knowledge and ideas of design and engineering coming from different and even new actors;
- **Design of new strategies based on creative and agile methodologies for analysis;**
- **Development of knowledge, technologies and tools to share and analyse relevant data and demands from users** as well as to fully enable collaborative engineering in the production network, allowing all actors to propose innovative solutions;
- Development of open source product data exchange and standard representations of products and processes that ensure the compatibility of modelling and simulation with different process information systems;
- Development of new Manufacturing Demonstration Facilities (MDFs), where companies will test new technologies in cooperation with fablabs and makers in order to develop real industrial products and where training is offered.

Proposals also need to take into account Social Science and Humanities (SSH) aspects regarding creativity.

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 4 and achieve TRL 6 at the end of the project.

The Commission considers that proposals requesting a contribution from the EU between EUR 4 and 6 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

- Establish Open-Innovation networks for manufacturing that support customer-driven production all around Europe;
- **Creation of specific business models for the engineering of customised solutions, particularly for SMEs, rapid demand changes and shorter time to market;**
- **Improvement of the co-design and co-development capabilities towards a reduction of development costs of new products and services;**
- Increase of product variety and personalisation for higher customer satisfaction and loyalty.

Type of action	Innovation action
Deadline	21 February 2019
Call identifier	H2020-NMBP-TR-IND-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-fof-05-2019.html



Call – Transforming European industry

DT-NMBP-20-2018: A digital 'plug and produce' online equipment platform for manufacturing

Specific challenge

One of Europe's strengths in manufacturing is its abundance of SME equipment manufacturers with the capability to offer world-class products of highest quality and precision. A further strength is the large number of actors having off-the-shelf prototypes ready for experimentation and for market uptake. To increase their visibility towards global users of equipment and to further support digitisation of manufacturing, industrial online platforms needs to be developed and set up for use on the market.

Scope

(a) design and build the digital platform that brings together suppliers and users in a transparent and efficient way; and (b) populate it with adequate product information. This will constitute a set of pilot implementations intended to sell 'plug and produce' industrial equipment and services to customers globally. The platform should therefore facilitate B2B transactions and host associated services in the form of digital product models allowing users to simulate (e.g. digitally test) the capabilities of the equipment on offer and its compliance to standards. This will ultimately boost product quality, transparency and usability based on Return on Experience The digital platform should enable all of the following:

- Transparency of product features, capabilities, resource use, associated add-on services and price;
- Customer feedback, real-time use feedback (anonymised as needed) and associated options;
- Scalability with respect to technological development and manufacturing application domains;
- Information about standards and regulatory compliance (e.g. the facilitation of re- and de-manufacturing) as well as security requirements.

Social Sciences and Humanities (SSH) elements should cover issues such as business model/ownership economics and adequate administration. Work should cover in particular user interface aspects to encourage active customer feedback.

Activities under (b) include the incorporation of suppliers or users of the equipment pilots and/or developers of additional applications and services where appropriate. Beneficiaries may provide support to third parties as described in part K of the General Annexes of the Work Programme. The support to third parties can only be provided in the form of lump sums. The respective options of Article 15.1 and Article 15.3 of the Model Grant Agreement will be applied.

Each consortium will define the selection process of the third parties for which financial support will be granted. The typical amount per party shall be in the order of EUR 50 000 to 100 000, as these parties are responsible for achieving the objective of activities under (b).¹¹ Around one third of the EU funding requested by the proposal shall be allocated to the purpose of financial support to third parties.¹²

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.

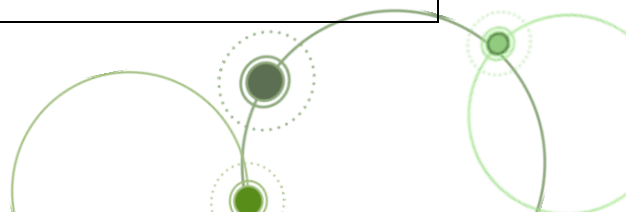
Activities should start at TRL 5 and achieve TRL 7 at the end of the project.

This topic is part of the lump sum funding pilot scheme¹³. Funding for grants awarded under this topic will take the form of a fixed lump sum of EUR 7.5 million.

Expected impact

- Deliver a B2B online platform covering at least one key industrial equipment domain and mobilising actors across Europe;
- Demonstrate the full capability of the platform in one dedicated industrial domain, including associated product services (e.g. digital models enabling functional simulation) and including the services from all third parties selected in line with the conditions set out in Part K of the General Annex;
- Showcase the platform's scalability capability (towards all relevant industrial domains) via a reference architecture;
- **Deliver a credible business plan that ensures long-term deployment and profitability, as well as scalability beyond the initial public financing phase;**
- Demonstrate industry-wide support through an inclusive governance structure;
- **Increase market opportunities for the users of the platforms, including SMEs.**

Type of action	Innovation action
Deadline	08 March 2018
Call identifier	H2020-NMBP-TR-IND-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-nmbp-20-2018.html



Call – Transforming European industry

DT-FOF-02-2018: Effective Industrial Human-Robot Collaboration

Specific challenge

Human-Robot Collaboration (HRC) on the factory floor has a high potential economic impact for European industry.

Past research to implement HRC in an industrial setting concentrated largely on safety of humans, allowing workers and robots to share working space without fences. Most of the developments started from existing industrial robotic arms, augmenting it with technologies to make it safe for humans to interact with the robot. This has already led to production environments with safe interaction between humans and robots. However genuine collaboration between humans and robots require more holistic solutions encompassing smart mechatronic systems designed to improve the quality of the job performed and to increase flexible production. Such systems have not yet been demonstrated for manufacturing purposes.

In order to move from a structured factory floor where robots work behind closed fences to an open environment with smart mechatronic systems and humans collaborating closely, interdisciplinary research in the fields of robotics, cognitive sciences and psychology is required, also taking into account regulatory aspects. More attention has to be paid to develop novel inherently-safe robotic concepts where collaboration with humans is taken up already in the design phase. In order for effective HRC to be taken up by industry, beyond safety aspects, including ergonomics, adaptability, liability issues, inclusiveness of vulnerable workers, acceptability and feedback from users need to be considered in a holistic way.

Scope

Proposals need to extend the current state of the art of individual HRC to work environments where robots and workers function as members of the same team throughout the factory.

Proposals should cover two of the following three areas:

- Integration in industrial production environments of novel human-centred designed smart mechatronic systems such as for example soft robotics for high payloads;
- Implementation of novel artificial intelligence technologies capable of massive information processing and reacting in real-time to enable new levels of autonomy, navigation, cognitive perception and manipulation for robots to collaborate with humans in the process;
- Development of methods for robotic hazard assessment and risk management to clarify trade-offs between productivity and safety for mixed human-robot smart devices environments.

Proposals need also to take into account Social Sciences and Humanities (SSH) elements regarding human-related barriers for the uptake of smart mechatronic systems including robot technology in industrial environments such as ergonomics, user experience, comfort, trust, feeling of safety and liability in modern production facilities, taking into account age and gender aspects.

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 4 and achieve TRL 6 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

- Demonstrating the potential to bring back production to Europe;
- 15% increase in OECD Job Quality Index through work environment and safety improvement;
- 20% reduction in production reconfiguration time and cost.

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

Type of action	Research and Innovation action
Deadline	22 February 2018
Call identifier	H2020-NMBP-TR-IND-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-fof-02-2018.html



Call – Transforming European industry

BIOTEC-01-2018: Standardisation in Synthetic Biology

Specific challenge

Systems biology and synthetic biology are scientific fields with potential to transform our way to understand and interact with nature. Synthetic biology combines knowledge and tools from biology and engineering for the design of biological systems that are thus programmed to do what we want them to do, be it for pharmaceutical products (e.g. active pharmaceutical agents or enzymes), in the environment (e.g. bio-pesticides), or industry (e.g. biochemicals).

Standardisation in electric and mechanical engineering has underpinned the success of global industrial production. However, the question remains about how much of this can be imported into the biological domain. Standards for the biological components used by synthetic biology will facilitate creating the blueprint of a given component with identical representation methods. This could bring major advancement in biotechnology and strengthen European leadership in future biotechnological research and production.

Scope

Proposals will be based on equivalent standardisation experiences that can be imported into the biological realm along with a thorough analysis of the functions of live systems that can be amenable to standardisation, generating new approaches where previous experiences do not apply. It will involve a dialogue with experts of the relevant disciplines on the necessary steps to set up principles for understanding, measuring, refining and, to the extent possible, standardizing the engineering of biological systems in support of their broad application in different industrial sectors. Standardisation will be considered in the following fronts: designation of the component/part, specifications, methodologies involved and assembly. Proposals will take into consideration worldwide actions to create synergies and partnerships between leading EU and international scientists, engineers and industrialists.

Proposals will include Social Sciences and Humanities (SSH) elements regarding the ethical dimensions and the environmental impact of products issued from synthetic biology research.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is particularly encouraged.

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.

The Commission considers that proposals requesting a contribution from the EU up to EUR 2 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 list of the most urgent standardisation needs via current practice leading to homogeneity in research and production;
- Identified scientific research gaps whose elucidation would accelerate standards-driven biological engineering;
- A realistic strategy based on research programmes, resources, facilities and structures needed to sustainably support the establishment of and compliance with standards for synthetic biology in the EU in the medium to long term.

Type of action	Coordination and support action
Deadline	22 February 2018
Call identifier	H2020-NMBP-TR-IND-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/biotec-01-2018.html



Call – Transforming European industry

BIOTEC-02-2019: Boosting the efficiency of photosynthesis

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 CO₂ 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 CO₂ 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 CO₂-fixation;
- engineered enzymes for novel CO₂-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.

Type of action	Research and Innovation action
Deadline	1st stage - 22 January 2019 2nd stage - 03 September 2019
Call identifier	H2020-NMBP-TR-IND-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/biotec-02-2019.html



NMBP-33-2018: Innovative and affordable solutions for the preventive conservation of cultural heritage

Specific challenge

Preventive conservation (PC) prevents damage or reduces the potential for damage of cultural heritage (CH) artefacts. In the long term, it is more cost efficient than remedial conservation, which can be orders of magnitude more expensive than appropriate PC measures. In particular small and medium sized museums struggle to fulfil international recommendations for PC and to implement necessary technologies, e.g. for environmental control and monitoring, mainly because of lack of budget and/or expertise.

Scope

The proposed solution should include the following three main elements:

- One or more innovative low-cost tools/solution for PC of movable CH artefacts (in storage and/or on display) should be developed;
- The solution(s) should include monitoring of individual or groups of similar artefact types to allow continuous remote data acquisition for key-parameters and/or conservation status of artefacts;
- Multi-scale modelling (i.e. linking different types of models such as electronic, atomistic, etc.) should be an integral part of the activities and should at least allow predictions about the CH degradation based on the monitoring data. Building on on-going efforts is encouraged.

The majority of resources should be spent on the development of actual tools/solutions rather than new models. **Proposals should present clearly measurable objectives. Convergent contributions from SSH disciplines should be considered at least for the CH targeting criteria. Standardisation and/or the production of (certified) reference tools and/or pre-normative research should be an integral part of the proposal.**

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is strongly encouraged, in particular with relevant international organisations (e.g. ICOM).

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 are expected to start at TRL 5 and achieve TRL 7 at the end of the project.

The Commission considers that proposals requesting a contribution from the EU between EUR 4 and 6 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

- Practical and affordable tools/solutions in terms of cost and/or complexity of operation. A cost reduction of at least 50% is expected as compared to existing solutions;
- Improved compliance with PC recommendations, without a negative impact on the budget presently available for PC, in particular for end-users such as small and medium sized museums;
- Improved CH degradation predictions and modelling-based decision-making with regard to the choice between preventive and remedial conservation measures;
- Clear prospect for quantified socio-economic gains from the proposed solutions (e.g. the creation of new services) also beyond their application for CH;
- Effective market uptake across Europe of the proposed solutions within five years after the end of the project;
- Contribution to sustainable open repositories of simulation/experimental/measurement data;
- Contribution to an increased citizens' awareness of PC of tangible CH.

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

Type of action	Innovation action	
Deadline	1st stage - 23 January 2018	2nd stage - 28 June 2018
Call identifier	H2020-NMBP-ST-IND-2018-2020	
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/nmbp-33-2018.html	



LC-EEB-06-2018-20: ICT enabled, sustainable and affordable residential building construction, design to end of life

Specific challenge

The poor energy performance features that buildings may exhibit can be due not only to the characteristics of the building materials used, but also to the use of traditional or unsuitable construction processes. Therefore, the building process needs to benefit from an increased level of industrialisation, including for instance lean construction and higher degree of prefabrication. This is especially true in the case of building retrofitting where the traditional construction methods are not able to plan in advance all the problems to be solved in the variety of renovation sites. Using ICT as an enabler in the building process and operation is a way to meet the challenges. ICT solutions need to incorporate the design, manufacturing, construction, material choice (including reusability, environmental performance and cost aspects), operation and end of life phases affecting the overall building lifecycle. The closer integration of ICT based-building construction tools into the manufacturing, construction and operation phases has a strong impact on the overall building lifecycle, and it will also help reducing the performance gap.

Scope

Existing generic software tools have limited flexibility and lack interoperability concerning models and design cultures. Vertically integrated life cycle design is still missing, mainly due to a fragmented design culture across the various disciplines. ICT tools should be provided for energy and environmental performance related design, analysis and decision-making in early planning phases for new buildings or renovation of buildings. Clear evidence of technical and economic viability should be provided by validating and demonstrating the proposed ICT-driven construction processes in either new or retrofitting projects. For existing buildings, significant effort will be required to first retrieve all relevant information, and to compile and structure it in a meaningful form to be used by new solutions.

