



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

Analysis of SSH-relevant Topics  
Work Programme 2018-20

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Coordination and Support Action



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# 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 [Funding & Tenders 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.

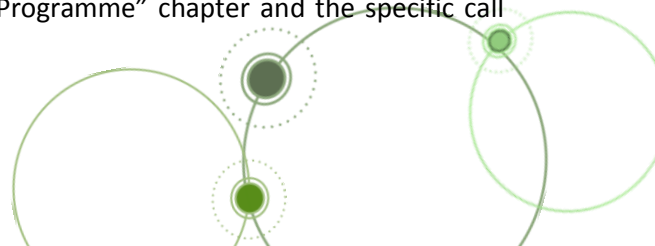
This document compiles the “SSH-flagged topics” and is based on the analysis of SSH relevant topics carried out jointly by the thematic services and Unit E.4 Fair Societies & Democratic values of the EC Directorate-General for Research and Innovation. The document also includes a few additional topics 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: brief 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 on their specific interest. In any case, the Work Programmes need to be read in more detail to be aware of 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 <https://www.net4society.eu/en/Other-funding-opportunities-1846.html>

*This document includes information on open or forthcoming topics for 2019-2020 as of September 2019.*

### DISCLAIMER

Information on calls might be subject to change. Researchers need to consult the Funding & Tenders Portal to receive the latest information on calls.

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# Societal Challenge 1

## Health, Demographic Change and Wellbeing

# 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, an EU Member States led initiative which includes representatives from most EU countries along with several other European countries, Brazil and Canada. The EC currently supports ICPeMed with a grant to operate its secretariat until October 2020. 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, cultural, ethical and legal 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. For the 2020 call, the project should focus on countries in Africa, linking also into the EU-AU (African Union) policy dialogue and taking into account the new Africa-Europa Alliance for Sustainable investment and Jobs. Alignment with activities of the Global Alliance for Chronic Diseases (GACD) and The European and Developing Countries Clinical Trials Partnership (EDCTP) activities should be explored. Special attention should be given to prediction and prevention, and to promoting well-being for all at all ages. Furthermore, the project should seek to integrate local knowledge and practice. Data safety and privacy should be addressed in line with existing standards and legislation. The project should have a duration of at least four years and address sustainability beyond that to ensure longer term structuring effect. 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 based in the international partner region; CELAC (2018 call), China (2019 call) and Africa (2020 call).

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 EMA44 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).



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

5. ICPeMed secretariat: The project should continue the work done by the secretariat for ICPeMed, e.g. maintenance of existing services, organising the meetings of the ICPeMed Executive Committee, convening dedicated workshops and preparing and issuing updates of the ICPeMed Action Plan. Furthermore maintaining the network of policy makers and funders gathered in ICPeMed and expanding the membership to new interested and complementary partners as well as maintaining communication with all EC funded activities related to ICPeMed (2020 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. Support the EU-AU policy dialogues relevant to research and health (2020 call). 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 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.
5. ICPeMed secretariat (2020 Call): Ensure continuity of the operations of ICPeMed beyond 2020. Increase the visibility of the consortium and ensure openness of the structure. Provide harmonised vision for the further development of personalised medicine. Contribute to the convergence of members' approaches to personalised medicine and further alignment of research efforts in the field.

Type of action	Coordination and support action
Deadline	07 April 2020
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	<a href="#">Link</a>



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

## SC1-BHC-17-2020: Global Alliance for Chronic Diseases (GACD) - Prevention and/or early diagnosis of cancer

### Specific challenge

The Global Alliance for Chronic Diseases (GACD) call will focus on implementation research proposals for the prevention and/or early diagnosis of cancer in Low and Middle-Income Countries (LMIC) and/or in vulnerable populations in High- Income Countries (HIC).

**The world is facing a critical healthcare problem due to ageing societies, unhealthy lifestyles, socio-economic inequalities, and a growing world population. Cancer is becoming one of the most important public health problems worldwide.** In 2018, it is estimated that 181 million people have been diagnosed with cancer and 9.6 million have died from it. Predictions suggest that 30 million people will die from cancer each year by 2030, of which three-quarters in low- and middle-income countries (LMICs).

With an estimated 30-50% of avoidable cancers, it is a leading cause of premature death, reducing a country's productivity. **Current cancer prevention and control do not fully reflect ethnic, cultural, environmental, socio-economic and resource differences.** In particular, limited implementation research is conducted on cancers primarily found in LMICs and vulnerable populations in HIC. In order to achieve the United Nations' sustainable development goal 3.4, implementation research and healthcare efforts are needed to prevent and control cancers in these countries and populations.

### Scope

Proposals should focus on implementation research for the prevention and/or early diagnosis of cancer on in LMIC and/or in vulnerable populations in HIC. Proposals should build on interventions with promising or proven effectiveness (including cost-effectiveness) for the respective population groups under defined contextual circumstances. For promising interventions, a limited validation period can be envisaged. However, the core of the research activities should focus on their implementation in real-life settings. The proposed interventions should gender-responsive.

The aim should be to adapt and/or upscale the implementation of these intervention(s) in accessible, affordable and equitable ways in order to improve the prevention and early diagnosis of cancer in real-life settings. Interventions should meet conditions and requirements of the local health and social system context and address any other contextual factors identified as possible barriers.

Each proposal should:

Focus on implementation research addressing prevention, and/or early identification strategies derived from existing knowledge about effective and/or promising interventions.

For screening interventions, the pathway to referral for positive cases should be included.

**Include a strategy to test the proposed model of intervention and to address the socioeconomic and contextual factors of relevance to the targeted region and community.**

Lead to better understanding of key barriers and facilitators at local, national and international level that affect the prevention and/or early diagnosis of cancer.

Include health economics assessments as an integral part of the proposed research, including considerations of scalability and equity.

Propose a pathway to embed the intervention into local, regional or national health policy and practice, addressing:

A strategy to include policy makers and local authorities (possibly by being part of the consortium), as well as other relevant stakeholders such as community groups, patient groups, formal and informal carers and any other group, where ever relevant from the beginning of the project, which will contribute to the sustainability of the intervention, after the end of project.

**Relevance of project outcomes/evidence for scaling up the intervention at local, national and international level and then scaled-up appropriateness with respect to the local social, cultural and economic context.**

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). Applicants must budget their involvement in GACD working groups and other GACD wide activities, beyond their projects.

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. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

### Expected impact

The proposals should address one of or combinations of:

- Advance local, regional or national cancer prevention and/or early diagnostic health policies, alleviating the global burden of cancer;



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- Establish the contextual effectiveness of cancer intervention(s), including at health systems level;
- Improve tailored and affordable prevention and/or early diagnosis;
- Provide evidence and recommendations to national programmes and policies focusing on prevention, screening, and/or early diagnosis;
- Inform health service providers, policy and decision makers on effective scaling up of cancer interventions at local, regional, and national levels, including affordability aspects for users and health providers;
- Reduce health inequalities and inequities, including due consideration of socio-economic, gender and age issues where relevant, in the prevention and/or early diagnosis of cancer at both local and global levels;
- Provide pathway to cancer care for the patients diagnosed with cancer;
- Maximise the use of existing relevant programmes and platforms (e.g. research, data, and delivery platforms);
- Contribute to the United Nations' Sustainable Development Goal 3.4.

Type of action	Research and Innovation action
Deadline	07 April 2020
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	<a href="#">Link</a>





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

## SC1-BHC-33-2020: Addressing low vaccine uptake

### Specific challenge

Vaccines are one of the most important medical breakthroughs in the last 100 years. Every year vaccines save millions of people around the world from illness, disability and death, and they continue to be one of the most cost-effective ways to increase the health and wellbeing of their citizens. Despite this, vaccination uptake faces significant challenges across Europe, and these have increased in particular over the past 20 years. Recent studies have shown Europe to be the world region with the most negative views towards the safety and effectiveness of vaccines, and the importance of childhood vaccination.

Recent figures collected by the World Health Organization (WHO) show that in 2016 only one vaccine had a coverage rate of over 95% in Europe. Seasonal influenza vaccination also remains significantly below the 75% coverage target for older age groups.

Thus, coverage for many vaccines is below the recommended limit. Due to the low vaccine coverage rates, several EU Member States have faced considerable outbreaks of vaccine-preventable diseases in recent years. For example, more than 14,000 cases of measles were reported across the EU in 2017, which is more than three times the number of cases reported in 2016. During the same period 50 people in the EU died due to measles.

These figures highlight the urgent need to get to grips with vaccine uptake issues, whether uptake of existing or new vaccines. Research has an essential role to play in understanding the underlying causes of poor vaccine uptake, including vaccine hesitancy, and to develop strategies and guidelines to help Member States and Associated countries increase vaccination coverage. A detailed understanding of the obstacles to, and drivers of, vaccination uptake in various settings is necessary to provide appropriate recommendations.

### Scope

Proposals should work to increase understanding of the determinants of low vaccine uptake in specific contexts situated in the EU and/or Associated Countries (AC), and should develop strategies to increase vaccination rates of essential vaccines within these contexts. From this work, proposals should aim to develop a series of recommendations that national and regional public health authorities in the EU and/or Associated Countries could implement in order to increase vaccine coverage. Proposals should build on existing research, findings and available information in this domain, as well as existing guidelines and recommendations from public health authorities, including those from the European Centre for Disease Prevention and Control and WHO/Europe (such as ECDC reports and guidance on vaccine coverage and hesitancy, "WHO/SAGE Working Group on Vaccine Hesitancy", WHO/Europe "Guide to tailoring immunization programmes (TIP)").

**The approach taken should include a detailed examination of the causes of reduced vaccine uptake, and the design and testing of one or more interventions to improve vaccine uptake. Factors influencing vaccine uptake such as access, inequality, social/cultural influences and vaccine/vaccination-specific issues in specific population(s) that are identified as having lower than average vaccination coverage should be examined.** Interventions to improve vaccine uptake should be based on existing high-quality research findings, with a sound hypothesis for why the chosen intervention(s) could be effective at increasing vaccine coverage in the target population(s). **These interventions could be made in a wide variety of ways, for example content and style of online or offline media, educational material, modification of primary healthcare practices, access to vaccination, incentivisation, or any other strategies that are supported by a strong hypothesis. Also, the proposals should include a strategy for measuring the impact/success of the proposed interventions.**

Finally, the findings of the project will be gathered into a clear and coherent set of recommendations that can be readily utilised by public health authorities in Europe to improve vaccine coverage. Proposals should include in their work the development of a strategy to ensure the implementation of these guidelines.

**Proposals should take into account the specific contexts of the population(s) that they are studying, including factors such as age, sex/gender, religion, politics, geography, and socio-economic situation. Proposals should include partners from social science and public health-related disciplines.** Proposals will also be expected to create links with other existing initiatives, both in Europe and internationally. This should include specific budget for networking, travelling to or organising meetings for researchers and other stakeholders that work on vaccine uptake challenges.

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





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## Expected impact

- Contribute to increasing vaccine coverage in Europe, in particular in specific populations with low vaccine uptake and in specific contexts.
- Develop practical and readily implementable guidelines to aid national and regional public health authorities in the EU and Associated Countries to increase vaccination rates.
- Work towards meeting the goals on vaccination set out in President Juncker's State of the Union address in September 2017, the EC Communication on strengthened cooperation against vaccine preventable disease (COM/2018/245) and the Council Recommendation on strengthened cooperation against vaccine preventable diseases).