Proposals should:

- Develop an advanced digitalised and industrialised construction and building process utilising smart combinations of materials/components;
- Assess the overall life cycle of construction, in order to deliver more efficient buildings in terms of sustainability and construction, maintenance and operation costs;
- Provide for fully integrated systems to be compact, exchangeable, and easy to commission and to operate and demonstrate business solutions for operating such building life-time ICT solutions.

Proposals should include Social Sciences and Humanities (SSH) elements regarding public perception and acceptance of advanced building life solutions at the level of the construction sector in Europe.

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 5 and achieve TRL 7 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.

As an exception from General Annex D, the funding rate for eligible costs in grants awarded under this topic will be differentiated: 100% of the eligible costs for beneficiaries and linked third parties that are non-profit legal entities; and 50% of the eligible costs for beneficiaries and linked third parties that are for profit legal entities.

Expected impact

Proposals should achieve all of the following:

- Reduction of CO₂ with 15-20% for the total life-cycle compared to current situation shown through Life Cycle Assessment;
- Construction cost reductions of at least 15% compared to current situation;
- Buildings shortened construction time (reduced by at least 10-15% compared to current State of the art);
- Reduction of the gap between predicted and actual energy consumption;
- Improved indoor environment;
- Significantly improved integration of the value chain (design, procurement, manufacturing, construction, operation and maintenance);
- Contribution to new standards and regulations;
- Demonstration of large scale replicability potential.

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



Call – Industrial sustainability

Type of action	Innovation action
Deadline	22 February 2018
Call identifier	H2020-NMBP-ST-IND-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-eeb-06-2018-20.html





Leadership in Enabling and Industrial Technologies

Space

DT-SPACE-08-BIZ-2018: Space outreach and education

Specific challenge

One of the main challenges for the sustainability of the European space industrial fabric and the delivery of cutting-edge scientific achievements is to maintain highly qualified scientists, engineers and technicians including their lifelong learning. Space science and technology constitute important inspirational tools for exciting and motivating young people, and encouraging them to choose space related careers. Space is also a domain that easily captures the interest of students towards education paths in the fields of science, technology, engineering and mathematics.

Positive exposure to and experiences in the space domain can contribute moreover to building long-term partnerships between peoples from different cultural backgrounds and countries inside and outside Europe. The challenge is to design and run sustainable education and outreach activities which can act as catalysers, both inside and outside the classroom, motivating teachers and students at different ages and education levels.

Scope

The main delivery of the action shall be an initiative capable of attracting the interest of a significant number of students towards space and space-related themes, while creating at the same time a relevant impact on their families and the general public in terms of news coverage, social-media interest, stakeholders' involvement. **The action shall engage academia and educators involved in different education levels, targeting different demographics including young children and teenagers.**

The key advancements of the European space programmes should be given a privileged position, but the main objective should remain attracting the interest of students for space, space-related subjects and steer them towards education paths in the fields of science, technology, engineering and mathematics.

Proposals should take into account similar activities of ESA and national education programmes. **They could focus in the context of the classroom or outside the normal classroom environment, making use of space educational centres or online resources, including contests and public exhibitions (for instance in science museums). Particular attention should be paid to stimulating interest amongst female students and reaching children in underprivileged communities.**

Activities shall also aim at identifying links with the Knowledge and Innovation Communities (KICs) of the European Innovation Institute of Technology (EIT) and possible scope for dedicated activities for space.

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

This topic contributes to the Horizon 2020 focus area "Digitising and transforming European industry and services".

Expected Impact

- **Promote the network European space education and outreach actors and reach out to a significant number of students, their families and the general public.**
- Achieve a significant coverage by media and attention by stakeholders and help increase the political support for European space programmes and initiatives within the EU and national Parliaments.
- Increase the number of students that opt for a technical career related to space when compared to the general population of students in their cohorts;
- Promote research in collaboration with universities.
- Reinforce links between space and the EIT KICs and explore options for a dedicated space KIC.

Type of action	Coordination and support action
Deadline	06 March 2018
Call identifier	H2020-SPACE-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-space-08-biz-2018.html





Innovation in SMEs

Call - For a better innovation support to SMEs

INNOSUP-04-2019: Workplace innovation uptake by SMEs

Specific challenge

Workplace innovations are non-technological innovations related to business structure and organisation, employee engagement and Human Resources management, managing internal process and decision making, development and planning of organisational strategies and methods, relationships with clients and suppliers, the work environment itself.

Workplace innovations improve motivation and working conditions for employees, both men and women, which leads to increased labour productivity, innovation capability, market resilience, and overall business competitiveness. Workplace innovation helps companies to anticipate and adapt faster and better to changing economic environment. This type of flexibility is even more important in the context of a new industrial revolution and quickly changing technologies and business models. Being able to react to changes rapidly requires continuous feedback from customers and users. Employees working at the customer interface have an important role in producing this information. Workplace innovation also improves learning capabilities and diffusion of knowledge, which are important for keeping workers' skills up-to-date. Finally, non-technological innovations are an integral part of the successful implementation of technological innovations. . In the recent past innovation. Despite obvious benefits still not many companies, especially SMEs, implement this type of innovation. Implementing workplace innovation and facing challenges related to new industrial revolution requires right managerial skills. That is often not the case for SMEs, which do not have enough knowledge resources.

The experience of the 2013-2016 European Workplace Innovation Network pilot project shows the difficulties in promoting one specific model of workplace innovation. **Successful implementation of this type of innovation depends on the national, economic and cultural context** (related e.g. to the entrepreneurship and managerial culture).

Scope

The Action will be a piloting scheme for the uptake of workplace innovation by SMEs. It will aim at creating interregional networks gathering national or regional innovation support agencies, which will work together to create pilot schemes supporting the uptake of workplace innovation in SMEs. The composition of the networks should reflect similar needs of SMEs and a comparable entrepreneurship culture in the area covered by the network. This approach will enable the creation of new, context-based workplace innovation support schemes.

Those new pilot schemes will be tested in companies selected by the interregional networks, by using financial support to third parties (at least 75% of the grant will be used for this purpose). The total number of supported companies will be taken into account in the evaluation of the proposals (please refer to the grant conditions for this topic).

The Action, by looking at existing tools, exchange of best practice and creation of new pilot schemes will help to create new, context based, long term mechanisms supporting the uptake of workplace innovation by SMEs across Europe. It will also give concrete support to SMEs interested in looking for new sources of growth through the competitive edge provided by workplace innovation related opportunities. **Thereby it will stimulate: (i) new forms of work organisation and working (including the gender dimension); (ii) stronger employee participation in innovation processes** (creation of new products, services and their production); **(iii) improvement of the managerial techniques;** (iv) it will help draw lessons for innovation support agencies.

A budget of EUR 1,5 million should allow to address this challenge (budget for a single network not exceeding EUR 300,000).

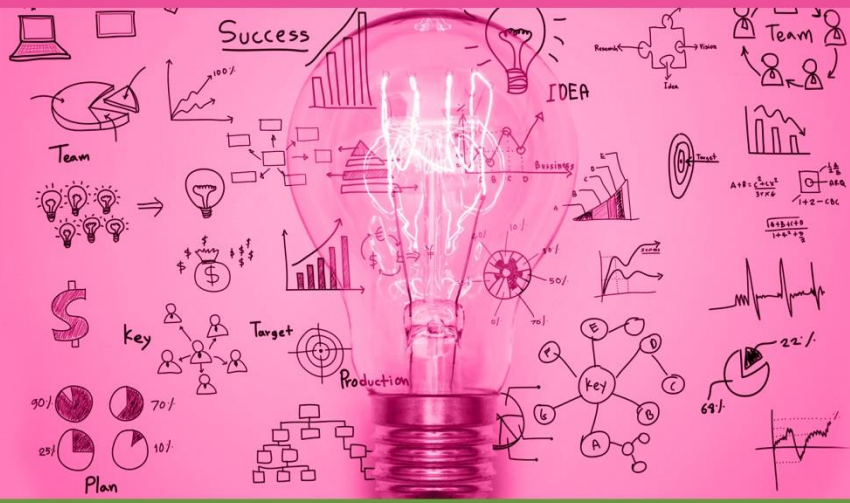
The Commission considers that proposals requesting a contribution from the EU of up to EUR 0,3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact

- New, context based mechanisms supporting uptake of workplace innovation by SMEs.
- More SMEs take advantage of the opportunities offered by workplace innovation.
- New, context-based forms of workplace innovation are created.
- Improved framework conditions for the uptake of new technologies.
- Better skilled workforce and more resilient companies.

Type of action	Coordination and support action
Deadline	17 January 2019
Call identifier	H2020-INNOSUP-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/innosup-04-2019.html





Excellent Science

Future and Emerging Technologies

Call – FET-Open

Novel ideas for radically new technologies

FETOPEN-01-2018-2019-2020: FET-Open Challenging Current Thinking

Specific Challenge

To lay the foundations for radically new future technologies of any kind from visionary interdisciplinary collaborations that dissolve the traditional boundaries between sciences and disciplines, including the social sciences and humanities. This topic also encourages the driving role of new actors in research and innovation, including excellent young researchers, ambitious high-tech SMEs and first-time participants to FET under Horizon 2020 from across Europe.

Scope

Proposals are sought for cutting-edge high-risk / high-impact interdisciplinary research with all of the following essential characteristics ("FET gatekeepers"):

- Radical vision: the project must address a clear and radical vision, enabled by a new technology concept that challenges current paradigms. In particular, research to advance on the roadmap of a well-established technological paradigm, even if high-risk, will not be funded.
- Breakthrough technological target: the project must target a novel and ambitious science-to-technology breakthrough as a first proof of concept for its vision. In particular, blue-sky exploratory research without a clear technological objective will not be funded.
- Ambitious interdisciplinary research for achieving the technological breakthrough and that opens up new areas of investigation. In particular, projects with only low-risk incremental research, even if interdisciplinary, will not be funded.

The inherently high risks of the research proposed shall be mitigated by a flexible methodology to deal with the considerable science-and-technology uncertainties and for choosing alternative directions and options.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 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:

- Scientific and technological contributions to the foundation of a new future technology
- Potential for future social or economic impact or market creation.
- Building leading research and innovation capacity across Europe by involvement of key actors that can make a difference in the future, for example excellent young researchers, ambitious high-tech SMEs or first-time participants to FET under Horizon 2020.

Type of action	Research and Innovation action
Deadline	16 May 2018 24 January 2019 18 September 2019 13 May 2020
Call identifier	H2020-FETOPEN-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/fetopen-01-2018-2019-2020.html



Call – FET Open

Novel ideas for radically new technologies

Topics with minor SSH relevance

FETOPEN-03-2018-2019-2020: FET Innovation Launchpad

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/fetopen-03-2018-2019-2020.html>



Call – FET Proactive

Boosting emerging technologies

FETPROACT-01-2018: FET Proactive: emerging paradigms and communities

Specific challenge

To explore and consolidate a new technological direction in order to put it firmly on the map as a viable paradigm for future technology. To foster the interdisciplinary communities that are able to drive this forward, extending from the participating consortia to a wider European pool of expertise. To stimulate the emergence of a European innovation eco-system around a new technological paradigm, well beyond the world of research alone.

Scope

proposals are sought for cutting-edge high-risk / high-reward research and innovation projects that aim to demonstrate a new technological paradigm within the scope of one of the following sub-topics:

a. Artificial organs, tissues, cells and sub-cellular structures. Merging the growing understanding of genome, proteome, metabolome and cell behaviour with strategies for the engineering and use of biological and hybrid functional constructs is the core of this initiative. Proposals should build on recent advances in integrative biology (including modelling and simulation) and bio-engineering for engineering biological, artificial or hybrid sub-cellular systems (e.g., synapses, organelles, vesicles), highly specific cell assemblies (including microbial) and proper differentiation, tissues, organs or multi-organ systems. Examples of long-term research targets include synthetic cell building, cell assembly, and organ reproduction, replacement, control or repair of vital organ functions (e.g., following ageing, trauma or disease), their use in the development of personalised treatment, drugs or vaccines, and high-throughput organ- and body-on-chip technologies.

b. Time. This initiative seeks new technological possibilities inspired by notions of time, not seen as a given and singular background against which things unfold, but rather as a resource that can be experienced and used in different ways. Highly interdisciplinary research could address, for instance, technologies for subjective time awareness (and its neural basis) and distortion (e.g., contextual, emotional, pathological); for studying the role of time in processes like aging, healing, learning or evolution and how this can be influenced (e.g., stimulation) or changed in different 'materialities' (combining insights from biological or computational evolution, for instance); or modeling to understand and better anticipate non-linear temporality in complex systems (such as in economies, societies, climate ...). Technologies in, for instance, extreme electronics/photonics, data-streams analytics, time aware artificial intelligence, virtual and augmented reality, bio-engineering or neuroprosthetics could demonstrate new ways to represent, modulate, duplicate or differently experience and use time, thus altering our relationship with time (at individual and collective but differentiated level – e.g., according to gender or culture) and with impacts on, for instance, quality of life, therapy, learning, productivity, social and environmental awareness or the better understanding and management of natural hazards.

c. Living technologies. This initiative seeks to build on the emerging understanding from evolutionary biology, ethology, micro-, plant- and animal biology of essential features of living systems such as physical autonomy, growth, interaction and enaction, adaptation and evolution, among others. The aim is to create new functional biological, technological or hybrid artefacts, with similar capabilities of purposeful stability and change. This can also lead to hybrid materials and systems with programmable features of shape, structure, functionality and evolvability (including for their use in bio-robotics or bio-engineering), potentially constructed from naturally existing complexes, through synthetic biology, systems biology and /or chemical biology. New insights into the multi-level mathematics and complexity of living systems or the boundaries/characteristics of life may also emerge from this. Work on ethical implications should be included.

d. Socially interactive technologies. There is a growing understanding of the changes at cognitive, neural and physiological levels from group interactions in realistic settings, from pairs to large groups and crowds. Based on this, this initiative seeks new technologies for deeper social interaction involving, for instance, context, culture, emotion, and factors of embodiment and cognition. **Realistic and larger contexts require new experimental tools and paradigms, combining social sciences and humanities with neuroscience, engineering and computing in new ways. This will lead to new socially interactive media with radical improvement for building trust and understanding, social integration, engagement, collaboration, learning, creativity, entertainment, education and wellbeing, among others. Work on ethical implications and gender should be included.**

e. Disruptive micro-energy and storage technologies. This initiative seeks radically new approaches to energy for embedded, personal or local use (including bio-mimicking, the use of soft or intelligent materials to generate, capture or store energy or the development of new types of batteries). Proposals could target in particular the lower end (i.e., micro-energy or nano-scale energy transfer, dissipation and conversion) and/or new technologies for optimal local (close to where-needed) energy storage/release and their smart integration within hybrid/distributed energy systems. Proposals should also address aspects of sustainability and environmental impact.

f. Topological matter, strongly based on topology and quantum physics, is a rapidly emerging area that after an initial focus on insulators now touches the whole range of material properties, providing advances in spintronics, photonics, plasmas, mechanics, superconductivity, elasticity, acoustics and their combinations, among others. Here concept development together with design, realisation and testing of topological devices are called for to unleash the promise of topological matter beyond the pure physics and mathematics aspects. The much expected robustness, wide spectral range and topologically-protected spin- and transport properties call for an engineering approach to apply the multi-physics of wave-matter interactions to novel, potentially lossless communication components and circuits. Challenges to be addressed include compact designs and fabrication technologies, setting figures of merit and benchmarks relevant to functions.