Type of action	Research and Innovation action
Deadline	07 April 2020
Call identifier	H2020-SC1-BHC-2018-2020
Topic information	<a href="#">Link</a>



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

## SC1-BHC-29-2020: Innovative actions for improving urban health and wellbeing - addressing environment, climate and socioeconomic factors

### Specific challenge

The natural and built environment as well as the social fabric are critical determinants of health and well-being. Three quarters of the European population now live in cities and urbanisation continues at high speed, driven by economic growth and employment opportunities. The related environmental changes e.g. pollution of air and water, transportation problems, reduced social cohesion and stress affect physical as well as mental health. Although health has improved in the EU over the last decades, large differences in health still exist between and within all countries in the EU. These differences are caused by many factors such as living conditions, health-related behaviour, education, occupation and income, health care. Some of these inequalities are widening. As European cities are growing, they are increasingly taking action and introducing policies to become more sustainable and liveable, adapting to climate change, investing in a range of smart and innovative solutions such as clean and sustainable transport, higher energy efficiency and stronger social cohesion. Similar initiatives are underway e.g. in Canada, USA as well as in Asia and Africa which could provide valuable knowledge.

At EU level, the Urban Agenda for the EU focuses on improving the life of their citizens for example through the development of digital solutions, reducing urban poverty and better integration of migrants and refugees. The headline targets in the EU2020 strategy aim to turn the EU into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion.

Improving urban health and reducing health disparities can be achieved by changes in individual behaviour as well as policies such as urban design and sustainable transport, (re)creating green and blue space or improved housing standards. There is a need to address public policies across sectors to achieve health benefits, systematically taking into account the health implications of decisions, to seek synergies, and avoid harmful health impacts (health in all policies).

### Scope

European research should engage to build the evidence base of effective policies, developing and testing new initiatives to improve urban health and environment in Europe. Given the variety of national experiences across European countries and regions, there is an important potential to learn from each other's practices and develop innovative actions for urban health.

Proposals should develop and test effective actions and/or policies for improved urban health and wellbeing in Europe. Where applicable, health inequalities and environmental aspects should be addressed. These actions or policies should also be assessed for cost-effectiveness as well as barriers and facilitators to implementation. **Proposals should address improved physical or mental health, or both, while considering the relevant socio-economic and/or environmental determinants of health.** They could address any sector (with priority on other sectors than health care) or policy area relevant to achieve a lasting health improvement. **Proposals should include analysis of vulnerable groups and gender aspects and address any such inequities in the design of interventions. Research teams should bring in all appropriate scientific disciplines to design and test interventions. This includes social scientists not least for their role on behavioural aspects.**

In order to link research to practical needs and user demands, teams should include other relevant parties in urban health, building partnership with stakeholders such as policy makers, users, business, and local communities. Proposals should address the need for more systematic data collection on urban health across the EU, to allow better analysis and conclusions. This may include the linking up with relevant population based cohorts.

As urban health is of concern in many regions of the world, proposals should foresee the possibility to link up internationally with other relevant urban health initiatives. Proposals should include in their budgets funds for participation in at least one international meeting gathering urban health initiatives relevant to the research.

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

- More robust evidence for policy making on improved urban health in the EU
- Improved population health, physical and/or mental, in urban areas of the EU
- Reduced health inequalities in urban areas



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

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 24 September 2019	2 <sup>nd</sup> stage - 7 April 2020
Call identifier	H2020-SC1-BHC-2018-2020	
Topic information	<a href="#">Link</a>	



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

## SC1-DTH-13-2020: Implementation research for scaling up and transfer of innovative solutions involving digital tools for people-centred care

### Specific challenge

People-centred care is one of the main goals of health systems. It relates to a stronger orientation towards the needs of people and their involvement in the treatment process and decision-making. This is expected to result in a better care as experienced by people, in less inequality, better health promotion, better disease prevention, and treatments better targeted to people's needs. Health system transition to people-centred care requires empowering citizens and integration of services.

The growing digital transformation of health and care offers great opportunity to achieve this transition. Innovative solutions involving digital tools have the potential to improve people-centred care through self-management, goal orientation and shared decision-making. However, technical innovation is unlikely to achieve the anticipated improvements/impact if not accompanied by supportive organisational and policy innovations. Given the complexity and differences between health systems, cross-national comparative health services and systems research as well as implementation research are needed to better understand the contextual factors that impact the successful introduction, use and sustainability of innovative solutions. This will in turn facilitate their scalability and their transferability to other settings.

### Scope

Proposals should study the scaling-up or transferability of an innovative solution involving digital tools, i.e. the conditions under which it can be implemented in other health systems and whether it can have the same intended effect.

To address this specific challenge, the proposals should:

- Identify an innovative solution involving digital tools (or a set of comparable innovations developed in parallel in different settings) with the potential to enhance people-centred care. The selected innovative solution should be described and supported by sufficient documented evidence on its effectiveness in specific contexts and if possible cost-effectiveness.
- Design and conduct an implementation study to collect either prospectively or retrospectively (depending on the maturity of the innovative solution) the evidence needed to inform the successful scaling up or transfer to different health systems with particular focus on the contextual factors including legal, ethical, behavioural and social issues.
- Identify the key aspects for scaling up or transfer, identify potential barriers, necessary measures/changes as well as facilitators to adopt the solution.
- Develop a prediction model to help decision-makers decide on the implementation of the solution as well as guidance to assess the future impact of the transferred solution on health system performance.

**Proposals should be multidisciplinary, bringing together expertise in health services and systems research, human and social sciences and implementation research.** The main focus should be on improving people-centeredness in Europe but solutions can originate from non- European countries. Gender aspects should be taken into account. Careful consideration should be given to vulnerable groups. Relevant stakeholders including end-users of research and patients' organisations should be identified and involved throughout the project lifetime. Innovative approaches in gathering patients input should be considered.

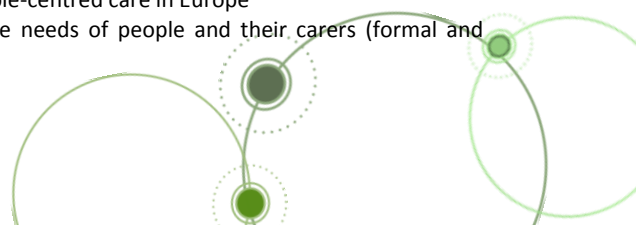
The proposals should complement or build on existing initiatives, including (but not limited to) results of EU-funded projects.

Selected proposals should provide evidence to support the third pillar of the Communication from the Commission on enabling the digital transformation of health and care in the Digital Single Market, "Digital tools for citizens empowerment and person-centred care".

The Commission considers that proposals requesting a contribution from the EU Horizon 2020 research programme 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

- **Availability of methods and strategies for the implementation of innovative, ethically and legally sustainable solutions aiming at improving people-centred care**
- **A better understanding of organisational and system changes, as well as social and behavioural changes required to successfully embed evidence-based innovative solutions involving digital tools into daily practice and ensure their sustainability**
- Increased scaling up and transfer of innovative solutions improving people-centred care in Europe
- In the medium and long-term, health services more responsive to the needs of people and their carers (formal and informal), more effective, efficient and equitable health systems.



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

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 24 September 2019	2 <sup>nd</sup> stage - 7 April 2020
Call identifier	H2020-SC1-BHC-2018-2020	
Topic information	<a href="#">Link</a>	



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

## *Topics with minor SSH relevance*

**SC1-BHC-08-2020: New interventions for Non-Communicable Diseases**

[Link](#)

**SC1-BHC-24-2020: Healthcare interventions for the management of the elderly multimorbid patient**

[Link](#)



## SC1-DTH-02-2020: Personalised early risk prediction, prevention and intervention based on Artificial Intelligence and Big Data technologies

### Specific challenge

The ageing of the population together with the rising burden of chronic conditions (incl. mental diseases) and multi-morbidity bring an ever increasing demand to strengthen disease prevention and integrate service delivery around people's needs for health and social care.

It is widely recognised that health systems must put more emphasis on prevention and adopt a person-centred rather than a disease-centred approach. The goal must be to overcome service fragmentation and to move towards integration and coordination of interventions along the continuum of care.

Personalised early risk prediction models, estimating the probability that a specific event occurs in a given individual over a predefined time, can enable earlier and better intervention, prevent negative consequences on a person's quality of life and thus result in improved individual health outcomes.

The challenge is to develop and validate these comprehensive models based on AI or other state of the art technologies for prediction, prevention and intervention using multiple available data resources and to integrate them in personalised health and care pathways that empower individuals to actively contribute to risk mitigation, prevention and targeted intervention.

### Scope

Proposals should build on results of projects and the state of the art in ICT for early risk prediction and introduce innovative ICT solutions through data, data analytics, advanced or novel digital technologies, services, products, organisational changes, and citizens data ownership, that lead to more effective health and care systems. These innovative ICT based solutions may address one or multiple conditions and explore ways of inducing adequate personalised preventive measures (e.g. behavioural change, diet, interventions, medication, primary prevention) from advanced predictive models. Sustainable behaviour change refers to efforts to change people's personal habits to prevent disease, stimulate healthy people to monitor their health parameters and thus lowering the risk of developing (chronic) conditions.

Proposals should build on the use of already existing and/or new data generated by individuals, health professionals and other service providers (including but not limited to data collected through IoT enabled devices, wearables, mobile devices, data source networks or data lakes etc. collected outside the controlled environment of clinical trials) by citizens, healthcare professionals, public authorities and industry, with a view to developing personalised early risk prediction, prevention and intervention approaches that meet the needs of individuals while providing them with adequate information to support informed decision making, improve the uptake of preventive approaches and lead to better health outcomes.

Proposals should also include actions aimed at increasing health literacy, including the role of the citizen as owner of his or her own personal data, as well as advancing health and care professionals' proficiency in novel, data-oriented health services through the use of digital solutions to increase knowledge about diseases and help them in the interpretation of symptoms and effects (e.g. with visualisations like dashboards, etc.), notably of early warning signs and medical information. Early warning signs relay to either healthy people monitoring several body parameters e.g. to conduct healthy life styles and increase physical activity levels or to the detection of the deterioration of the condition of already diseased patients. The latter could include advanced prediction models from aggregated patient data of certain health events/complications.

**Proposals are expected to be built on realistic scenarios for new health and care pathways, and should integrate multi-disciplinary research involving behavioural, sociological, medical and other relevant disciplines. Stakeholder engagement (esp. considering vulnerable user groups, i.e. persons belonging, or perceived to belong, to groups that are in a disadvantaged position or marginalised, for example, elderly people, persons with special needs or chronic diseases) should be part of the research design for an agile approach to ensuring that relevant user needs (including social, age and gender aspects) are met and solutions find acceptance by users. Full account should be taken of ethical and legal aspects e.g. data protection, privacy and data security.** This action should create a clear and coherent set of recommendations or guidelines for public health authorities in Europe together with a strategy to support their implementation.

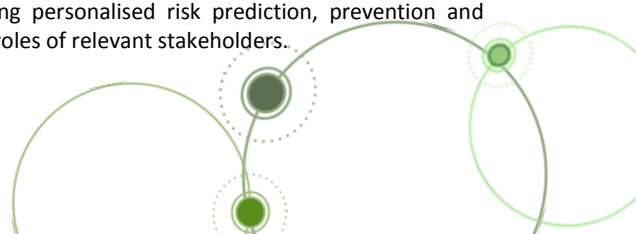
No large-scale piloting or clinical trials are expected in this Research and Innovation Action. However, proposals should include validation (testing on a prototype and/or proof of concept) and demonstration of feasibility of their respective models, technologies and scenarios.

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. Participation of SMEs is encouraged.

### Expected impact

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

- Evidence of the benefits of delivering adequate information regarding personalised risk prediction, prevention and intervention, based on proof of concept and involvement and specified roles of relevant stakeholders.



# Call – Digital transformation in Health and Care

- Clear improvements of outcomes for individuals, care systems and wider society from prevention measures and interventions based on personalised early risk prediction in comparison with current practices.
- Usefulness and effectiveness of integration and coordination of interventions in new health and care pathways based on person-centred early risk prediction, prevention and intervention models.
- Realise large-scale collection of user-generated data in compliance with data protection, privacy and security rules and principles.
- Support integration with tools and services under the European Open Science Cloud.

Type of action	Research and Innovation action
Deadline	22 April 2020
Call identifier	H2020-SC1-DTH-2018-2020
Topic information	<a href="#">Link</a>





# Call – Digital transformation in Health and Care

## SC1-HCC-09-2020: Supporting deployment of eHealth in low and lower middle income countries in Africa for better health outcomes

### Specific challenge

E-Health can contribute to better, more accessible and more efficient health and care services, in particular to remote populations and underserved communities. E-Health and mHealth technologies can only be successful, if they are supported by national governments, who have established e-Health policies and strategies and demonstrate strong ownership of the national e-Health programme. E-Health programmes will only achieve their objectives, if they are adapted to country needs, are citizen-centered and sustainable through sound public finance management. These pre-requisites will impact on the quality and accessibility of such e-Health services and their sustainability, usability, data security and interoperability, privacy and ethics issues.

Access to one's own health data and high-quality mHealth services in real-life environment are still a challenge because of a lack of government ownership, e-Health policies including enabling regulations, a sustainable and trustable infrastructure, and digital literacy.

Coordination and support is needed for taking stock of and further developing strategic partnerships on E-Health deployment together with low and middle income countries and regions in Africa with the aim to improve the health of the citizens.

### Scope

The aim is to support the coordination of a registry of relevant existing e-Health solutions describing their services and potential for low and lower middle income African countries or regions together with a roadmap and strategic implementation plans building on the requirements of end-user communities and policy makers in the target countries. The action should take into account national and regional policies and (best) practices regarding health and care services and health infrastructures and also include lessons learned from existing eHealth policies and programmes at all levels of the health system. It should take into account the new Africa-Europa Alliance for Sustainable investment and Jobs as relevant.

It should identify and build on and identify relevant existing and emerging initiatives and capacities in Europe and Africa which can form the basis for future cooperation and deployment.

The action should make use of and contribute to standardisation as appropriate. **Proposals should comply with and contribute to the development of the relevant legislation, in particular on ethics and data protection of health data. Socio-economic and gender issues should be addressed appropriately.**

The action should also ensure that relevant stakeholders including end-users are engaged during the process through national, regional and international workshops and a set of communication and dissemination actions, aligned to national policies, to support the deployment of e-Health services in low and lower middle income countries in Africa. The action should provide an added value, to the facilitation of the cooperation between European and low and middle income countries in Africa for a better health for all.

For grants awarded under this topic, beneficiaries may provide support to third parties as described in General Annex K of the Work Programme either in form of grants or prizes. The respective options of Article 15 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. At least one consortium partner must come from low and lower middle income countries in Africa.

### Expected impact

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

- Higher level of international cooperation and networking in eHealth programmes and policies between European countries or regions and low and middle income African countries, focusing on areas that are beneficial to the target countries / regions and their citizens in eHealth;
- Increased opportunities for e-health innovators, patients, medical staff and health system stakeholders in Europe and Africa;
- Better accessibility of eHealth Services.



# Call – Digital transformation in Health and Care

Type of action	Coordination and support action
Deadline	22 April 2020
Call identifier	H2020-SC1-DTH-2018-2020
Topic information	<a href="#">Link</a>



## *Topics with minor SSH relevance*

**SC1-DTH-06-2020: Accelerating the uptake of computer simulations for testing medicines and medical devices**

[Link](#)





## Societal Challenge 2

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

## 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 to secure yield and ensure food and feed safety across agricultural production and the agri-food chain. At the same time, pesticides may have effects on the environment, non-target organisms, animal and human health. In the EU they are regulated<sup>29</sup> 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 to the use of pesticides while at the same time safeguarding competitiveness.

### Scope

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

B. [2020] Alternative to contentious pesticides (IA)

Activities will foster the development and testing of tools, approaches, strategies and/or products to reduce the risks associated with the use of contentious plant protection products and/or biocidal products in conventional and/or organic farming systems and/or the agri-food chain. They will seek for more sustainable alternatives to contentious (or, as appropriate, active substances used in) plant protection product(s) for integrated pest, disease and/or weed management in agriculture and/or biocidal product(s) for preventing and controlling harmful organisms occurring in facilities related to agricultural production and the agri-food chain.

**Activities should address the development, testing and demonstration of novel, more durable and sustainable approaches, products, strategies and/or tools for their application within a systems approach and cultural practices.**

The Commission considers that proposals requesting a contribution from the EU of up to EUR 15 million for scope A and EUR 5 million for scope B would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

All sub-topics (A), (B): Projects should fall under the concept of the 'multi-actor approach'<sup>30</sup> including a range of actors to ensure that knowledge and needs from various sectors such as research, farming, advisory services and industry including SMEs are brought together. **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, including the impact on labour, safety culture and risk management on farms and economic impact for farmers. 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, pest / disease / weed prevention and control strategies for EU agricultural production and / or the agri-food chain and related communication;
- contribute to the ongoing collection of harmonised EU-wide datasets in open source collaboration and of indicators to assess and monitor trends over time and support risk management measures (scope A);
- improve monitoring of pesticide uses and pressures on human and animal health and the environment, by developing appropriate tools and integrated approaches considering various pathways (scope A);
- foster lasting transdisciplinary cooperation in the fields of life sciences, human, plant and animal health and environmental sciences and strengthen the European scientific community on global health approaches (scope A);
- introduce alternative approaches, tools, strategies and/or products for prevention and control of pests/diseases/weeds with improved environmental performance (e.g. reduced effects on non-target organisms, natural resources and the environment) in the field of plant protection and/or use of biocides related to agricultural production and activities across the agri-food chain (scope B);
- assess the potential risks and benefits of the chosen alternatives in a coherent and consistent way in view of safety and sustainability (scope B);
- **improve current agronomic, ecological and cultural practices to increase the resilience of agricultural production and/or the agri-food chain against biotic stresses (scope B);**
- **assess the economic, social and environmental impact of the alternative proposals for the farmers and/or consumers (scope B);**



# Call - Sustainable Food Security

- support relevant EU plant health policies and/or European risk assessments in relation to EFSA and / or ECHA activities (scope B).

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	Innovation action
Deadline	22 January 2020
Call identifier	H2020-SFS-2018-2020
Topic information	<a href="#">Link</a>



## *Topics with minor SSH relevance*

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

[Link](#)

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

[Link](#)



### *Topics with minor SSH relevance*

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

[Link](#)





## RUR-21-2020: Agricultural markets and international trade in the context of sustainability objectives

### Specific challenge

The EU remains a staunch supporter of the multilateral trading system. In spite of its successes, the World Trade Organisation (WTO) is now facing new challenges in light of a rapidly changing world. The WTO can be further modernised, by making its trade agenda closer to citizens and ensuring that trade contributes to the pursuit of broader objectives set by the global community, in particular with regard to sustainability. **There are strong, complex and crucial links between trade, financial, economic and social policies, and these also reflect in agriculture.** As one of the sectors with the lowest income worldwide, average farm income in the EU28 is only around 40% of average overall income. In Africa, rural areas remain much poorer, although the urban-rural gap has narrowed. The profile of the global poor shows they are predominantly rural, young, poorly educated, and mostly employed in agriculture. Competition on world markets is considered by some to be the cause of poverty as it drives prices down on some sensitive commodity markets. The United Nations (UN) Sustainable Development Goals (SDG) agreed in the framework of Agenda 2030 in 2015 set out a detailed set of actions to be pursued, many of them with strong links to trade. Of particular relevance to agriculture are SDG1 "No poverty" and the closely related SDG2 "Zero Hunger" and SDG3 "Good Health and Well-being". Aspects linked to agricultural practices and standards are also included in several environmental-related SDGs: "Life on Land" (SDG 15), "Clean Water" (SDG 6) and "Climate Action" (SDG 13). Global commitments should prompt the adoption of measures attentive to the social and environmental impact of trade in agriculture. In a globalised food system, the impact of these measures in one part of the world may be offset by slower progress in other parts, which would benefit from lower costs and increased competitiveness in the meantime. Consequently, a detailed analysis of the SDG targets related to the agriculture sector, and the corresponding environmental issues, should be undertaken and options through which trade policy can contribute to achieving the SDGs should be identified.

### Scope

**Proposals will analyse and further develop robust methods and related indicators to assess the impacts (positive and negative) of agricultural international trade on the environment and society. It will include analysis of options through which trade policies can contribute to achieving the SDGs and implementing climate and biodiversity agreements while securing the achievement of EU objectives regarding a fair standard of living for farmers and poverty eradication, which remains the primary objective of development policy under the new European Consensus.** Work will look in particular to relevant supply chains in the agriculture sector involved both in import and export for the European Union in relation to its major agricultural trading partners. In addition, a contrasting analysis from the African continent perspective - the world's poorest continent (Sub-Saharan Africa was hosting more than half the world's poor in 2013) – could be proposed<sup>185</sup>. Environmental impacts as carbon leakage<sup>186</sup> and other concepts will be analysed regarding agricultural trade. Activities will build upon previous studies<sup>187</sup> including the work done on the impact of EU consumption on deforestation and related to the target 6 of the EU Biodiversity Strategy (action 17b) regarding the enhanced contribution of trade policy to conserving biodiversity, ecosystems and ecosystem services. **Projects will design transition paths in order to develop trade relations in sustainable and fair ways and as "equals" (SOTEU2018) while considering the role that labour plays in overall production cost and the impact of the internalisation of environmental costs on the competitiveness of agricultural productions.**

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

### Expected impact

- More evidence-based policies and improved civil society dialogue building on improved data, analysis, and methods;
- Improved coherence between EU policies (Agriculture, Environment, Trade, Climate, Food security, Development...);
- Best practices and policies for multilateral trade contributing to the Sustainable Development Goals and global agreements on environmental and climate challenges.