FET Proactive projects shall establish a solid baseline of knowledge and skills and assemble the interdisciplinary communities around them. They shall further foster the emergence of a broader innovation ecosystem and create a fertile ground for future take-up of its new technological paradigm (e.g., public engagement, informal education, policy debate).



Call – FET Proactive

Boosting emerging technologies

The Commission considers that proposals requesting a contribution from the EU of EUR 4 to 7 million (but up to EUR 5 million for proposals on the sub-topics of 'Time' and 'Topological matter') and with a duration of up to 5 years would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals of different size and duration.

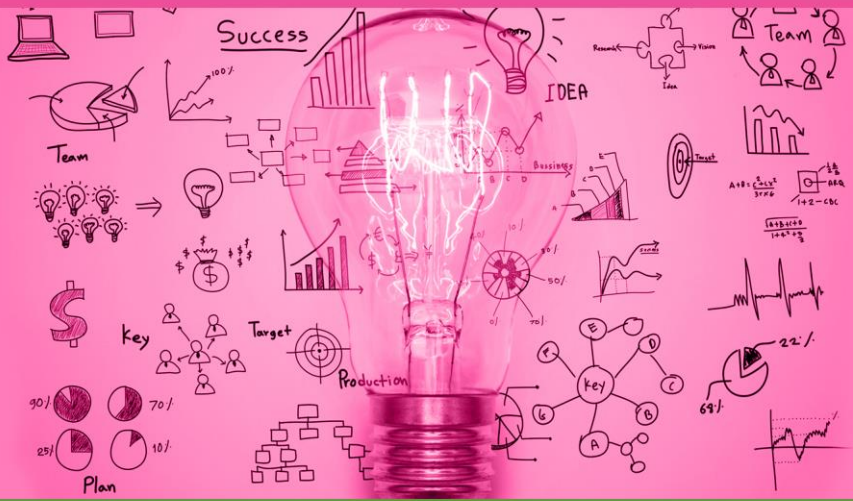
This topic allows for the provision of financial support to third parties established in an EU member state or country associated with Horizon 2020 in line with the conditions set out in General Annex K, either to enhance impacts through punctual small scale experimentation and use of project results by third parties, or to award a prize following a contest organised by the beneficiaries.

Expected impact

- Scientific and technological contributions to the foundation and consolidation of a radically new future technology.
- Potential for future returns in terms of societal or economic innovation or market creation.
- Spreading excellence and building leading innovation capacity across Europe by involvement of key actors that can make a difference in the future, for example excellent young researchers, ambitious high-tech SMEs or first-time participants to FET under Horizon 2020.
- Build-up of a goal oriented interdisciplinary community (within and beyond the consortium).
- Emergence of an innovation ecosystem around a future technology in the theme addressed from outreach to and partnership with high potential actors in research and innovation, and from wider stakeholder/public engagement, **with due consideration of aspects such as education, gender differences and long-term societal, ethical and legal implications.**

Type of action	Research and Innovation action
Deadline	22 March 2018
Call identifier	H2020-FETPROACT-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/fetproact-01-2018.html





Excellent Science

Research Infrastructures

Call – Development and long-term sustainability of new pan-European research Infrastructures

INFRADEV-01-2019-2020: Design Studies

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.

Type of action	Research and Innovation action
Deadline	12 November 2019
Call identifier	H2020-INFRADEV-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/infradev-01-2019-2020.html



Call – Development and long-term sustainability of new pan-European research Infrastructures

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

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.**

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.

Type of action	Coordination and support action
Deadline	29 January 2019
Call identifier	H2020-INFRADEV-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/infradev-02-2019-2020.html



Call – Implementing the European Open Science Cloud

INFRAEOSC-04-2018: Connecting ESFRI infrastructures through Cluster projects

Specific challenge

Research Infrastructures such as the ones on the ESFRI roadmap and others, are characterised by the very significant data volumes they generate and handle. These data are of interest to thousands of researchers across scientific disciplines and to other potential users via Open Access policies. Effective data preservation and open access for immediate and future sharing and re-use are a fundamental component of today's research infrastructures and Horizon 2020 actions but researchers are still confronted with a fragmented research data landscape. The European Open Science Cloud (EOSC) will help addressing the current situation. Major stakeholders, such as the pan-European research infrastructures, must actively contribute to the setting up of its services.

Scope

This topic will ensure the connection of the research infrastructures identified in the ESFRI Roadmap to the EOSC. Support to this activity will be provided through cluster projects gathering ESFRI projects and landmarks in each of the following large thematic domains: Biomedical Science, Environment and Earth Sciences, Physics and Analytical Facilities, **Social Science and Humanities**, Astronomy, Energy. While the ESFRI infrastructures represent the core component of any cluster, other relevant world class research infrastructures with a European dimension, established as ERICs or International Organisations, can also be involved in a cluster. Each infrastructure should participate to only one cluster. Proposals will address the stewardship of data handled by the involved research infrastructures according to the FAIR principles and in line with the objectives of Open Science. This will include the definition of domain specific data policies (e.g. acquisition, deposit, curation, preservation, access, sharing and re-use), addressing any legislative or interoperability issues which affect data handling across geographical and discipline borders, as well as the development of appropriate tools for depositing, curating and analysing data. Research infrastructures will have to expose their data and tools under the EOSC catalogue of services and take all the necessary steps to ensure that the used repositories are compliant with the FAIR principles. In doing so proposals should develop synergies and complementarity in data handling between research infrastructures, optimise technological implementation, and ensure integration and interoperability of data and tools within the EOSC. Proposals may address the development of domain specific skills for data stewardships and the specific training of research infrastructure staff. Activities should contribute to a faster adoption of best practices and foster the use of open standards and interoperability in data and computing services. The detailed list of activities that can be supported under this topic is given in part C of the section "Specific features for Research Infrastructures".

Consortia should include key participants of the involved infrastructures and/or the infrastructure legal entities as well as other partners needed to address the challenges or develop the required solutions. Proposals should build upon the state of the art in ICT and e-infrastructures for data, computing and networking and work in cooperation with e-infrastructure service providers.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 24 million would allow this challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. The requested contribution should however be in line with the number of pan-European research infrastructures¹³ the cluster aims to connect to the EOSC.

Expected impact

- In line with the objectives of Open Science, improve access to data and tools enabling new and interdisciplinary research leading to new insights and innovation for the society at large
- Facilitate access of researchers across all scientific disciplines to the broadest possible set of data and to other resources needed for data driven science to flourish.
- Contribute to the creation of a cross-border and multi-disciplinary open innovation environment for research data, knowledge and services with engaged stakeholders and organisations.
- Rise the efficiency and productivity of researchers thanks to an easier and seamless access to reliable and open data services and infrastructures for discovering, accessing, and reusing data;
- Foster the establishment of global standards, ontologies and interoperability for scientific data.
- Develop synergies and complementarity between involved research infrastructures, thus contributing to the development of a consistent European research infrastructures ecosystem.
- Research communities adopt common approaches to the data management lifecycle (data and metadata curation), which leads to economies of scale.

Type of action	Research and Innovation action
Deadline	22 March 2018
Call identifier	H2020-INFRAEOSC-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/infraeosc-04-2018.html



Call – Integrating and opening research infrastructures of European interest

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

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 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), 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-infrastructure for data, computing and networking, and ensure connection to the European Open Science Cloud.

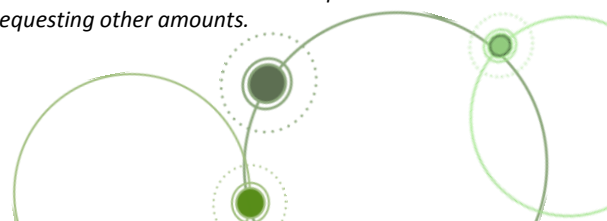
Integrating Activities should in particular contribute to fostering the potential for innovation, including social innovation, of research infrastructures by reinforcing the partnership with industry, through e.g. transfer of knowledge and other dissemination activities, activities to promote the use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



Call – Integrating and opening research infrastructures of European interest

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.

(a) 2018 deadline

Biological and Medical Sciences

(...)

Energy

(...)

Environmental and Earth Sciences

(...)

Mathematics and ICT

(...)

Material Sciences, Analytical facilities and Engineering

(...)

Physical Sciences

(...)

Social Sciences and Humanities

Research infrastructures for the assessment of science, technology and innovation policies. This activity aims at further integrating and opening research data infrastructures in the field of science, technology and innovation (including social innovation). Emphasis should be on facilitating trans-national access and widening the user base, enlarging and strengthening the offered services, fostering the innovation role of such infrastructures and ensuring long term sustainability to their integration.

Digital archives and resources for research on European history. This activity aims at further integrating and opening key data collections and services in Europe for European History. Emphasis should be on widening the user base, enlarging and strengthening the offered services, e.g. by covering further historical periods, and ensuring long term sustainability to their integration.

Archaeological data infrastructures for research. This activity aims at further integrating and opening key archaeological data infrastructures to facilitate research in all fields of archaeology (from prehistory to contemporary society). Emphasis should be on widening the user base, enlarging and strengthening the offered services, including fields such as paleo-anthropology, bioarchaeology and environmental archaeology, sharing resources at global level, and ensuring long term sustainability to their integration.

(b) 2019 deadline

The areas to be addressed under the different domains will be defined at a later stage, before the opening of the related call.

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



Call – Integrating and opening research infrastructures of European interest

Type of action	Research and Innovation action
Deadline	Call 2018 – 22 March 2018 Call 2019 – 20 March 2019
Call identifier	H2020-INFRAIA-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/infraia-01-2018-2019.html



INFRAEDI-01-2018: Pan-European High Performance Computing infrastructure and services (PRACE)

Specific challenge

To create a world-class pan-European High Performance Computing (HPC) infrastructure and to provide state-of-the-art services accessible by users independently of their location, by pooling, integrating and rationalising the HPC resources at EU level.

Scope

Proposals should address all the following activities:

- **Provide a seamless and efficient Europe-wide Tier-0 service to users, based on promoting research excellence and innovation; this includes peer-review procedures for the allocation of computing time; transparent billing; and specific services adapted to the needs of academia and industry users, including Centres of Excellence on HPC;**
- Support software implementations (i.e. through high level support teams), helping Tier-0 users and communities in adapting and adopting novel software solutions to cope with the rapidly evolving HPC architectural and programming environment landscape;
- Collaborate with Centres of Excellence on HPC and other national and EU funded activities that focus on similar or complementary activities for HPC codes and applications;
- **Identify and support new user needs and ensure openness to new user communities and new applications; reach out to scientific and industrial communities, promoting industrial take-up of HPC services in particular by SMEs;**
- Carry out activities (such as service prototyping, software development, etc.) that build on national HPC capabilities (Tier-1) and are necessary to support Tier-0 services and a functional European HPC ecosystem;
- Run training and skills development programmes tailored to the research needs of academia and industry and relevant public services and transfer of know-how for the use of HPC; Coordinate at European level such programmes in cooperation with the Centres of Excellence on HPC;
- **Implement inclusive and equitable governance and a flexible business model to ensure long term financial sustainability;**
- Support the development of the strategy for the deployment of a rich HPC environment of world-class systems with different machine architectures - evolving towards exascale -, including the implementation roadmap at EU and national level, in particular in the context of EuroHPC;
- Coordinate activities with the European Technology Platform for HPC (ETP4HPC) and the Centres of Excellence in HPC applications in support of the European HPC strategy towards the next generation of computing systems, technologies and applications. In particular, the mechanisms to be put in place by PRACE for the provision of technical specifications to guide research activities for future exascale prototypes and systems and for the testing and demonstration of such exascale solutions;
- Develop an international cooperation policy and associated activities in the area of HPC.

The PRACE infrastructure should provide core and basic services in coordination with other e-infrastructure providers to promote interoperability and a seamless user experience. Interworking with other computing infrastructures such as clouds and grids should be ensured. Appropriate KPIs should be provided addressing all the above activities and allowing the assessment of the progress towards the objectives, both in terms of outputs and ultimate impact.

The Commission considers that proposals requesting a contribution from the EU of between EUR 22 and 24 million would allow this this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts or duration.