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 22 January 2020	2 <sup>nd</sup> stage - 08 September 2020
Call identifier	H2020-RUR-2018-2020	
Topic information	<a href="#">Link</a>	

## RUR-05-2020: Connecting consumers and producers in innovative agri-food supply chains

### Specific challenge

In the context of a greater market-orientation of the Common Agricultural Policy (CAP), one of the specific post 2020 CAP objectives is to rebalance the farmers' position in the food chain. The food supply chain is vulnerable to unfocused and even unfair trading due to strong imbalances between small and large operators: often farmers and small operators in the food supply chain have hardly any information or connection with the consumer to improve their offer and adapt it to the demand. A knowledge-based approach will strengthen the sector's market orientation and enhance its competitiveness, incentivising organisational innovation along the supply chain, triggered by new emerging technologies and evolving consumer demand. Zooming in on the connections between producers and consumers therefore has the potential to improve farmers' position in the value chain, as it will strengthen capacity-building. Innovative supply chains and novel food systems may tackle the downward pressure on farm gate prices and at the same time make them more sustainable, e.g. by reducing CO2 emissions. Focus on costs and margins is needed: even in innovative chains, improvement of primary producers' incomes should not be taken for granted: cases illustrate that costs attributed to the intermediaries in short supply chains may rise from 20 up until 50%. **Although smaller tenders fit for small-scale producers are vital to local and fresher food in public offices, schools and hospitals, the experience needed to enable adequate public procurement approaches is generally lacking. Proposals have ample opportunity to build on sharing of good practices developed to overcome all these barriers.**

### Scope

**Activities should look into concrete ways for producers to collaborate on opportunities which are both consumer driven and conducive to improving farmers' incomes (e.g. economies of scale, smarter distribution, reduction of environmental footprints, territorial approaches etc.), building on a set of good examples of efficient and applicable approaches to do so.** Proposals shall collect and develop good practices for mutually beneficial cooperation, integrating the needs of primary producers and consumers in a hands-on approach. Proposals shall pay particular attention to the calculation of costs and margins for each link in the supply chain. Activities may cover infrastructure and logistics for efficient access to consumers such as smart joint logistics of producers' groups, outsourcing of transport to entrepreneurs sharing the values of the producers, optimising sales order picking and transport routes, regaining consumers' trust by shortening chains, direct sales and collaboration, etc. This should lead to a collection of good examples showing efficient access to markets, with a view to reducing costs for intermediaries as much as possible. **Proposals should help to develop identity of primary producers and market position e.g. through unique selling points. They may touch upon incentives from grassroots' initiatives like local food communities, agri-food clusters or food policy councils, the role of communities of practice and of knowledge hubs and even deal with legal constraints in so far as they support the envisaged impacts of this topic. Simultaneously, educational aspects may also be covered, such as connecting producers with consumers via open days, producer events, culinary events with local producers, food education in school curricula, celebrating local food heroes, promotion of local food labels, etc., leading to a set of concrete examples of education and awareness raising activities.** Moreover, activities should support development of new public procurement approaches for offices, schools, hospitals, etc. interactively building smaller tenders to enable provision of local and seasonal food. Activities should make contracting authorities share experiences, create a dialogue with suppliers to attune supply and demand, and develop support mechanisms for smaller suppliers to meet tender requirements. Proposals shall fall under the concept of the 'multi-actor approach'<sup>193</sup> with a consortium based on a balanced mix of actors with complementary knowledge clearly including farmers/foresters, farmers' groups, advisors, contracting authorities and policy makers. The project's strategy, as well as related projects RUR-06-2020 and RUR-07-2020 should be coordinated with the SCAR AKIS Strategic Working Group (SWG) with a view to cross-fertilise between projects under this topic, in order to help sharing conclusions of the project with the competent policy makers and national or regional authorities. Projects should deliver a substantial number of "practice abstracts" in the common EIP-AGRI format, including audio-visual material as much as possible.

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

- Developing tailor-made and practical support to set up innovative supply chains creating win-wins for producers and consumers, including through a collection of examples of good practices, illustrating mutually beneficial cooperation and a fair share for primary producers;
- Integrating the needs of primary producers and consumers in a hands-on approach in particular by minimising margins taken by intermediaries;



## Call - Rural Renaissance

- Improved sharing of experience between contracting authorities on tendering healthy and fresh food, with a view to connecting

Type of action	Coordination and support action
Deadline	22 January 2020
Call identifier	H2020-RUR-2018-2020
Topic information	<a href="#">Link</a>



## RUR-06-2020: Innovative agri-food value chains: boosting sustainability-oriented competitiveness

### Specific challenge

Food systems face many interlinked challenges, which jeopardise their sustainability, such as changing climate conditions, deteriorating natural resources, increasing power imbalances in the agri-food value chain, changing demographics and dietary habits. Although the stages of the agri-food value chain are strongly interconnected, the design processes of solutions to improve their sustainability are still mostly managed separately. Such an approach is often ineffective, as it can lock in the system, blocking much needed radical innovations, and/or generate unintended consequences elsewhere. **Therefore, the complexity and persistence of the sustainability challenges underline an urgent need for innovative systemic approaches to redesign agri-food value chains, with a view to unlock their full potential to deliver economic, environmental and social benefits while also addressing power imbalances between farmers and other operators.** This implies that different actors across the agri-food value chains need to cooperate with each other on innovative integrated approaches to produce and distribute enough affordable nutritious food for all in a sustainable way. Such co-created innovative designs of agri-food value chains are emerging. Not all innovative strategies are, however, equally sustainable. There is a need to identify such innovative integrated approaches, assess them against sustainability criteria, elicit those with the highest potential to address sustainability challenges across a variety of agri-food sectors and demonstrate their benefits to serve as examples of best practice. There is also a need to understand the structure and behavioural incentives inherent in agri-food value chains, how these affect sustainability and innovation in practice, and what kind of adjustments would be desirable to facilitate good practice at a systemic level, in order to contextualise and understand the replicability of the best practices identified.

### Scope

**Building on the state of the art, the proposals shall map and assess existing innovations, and (re)design and pilot innovative systemic approaches to agri-food value chains that unlock their full potential to achieve economic, social and environmental sustainability and foster cooperation, notably involving farmers. The innovative approaches to agri-food value chains should combine diverse forms of innovation, for instance, technological, social, organisational, managerial and institutional, etc.**

Activities shall assess and validate the benefits of pilot activities for actors involved with a view to promote them as examples of best practice. Proposals shall apply comprehensive methods, quantitative and qualitative, to assess and benchmark economic, environmental and social performance of the innovative approaches along entire agri-food value chains. **Particular attention should be paid to the potential of the innovative agri-food value chains to reduce trade-offs and to boost synergies between the economic, social and environmental dimensions of sustainability as well as to the fair distribution of costs, benefits and risks among all actors involved in the agri-food value chains.** Activities should scrutinize factors enabling and hindering innovative approaches. Recommendations, best practice guidelines and toolkits for promising innovative approaches to agri-food value chains shall be developed and disseminated to reach broad audiences likely to take up and adapt the identified innovative approaches to agri-food value chains.

Proposals shall fall under the concept of the 'multi-actor approach'<sup>194</sup>, engaging relevant actors (including those traditionally less involved in research and innovation), such as farmers and farmers' organizations, input and food industry, in particular SMEs, traders and distributors, food related services, consumers, environmental and social non-governmental organisations as well as public authorities, in collaboration on redesigning the agri-food value chains towards common sustainability objectives.

To maximize impact across Europe and to ensure wide dissemination of the project results, proposals should foresee a dedicated work package for cooperation with other selected projects under topic RUR-06-2020 and earmark appropriate resources. Cooperation with other selected projects under topic RUR-07-2020 is encouraged.

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

- **long-term, win-win economic relationships between actors from agri-food chains which effectively collaborate towards common sustainability objectives;**
- better understanding and fairer distribution of costs, benefits and risks amongst the actors involved in the innovative agri-food chains which are piloted, tested and demonstrated;
- **a portfolio of innovative sustainable business models well-functioning in operational environment;**
- **strengthened farmers' position in agri-food value chains through innovative approaches that enhance transparency, information flow and management capacity;**
- **enhanced positive socio-economic and environmental impacts of agri-food value chains.**



# Call - Rural Renaissance

In the long term, the innovations action will contribute to more competitive, efficient, resilient, sustainable and better performing agri-food value chains.

Type of action	Innovation action
Deadline	22 January 2020
Call identifier	H2020-RUR-2018-2020
Topic information	<a href="#">Link</a>



## RUR-07-2020: Reducing food losses and waste along the agri-food value chain

### Specific challenge

Annually in the EU around 88 million tonnes of food are lost or wasted all along the agri-food value chain, from primary production to final consumption, with consequent high environmental, social and economic impacts. The problem is particularly worrying for perishable foods. Reducing food losses and waste, primarily through prevention, has enormous potential for ensuring sustainable food and nutrition security, reducing greenhouse gas emissions and lessening environmental impacts by improved resource use efficiency. Nonetheless, reducing food losses and waste all along the agri-food value chain is not straightforward, as the problem is a result of manifold and highly interlinked causes. Much is known about the causes and many innovative solutions are already available. There is, however, an urgent need for their demonstration and market replication. To avoid shifting the burden of food losses and waste from one stage of the agri-food value chain to another, it is important to coordinate the innovative actions to tackle food losses and waste along all stages of the agri-food value chain.

### Scope

Building on the state of the art, proposals shall identify, validate and demonstrate innovative, effective ways to reduce food losses and waste, with a focus on preventing avoidable losses and waste of perishable products, all along the agri-food value chain from primary production down to final household consumption and disposal. **Proposals should consider diverse forms of innovation, e.g., technological, social, organizational, managerial and institutional, etc. that allow actors to better organize and coordinate their activities, to monitor conditions, to eliminate the many intricate direct and indirect causes of inefficiency, and, hence, to discard as little food as possible all along the agri-food value chains without compromising on food quality, including safety, and sustainability.** When applicable, proposals should address requirements from relevant EU regulatory frameworks, including pre-market approval.

In order to test and demonstrate efficacy of the introduced innovative approaches and to further improve understanding of the root causes behind the current situation, proposals shall include a task to measure and monitor food losses and waste (and associated economic and environmental costs) along the agri-food value chains. Any methods used for this purpose should be compatible with the EU legislation on measurement and reporting data on food losses and waste (to be adopted by the 31 of March 2019), but may be complemented with measurement of materials not covered by the legislation (e.g., farm losses). Activities should scrutinize factors enabling and hindering innovative approaches. **Recommendations, best practice guidelines and toolkits for promising innovative approaches to the reduction of food losses and waste shall be developed, taking into consideration the underlying socio-cultural factors and gender aspects, when relevant.**

Proposals should foresee activities to inform diverse actors along the agri-food chain, including consumers and policymakers, about the innovative solutions to food losses and waste, influencing their behaviour in relation to this issue, and supporting policy development and implementation. Proposals should seek complementarities with selected projects under topic RUR-07-2020 and other relevant EU projects, as well as contribute to relevant initiatives at EU level. To maximize impact across Europe and to ensure wide dissemination of the project results, proposals should foresee a dedicated work package for cooperation with selected projects under topic RUR-07-2020 and earmark appropriate resources. Cooperation with other selected projects under topic RUR-06-2020 is also encouraged.

Proposals shall fall under the concept of the 'multi-actor approach'<sup>200</sup>, ensuring solid collaboration between relevant actors, such as farmers or farmers associations, agri-food industry (including small businesses), wholesalers and retailers, food related services, consumers and policymakers.

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

### Expected impact

In the short and medium term, proposed innovative activities will lead to a significant reduction of food losses and waste along the entire agri-food chain, and:

- increase the capacity and engagement of actors along the agri-food chain to collaborate with each other towards the common objective to reduce food losses and waste;
- raise awareness on the value of food and increase shared responsibility for food losses and waste prevention among all actors of the agri-food chain;
- **expand the portfolio of innovative technologies, added-value products, business models and modes of cooperation between actors across the agri-food chain with large potential for market replication and reduction of food losses and waste; the TRL of the innovative solutions can vary at the start of the project, but should achieve at least TRL 6-7;**
- contribute to and/or improve understanding of the root causes behind the current situation and measurement of food losses and waste to be taken by Member States as laid down in the recently amended Waste Framework Directive<sup>201</sup>.

In the long-term the innovation action will:



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- identify adequate measures to promote the reduction of food losses and waste;
- increase resource use efficiency and reduce adverse environmental impacts, including emissions of greenhouse gases;
- **reduce economic costs associated with food loss and waste, create jobs and increase competitiveness of the agri-food chain.**

Type of action	Innovation action
Deadline	22 January 2020
Call identifier	H2020-RUR-2018-2020
Topic information	<a href="#">Link</a>



## 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. Agri-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 and waste streams, 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 agri-food or forestry sectors, or from waste water and sewage sludge, and conversion into novel fertilisers.

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

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

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

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

Projects shall demonstrate processes for recovery of mineral nutrients and production of novel fertilisers from by-products of the agri-food, fisheries, aquaculture or forestry sectors, excluding animal manure, water and sewage sludge (covered in scopes B and D). Proposals should demonstrate that the activities proposed go beyond past or ongoing research, without overlaps. Technologies that are currently under development should 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 should 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 agri-food industries, technology providers, research centres, end-users (farmers and farmer associations), or public administration.**

D.[2020] Bio-based fertilisers from waste water and sewage sludge (RIA)

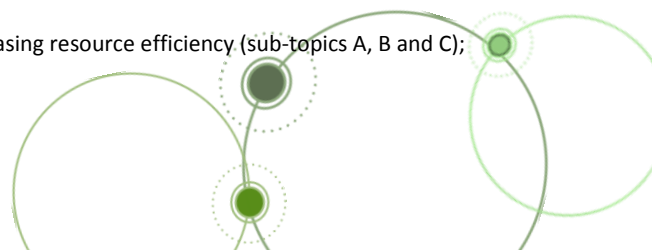
Projects shall develop techniques for nutrients recovery from waste water streams such as urban and industrial waste water, sewage sludge from waste water treatment plants, brine from water desalination or demineralisation plants. Building on related work under previous research framework programmes and other EU-funded programmes, projects should design and test techniques for nutrients recovery and subsequent mechanical, chemical or biological processes to upgrade recovered nutrients. The monitoring and removal or mitigation of contaminants affecting food safety, human and ecosystem health (e.g. pharmaceuticals in sewage sludge) in recovered nutrients should be key in the process design. A life-cycle assessment should be carried out in order to evaluate the environmental impacts of processes along the whole value chain, including waste/residues, and products' environmental performances. Regulation issues should be part of the investigation. Involvement of governments at different levels as regards regulation issues, regional/local strategies and territorial development plans is an asset.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 6 million for sub-topic A and D and EUR 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. Proposals for sub-topics A, B and C 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). 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 non-renewable mineral fertilisers, hence reducing external dependence and risks related to depletion (sub-topics A, B, C and D);
- balance nutrient concentrations between or within regions, thus increasing resource efficiency (sub-topics A, B and C);





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- reduce the environmental impacts linked to the dispersion of nutrients present in waste flows, to the emissions of greenhouse gases, or to the production of fossil-based fertilisers (sub-topics A, B, C and D);
- develop new business models creating value from agri-food, fisheries, aquaculture or forestry by-products (sub-topics B and C) and from water sector and the industrial sector subject to waste water treatment, including desalination or demineralisation plants (sub-topic D).

**In the long term, this should 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.**

Type of action	Research and Innovation action, Innovation action	
Deadline	IA: 22 January 2020 RIA: 1 <sup>st</sup> stage - 22 January 2020	2 <sup>nd</sup> stage - 08 September 2020
Call identifier	H2020-RUR-2018-2020	
Topic information	<a href="#">Link</a>	



## 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 2oC (Paris Agreement goal) would entail a substantial reduction of anthropogenic GHG emissions, through far-reaching changes to energy systems, land use and associated value chains. The second consumer-driven factor of GHG emissions is the construction sector (ca. 15%), implying a significant role for forest-based products. The forest-based sector can contribute to climate change mitigation through increasing sinks in and reducing emissions from living biomass, soils and wood products, and the substitution of non-renewable resources through the sustainable use of material and energy use of wood-based materials. The combined sink and substitution effects of wood value chains can provide a key mitigation option, provided that changes in fossil and biogenic carbon are taken into account in a comprehensive and balanced manner. Climate change is at the same time increasing forests' vulnerability. Several research projects 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 environmental and micro/macrocclimate-friendly wood-based value chains on the ground.

### Scope

#### A. [2019] Building with wood (IA)

#### B. [2020] Resilient forest systems (RIA)

Proposals shall aim at enhancing the adaptation of forest ecosystems (both primary and secondary) and forest production systems to the growing societal demands for forest products (i.e. wood and non-wood) and ecosystem services, considering trade-offs, climate change and vulnerability to natural disturbances (e.g. storms, droughts, pathogens, wild fires). Restoration of degraded ecosystems and natural expansion of forests, considering the long-term rural development, climate change mitigation objectives and biodiversity enhancement are also in the scope. Proposals shall encompass a varied range of forest and site types and tailored forest management systems representative of Europe's biogeographic regions. **Proposals shall cover multiple parts of the production cycle and related operations, from regeneration/planting to harvesting, shall consider jointly supply (i.e. primary production) and demand (i.e. socio-economic) factors, and are expected to be interdisciplinary in nature.**

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 Forest Strategy 2013, the Circular Economy Package 2015, the Paris Agreement 2015, the EU's Bioeconomy Strategy 2018, and the EU Action Plan for Nature, People and the Economy, proposals are expected to assess how they will contribute to:

Increased resource and/or energy efficiency and added value and minimising pollution and the environmental footprint (emissions of GHG and air pollutants included) in the construction sector in the cities, by specific amounts/proportions to be specified in the proposals, by 2030 [sub-topic A];

Enhanced connectivity of rural-urban areas and their overall contribution to a resilient, circular and competitive, forest-based bioeconomy, by 2025 [sub-topic A];

Increased long-term resilience of forest production systems and associated value chains to climate/environmental change and societal demand [sub-topic B];

Protection and restoration of biodiversity of primary and secondary forest [sub-topic B];

Enhanced contribution of the forest-based sector to long-term climate change mitigation, adaptation and rural development objectives [sub-topics A & B];

Also in the long-term, prompt a sizeable positive change to European landscapes and economies, by keeping the countryside green and serving to make 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	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 22 January 2020	2 <sup>nd</sup> stage - 03 September 2020
Call identifier	H2020-RUR-2018-2020	
Topic information	<a href="#">Link</a>	

## FNR-01-2020: Strengthening the European agro-ecological research and innovation ecosystem

### Specific challenge

**To meet increasing societal requirements as well as food insecurity challenges, agriculture must address the environmental and climate change issues relating to primary production.** By using ecosystem services, agroecology – defined as the study of ecological processes applied to agricultural production systems – can strengthen the sustainability and resilience of farming and land use systems, including through agricultural practices that contribute to climate change mitigation. Agro-ecological production practices are site-specific, complex and long to setup. They must be implemented on a significant proportion of farms to have a tangible impact on the environment. **In addition to the spatial and temporal scales, the human and social factors also need to be taken into consideration to develop a coherent and integrated approach.** Speeding-up the agro-ecological transition requires a strengthening of research infrastructures and open innovation initiatives, such as living labs, with the potential to trigger large-scale change. There is a need for mechanisms that can help sustain research infrastructures and approaches that deliver site-specific knowledge and solutions in the long term and at the relevant landscape level. Individual European research projects can contribute to launching facilities or networks but can neither sustain them in the long-run nor integrate them in bottom-up grassroots initiatives in specific territories. A successful transition to agro-ecology, as a climate friendly production system, requires the development of an ambitious and longer-term joint action at European level involving European, national and regional funders.

### Scope

**Proposals shall develop the framework for a European network of agro-ecological living labs (LL) and research infrastructures (RI). Such a framework should make it possible to grasp long-term agro-ecological processes at landscape level and would accelerate the transition to sustainable farming practices by promoting place-based innovation in a co-creative environment.** Proposals shall map existing European RI, LL and similar research or open innovation activities that contribute to knowledge creation and further deployment in practice of agro-ecological production processes. They should build on the work of past and ongoing RI and LL initiatives, in and outside of the agricultural domain, and analyse how to develop relevant approaches for agro-ecological production systems. Proposals should take into account the results of national and regional projects, networks or LL launched under Horizon 2020 and previous European research and innovation framework programmes and RI related to agro-ecosystems. They should describe in detail the functioning of these initiatives and their existing capacities. They should analyse the potential to create new initiatives as well as the various methods and approaches followed, and identify potential synergies and trade-offs between RI and LL in order to propose a common set of activities to connect them. **Proposals should also analyse how various stakeholders (such as farmers, up- and down-stream businesses, consumers and citizens) are engaged in these initiatives and make recommendations regarding their engagement in future initiatives. Knowledge and data management issues will be taken into consideration in particular to enable comparison and exchanges at European level.**

Proposals should analyse how existing funding sources (including Horizon 2020, rural and regional development funds) are mobilised to support agro-ecological research and innovation initiatives approaches.

They should explore the interest of regional and national funders in supporting such activities in the long run and provide recommendations on the funding sources that could be combined and under which conditions (e.g. application requirements, monitoring and evaluation), looking for synergies and coherence. Proposals shall identify needs for training on LL/RI methods. They should prepare a training package matching the needs of various actors and pilot training activities for potential actors to be involved in future activities.

Involvement of Member States' authorities is encouraged in order to ensure a strategic and long-term approach, along with a broad coverage of Europe. Transdisciplinary and integration of SSH and RRI are also encouraged. 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

This topic aims at mapping, analysing and providing recommendations to strengthen the European agro-ecological research and innovation ecosystem. In the short term, the project should:

- provide a structured framework for the development of an initiative that develops synergies in this area at European level;
- increase connections in the agro-ecological community and, if mature, prepare the community for the implementation of this initiative;
- prepare the funders and raise their capacity to mobilise complementary funding sources;
- improve the human and social capital as well as skills and methods for the development of living labs and research infrastructures in the field of agro-ecology;
- improve capacity to tailor policy interventions to specific situations based on stronger evidence.



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In the medium/long term, the project should provide for research and innovation projects and initiatives to benefit from the work of the network in terms of engagement of the relevant actors as well as availability of long-term-series and landscape level data regarding agro-ecological processes.

Type of action	Coordination and support action
Deadline	22 January 2020
Call identifier	H2020-FNR-2020
Topic information	<a href="#">Link</a>



## FNR-02-2020: Developing long-term monitoring and evaluation frameworks for the Common Agricultural Policy

### Specific challenge

The proposed Common Agricultural Policy (CAP) for the period post-2020 assigns a prominent role to the use of indicators for the preparation of the CAP plans and for the monitoring of the policy. While the decision-making process on the legislative proposals for the Multiannual Financial Framework and related preparatory work are on-going, Research and Innovation Actions should pave the way for longer-term modernisation of monitoring and evaluation.

### Scope

The project will support the long-term development of monitoring and evaluation frameworks for agricultural policy. Insofar as it is possible these frameworks will be based on context, results and impact indicators and reflect the need for modernisation, simplification and accuracy. **The project will establish an inventory of indicators, proxies and data needs which would allow for a better targeting of agricultural policy, in social, environmental and economic terms.** The consortium will rely on the input of the relevant scientific disciplines and administrations.

The project should explore how the identified data needs can be met. A strong scientific basis, combined with technical knowledge and support from the ICT and other relevant sectors should allow the exploration of advanced and innovative data capturing methods. These methods will: (a) rely on a combination of different sources, for example combining satellite data with on the ground sensors or data captured by drones; (b) where possible be automated and/or rely on platforms, sensors or other systems already in place, while anticipating future needs; **(c) respect other economic or social needs such as a good cost-benefit ratio and respect for privacy.**

The project will identify the most promising pathways for managing future data flows between the private sector, Member States and the EU (a) aiming at a mutualisation of resources and (b) allowing for a better use of the data and information beyond policy monitoring and evaluation. Needs at farm level should also be covered, for instance enhanced possibilities for e-declarations, one-stop data entries, integration of field and administrative data, or on-the-fly automatic information retrieval from clouds.