Expected impact

- Improved services and procedures for large user access, fostering openness to new users and applications, to world-class HPC infrastructure resources and services.
- Increased amount of computing cycles available to researchers at European level through user-friendly and efficient procedures for helping Europe staying at the forefront of scientific breakthroughs and innovation.
- Increased number of research communities, industrial organisations (in particular SMEs), and institutional users benefiting from access to services including training in HPC.
- Increased investment in HPC infrastructure in Europe (national, regional and EU), long term financial sustainability through flexible business models and inclusive governance, better coordination between demand and supply in the European HPC ecosystem, with improved collaboration of the users and procurers with technology developers and suppliers to foster innovation.

Type of action	Research and Innovation action
Deadline	22 march 2018
Call identifier	H2020-INFRAEDI-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/infraedi-01-2018.html

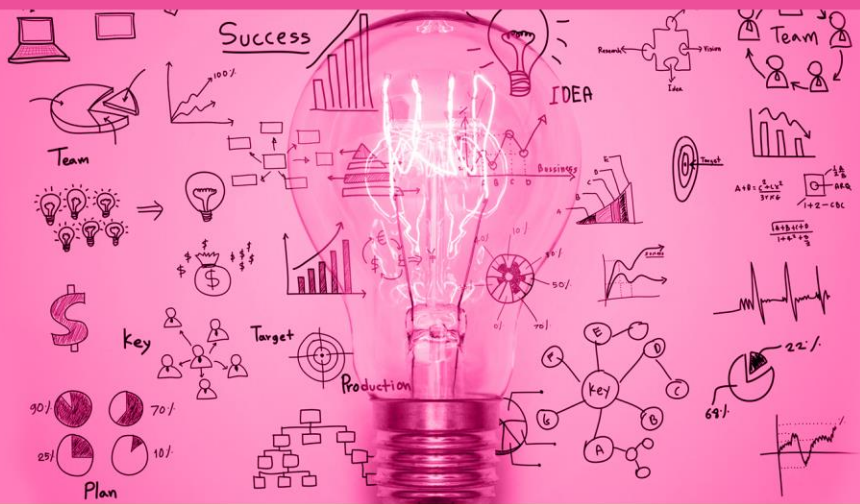


Topics with minor SSH relevance

INFRAEDI-02-2018: HPC PPP - Centres of Excellence on HPC

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/infraedi-02-2018.html>





Excellent Science

European Research Council

Net **4** Society

ERC – Starting Grant

European Research Council (ERC)

The ERC's frontier research grants operate on a 'bottom-up' basis without predetermined priorities.

The ERC puts particular emphasis on the frontiers of science, scholarship and engineering. In particular, it encourages proposals of a multi- or interdisciplinary nature which cross the boundaries between different fields of research, pioneering proposals addressing new and emerging fields of research or proposals introducing unconventional, innovative approaches and scientific inventions.

The ERC encourages in particular proposals that cross disciplinary boundaries, pioneering ideas that address new and emerging fields and applications that introduce unconventional, innovative approaches.

The three main ERC frontier research grants will be available under Work Programme 2018: Starting; Consolidator; and Advanced Grants. In addition, a Synergy Grant call for groups of two to four Principal Investigators to jointly address ambitious research problems will be reintroduced under Work Programme 2018.

	<i>Starting Grant</i>	<i>Consolidator Grant</i>	<i>Advanced Grant</i>	<i>Synergy Grant</i>
<i>Call identifier</i>	ERC-2018-StG	ERC-2018-CoG	ERC-2018-AdG	ERC-2018-SyG
<i>Call Opens</i>	03/08/2017	24/10/2017	17/05/2018	03/08/2017
<i>Deadline or cut-off dates for PoC</i>	17/10/2017	15/02/2018	30/08/2018	14/11/2017

This document provides details only on the 2018 open and forthcoming calls (Consolidator and Advanced Grants); details on the Starting and Synergy Grants will be provided on the 2019 update.



ERC – Consolidator Grant

ERC Consolidator Grant

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 Starting Grants

Consolidator Grants may be awarded up to a maximum of EUR 2 000 000 for a period **of 5 years**.

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.

Profile of the ERC Starting 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.

Type of action	ERC-COG Consolidator Grant
Deadline	15 February 2018
Call identifier	ERC-2018-COG
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/erc-2018-cog.html



ERC – Advanced Grant

ERC Advanced Grant

Objectives

Advanced Grants are designed to support excellent Principal Investigators at the career stage at which they are already established research leaders with a recognised track record of research achievements. Applicant Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal.

Size of ERC Starting Grants

Advanced Grants may be awarded up to a maximum of EUR 2 500 000 for a period of 5 years.

However, up to an additional EUR 1 000 000 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.

Profile of the ERC Starting Grant Principal Investigator

ERC Advanced Grant Principal Investigators are expected to be active researchers and to have a track record of significant research achievements **in the last 10 years** which must be presented in the application.

A competitive Advanced Grant Principal Investigator must have already shown a record which identifies them as an exceptional leader in terms of originality and significance of their research contributions.

Thus, in most fields, Principal Investigators of Advanced Grant proposals will be expected to demonstrate a record of achievements appropriate to the field and at least matching one or more of the following benchmarks:

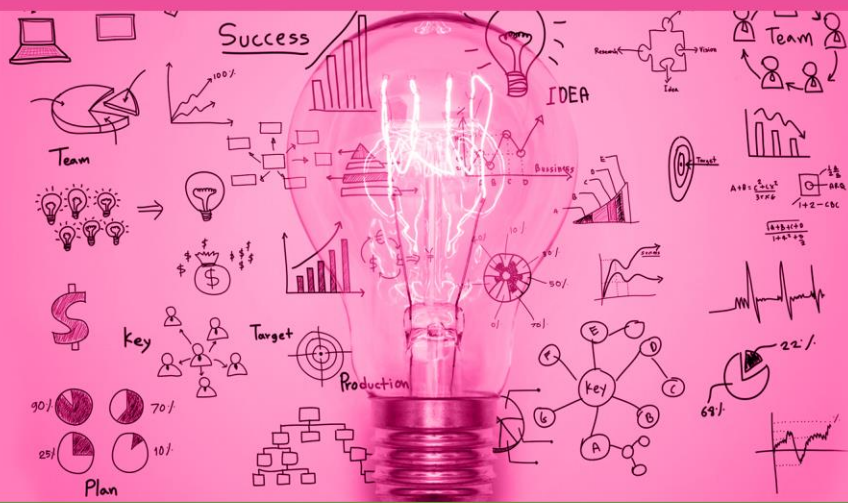
- 10 publications as main author (or in those fields where alphabetic order of authorship is the norm, joint author) in major international peer-reviewed multidisciplinary scientific journals, and/or in the leading international peer-reviewed journals and peer-reviewed conferences proceedings of their respective field;
- 3 major research monographs, of which at least one is translated into another language. This benchmark is relevant to research fields where publication of monographs is the norm (e.g. humanities and social sciences).

Other alternative benchmarks that may be considered (individually or in combination) as indicative of an exceptional record and recognition in the last 10 years:

- 5 granted patents;
- 10 invited presentations in well-established internationally organised conferences and advanced schools;
- 3 research expeditions led by the applicant Principal Investigator;
- 3 well-established international conferences or congresses where the applicant was involved in their organisation as a member of the steering and/or organising committee;
- International recognition through scientific or artistic prizes/awards or membership in well-regarded Academies or artefact with documented use (for example, architectural or engineering design, methods or tools);
- Major contributions to launching the careers of outstanding researchers;
- Recognised leadership in industrial innovation.

Type of action	ERC-ADG Advanced Grant
Deadline	30 August 2018
Call identifier	ERC-2018-ADG
Topic information	Call opens on 17 May 2018





Excellent Science

Marie Skłodowska-Curie Action

Marie Skłodowska-Curie Action

The Marie Skłodowska-Curie actions (MSCA) support researchers at all stages of their careers, irrespective of nationality.

MSCA are entirely bottom-up and are open to all domains of research and innovation from basic research up to market take-up and innovation services.

MSCA-ITN-2018: Innovative Training Networks

MSCA-ITN-2019: Innovative Training Networks

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 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, double or multiple doctoral degrees⁴ 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:



MSCA – Innovative Training Networks

- 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

Type of action	European Training Networks, European Industrial Doctorates, European Joint Doctorates	
Deadline	17 January 2018	15 January 2019
Call identifier	H2020-MSCA-ITN-2018	H2020-MSCA-ITN-2019
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/msca-itn-2018.html	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/msca-itn-2019.html



MSCA – Individual Fellowships

MSCA-IF-2018: Individual Fellowships

MSCA-IF-2019: Individual Fellowships

Objective

The goal of the Individual Fellowships is to enhance the creative and innovative potential of experienced researchers, wishing to diversify their individual competence in terms of skill acquisition through advanced training, international and intersectoral mobility.

Individual Fellowships provide opportunities to researchers of any nationality to acquire and transfer new knowledge and to work on research and innovation in Europe (EU Member States and Horizon 2020 Associated Countries) and beyond. The scheme particularly supports the return and (re)integration of European researchers from outside Europe and those who have previously worked here, as well as researchers displaced by conflict outside the EU and Horizon 2020 Associated Countries. It also promotes the career restart of individual researchers who show great potential.

Scope

Support is foreseen for individual, trans-national fellowships awarded to the best or most promising researchers of any nationality, for employment in EU Member States or Horizon 2020 Associated Countries. It is based on an application made jointly by the researcher and the beneficiary in the academic or non-academic sectors.

Only one proposal per individual researcher per call will be evaluated.

Fellowships take the form of European Fellowships or Global Fellowships. European Fellowships are held in EU Member States or Horizon 2020 Associated Countries and are open to researchers either coming to Europe from any country in the world or moving within Europe. The researcher must comply with the rules of mobility in the country where the European Fellowship is held.

Direct return to and long-term reintegration of researchers in Europe, including in their country of origin, is supported via a separate multi-disciplinary reintegration panel of the European Fellowships. For the reintegration panel, there must be direct mobility to the country of the beneficiary in Europe from a third country (compulsory national service and/or short stays such as holidays are not taken into account).

Support to individuals to resume research in Europe after a career break, e.g. after parental leave or due to recent migration, is ensured via a separate multi-disciplinary career restart panel of the European Fellowships. To qualify for the career restart panel, researchers must not have been active in research for a continuous period of at least 12 months within the 18 months immediately prior to the deadline for submission.

Researchers seeking to work on research and innovation projects in an organisation from the non-academic sector will be supported via a separate multi-disciplinary society and enterprise panel of the European Fellowships. The objective of this panel is to facilitate career moves between the academic and non-academic sectors, to stimulate innovation, and to open attractive career opportunities for researchers outside academia.

The Widening Fellowships implemented through Work Programme part 15, Spreading Excellence and Widening Participation, provide specific support to researchers to undertake their fellowship in a widening country. This will help spread excellence and close the still apparent research and innovation gap within Europe.

Global Fellowships are based on a secondment to a third country and a mandatory 12 month return period to a European host. The researcher must comply with the rules of mobility in the country where the Global Fellowship secondment takes place, not for the country of the return phase.

Researchers receiving an Individual Fellowship may opt to include a secondment phase in Europe, notably in the non-academic sector, within the overall duration of their fellowship. For a fellowship of 18 months or less, the secondment phase may last up to three months. For a fellowship of more than 18 months, the secondment phase may last up to six months. The secondment phase can be a single period or be divided into shorter mobility periods. The secondment should significantly add to the impact of the fellowship. In the Global Fellowships, such a secondment can also take place at the start of the action at the beneficiary or a partner organisation in Europe for a maximum of 3 months, allowing the researcher to spend time there before moving on to a partner organisation in a third country.

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

Researchers participating in the Individual Fellowships may opt to work part-time in order to pursue supplementary activities. These might include creating a company, or engaging in advanced studies not related to the MSCA grant. Any supplementary activities carried out part-time in parallel with the MSCA action must be agreed upon by the researcher and the beneficiary.

Expected impact

At researcher level:

- Increased set of skills, both research-related and transferable ones, leading to improved employability and career prospects



MSCA – Individual Fellowships

- 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 stronger networks
- Better transfer of knowledge between sectors and disciplines
- 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 with more entrepreneurial and better trained researchers
- Better communication of R&I results to society
- Increase in Europe's attractiveness as a leading destination for R&I
- Better quality research and innovation contributing to Europe's competitiveness and growth

Type of action	Career Restart panel, Reintegration panel, Standard European Fellowships, Society and Enterprise panel, Global Fellowships	
Deadline	12 September 2018	11 September 2019
Call identifier	H2020-MSCA-IF-2018	H2020-MSCA-IF-2019
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/2018/1/mcsa-if-2018.html	(call opens on 11 April 2019)



MSCA – Research and Innovation Staff Exchange

MSCA-RISE-2018: Research and Innovation Staff Exchange

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.

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



MSCA – Research and Innovation Staff Exchange

Type of action	RISE	
Deadline	21 March 2018	02 April 2019
Call identifier	H2020-MSCA-RISE-2018	H2020-MSCA-RISE-2019
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/m-sca-rise-2018.html	(call opens on 4 December 2018)



MSCA – Co-funding of regional, national and international programmes

MSCA-COFUND-2018: Co-funding of regional, national and international programmes

MSCA-COFUND-2019: Co-funding of regional, national and international 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 encouraged¹⁰.

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.



MSCA – Co-funding of regional, national and international programmes

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.

Type of action	Doctoral programmes, Fellowship programmes	
Deadline	27 September 2018	26 September 2019
Call identifier	MSCA-COFUND-2018	MSCA-COFUND-2019
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/msca-cofund-2018.html	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/msca-cofund-2019.html



MSCA-NIGHT-2018: European Researchers' Night

Objective

The European Researchers' Night aims to bring researchers closer to the general public and to increase awareness of research and innovation activities, with a view to supporting the public recognition of researchers, creating an understanding of the impact of researchers' work on citizen's daily life, and encouraging young people to embark on research careers.

Scope

The European Researchers' Night takes place yearly, typically starting on the last Friday of the month of September, and is the occasion for a Europe-wide public and media event for the promotion of research careers, in particular towards young people and their families. Supported main events can last up to two full days: they can start on Friday and continue the following day. Pre-events can also be organised during spring or summer, prior to the main event in September.

Activities focus on the general public, addressing and attracting people regardless of the level of their scientific background, with a special focus on pupils and students. Activities can combine education aspects with entertainment, especially when addressing young audiences. They can take various forms, e.g. hands-on experiments, science shows, simulations, debates, games, competitions, quizzes, etc. **The European Parliament and the Council designated 2018 as the 'European Year of Cultural Heritage'. As a consequence, applicants are encouraged to include activities relating to cultural heritage, where appropriate, in their events.**

Where appropriate, engagement with educational institutions should be sought in order to encourage formal and informal science education with the aim to improve the scientific knowledge base.

Each proposal should set up at least one European corner, providing general information about the European Union and how the EU funds science and education cooperation within Europe and beyond. Activities should be organised with researchers actively involved and directly in contact with the public. **They should promote the European dimension, gender balance and inclusion in research and innovation.** Involvement of researchers funded by Horizon 2020, including the Marie Skłodowska-Curie actions, is highly encouraged.

Participants can be any legal entity in the EU Member States and Horizon 2020 Associated Countries, and/or if relevant, constitute a partnership at regional, national or international level. The maximum duration of support will be two years from the starting date specified in the grant agreement. Proposals should cover two editions of the NIGHT in successive years, but single editions will also be considered.

High-quality applications not retained due to lack of funding may be granted the status of associated events.

Expected impact

- Increased awareness among the general public of the importance of research and innovation and more favourable general attitude towards its public funding
- Better understanding of the key benefits that research brings to society
- Reduction in the stereotypes about researchers and their profession
- Increase, in the long term, of people taking up research careers
- Better understanding of the European Union among the general public

Type of action	Coordination and support action
Deadline	14 February 2018
Call identifier	H2020-MSCA-NIGHT-2018
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/msca-night-2018.html





Science with and for Society

Net **4** Society

Call - Science with and for Society

SwafS-01-2018-2019: Open schooling and collaboration on science education

Specific challenge

At the moment, Europe faces a shortfall in science-knowledgeable people at all levels of society. This is a good time to expand opportunities for science learning, in formal, non-formal and informal settings. Evidence shows that European citizens, young and old, appreciate the importance of science and want to be more informed, and that citizens want more science education. Over 40% believe science and technological innovation can have a positive impact on the environment, health and medical care, and basic infrastructure in the future. Therefore, collaboration between formal, non-formal and informal science education providers, enterprises and civil society should be enhanced to ensure relevant and meaningful engagement of all societal actors with science and increase the uptake of science studies, citizen science initiatives and science-based careers, employability and competitiveness.

Scope

The proposed action targets the creation of new partnerships in local communities to foster improved science education for all citizens. **This action aims to support a range of activities based on collaboration between formal, non-formal and informal science education providers, enterprises and civil society in order to integrate the concept of open schooling**, including all educational levels, **in science education**.

"Open schooling" where schools, in cooperation with other stakeholders, become an agent of community well-being shall be promoted; families should be encouraged to become real partners in school life and activities; professionals from enterprises and civil and wider society should actively be involved in bringing real-life projects to the classroom. Relevant policy makers should also be involved, to encourage policy buy-in and the mainstreaming of good practices and insights into policies, and hence sustainability and impact beyond the lifetime of funding. Partnerships that foster expertise, networking, sharing and applying science and technology research findings across different enterprises (e.g. start-ups, SMEs, larger corporations) should be promoted. **Gender, socio-economic and geographical differences should be considered.**

The Commission considers that proposals requesting a contribution from the EU of the order of € 1.50 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

It is expected that in the short term the development of partnerships between schools, local communities, Civil Society Organisations, universities and industry should contribute to a more scientifically interested and literate society and students with a better awareness of and interest in scientific careers. In the medium term the activities should provide citizens and future researchers with the tools and skills to make informed decisions and choices and in the long-term this action should contribute towards the ERA objectives of increasing the numbers of scientists and researchers in Europe.

Type of action	Coordination and support action
Deadline	Call 2018 1st stage - 10 April 2018 2nd stage - 13 November 2018 Call 2019 1st stage - 02 April 2019 2nd stage - 07 November 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-01-2018-2019.html



Call - Science with and for Society

SwafS-02-2018: Innovative methods for teaching ethics and research integrity

Specific challenge

In order to maximise the quality and societal impact of research, integrity should be an integral part throughout the research and innovation process and more generally within the scientific system, rather than being considered as an add-on and as a means of creating additional red tape. The new European code of conduct for research integrity is unambiguous: "*It is of crucial importance that researchers master the knowledge, methodologies and ethical practices associated with their field*".

Traditional methods of teaching ethics and research integrity do not appear to be efficient in raising awareness on these issues. There is consequently a need to develop innovative educational methods, engaging all those who are directly (e.g. young and senior researchers) or indirectly (e.g. pupils at all levels of education, educators and students educated in technical laboratory support studies) involved in research. In particular, the needs of two groups should be addressed: that of adolescents, and that of university students and early career researchers.

Scope

On the basis of existing successful educational practices, **the action will develop and test innovative educational student-centred methods (formal and informal) aiming to promote a culture of research integrity and raise awareness of students and early career researchers.** The above mentioned code of conduct for research integrity will be the reference document to be used as the basis for the proposed methodology. **Different curricula and educational tools and methods should be developed** for two groups: the first group will be composed of secondary school students; the second will be composed of undergraduate and graduate students in relevant fields (including technical education students) as well as early career researchers.

The curricula should be interactive, aiming to engage students and early career researchers in a dialogue. Such curricula should be adapted to the age of the students and take into account the gender dimension. The curricula may include, for example, drama, role play, service learning, case studies, debates, position papers and presentations as well as e-learning methods. These curricula should allow for plurality of opinions and for nuances, rather than a set of predetermined "right or wrong" answers.

The work will also cover the design of training programmes for educators that will be responsible for implementing the curricula. **The work should be based (amongst others) on (i) a mapping of other existing innovative teaching techniques and (ii) an analysis of the benefits and potential impact of the proposed methodology compared to existing educational practices.** The action will take into account and build on the output of the research projects financed by this Science with and for Society programme that covers training and educational aspects of research integrity (e.g. PRINTEGER, ENERI14, project funded via SwafS-27-2017).

Close cooperation with the European Network of Research Ethics and Research Integrity is required.

In line with the strategy for EU international cooperation in research and innovation (COM (2012)479), international cooperation is encouraged.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 2.50 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 implementation of this action will improve current educational methods, raise awareness of students and early career researchers and contribute to the establishment of a research integrity culture. The innovative methods for teaching research integrity developed by this project will improve short and long-term educational and training results and will contribute to the responsible conduct of research and research excellence.

Type of action	Coordination and support action
Deadline	10 April 2018
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-02-2018.html



SwafS-03-2018: Developing research integrity standard operating procedures

Specific challenge

Research integrity is key to achieving excellence in research and innovation in Europe. It is widely acknowledged that research misconduct undermines the quality of research and may potentially lead to social and financial costs.

Research performing organisations (RPOs), including Higher Education Institutions, as well as research funding organisations (RFOs) play an important role in shaping the culture of scientific research. In this regard, it is important that RPOs and RFOs develop efficient mechanisms to promote the quality of science. As indicated in the first Council conclusions on research integrity, they are expected to *"define and implement policies to promote research integrity and to prevent and address research misconduct"*. The implementation of these policies requires the development of standard operating procedures (SOP) and guidelines related to research integrity and the prevention of research misconduct. The crucial role of RPOs and RFOs is further underlined by the new the European code of conduct for research integrity. In order to achieve the broadest embedding of research integrity and the minimisation of research misconduct, appropriate structures must be in place.

Scope

The action aims to promote the development of Research Integrity Promotion Plans, i.e. concrete and efficient research integrity support processes and structures as "drivers" for institutional change within RPOs and RFOs. To this end, SOP and operative guidelines for effective and efficient prevention, detection and handling (including any legal and financial aspects) of research misconduct (hereafter "processes") will be developed, addressing the needs and expectations of the research funders, the research community and other relevant stakeholders.

In order to inform the development of such guidelines, discipline-related focus groups including stakeholders from research integrity structures (research integrity offices, academies, industry ethics departments, university research offices, etc.) should take place. **The issue of promoting research integrity and the relation with scientific and research culture in general should also be discussed and analysed.**

The outcomes of the focus groups will form the basis of a large-scale survey of researchers on issues around research integrity to be carried out by the action. This survey should be performed on the basis of the relevant literature and, in order to avoid duplication, take into account previous survey results including those conducted by the SwafS projects PRINTEGER, ENERI, DEFORM and EnTIRE. Similarly, the results of EU Member State national surveys should also be used appropriately. **The survey, to be conducted in all EU Member States and some key OECD countries, should cover the main scientific disciplines (including social sciences and humanities)** in order to reflect the different realities and perceptions of research integrity within these fields. Ultimately, the survey results will inform the development of the research integrity support processes and structures.

The processes must be in line with the above mentioned new European code on research integrity. Overall, the action must facilitate the coherent implementation of the principles and practices contained in this code throughout the European Research Area. The elaborated SOPs/guidelines should be tested as a pilot, in selected institutions, and the feedback on their efficiency and effectiveness should be integrated into the outcomes of the project.

When designing such processes, **the work shall explore, among others, factors that could have a negative influence on the culture of scientific research as well as on the means of promoting the quality of science**, identifying in particular best standard practices, good laboratory practices (GLPs), conditions for reproducibility of results and standardisation of materials, encouraging the publication of negative results. The processes and structures should be comprehensive and practical, designed to address specific needs and expectations of the research community and other relevant stakeholders in the different fields. The work should also include cost-benefit analysis and suggestions as to how the proposed SOP/guidelines should be embedded in the RPOs internal procedures (e.g. acknowledging differences in size, scope of activities, budget, location, etc.)

A key element in developing the SOPs is the need to address, in a constructive manner, the roots of research misconduct (e.g. the lack of standardisation and GLPs, negative consequences of the "publish or perish" model and side effects of assessing excellence via bibliometric tools) and not to solely rely on repressive systems. In this regard and in addition to the identification of the most effective sanctions (from a short and long-term perspective), **innovative ways of stimulating responsible research practices should be proposed and validated** (preparatory work should be included in the survey). This should also address those researchers who have been involved in some form of misconduct ("innovative sanctions").

The scientific community and other relevant stakeholders should be involved in the co-design of research integrity plans for RPOs and RFOs. The research integrity plans should include actions such as the introduction of research integrity in Higher Education Institutions' curricula, continuing education actions on research integrity, SOP for establishing research integrity committees and a commonly accepted framework of principles and procedures dealing with issues of research misconduct.

The proposal should demonstrate how the Research Integrity Promotion Plans will contribute to the promotion of research integrity, fostering a culture of open science and open innovation. The work will also propose methods for monitoring the implementation of such integrity plans in RPOs and RFOs.

The proposed actions will closely collaborate with and make use of the results from relevant EU funded research projects under the SWAFs programme (mainly PRINTEGER, ENERI, DEFORM and projects funded via SwafS-16-2016, SwafS-21-2017, SwafS-27-2017). The currently available results of these projects are accessible through the websites already listed (see previous footnote). Any IT communication infrastructure envisioned should use the existing EU communication tool SINAPSE.

The close cooperation with the European Network on Research Ethics and Research Integrity (ENERI) is of particular importance due to its current activities in this area. In order to improve the impact of the expected output, cooperation with organisations of research managers and administrators such as the European Association of research managers and Administrators (EARMA) is encouraged.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.



Call - Science with and for Society

A project duration of at least 36 months is recommended.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 4 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

Overall, the action will actively contribute to the development in the EU of a strong research integrity culture and to a coherent adherence to the highest ethics and integrity standards. The resulting support processes and structures should ultimately lead to institutional changes within RPOs and RFOs that will fill in gaps in the existing system and promote responsible research and innovation while respecting the diverse circumstances that prevail in different scientific and research fields.

Type of action	Coordination and support action
Deadline	10 April 2018
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-03-2018.html



Call - Science with and for Society

Swafs-08-2019: Research innovation needs & skills training in PhD programmes

Specific challenge

Within the New Skills Agenda (adopted in June 2016) and in the Modernisation Agenda (adopted in May 2017) specifications on innovative employment-oriented curricula recommendations are described. The Open Science Agenda incorporates activities which makes it crucial for Higher Education Institutions to integrate new or existing skills courses into PhD programmes and to train data stewards. Especially the formal integration of skills courses developed with and by non-academic actors and provided in non-academic surroundings into curricula, will be a specific challenge.

Scope

A broad package of skills-related training, integration and intelligence for researchers and scientists in all career stages will need to be developed. Preferably pilots will be organised by (or in cooperation with) experienced projects which already received EU funding or are currently funded under Erasmus+, Horizon2020, ITN, MSCA. In all cases, partners should be able to demonstrate proof of concept and initial impact of the PhD training and reasoning for improving and formally integrating skills training. **Initial postgraduate tracking exercises have to be integrated in the proposal, to demonstrate ability to trace postgraduates during employment (including sex-disaggregated data). Counselling initiatives of PhD candidates and PhD graduates into focussed careers in and outside academia should be provided.**

The Commission considers that proposals requesting a contribution from the EU between EUR 0.75 million and 1.00 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

Impact is expected on post-graduate candidates and early stage researchers, careers, in closing the skills gap between research employment in academia and beyond academia. Expected impact also on the improvement of the innovation potential of future PhD candidates, by joint design of skills training courses and curricula of consortium partners into modernised PhD programmes. Expected impact on the joint collaboration between academia and stakeholders in the regions (hubs) by improving skills intelligence, skills visibility and comparability for better career choices; learning about future skills needs and employment potential of scientists of all (interdisciplinary) fields. Expected impact on the interdisciplinary and international mobility of researchers working under Open Science in line with the Innovative Doctoral Training Principles (IDTP).