The project will take into account existing relevant initiatives and methods and consider what is developed by the following projects: Recap, BEACON, CAPSELLA, SENSAGRI, Sen4Cap, as well as the projects selected under RUR-03-2018: Contracts for effective and lasting delivery of agri-environmental goods, RUR-20-2018: Digital solutions and e-tools to modernise the CAP and DT-ICT-08-2019: Agricultural digital integration platforms.

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

Support the development monitoring and evaluation frameworks of the CAP but also of other EU and national policies (e.g. environmental policies):

- in order to achieve a better targeting of policy measures;
- establish an inventory of data needs and potential solutions to fill in these needs;
- develop a roadmap and explore a potential initiative with Member States on research and innovation in the domain
- further harmonise Member States monitoring and evaluation frameworks, including indicators, the underpinning data flows and measuring methods.

Type of action	Coordination and support action
Deadline	22 January 2020
Call identifier	H2020-FNR-2020
Topic information	<a href="#">Link</a>



## FNR-03-2020: A comprehensive vision for urban agriculture

### Specific challenge

Urban agriculture, in its many different forms, can provide responses to a wide array of challenges related to life in cities. In developed countries, these relate mainly to social and environmental concerns, climate change adaptation, sustainable urban development, food quality and sustainability, or to the search for new economic avenues and business models. **In developing countries, urban agriculture has also proved to be a non-negligible source of food and income for the urban poor, and a valuable buffer in cases of food shortage. Consequently, interest in urban farming has significantly increased in the last years.** Initiatives, projects, networks and studies have proliferated worldwide. However, these studies generally focus on just one or a few of its dimensions. There is a need to address urban agriculture from a holistic perspective, to develop a comprehensive vision about its future role and to see how European policies, including research and innovation, can support its development.

### Scope

The proposals should build on knowledge and data created through recent studies and former projects and address the exchange of knowledge and experience in urban farming. In line with the principles of Responsible Research and Innovation, the proposals shall bring together actors (academia, municipal and regional authorities, urban farmers, businesses, citizen associations, etc.) representing various approaches to urban agriculture across a representative set of urban locations and countries (including least developed countries). **Proposals should consider the variety of contexts and motivations that exist, and encompass all the dimensions of urban agriculture, such as:**

- Role in urban development and landscapes, and potential synergies and conflicts with other land uses and economic activities, including notably urban sprawl;
- Environmental benefits (biodiversity, green infrastructure, climate, etc.);
- **Social benefits, including income generation, development of social capital within cities, effects on gender balance, or improved urban-rural connections;**
- **New business models based on urban agriculture;**
- Improvements on food security, accessibility, safety and quality as well as food literacy and diets.

The formulation of guidance and recommendations to stakeholders and policy makers, including on means to engage European citizens in urban agriculture, are included in the scope.

Cooperation with relevant projects in this domain under Horizon 2020<sup>244</sup> (including notably the project funded under FNR-07-2020) or other programmes is essential. Where relevant, the consortium should establish links with actors and networks around the world that are active in this domain.

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

Activities should contribute creating a community of stakeholders, fostering a structured dialogue and developing a holistic and balanced vision of urban agriculture. In the short term, this will help to:

- Develop and deploy urban agriculture initiatives by urban stakeholders adapted to a variety of contexts;
- Inform the development of policies supporting the development of urban agriculture and facilitate harmonisation and coordination between decision-making levels.
- Develop suitable R&I programmes to deliver the knowledge, technologies and practices needed to achieve the objectives set out in the vision.

In the longer term, this should contribute exploiting the full potential of urban agriculture to improve the quality of life, wealth, health, diets and food security and safety of urban dwellers.

Type of action	Coordination and support action
Deadline	22 January 2020
Call identifier	H2020-FNR-2020
Topic information	<a href="#">Link</a>

## FNR-04-2020: Towards a European research and innovation roadmap on soils and land management

### Specific challenge

Land and soils perform a number of vital functions including the production of food and the provision of ecosystem services such as water purification, nutrient cycling, carbon storage and the support to biodiversity. Pressures on land and soils continue growing as a consequence of competing demands for the delivery of food, energy and biomaterials or the development of industries, infrastructures and urbanisation. Finally, soils are also at the center of climate mitigation efforts.

A new level of ambition is needed to tackle Research and Innovation (R&I), thereby generating the necessary knowledge, solutions to enhance the delivery of soil functions and develop capacities for a more sustainable land management across Europe and beyond.

### Scope

Activities will create an effective framework for action which will allow pooling resources, coordinating efforts and developing a coherent portfolio of R&I activities (programme) in the wider area of soils and land management. This will include:

- mapping and assessing existing soil/land related European and international R&I activities and promoting their coordination
- analysing the needs for R&I on soils/land management as expressed through stakeholder/citizen consultation and on-going research projects
- identifying gaps, priority areas and types of action for intervention
- proposing methodologies to monitor and review a portfolio of soil related R&I activities

The details of coordination activities will be defined during the grant preparation phase with the Commission.

Proposals fall under the concept of the "multi-actor approach", thus bring together main players such as from research, research funding, policy and land management and land. **Transdisciplinary and integration of SSH and RRI are also encouraged.** Activities will be implemented in close cooperation with EU Commission services. The Commission considers that proposals requesting a contribution from the EU 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

Funded activities will increase European capacities (technical, organisational) for implementing a major R&I programme on soil/land management. This will result in

- a roadmap for R&I on soils/land management developed following the concept of "co-creation" with a wide range of stakeholders
- improved coordination with existing activities in Europe and globally, thereby raising visibility and effectiveness of R&I funding
- identification of potential "flagships" for testing and demonstrating solutions on key strategic domains such as boosting organic carbon content of soils in agriculture and forestry

Type of action	Coordination and support action
Deadline	22 January 2020
Call identifier	H2020-FNR-2020
Topic information	<a href="#">Link</a>



## FNR-05-2020: Husbandry for quality and sustainability

### Specific challenge

Animal products constitute an important source of good quality, digestible proteins, minerals and vitamins in human consumption patterns and are part of a healthy and balanced diet. Due to the increasing demand at global level for animal derived food and the mounting pressure over land use, further intensification and expansion of animal production is expected. Development of the livestock sector at EU and global levels is challenging as it contributes significantly to greenhouse gas emissions, can put pressure on the environment and natural resources, may increase the risks to the health and welfare of animals within the systems and to human health. At the same time, livestock farming systems generate valuable products for human consumption including some from resources that cannot otherwise be converted into food (e.g. grass-based systems). They support the development of rural communities, but livestock farmers often thrive to reach economic sustainability. Extensive livestock systems can contribute to the management and maintenance of ecosystems and may increase biodiversity. Climate change is an additional pressure to the sustainability (e.g. productivity, health) of livestock systems. Means to improve sustainability of terrestrial livestock production and consumption systems need to be sought. Farming systems and the agri-food chain need to be (re)designed in a holistic manner to best reconcile the various demands concerning productivity, sustainability, quality and other societal values, for now and the future.

### Scope

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

#### A. (2020) Husbandry for sustainability (RIA)

**Proposals should undertake a comprehensive assessment of the sustainability and potential delivery of ecosystem services, social services, resilience, competitiveness and possible trade-offs of diverse EU livestock production systems, covering all the EU's major types of production systems and most important species.**

**The assessment should be holistic, encompassing the main facets of the concerned systems, and their role in a circular economy. These facets will notably include: environmental impacts (incl. impact of feed production, climate change, (indirect) land use); economics and supply chain dynamics (incl. international trade, demand, market power and farm income); territorial dynamics (incl. socio-geographic and demographic changes of the concerned farming community, areas with little alternatives to livestock production); animal welfare; as well as food and nutrition security (extended to the place of animal products in the society and diets in the future).**

Activities will build on existing Life Cycle Assessment data and perform new measurements where necessary. Work on emission factors should be included and the development of new comprehensive models should be supported.

The assessment should form the basis for a coordination of further action in response to the major challenges of the respective production and consumption systems, in the domains of research, innovation, policy-making and business development. A wide range of alternative development scenarios will be used to identify the most appropriate coping strategies and future development scenarios within planetary and nutritional boundaries and may propose policy options. The analyses will include (indirect) effects on related production systems.

Proposals should fall under the concept of 'multi-actor approach', representing a broad and diverse range of public and private interests and actors. **This will provide insights on how sustainable livestock management can be translated into practice and propose holistic solutions and policies to tackle the multiple societal requirements related to livestock production.**

#### B. (2020) Husbandry for quality (RIA)

Proposals should undertake an assessment of the intrinsic quality of livestock products stemming from different production systems. They should study the relation between intrinsic quality and husbandry (e.g. breeding, feeding, management), taking into account the processing methods and means to ensure authenticity along the food chain. Where considered appropriate, proposals will dedicate resources to the assessment of claims on the relation between intrinsic quality of products and extrinsic factors (e.g. sustainable production systems, traditional production systems). Proposals may work on one or more species but shall, within the same species, assess at least differences between extensive and intensive production systems. Proposals should fall under the concept of 'multi-actor approach', representing in particular farmers, the food industry and consumers.

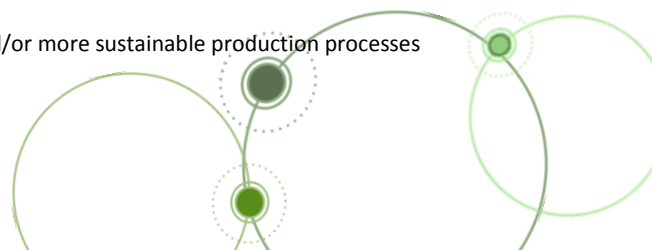
The intrinsic qualities covered will at least encompass: (i) food safety (ii) nutritional value, (iii) organoleptic quality and sensorial features of animal products.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 9 million for scope A and EUR 6 million for Scope 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

Proposals should contribute in achieving the following impacts:

- Incorporation of societal demands in livestock production
- Increasing the added value of livestock products, via higher quality and/or more sustainable production processes





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- (Scope A) Development of pathways for action in research, innovation, policy and business development, in support of a sustainable development of the EU livestock sector
- (Scope B) Understanding of the relation between intrinsic quality and husbandry

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 22 January 2020	2 <sup>nd</sup> stage - 08 September 2020
Call identifier	H2020-FNR-2020	
Topic information	<a href="#">Link</a>	



## LC-FNR-13-2020: Bio-based industries leading the way in turning carbon dioxide emissions into chemicals

### Specific challenge

The use of industrially emitted or atmospheric CO<sub>2</sub> as a raw material offers a number of opportunities for European industry. It is not only a key means of fighting climate change, but also supports the circular economy (by converting waste CO<sub>2</sub> into products) and opens new ways of coupling environmental protection and economic growth.

The industrial conversion of CO<sub>2</sub> faces technical challenges that call for scientific progress and research support. One of the main technological bottlenecks is the low energy content of CO<sub>2</sub>, which results in highly energy-intensive conversion processes. While substantial R&D effort has been devoted to the use of CO<sub>2</sub> as a feedstock for fuels, research organisations and their industrial counterparts are now turning the attention to the pathway to (longer-life) added-value chemicals. This is particularly the case in bio-based industries, for two main reasons:

- integrating CO<sub>2</sub> use technologies in industrial operations using biomass could make it offer the possible to achieve zero or negative greenhouse gas emissions; and
- biotechnological processes are a promising route for the use of CO<sub>2</sub>.

### Scope

Proposals should address one of the following mutually compatible concepts:

- innovative technologies for converting CO<sub>2</sub> from industrial plants processing biomass into bio-based products, as direct feedstock for the production of added-value chemicals and their integration into the plants' flowchart; and
- biotechnological processes for the conversion of CO<sub>2</sub> into added-value chemicals.