Type of action	Coordination and support action
Deadline	02 April 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-08-2019.html



Call - Science with and for Society

SwafS-09-2018-2019: Supporting research organisations to implement gender equality plans

Specific challenge

Gender equality is a key priority set with the Member States and Associated countries in the European Research Area. Research funding and performing organisations and universities are invited to implement institutional change through Gender Equality Plans (GEPs). The Council conclusions of 1/12/2015 acknowledged the contribution of gender equality to the quality of research and innovation. It reaffirmed the need for sustainable cultural and institutional change along the three following objectives:

1. Removing barriers to the recruitment, retention and career progression of female researchers;
2. Addressing gender imbalances in decision making processes;
3. Integrating the gender dimension in research and innovation content.

The GEAR tool developed by the European Commission and EIGE regrouped the state of the art knowledge and practices on institutional change and provided a step-by-step guide on how to set up and implement GEPs.

Scope

The action should focus on implementing Gender Equality Plans (GEPs) in research organisations and universities, as "drivers" for systemic institutional changes. The GEPs should be developed using a coherent approach, referring to the GEAR tool step-by-step guide. **The proposed GEPs structure will include at least the following:**

- **Conduct assessment / audit of procedures and practices with relevant data to identify gender bias at organisation level;**
- Implement effective actions to be developed over time, according to the identified bias;
- Set targets and monitor progress via indicators at organisation level.

The proposals will explain the planned GEPs in the context of existing national provisions and national action plans (legislation, specific incentives, etc.) relating to gender equality in research and innovation. The proposal should also explain previous steps taken by the organisation for gender equality.

The proposal will provide proof of long term commitment in the implementation of GEPs from their highest management level. The role of middle management and relevant departments of the partner organisations in the implementation of the GEPs shall be described.

The proposals will include a methodology for impartially evaluating the progress made on the impact the gender equality plans had on structural change throughout the duration of the project. A specific work package(s) and deliverable(s) should be introduced in the proposal for this purpose.

Special emphasis will be placed on the sustainability of the GEPs to be implemented and on project follow-up initiatives.

The allocation of resources within the consortium will focus on the implementation of GEPs in the partner organisations. These partner organisations must be at a starting/initial stage in the setting-up and implementation of gender equality plans. It is recommended that the proposals should allocate the majority of funding to setting-up and implementing GEPs. The proposal will explain the role of partners not implementing GEPs and their specific contribution in line with the text and requirements of the topic.

Participation of professional associations in the consortium is recommended.

Project duration of at least 48 months is recommended.

The Commission considers that proposals requesting a contribution from the EU between EUR 2.50 million and 3.00 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

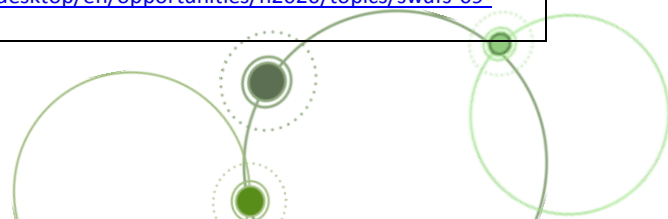
The proposed action will contribute to increasing the number of research organisations and higher education establishments implementing gender equality plans. The individual implemented GEPs should be shared on the GEAR tool.

The expected impacts are:

- Increase in the participation of women in research and innovation and improvement of their careers prospects;
- Improvement of gender balance in decision-making bodies in research organisations;
- Inclusion, where relevant, of the gender dimension in research content and increase in the quality and societal relevance of produced knowledge, technologies and innovations.

In the medium to long term, the implementation of Gender Equality Plans will contribute to the achievement of the ERA.

Type of action	Coordination and support action
Deadline	Call 2018 - 10 April 2018 Call 2019 - 02 April 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-09-2018-2019.html



Dedicated Topic

SwafS-10-2018: Analysing gender gaps and biases in the allocation of grants

Specific challenge

In many countries in Europe and at European level the major part of the research budget is allocated in the form of grants. The allocation of grants and access to funding is consequently an essential component of scientific performance and career progression. The Figures 2015 shows that although the gender gaps in the funding success rates is decreasing at the EU level, men still have a higher success rate than women. Research is needed to better understand the remaining institutional barriers which contribute to maintaining the gender gaps in research funding, as well as the policy changes required to remove such barriers.

Scope

From selected key research and/or innovation fields, the research will situate the role of grants in researchers' careers, identify, map, and analyse the possible differences between women and men researchers at various steps of grant allocation by research funding organisations and their potential consequences on their careers. Factors that create gender biases in the grant awarding processes of research funding organisations will be investigated. The research will give particular attention to the nature and mode of action of hindering and driving factors and investigate their relative weight in the grant awarding processes of research funding organisations. It will suggest how to overcome the hindering factors and arrive at a better level playing field for women and men researchers by adapting the grant systems (institutional change approach). The research will formulate recommendations targeting research funding policy and involve different stakeholders in this process.

A project duration of at least 48 months is recommended.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 2.00 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

Contribute to more gender equal research grant systems in the EU and to advancing gender equality in research and innovation as requested in the European Research Area. Help EU research and innovation benefit better from male and female scientists' talents and improve the quality of research and innovation and their relevance to society.

Type of action	Research and Innovation action
Deadline	10 April 2018
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-10-2018.html



Dedicated Topic

SwafS-11-2019: Scenarios for an award/certification system for gender equality in research organisations and universities in Europe

Specific challenge

Through the implementation of Gender Equality Plans (GEPs) in the last years in research organisations and universities a substantial knowledge base and a wide set of practices were established which is accessible in particular in the Gender Equality in Academia and Research - GEAR tool.

Gender Equality Plans are now common in some Member States and Associated Countries, but in others they are in their infancy. The implementation of the Plans as a key instrument for gender equality in the European Research Area and the institutional change they entail in research organisations and universities need to be further promoted and evaluated.

A promising option which is implemented in some countries, could be gender equality award schemes for R&I organisations. Some awarding schemes are also used as drivers for competition in attracting students and researchers and/ or as prerequisite to access funding.

Scope

The action will consist of a feasibility study of a European award/certification system for gender equality in research organisations, including universities. Several options should be investigated.

Based on the experiences of existing schemes and outcomes of previous research and initiatives (e.g. Horizon 2020 projects such as GEDII, and EFFORTI, FP7 ERA-Net Gender-NET3, the action will:

- Conduct an in-depth qualitative and quantitative assessment of existing national award/certification schemes for gender equality in research organisations and universities. Particular attention will be given to the national context in terms of legislation, policy and research funding environment to understand the intended and non-intended impacts of each evaluated award scheme.
- Provide a clear framework for at least 3 different options of a European award/certification scheme encompassing the three objectives for gender equality in the ERA, i.e. gender equality scientific careers, gender balance in decision-making positions and in the integration of the gender dimension in R&I content. The options should take into account the possible synergies and linkages with the current Human Resources Strategy for Researchers (HRS4R).

A project duration of maximum 24 months is recommended.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 1.50 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

Strengthen the incentives for research organisations and universities to set up Gender Equality Plans. Make progress on gender equality along the three objectives set in the European Research Area, i.e. in scientific careers, in decision-making and in the integration of the gender dimension in R&I content.

Type of action	Research and Innovation action
Deadline	02 April 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-11-2019.html



Call - Science with and for Society

SwafS-12-2019: The gender perspective of science, technology and innovation (STI) in dialogue with third countries

Specific challenge

In its Conclusions of 1 December 2015 on advancing gender equality in the European Research Area, the Council invited the Commission and the Member States to consider including, among others, a gender perspective in dialogues with third countries in the area of science, technology and innovation (STI).

The EU Member States and many countries outside the European Union are facing similar challenges in terms of gender equality in STI: gender-related biases are leading to horizontal (disparities among different scientific disciplines) and vertical (low levels of women representation on top positions) segregation. The perception of and support for gender equality varies significantly across cultures. Cultural and institutional barriers turn women away from STI and affect their careers. Also the take up of the gender dimension in research and innovation content is still limited. The EU has developed a strategy for gender equality along three objectives relating to equality in careers, gender balance in decision-making and the integration of the gender dimension in R&I content.

The Commission has pledged reinforced cooperation with third countries under one of the three goals set by the current Commissioner, i.e. *Open to the World*. There is increasing interest from third countries to cooperate with the EU in the field of STI and encourage the mobility of researchers. It is therefore important to develop common solutions for common challenges regarding gender inequalities in STI.

Scope

The project will investigate how gender equality matters are taken into consideration at different levels of international cooperation in the area of science, technology and innovation between the EU and a selected set of third countries, along three objectives, i.e. equality in scientific careers, gender balance in decision making, and the integration of the gender dimension in R&I content. The project will build on the work done by the ERA-related groups in charge of gender equality and international cooperation as well as EU funded projects. It will provide a mapping and a subsequent analysis of how gender equality is taken into account and promoted:

1. in the formal bilateral and multilateral agreements in the STI area between the EU Member States and Associated Countries on one side and the selected third countries on the other side;
2. in the bilateral and multilateral STI implementation activities, including access to grants and the evaluation process;
3. in the dissemination and promotion of the results of international dialogues and cooperation.

The project will also formulate recommendations to enhance the integration of gender equality objectives at the various stages mentioned above.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 2 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

Improve awareness and implementation of gender equality objectives in the bilateral and multilateral activities between EU Member States and third countries in the area of STI. Contribute to removing potential barriers to the equal treatment of women and men scientists and to integrate the gender dimension in R&I content in international dialogues and cooperation.

Type of action	Research and Innovation action
Deadline	02 April 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-12-2019.html



Call - Science with and for Society

SwafS-13-2018: Gender Equality Academy and dissemination of gender knowledge across Europe

Specific challenge

Gender equality is not only a matter of social justice but also of research performance. Indeed, including a sex and gender analysis enhances the research quality and the societal relevance of the produced knowledge, technologies and innovations. It is therefore recommended that researchers across Europe and beyond acquire adequate knowledge on gender equality and the gender dimension, in general and in their specific fields of research. Universities with gender studies departments are still a minority, and those including gender issues in the curricula of other disciplines are even fewer, limiting the sharing of existing knowledge. The Horizon 2020 interim evaluation recommends further sharing and disseminating knowledge on gender in R&I.

Scope

In an initial phase, **this project will design training material for trainers, practitioners and researchers on a variety of issues relevant for gender equality in research and innovation (gender balance, gender dimension, gender bias, etc.)**. The project should clarify the minimum quality standard of the training material. It should draw knowledge from the GEAR Tool and the Gendered Innovations report, as well as on new knowledge, developed in Horizon 2020, across and beyond Europe.

In a second phase, **the project will carry out a series of trainings, such as Moocs, workshops, summer schools, modules, webinars** accessible in all the Member States and Associated countries. The project shall target trainers and researchers, in particular in the early stage of their careers with tailored-made activities. The activities shall be designed in a way that they attract men as well as women. A pan-European network of trainers will be established, with the aim of enhancing the sharing of knowledge and practices.

To address this specific challenge, proposals may benefit from a broad coverage. It is therefore suggested that consortia could include at least entities from 10 different Member States or Associated Countries.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 2.00 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 better understanding of gender issues within the R&I community. A better uptake of gender issues in R&I and consequently an improvement of the quality of the produced research and innovation. A pan-European trainers' network to better share gender knowledge and practices.

Type of action	Coordination and support action
Deadline	10 April 2018
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-13-2018.html



SwafS-14-2018-2019: Supporting the development of territorial Responsible Research and Innovation

Specific challenge

The Responsible Research and Innovation (RRI) approach supported by the European Commission since 2011 aims to encourage societal actors to work together during the whole research and innovation (R&I) process to better align R&I and its outcomes with the values, needs and expectations of society. Experience shows that strategies and practices based on RRI can open up R&I to all relevant actors, and improve co-operation between science and society, fostering the recruitment of new talent, and pairing scientific excellence with social awareness and responsibility.

Territories have a specific advantage to address the complexity of the challenges set by the interplay between science and society. Indeed local actors have an intimate knowledge of the physical territorial setting, and local ecology, i.e. the status quo of the complex relationships between cultural, social, economic and political actors, of the local dynamics, history, expectations and requirements as well as specific concerns.

During the last century, local and regional development policies have slowly, unevenly, but surely, integrated dimensions related to science, technology, and innovation (STI). For example, the European Commission supported regional technology plans in the 1990s and regional innovation strategies during the 2000s. Since 2010 the Commission has encouraged regions to develop smart specialisation strategies, based on comprehensive stakeholder involvement, to identify specific fields of industrial and research strengths with a potential for competitive advantages for the region. A more comprehensive approach involving citizens and communities is likely to result in positive impacts on STI and local and regional development.

Territories can work towards the establishment of self-sustaining R&I ecosystems that are characterised by a high degree of openness, democratic accountability, and responsiveness to need by taking action to promote all parts of RRI (i.e. gender equality, science education, open access/open data, public engagement, and ethics). This requires them to bring relevant R&I actors together, for instance citizens and civil society organisations (CSOs), universities, research institutions, formal and informal education institutions (including primary and secondary schools), governments and public authorities (including regional and local administrations and science policy institutions), businesses (including industry, the service sector and social entrepreneurs) and science mediators. New R&I working methods within and between organisations, including novel and transparent governance relations, would promote greater sustainability and inclusiveness at local, national, EU and global levels.