Proposals should include a life cycle assessment of the environmental performance of the concept. This should go beyond impacts in terms of climate change. **Proposals should address business models, operations and logistics, considering also the possibility of industrial symbiosis if relevant. They should also explore the socio economic and regulatory measures required to support the use of CO<sub>2</sub> as a raw material for the production of chemicals. In order to avoid duplication of previously EU-funded projects, the development of algae-based concepts is excluded. The technology readiness levels (TRLs) covered by the projects should range from 3 to 5.** Cooperation with other selected proposals under this topic is encouraged.

The Commission considers that proposals requesting an EU contribution of around EUR 7 million would allow this specific challenge to be addressed appropriately. This does not preclude the submission and selection of proposals requesting other amounts.

### Expected impact

#### Short/medium term

- development of breakthrough technologies for the conversion of CO<sub>2</sub> into high added-value chemicals;
- design of an integrated process with zero or negative greenhouse gas emissions;
- **new business models and value chains in the CO<sub>2</sub> utilisation sector;**
- definition of targets of the conversion process including energy requirements, production costs and product yields; and

#### long term

- **diversification of the economic base of bio-based industries.**

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 22 January 2020	2 <sup>nd</sup> stage - 08 September 2020
Call identifier	H2020-FNR-2020	
Topic information	<a href="#">Link</a>	



## *Topics with minor SSH relevance*

**CE-FNR-07-2020: FOOD 2030 - Empowering cities as agents of food system transformation**

[Link](#)

**CE-FNR-09-2020: Pilot action for the removal of marine plastics and litter**

[Link](#)





Societal Challenge 3

**Secure, Clean and Efficient Energy**

# 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 conversions, new renewable energy concepts and innovative renewable energy uses faster to commercialisation 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.

The proposed solution is expected to contribute to implementing the specific priorities for strengthening the EU leadership on renewables laid out in the Communication for Accelerating Clean Energy Innovation.

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, in particular in the context of the Mission Innovation Challenges.

### Scope

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.

This topic calls for bottom-up proposals addressing any renewable technology currently in the early phases of research. Activities also might include energy materials, catalysts, enzymes, microorganisms, models, tools and equipment, as long as those are strictly connected to the energy conversion process.

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.

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: lower environmental impact, better resource efficiency than current commercial renewable technologies, issues related to social acceptance or resistance to new energy technologies, related socioeconomic and livelihood issues.**

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

The concepts proven or validated within the projects are expected to contribute to accelerating and reducing the cost of the next generation of sustainable renewable energy generation. In addition, the project is expected to advance the knowledge and scientific proofs of the technological feasibility of its 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.

Type of action	Research and Innovation action
Deadline	21 April 2020
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Building a low-carbon, climate resilient future

## LC-SC3-RES-34-2020: Demonstration of innovative and sustainable hydropower solutions targeting unexplored small-scale hydropower potential in Central Asia

### Specific Challenge

The challenge is to demonstrate innovative solutions targeting unexploited small-scale hydropower potential in Central Asia that will contribute to solve the particular cross-border water and energy management challenges in the region. Therefore, the hydropower technological solutions will need to be socio-economically and environmentally sustainable and embedded in a forward-looking cross-border Water/Food/Energy/Climate nexus concept for this region.

### Scope

Projects will demonstrate innovative hydropower equipment exploiting unexplored small-scale hydropower potential in Central Asia up to 10 MW installed capacity by means of sustainable and cost-effective small-scale hydropower solutions. The demonstration will provide solutions for realising innovative and sustainable hydropower, based on synergies between innovative European hydropower technology, research and industry partners, and the Central Asian hydropower sector. Therefore, the demonstration activities shall take place in Central Asia (Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan or Uzbekistan), with participation of local partners.

**The project should also fulfil the highest standard in terms of socio-economic and environmental sustainability and impact, and engagement of local civil society.** It should also demonstrate how it will contribute positively to the regional cross-border Water/Food/Energy/Climate nexus and refer to embedded sustainable hydropower auxiliary services.

Proposals are expected to bring the technology from TRL 6-7 to 7-8 (please see part G of the General Annexes).

The Commission considers that proposals requesting a contribution from the EU of between EUR 7 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 action is expected to support the competitiveness of the European hydropower technology sector as a responsible actor in global markets in the long-term, with a strong focus on overall sustainability of the provided hydropower solutions within the Water/Food/Energy/Climate nexus in Central Asia. The expected outcomes will strengthen the worldwide leadership of the European hydropower industry in providing innovative and sustainable hydropower solutions and will support international cooperation with developing countries. Expected are outcomes which are in line with UN sustainable development goals.

Type of action	Innovation action
Deadline	01 September 2020
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



# 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. At the same time the cost of energy from renewable energy sources has decreased significantly and the performance and market penetration of these sources has increased. Nevertheless, there is still a lot of market potential to be exploited. This potential is recognised in the "Clean Energy for all Europeans" package adopted at the end of 2016, which sets renewable energy targets for 2030 and introduces modifications in the energy market design, while empowering individuals or communities to participate actively to the energy system transformation. Furthermore, in June 2018 member states agreed to set an overall EU renewable energy target of 32% by 2030. Challenges exist for renewable energy to realise its full potential in all sectors and accelerate the clean energy transition, playing a crucial role in leading to an increased share of renewable energy consumed in the EU and to a more active role for the consumers.

**The introduction and deployment of renewable energy at large scale requires overcoming a number of barriers. These cover issues such as consumer acceptance, legal and financial challenges related to the introduction of novel solutions into a technical and business environment with incumbent established solutions in place, necessity of making renewable energy solutions compliant with the new legislations, facilitation of legislative and regulatory aspects limiting innovative energy solutions implementation at the grid levels and also at the community or citizen level.** Improving existing tools for better assessing the environmental, economic and social impact of renewable energy solutions is challenging due the breadth and scope of the different renewable technologies. The challenges are also related to creating a renewable energy sector fit for massive deployment in the market, which means ensuring that complete value chains for a broad range of renewable energy technologies are in place, not only covering raw materials (such as e.g. bioenergy feedstock) logistics but also components availability and operational reliability; and ensuring that renewables are fit to the market and capable to provide additional services to the grid. The energy markets outside the EU must not be forgotten, as they represent the most significant long term opportunity growth of the sector, but the penetration of these markets is a challenge in itself too.

### Scope

The proposal will develop solution(s) addressing one or more of the identified challenge(s), for the entire renewable energy sector or focusing on a specific energy market, such as electricity, heating, cooling or renewable fuels. The proposed solution can be developed to address a local challenge but should have wide potential for reapplication. The solution must have a long term viability and not be limited to an ad-hoc fix. The methodologies applied may be inspired by successful approaches already tested in other fields or contexts.

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 may call for multi-disciplinary approaches, which should include contributions from the social sciences and humanities.** Where relevant, regional specificities, socio-economic, gender-related, spatial and environmental aspects will be considered from a life-cycle perspective.

Where relevant, proposals are expected to also assess the legal, institutional and political frameworks at local, national and European level and examine how, why and under what conditions these (could) act as a barrier or an enabler.

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.

Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

### Expected Impact

It is expected that the solution proposed will facilitate the wider uptake of renewable energy generation in the energy and industrial sectors leading to an increase share of renewable energy in the final energy consumption by 2030. The solution will contribute to substantial and measurable reductions in the project development timings and efforts, whilst fully addressing the needs for environmental impact assessments and public engagement. It will also contribute to provide a basis for the development of 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.



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Type of action	Coordination and support action
Deadline	<b>11 December 2019</b>
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>





# Call – Building a low-carbon, climate resilient future

## 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

#### 2019 and 2020:

**The proposed action should set up and/or support energy communities (consumer cooperatives, consumer collective purchase groups, and/or other consumer driven collective actions) to increase energy efficiency and/or optimise energy management to integrate a higher share of renewable energy (generated locally or provided from the grid) within the community by, for example, combining collective solutions to distributed generation, distributed storage, and/or demand-response aggregation.** The focus of the proposed action should be on households, however, this does not preclude the complementary involvement of non-residential buildings.

**The proposed action should cover the following points:**

- **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 points, 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 the three 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:



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- 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:

- Reduction of greenhouse gases emissions (in tCO<sub>2</sub>-eq/year) and/or air pollutants (in kg/year) triggered by the project.

Type of action	Coordination and support action
Deadline	10 September 2020
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



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## 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 customers 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.

Type of action	Coordination and support action
Deadline	10 September 2020
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



## LC-SC3-EC-3-2020: Consumer engagement and demand response

### Specific Challenge

To put consumers / prosumers at the heart of the energy market and to develop and test new cost-effective solutions for consumers based on the next generation of energy services for consumers that are beneficial to the integration of RES into an efficient operation of the grid and of the power system, that will allow to better predict and incentivise consumer behaviour. Engaging consumers and prosumers in demand-response mechanisms and other energy services - based on dynamic prices as well as on incentives from grid operators to adjust energy consumption or production to help maintain frequency stability, manage congestion or address other grids constraints - has the potential to bring benefits to consumers and to the energy system.

Decentralised (renewable) energy production and digitalisation allow for new ways for consumers to engage in the energy transition, for example through energy cooperatives, peer-to-peer trading and citizen energy communities. Building and home automation allows for the integration of services to consumers and the creation of value by combining data and services across different sectors for example combining energy services (electricity, heat) with mobility (electric cars), health (assisted living).

### Scope

The proposals will develop and test novel solutions and tools for demand response and energy services, using real consumption data and feedback from the testing of services with the objective to improve predictability of consumption and consumer behaviour (aiming to create a digital twin of the consumer). The main focus will be on households, but other types of consumers (residential, industrial, commercial and tertiary, including prosumers who are self-consuming part of the energy they produce) may be included. Proposals will demonstrate services that bring a fair share of benefits to consumers and to the energy system, in particular the electricity grid. The proposals should take into account the existing EU framework and the proposed measures under the Clean Energy for all Europeans Package, including the relevant measures on demand response, active customers, energy communities and dynamic price contracts.

Proposals can target one or multiple types of loads (e.g. appliances, electric vehicles, power to heat / cool, etc.) as well as (small-scale) production (e.g. PV), include energy storage and one or several methods of aggregation (e.g. citizen energy communities). Preferably they should rely on advanced automation, advanced ICT tools and approaches (e.g. IoT, Big Data, AI, blockchain, etc.), communication protocols and interoperability.

Proposals are encouraged to include energy vectors other than just electricity (e.g. heating, cooling, water, wastes, etc.) , and are encouraged to include other services than energy (e.g. mobility, health, etc.).

**Proposals should not only bring a perspective from the grid and the power system on consumers but also a perspective from consumers on the grid and the power system. For this purpose, social science and humanities-related work will be closely associated with the development of technological solutions from the beginning of the project (e.g. co-creation process involving both technology/ service providers and consumers) and not as an isolated task/work-package.**

**Privacy, consumer and personal data protection and cybersecurity should be addressed by the proposed solutions.**

Proposals will demonstrate how they will use interoperable digital communication solutions, make use of existing standards, study what is the information that shall be exchanged and contribute to open platforms and market places that can be integrated with other services based on platforms.