Scope

For the present topic, 'territory' should be understood broadly. Territories may be defined by any particular area characterised by certain geographical features, or any area with shared cultural, environmental or economic ties.

Consortia should focus activities in more than one territory in Europe (and possibly also in Third Countries), **with a view to developing and promoting shared learning and diffusion of governance innovations**. Local and regional authorities should be active partners of the consortia, in particular those institutions or parts of institutions responsible for research and innovation. The RRI approach should be integrated in regional development policies, e.g. spatial planning, land use planning, coastal planning, urban development and urban structuring activities (list not exhaustive). Consortia should make strong efforts to ensure the involvement of all kind of citizens, irrespective of their age, gender, ethnicity and socio-economic background.

Consortia should lay out a sequence of actions that open up and transform the R&I ecosystem and governance systems so that they are more open and inclusive.

Consortia will:

- Map their current territorial R&I ecosystem, taking into account and complementing existing mapping exercises such as the Smart Specialisation Platform, the European Cluster Observatory, and the Regional Innovation Scoreboard,
- **Reflect on how the system could be more open and inclusive, and**
- **Consider their place within larger societal, geographical, economic and environmental framework.**
- Consequently, **proposals should develop concrete actions within individual beneficiaries' organisations (e.g. agenda setting and institutional changes in the fields of gender, ethics, public engagement, science education and open access) and in the territorial context (e.g. local and regional governance relations and decision-making processes).**

Changes should be sustainable (i.e. last beyond the lifetime of funding), for instance through the introduction of new forms of decision making, development of business plans or co-operation agreements, and institutional changes in participating organisations.

The actions should avoid duplicating the analytical and data collection activities of the Smart Specialisation Platform. Previous project findings and good practices should be considered as and when appropriate. Projects such as ONLINE-S3 and SEISMIC could be useful in this regard. The ONLINE-S3 project aims to assist national and regional authorities in the EU to elaborate and revise their smart specialisation agendas, in terms of policies and strategy, whereas the SEISMIC project helps tackle Europe's biggest urban problems by engaging citizens, identifying social innovation needs, and contributing to future urban policies and research strategies.

The Commission considers that proposals requesting a contribution from the EU of the order of € 2.00 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

Consortia are expected to elaborate and implement a more open, transparent and democratic R&I system in their defined territories. Consortia are expected to evaluate their activities and provide evidence of societal, democratic, environmental, economic and scientific impacts. Involvement in the project should have a measurable transformative and opening effect on organisations involved, which should be sustainable beyond the lifetime of funding. Consortia are expected to contribute to one or more of the MoRRI indicators (for



Call - Science with and for Society

instance GE1, SLSE1, SLSE4, PE1, PE2, PE5, PE7, PE8, E1, OA6, GOV2), and to the Sustainable Development Goals50 (for instance goals 4, 5, 9, 11, 12, 13, 16 or 17).

Type of action	Coordination and support action
Deadline	02 April 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-14-2018-2019.html



Call - Science with and for Society

SwafS-15-2018-2019: Exploring and supporting citizen science

Specific challenge

Citizen science is blooming across all scientific disciplines and the humanities. It can potentially bring a wide variety of benefits to researchers, citizens, policy makers and society across the research and innovation cycle, e.g; it can accelerate and sometimes even make possible the production of new scientific knowledge; it can help policy makers monitor implementation and compliance with regulations; it can increase public awareness about science and feeling of ownership of policies; and it can enable faster and evidence-informed reactions to events and better territorial coverage.

At the same time there are difficulties setting up citizen science initiatives – in terms of choosing the optimum methodologies; in terms of quality assurance and validation of the outcomes; in terms of linking the various governance levels, from local to global; in terms of ensuring balanced participation of citizens (e.g. regardless of background, gender and age); in terms of integrity of methods and data; in terms of recognising the work of citizens participating in citizen science initiatives; in terms of managing large numbers of volunteers for many months or even years (and keeping them motivated and responding to their questions).

Furthermore, questions remain unanswered about the potentials of citizen science for society e.g: what is the potential number of citizen scientists and who are they? What are the costs and benefits of citizen science (e.g. in terms of scientific excellence and the economy)? What relationship can and does citizen science have to informal and formal science education? Are there limits to citizen science, and if so what are they?

For the present topic citizen science should be understood broadly, covering a range of different levels of participation, from raising public knowledge of science, encouraging citizens to participate in the scientific process by observing, gathering and processing data, right up to setting scientific agenda and co-designing and implementing science-related policies. It could also involve publication of results and teaching science.

Scope

There are the two sub-topics:

A. Coordination and Support Action - CSA (1 project in 2018): This will provide support to citizen science at the European level. It will also create a mutual learning space where citizen science projects/participants can exchange experiences and successful strategies. **It will raise awareness of citizen science among the general public, provide co-ordination support between citizen science initiatives (in particular those funded by SwafS but also working in a spirit of co-operation with established networks of citizen scientists), identify training needs with a view to developing and implementing training to help citizen scientists,** and support communication between citizen science and science journalists/science media. It will also identify good practices that incentivise career scientists to engage with citizen science activities.

B. Research and Innovation Actions - RIA (multiple projects in 2018-2019): This will support hands-on citizen science activities. Proposals may focus on one particular area of scientific enquiry or tackle several, though transdisciplinary approaches should be favoured. The intended activities should be clearly defined and result in the development of new knowledge, new technologies, or new means of using existing technological or social innovations better. **Activities can explore how citizen science develops scientific skills and competences, act as a tool for informal and formal science education of young people and adults, counter perceived anti-intellectual attitudes in society, raise the scientific literacy of European citizens, and promote social inclusion and employability. Gender, geographical and socio-economic factors should be taken into account so as to ensure activities are open to people from all backgrounds. Effort should be made to evaluate the impacts on society, democracy, the economy, science itself, and the individual citizen scientists involved in the activities.** Lines of communication should be established with other relevant SwafS projects in order to share evaluation data and data arising from the citizen science in the spirit of open science.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

The Commission considers that proposals requesting a contribution from the EU in the order of € 2.00 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. Coordination and Support Action: Strengthened networks, co-ordination and communication among citizen science projects (particularly, but not limited, to those funded by SwafS). Availability of tools, guidelines, or other materials useful to actors inexperienced in organising and supporting citizen science initiatives. Increased awareness amongst the general public of citizen science. Delivery of training to citizen scientists (or potential science practitioners) and resultant increased skills, competences, and scientific excellence. Consortia should choose a basket of indicators to measure the impact of their work against. In particular, consortia are expected to contribute to one or more of the MoRRI indicators (for instance PE1 to PE10) and to the Sustainable Development Goals.

B. Research and Innovation Actions: Development of new knowledge and innovations by citizen scientists. Availability of evaluation data concerning the societal, democratic and economic costs and benefits of citizen science. Consortia should choose a basket of indicators to measure the impact of their work against. In particular, consortia are expected to contribute to one or more of the MoRRI indicators (for instance PE1 to PE10) and to the Sustainable Development Goals.



Call - Science with and for Society

Type of action	Coordination and support action, Research and Innovation action
Deadline	RIA, CSA - 10 April 2018 RIA - 02 April 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-15-2018-2019.html



Call - Science with and for Society

SwafS-16-2019: Ethics of Innovation: the challenge of new interaction modes

Specific Challenge

Innovation, from idea to product, and including social innovation, is a main driver for change, a pillar of EU growth and globally for socio-economic development. It addresses key challenges in fields such as the environment and health and improving the quality of life and well-being of citizens.

Over the past years, the modes of interaction between the different stakeholders have evolved significantly. Active participation of citizens in science and innovation has gained prominence. At the same time, new IT tools have profoundly impacted the way in which researchers work and interact. These developments are promising and have numerous advantages. At the same time, however, these **new modes of innovation** also **raise ethical and regulatory considerations, including concerns regarding the protection of participating citizens, their potential exploitation, the collection of big data and related privacy considerations, as well as intellectual property issues.**

Scope

In order to maximise the social benefits derived from innovation, **the action will assess the ethical, regulatory and governance issues potentially arising in this context. The action should identify what the distinctive elements of innovation ethics would be in this dynamic context.**

The role of citizen participation in innovation (including social innovation) must be analysed in order to maximise the effectiveness of this participation for all stakeholders, taking into account possible gender differences. Best practices for an active involvement of citizens and relevant stakeholders in the innovation processes should be identified. The design and use of IT tools should also be considered in order to optimise stakeholder participation.

In addition, **the existing legal environment applicable to citizen participation in research and innovation should be identified, mapped and analysed. Potential regulatory and legal gaps** (concerning for example IP rights and ownership of data) **should be described and concrete proposals should be presented** to address the highlighted gaps.

The analytical work should not be limited to the legal aspects, but also cover current practices (in the EU and beyond) with a view to discussing their ethics and values dimensions and taking into account the lessons learned so as to be able to identify best practices. In doing so, business ethics practices should also be considered.

The action must propose an ethics framework, based on accepted principles, **which aim to ensure that innovation remains a process which responds to citizens' needs and values, improves access and avoids a technological divide.** Such a framework should focus on the elaboration and implementation of publicly funded research and innovation programmes, as well as public-private partnerships. It should be developed, validated and translated into a set of practical guidelines that enable the effective handling of the identified ethical and regulatory issues.

Such a framework and guidelines must be compatible with and aim to complement the new European code of conduct for research integrity and include, where applicable, measures for benefit sharing. This process necessitates the active involvement of relevant stakeholders to ensure an effective take-up. The effectiveness of the guidelines should be assessed and tested, notably via workshops and focus groups (such science cafes, etc.) involving citizens, industry, researchers and policy makers. In addition, the resulting guidelines should be applied in real-life pilots with quantifiable results. Piloting needs to be carried out in a representative set of Member States in order to test different cultural/socio-political context.

The action should involve innovation agencies and/or research and innovation funding organisations, which are called to apply the results of the project into their internal procedures.

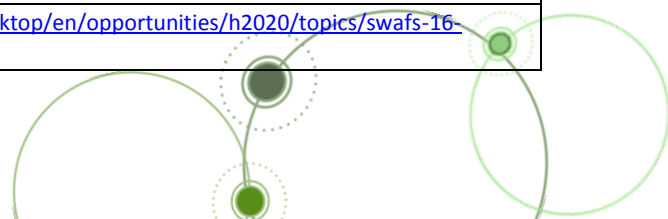
In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 3.00 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

Overall, this action will enable more effective handling of the ethical dimension of innovation, in particular regarding the new modes of interaction and participation. It will offer a practical and operative tool for all stakeholders confronted with the challenges related to co-design and to new (IT-based) interaction modes. It will practically support the work of a) the designers and funders of research and innovation policies/programmes, b) the ethics committees tasked with evaluating and monitoring innovative programmes and projects, and c) the research integrity bodies responsible for promoting research integrity and research quality. The implementation of the guidelines in pilots are expected to increase their uptake and overall the impact of the action.

Type of action	Coordination and support action
Deadline	02 April 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-16-2019.html



Call - Science with and for Society

SwafS-17-2019: Consolidating and expanding the knowledge base on citizen science

Specific challenge

Grassroots initiatives related to citizen science are blooming across the world. **Citizen science** has the potential to bring a wide variety of benefits to researchers, citizens, policy makers and society and across research and innovation (R&I) cycles. It **can make science more socially relevant, accelerate and enable production of new scientific knowledge, help policy makers monitor regulatory implementation and compliance, increase public awareness about science and ownership of policy making, and increase prevalence of evidence-based policy making.**

The growth of citizen science brings with it a need to understand its breadth and consequences. How is citizen science conducted, who is involved and in what way(s), and what effect(s) does it have on R&I systems, scientists and the citizens involved? What are the different incentives and disincentives for career scientists to get involved in citizen science? What are the enablers and the barriers of citizen science, what are good practices, and what are its limits? **It is also important to identify the democratic, societal, economic and scientific benefits of citizen science.** Moreover, the deep and profound implications on science as a discipline, a profession and as a practice, and also on science's relationship with and for society, need to be considered.

Scope

This topic will deepen scientific knowledge on citizen science. It will work very closely with and examine and synthesise data arising from existing citizen science projects (in particular, but not limited to, those funded by SWAFS) **to better understand participation patterns in citizen science**, the types of activities conducted, the transformative potentials of participating in citizen science, **challenges faced by citizen scientists, enablers and barriers to participating in citizen science (e.g. in terms of socio-economic status, gender, age, and in terms of R&I policies)**, and a strengthened knowledge base on its benefits. It will place developments in global and European historical contexts, and develop understanding about the implications of citizen science on science itself, and on science's relationship with and for society. It will involve stakeholders from local to European levels, from all parts of the quadruple helix, and **taking into account** gender, geographical and **socio-economic differences**, to develop policy messages that work towards an enabling R&I policy environment for citizen science and maximisation of the benefits of citizen science.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

The Commission considers that proposals requesting a contribution from the EU of the order 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 other amounts.

Expected impact

Consortia should aim to consolidate and expand the scientific and policy knowledge base about citizen science. They should identify key incentives, disincentives, barriers and enablers to involvement of citizens and scientists. **They should document, synthesise, and present evidence about the societal, democratic, economic and scientific benefits (and potential caveats) of citizen science.** They should aim to impact on R&I policies by developing implementable policy recommendations and targeting them at key stakeholders. They should aim to indirectly work towards MoRRI indicators (e.g. SLSE4, PE1, PE2, PE3, PE5, PE6, PE7, PE8, PE9, PE10, OA6) and identified and appropriate Sustainable Development Goals.

Type of action	Research and Innovation action
Deadline	02 April 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-17-2019.html



Call - Science with and for Society

SwafS-18-2018: Taking stock of the application of the precautionary principle in R&I

Specific challenge

In 2000, the European Commission adopted a Communication on the precautionary principle (PP) following several crises in the fields of health and food safety. PP was then seen as enabling rapid response in case of possible danger to human, animal or plant health or to protect the environment, especially in cases where scientific evidence was lacking. The Communication proposed common guidelines on the application of the precautionary principle. Since then, the application of PP has become controversial, with some stakeholders advocating an Innovation Principle (IP), by which potential innovation benefits should be favoured when weighed against potential risks. Yet debate and controversy related to the need to take due and proportionate precautions in research and innovation activities, and to anticipate and assess the potential environmental, health and safety impacts of policies and technologies, continue today. The challenge is to find a balanced approach that allows decisions to be made on a case-by-case basis, responding to the question "how safe is safe enough and how risky is too risky".

Scope

Consortia will take stock of the implementation of PP since 2000 in various contexts, analyse the effects of the PP and propose several scenarios for the future of the PP and IP. **Consortia are expected to examine international, EU, national (and sub-national) level initiatives and policies related to due and proportionate precaution.** They should examine and analyse recent and on-going controversies, understanding the competing interests and concerns of different stakeholders, and analyse whether and how their views are taken into account, for instance in the media, by pressure groups, citizens, governments, and in policy making.

Consortia should strive to develop new tools or approaches to PP or IP, in order to help policy makers and other stakeholders apply RRI principles, that is, build effective cooperation between science and society, and pair scientific excellence with social awareness and responsibility. These new tools should be created in a full co-creation approach with the different actors involved.

The Commission considers that proposals requesting a contribution from the EU in the order of 2 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

Consortia are expected to contribute to one or more of the MoRRI indicators (in particular PE 1 to 10, E 1 to 3 and GOV1 to 3) and to the Sustainable Development Goals (for instance goals 6, 9, 11, 12, 13, 14 and 15). **Consortia are expected to evaluate their activities and provide evidence of societal, democratic, economic and scientific impacts.**

Type of action	Research and Innovation action
Deadline	10 April 2018
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-18-2018.html



Call - Science with and for Society

SwafS-19-2018-2019: Taking stock and re-examining the role of science communication

Specific challenge

Science and innovation are undergoing deep and fundamental changes, in particular thanks to digitalisation (e.g. social media and citizen science). Science communication, which is a discipline, an activity conducted by scientists and other R&I stakeholders, and a career path followed by journalists, informs citizens about science and innovation, opens up R&I to society, and empowers citizens to participate in activities and debate.

Two concurrent developments lead to the growing need to ensure the quality and reliability of science communication: firstly, dwindling resources in science journalism lead to reduced critical assessment and reporting of science; secondly, the rapid diffusion of open access publications and science-related news through social media increase opportunities for all citizens and civil society groups to reach large audiences about science-related issues but sometimes without the editorial oversight and fact-checking established in the traditional media.

Scope

This topic aims to better understand how results from research and scientific methodologies are communicated and perceived by citizens (taking into account age, gender, and socio-economic status), develop improved ways to measure and assess science communication, and identify good practices and policy guidelines to increase the accuracy of (and therefore trust in) science communication. It will increase knowledge about science communication at international, EU and member state levels. It will propose innovative ways to open up science and innovation broadly to society by improving the quality and effectiveness of interactions between scientists and other R&I stakeholders, the media and the public. **It will examine the teaching of science communication within scientific disciplines and as a dedicated academic discipline. It will also give attention to existing incentive (and disincentive) structures for scientists and other R&I stakeholders to engage in science communication, for instance in terms of career and scientific reputation.** Applicants are welcome to propose other innovative ideas in relation to the above specific challenge.

To address this specific challenge, proposals will include a multi-disciplinary team able to explore well defined communication strategies (journalists, science communicators, scientists and other R&I stakeholders, educators, enterprises, economists, civil society/citizens, legal experts, etc.). Specificities related to gender, culture, territorial context and the environment should also be considered.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 1.2 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

Dissemination of the results should increase the communication of science in terms of quantity and quality, favour the opening of R&I, and the up-take of RRI. It should eventually improve the quality and effectiveness of interactions between scientists, general media and the public.

Type of action	Research and Innovation action
Deadline	Call 2018: 10 April 2018 Call 2019: 02 April 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-19-2018-2019.html



Call - Science with and for Society

SwafS-20-2018-2019: Building the SwafS knowledge base

Specific challenge

Understanding the evolution of science and society will help proactive and anticipatory policy making. This includes **examining how societal actors**, including young people, **behave, understand, react to and interact with science and scientific developments, and their motives for engaging in science-related activities. It encompasses investigating science communication and science advocacy in the digital world, and how science and technology studies and different disciplines (e.g. behavioural sciences, communication studies, gender studies, linguistics, and social anthropology) – and multi/transdisciplinary approaches – can help explain interactions between science and society.** This includes a focus on blind spots of research and innovation in relation to people's needs and concerns and in any of the areas or dimensions covered by RRI. Moreover, consideration could be given to rewarding achievement in RRI in its various dimensions to signal the organisations that are more RRI aware (answering questions such as how such a reward could work and based on which criteria). Another area is implications of deep changes in science and innovation and their interactions with society and the economy, such as the transition to open science and open innovation, and resultant changes in the relationships between science and society.

Scope

The present topic is completely bottom-up. Research and innovation actions are invited, using the above specific challenge to help stimulate ideas about where research is most needed.

The Commission considers that proposals requesting a contribution from the EU of the order of € 1 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

Consortia should choose a basket of indicators to measure the impact of their work against. In particular, consortia are expected to contribute to one or more of the MoRRI indicators⁶⁸ and/or to the Sustainable Development Goals⁶⁹. R&I outcomes should help build effective cooperation between science and society, foster the recruitment of new talent for science, and pair scientific excellence with social awareness and responsibility. Scientific and other types of publication should be foreseen.

Type of action	Research and Innovation action
Deadline	Call 2018 1st stage - 10 April 2018 2nd stage - 13 November 2018 Call 2019 1st stage - 02 April 2019 2nd stage - 07 November 2019
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-20-2018-2019.html



Call - Science with and for Society

SwafS-21-2018: Advancing the Monitoring of the Evolution and Benefits of Responsible Research and Innovation

Specific challenge

Understanding the evolution and the benefits of RRI is crucial to furthering inclusivity, collaboration and transparency in R&I systems. The MoRRI project has developed a monitoring system which provides a first picture of the evolution and benefits of RRI. This needs to be built upon, to deepen understanding of whether and how RRI leads to measurable societal, democratic, scientific and economic benefits, to provide stakeholders with user-friendly yet advanced tools that aid their efforts to improve the outcomes of R&I, and to enable benchmarking with countries in other regions of the world.

Scope

Based on the outcomes of MoRRI, consortia should work to implement an improved RRI monitoring system. One improvement that should be foreseen is consideration of scientific benefits of RRI, in addition to the societal, democratic and economic ones examined and elaborated on by MoRRI. Another improvement that should be foreseen is the development and collection of data on indicators of the benefits of RRI, building on the preliminary work conducted by MoRRI. Other improvements could relate to data reliability, efficiency of data collection, country coverage, balanced stakeholder representation in the monitoring system, ensuring synergies (and avoiding duplication) with other monitoring systems, and the comprehensibility of the indicator system to stakeholders. These and any other improvements may be introduced incrementally, so as to ensure there is sufficient continuity with MoRRI to enable comparison across different data collections. Consortia should publish the results of data collections at suitable regular intervals (e.g. in the second and the fourth year of the project).

This will require thorough review of the existing monitoring system developed by MoRRI, highlighting strengths and areas where improvements could be envisaged; a number of focused desk-based reviews and empirical in-depth studies could be envisaged to fill knowledge gaps about the evolution and benefits of RRI. Links should be established to relevant SWAFS and RRI-related projects, with a view to analysing and synthesising data they have collected concerning the impacts of their activities and the benefits of RRI. A clear intervention logic for the entire monitoring system should be developed so that the impact pathways between indicators and benefits can be perceived and so that stakeholders at national and EU levels can easily identify where efforts need to be made to improve the outcomes of R&I. Development of an RRI dashboard/online tool should be foreseen, to help stakeholders self-diagnose and react to the monitoring data with concrete policy responses. Technical fiches for every indicator along with detailed notes on data collection should be prepared to enable data collection after the lifetime of the project. Peer-review and other publications and participation in high-level scientific and policy fora are expected. **Cross- and/or trans-disciplinarity should be envisaged if the methods and knowledge of different disciplines are required to implement the monitoring system and/or establish causal links between RRI activities and benefits.** An advisory board consisting of experts from society, policy, science and innovation should provide yearly independent feedback on the work to the consortium.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. A project duration of five years should be envisaged.

Expected impact

This topic is expected to lead to an improvement in the monitoring of the evolution and benefits of RRI. Building upon and improving the monitoring system developed by MoRRI, it should implement a robust and replicable monitoring system consisting of a basket of indicators covering the five RRI dimensions and governance. It should provide time-series data with enough continuity with MoRRI's to enable meaningful comparison across data collections. It should enable benchmarking with countries in other regions of the world.

Type of action	Research and Innovation action
Deadline	10 April 2018
Call identifier	H2020-SWAFS-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-21-2018.html



Topics with minor SSH relevance

SwafS-04-2018: Encouraging the re-use of research data generated by publically funded research projects

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-04-2018.html>

SwafS-05-2018-2019: Grounding RRI practices in research and innovation funding and performing organisations

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-05-2018-2019.html>

SwafS-06-2018: Science4Refugees

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-06-2018.html>





Spreading Excellence and Widening Participation

Net **4** Society

WIDESPREAD-03-2018: Twinning

Specific challenge

The specific challenge is to enhance networking activities between the research institutions of the Widening countries and internationally-leading counterparts at EU level. Driven by the quest for excellence, research intensive institutions tend to collaborate increasingly in closed groups, producing a crowding-out effect for a large number of promising institutions. This is the challenge that a specific Twinning action will try to address.

Scope

Twinning aims at significantly strengthening a defined field of research in a university or research organisation from a Widening country by linking it with at least two internationally-leading research institutions in other Member States or Associated Countries.

Twinning will:

1. Enhance the scientific and technological capacity of the linked institutions with a principal focus on the university or research organisation from the Widening Country;
2. Help raise the research profile of the institution from the Widening country as well as the research profile of its staff.

Successful Twinning proposals will have to clearly outline the scientific strategy for stepping up and stimulating scientific excellence and innovation capacity in a defined area of research as well as the scientific quality of the partners involved in the twinning exercise. This scientific strategy should include arrangements for formulating new (or ongoing) joint research project(s) in the **scientific area of choice** and describe how Twinning will take this research to a new stage, by enlarging its scope and/or the research partnership. If relevant, any links with sustainable development objectives are to be outlined.

Such a strategy should include a comprehensive set of activities to be supported. These should include at least a number of the following: short term staff exchanges; expert visits and short-term on-site or virtual training; workshops; conference attendance; organisation of joint summer school type activities; dissemination and outreach activities.

A dedicated focus towards promoting the involvement of early stage researchers (as per the MSCA definition¹³) in the coordinating institution from the Widening country is expected. This should take the form of a dedicated work package in the proposal describing activities dedicated to early stage researchers from the coordinating institution that could include training, mentoring and networking measures within the Twinning exercise.

In general, costs relating to administration, networking, coordination, training, management, travel costs are acceptable under a Twinning project.

Therefore, for grants awarded under this topic and type of action the following cost categories will be ineligible costs:

- infrastructure costs;
- equipment;
- research costs (including consumables).

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

The duration of a Twinning project can be up to 3 years.

The Commission considers that proposals requesting a contribution from the EU of EUR 0.8 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

- Increased research excellence of the coordinating institution in the particular field of research as a result of the twinning exercise.
- Enhancing the reputation, attractiveness and networking channels of the coordinating institution.
- Improved capability to compete successfully for national, EU and internationally competitive research funding.
- Illustrate quantitatively and qualitatively the expected potential impact of the twinning exercise within the coordinating institution (and possibly at regional/national level) based on indicators like expected future publications in peer reviewed journals, collaboration agreements with businesses, intellectual property, new innovative products or services.
- It should be explained how the leading scientific institutions in the partnership will contribute in terms of provision of access to new research avenues, creativity and the development of new approaches, as well as acting as a source for increased mobility (inwards and outwards) of qualified scientists.
- The benefits for the internationally leading scientific institutions and the way they would materialise through the partnership should be substantiated.



Call - WIDESPREAD

Type of action	Coordination and support action
Deadline	15 November 2018
Call identifier	H2020-WIDESPREAD-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/widespread-03-2018.html



WIDESPREAD-04-2019: ERA Chairs

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, 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 including the European Charter for Researchers & Code of Conduct for the Recruitment of Researchers, 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 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. 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 costs¹⁹, 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).



Call - WIDESPREAD

- 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.

Type of action	Coordination and support action
Deadline	19 January 2017
Call identifier	H2020-IND-CE-2016-17
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/spire-13-2017.html



Call - Widening Fellowships

WF-01-2018: Widening Fellowships

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 2018 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. 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 2018 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-2018 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:

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

Type of action	MSCA-IF-EF-CAR Career Restart panel , MSCA-IF-EF-RI Reintegration panel , MSCA-IF-EF-SE Society and Enterprise panel , MSCA-IF-EF-ST Standard European Fellowships
Deadline	12 September 2018
Call identifier	H2020-WF-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/wf-01-2018.html



Call - Widening Fellowships

WF-02-2019: Widening Fellowships

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 call²⁶. 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.

Type of action	Career Restart panel, Reintegration panel, Society and Enterprise panel, Standard European Fellowships
Deadline	11 September 2019
Call identifier	H2020-WF-2018-2020
Topic information	http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/wf-02-2018.html