**Services, customer information, engagement strategies and contracts should be designed, tested and conclusions should be drawn to improve predictability of consumption and consumer behaviour, based on the different types of consumers (e.g. segmentation along different categories, e.g. social category, age, technology literacy, gender, etc.) on the considered location and climatic conditions and on the type and magnitude of incentives, putting the citizen at the centre of the proposed approach.**

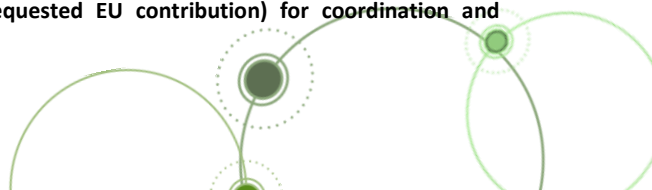
The participation of local energy communities, energy cooperatives, aggregators and local actors is encouraged. The participation of consumer associations in the project is an added value.

Proposals are expected to include clear business model development and a clear path to finance and deployment as a dedicated task, which confirms delivery of affordable energy in no more than 5 years, as well as a clear strategy for managing cybersecurity. Key partners should have the capability and interest in making the developed solution a core part of their business/service model to their clients. Proposals are expected to demonstrate knowledge of the relevant EU's policies on smart homes and buildings, interoperability, Internet of Things and platforms for data exchange.

Proposals should include tasks or a specific work-package on the analysis of obstacles to innovation under the current context but also under the future market design context and foresee the coordination on policy relevant issues and obstacle to innovation (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% of the EU contribution is recommended for the research work associated with these issues.

Proposals should build upon the insights and results of projects that have already been selected in this field under Horizon 2020 (information can be found on the BRIDGE web site) and demonstrate their innovative character.

Projects will cooperate with at least one of the projects supported under the topic LC-SC3-ES-5-2018-2020 that approach the challenge more from a grid perspective. **Therefore, proposals will foresee a work package for cooperation with other selected projects and earmark appropriate resources (indicatively 5-10% of the requested EU contribution) for coordination and**



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**communication efforts and research work associated with cross-cutting issues.** Regarding data handling, data management and standardisation issues, proposers should comply with the requirements stated in the section 'Common requirements' of the introduction to the part on the Smart citizen-centred energy system.

TRL will range 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.

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

## Expected Impact

The supported projects are expected to contribute to the following impacts:

- Increased use of demand response across the European energy system;
- Increased number and types of consumers engaged in demand-response across Europe;
- Demonstrated and improved viability of innovative energy services, best practices and effective incentives that can be replicated at large scale;
- Increased uptake of services that combine energy efficiency with other energy services, technologies and non-energy benefits;
- Increased reliability of innovative energy services and accessibility to them Developed and demonstrated viable solutions for customers: best practices and effective incentives that can be replicated at large scale;
- Increased predictability of consumption patterns and consumer behaviour;
- Increased data protection and privacy for customers;
- Improved modelling of the flexibility levers from the new energy services;
- Increased share of energy or power that can be mobilised to provide flexibility to the grid and increase the hosting capacity for RES.

Proposals are invited to address at least 7 of the above impacts, substantiate them 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. Indicators are expected to have clear and measurable targets.

Type of action	Innovation action
Deadline	29 January 2020
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



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## LC-SC3-EC-4-2020: Socio-economic research: non-energy impacts and behavioural insights on energy efficiency interventions

### 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<sup>129</sup>. However, two additional aspects need to be taken into consideration in order to create effective future policy scenarios and allow for financial and political decision making, while prices of fossil fuels remain relatively low:

- the real value beyond the fuel's cost and the (energy and non-energy) impacts of energy efficiency;
- psychological and contextual features (such as consumers' behavioural biases, superfluous complexity of alternative options or external barriers to energy efficiency) which can negatively impact the quality of consumers' decision-making.

### Scope

#### a) Modelling multiple non-energy impacts

Actions are required to explain the transition of energy efficiency from a "hidden fuel" to the "first fuel" and make the value of the externalities triggered by energy efficiency investments more visible across a variety of areas. The analysis should go beyond the traditional measures of reducing energy demand and greenhouse gas (GHG) emissions; it should include positive and negative externalities relating to other policies such as public health, air quality, impact on ecosystems, etc.

Actions should build upon the existing methodological frameworks and the work already developed in this field in order to:

- **create econometric models and other instruments able to quantify and when possible monetise direct and indirect non-energy impacts (both positive and negative) of energy efficiency investments, taking into account all possible challenges (e.g. rebound effect, double counting, etc.);**
- **provide a simplified and evidence-based tool which can help policy makers at local, regional, national and European level in defining optimised short-term cost-effective policies and measures as well as long-term strategies in the energy domain;**
- **disseminate the concept to households, businesses and financing institutions in order to increase awareness, information level, and investments in energy efficiency improvements.**

#### b) Behavioural insights for energy efficiency interventions

Actions should test energy efficiency behavioural change interventions through field trials informed by behavioural science. These trials should be aimed at selecting effective approaches to deliver the largest impact and should be targeted to specific energy behaviours.

Research may involve a mix of methodologies including different qualitative and quantitative research methods (e.g. RCTs, A/B testing, before-and-after trials, observation, focus groups, surveys, exploitation of existing datasets, quasi-experiments, etc.).

**Consortia should include, on the one hand, behavioural experts and, on the other, public authorities, DSOs and/or relevant civil society organizations (NGOs, associations, local energy communities, etc.) implementing energy efficiency related interventions.** Proposals should describe how the role and tasks of the various Consortia's members will be coordinated. They should place emphasis on the European added-value of their outputs and the comparability of the results of different pilots in order to be relevant for European policy makers. **The theoretical and empirical research chosen by the consortium should allow to draw conclusions regarding the best policy instruments (e.g. push and pull measures, price mechanisms, incentives, the leveraging on social norms, the provision of simplified real-time and possibly comparative information about one's own consumption pattern, etc.), the relevant contextual aspects determining the efficiency of the intervention and, where possible, the long-term impacts of behaviourally informed policy interventions.**

Proposals should build on relevant national and international projects and initiatives.

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

Depending on the scope addressed, proposals are expected to identify the impacts listed below using quantified indicators and targets, wherever possible:

- Support policies, at all governance levels, aiming to foster investments in Energy Efficiency improvements and best practice development (scope a and b);
- Increased awareness among households, businesses and financing institutions (scope a and b);



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- Number of public officers, private actors and other stakeholders involved and reached out to, number of peer-reviewed articles produced, or references to impact assessments, strategy papers or other policy documents (scope a and b);
- Increase awareness on multiple benefits among policy makers in other-than-energy policy departments e.g. using a simplified language in order to allow their inclusion in future policy developments and monitoring, impact assessments and policy evaluations (scope a);
- Number of analysed scenarios, energy efficiency measures and of non-energy benefits (scope a);
- Number of interventions designed using behavioural levers<sup>132</sup> and relevant behavioural biases and elements identified (scope b);
- Number of consumers adopting a more sustainable energy consumption behaviour (scope b);
- Primary energy savings triggered by the project (in GWh/year – scope b);
- Investments in sustainable energy triggered by the project (million Euro – scope b).

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

- Reduction of greenhouse gases emissions (in tCO<sub>2</sub>-eq/year) and/or air pollutants (in kg/year) triggered by the project (scope b).

Type of action	Research and Innovation action
Deadline	15 January 2020
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>





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## LC-SC3-EC-5-2020: Supporting public authorities in driving the energy transition

### 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 EU 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<sup>136</sup> 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

The Commission considers it to be equally relevant to address one or more of the following bullet points, as appropriate:

- **Enhance decision-making processes of regional and local authorities, to deliver a higher quality, coherence and consistency of energy efficiency measures - and accelerate reaching targets. Actions should foster horizontal and vertical integration of different governance levels, joint application of the energy efficiency measures across local and regional authorities, improved monitoring and verification schemes, and more efficient use of public spending. Proposals should demonstrate political commitment and lead to subsequent institutionalisation of the improved processes in support of the Energy Union Governance Regulation.**
- Support public authorities in the development of policy scenarios and 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 initiative and the Energy Union Governance Regulation, where relevant.
- **Innovative ways to enable public engagement in the energy transition, developing interface capacities within public authorities to engage with civil society.**
- Deliver innovative capacity-building programmes for cities and/or regions to step up their capacity to drive the sustainable energy transition in their respective territories. Proposals should foster a sustained increase in the skill base of public authorities, adapted to their needs and challenges, and support the diffusion of the learning within participating organisations and beyond. The proposed actions should include a strategy to replicate results across Europe and a solid impact monitoring.
- Proposals should build on existing initiatives such as the Covenant of Mayors<sup>137</sup>, ManagEnergy<sup>138</sup> or any other relevant initiative as appropriate.

#### b) Supporting the delivery of the Energy Efficiency Directive

Proposers should focus their proposed action on:

Actions assisting Member States to fulfil their obligations under the Energy Efficiency Directive (EED) and – where relevant to the implementation of the EED – under the Energy Union Governance Regulation. Proposals should support efficient implementation by taking into account existing effective practices and experiences from across Europe. Proposals may address, for example, the harmonisation of energy savings calculations under Article 3, the effective implementation of Article 7 including consistent monitoring and verification systems, higher efficiency of the generation under Article 14 and of transmission or distribution systems under Article 15 or an efficient development and continuous reporting of Integrated National Energy and Climate Plans.

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:





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- 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 institutionalised collaborations on the energy transition between public authorities;
- Numbers of stakeholders active in delivering the energy transition;
- Number of public authorities and public officers with improved capacity/skills in delivering the energy transition;
- Number of policies influenced through the action;
- Number of Member States with improved implementation of the EED and linked Energy Union Governance Regulation, clearly attributable to project activities.

Type of action	Coordination and support action
Deadline	<b>10 September 2020</b>
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Building a low-carbon, climate resilient future

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

### Specific Challenge

The fast growth of energy production from renewable energy sources offers new and economically attractive opportunities for decarbonising local energy systems (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 to integrate more renewables, but it is also an opportunity to optimise the electricity system operation in synergy with other energy carriers/vectors to increase the hosting capacity for renewables, not just for electricity but also for heating/cooling, transport and/or industry in a sector coupling approach. Novel approaches to optimize network architecture, planning and development based on the opportunities offered by integrated local energy systems and enabled by digitalisation and power electronics can contribute to addressing the challenge, as can storage of electricity in all energy vectors (e.g. electricity, heating, cooling, water, wastes, etc.), including possibilities offered by batteries and electric vehicles.

Integrated local energy systems can be used to create economically attractive conditions to boost local energy sources and activate local demand-response. Innovative approaches, for example based on Renewable Energy Communities, in line with the recently adopted Renewable Energy Directive (EU) 2018/2001 can result in attractive business cases for local investments in smart integrated energy systems with weakly or non-existing grid connections.

At the same time, decarbonisation can go hand-in-hand with the improvement of local air quality and citizens' engagement.

### 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, to optimise their joint operation that is demonstrated by an increased share of renewables in and higher energy efficiency of the local energy system.

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, that also have a high replication potential across Europe.

Local consumers, small to medium industrial production facilities and/or commercial buildings should be involved in the projects from the start, preferably by creating energy renewable energy communities.

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

**Proposals will include a task on the analysis and communication 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 and, if relevant to the project, the Clean Energy for EU Islands initiative.** An indicative budget share of at least 2% of the EU contribution is recommended for the research work associated with these issues and an additional 2% of the EU contribution for the coordination effort.

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.

### Expected Impact

The supported projects are expected to contribute to all the following impacts:

- validate solutions for decarbonisation of the local energy system while ensuring a positive impact on the wider energy infrastructure, on the local economy and local social aspects, and local air quality;
- enhance the involvement of local energy consumers and producers, preferably by creating energy communities in the development and the operation of local energy systems and test new business models;
- validate approaches, strategies and tools to safely and securely operate an integrated local energy system across energy vectors (electricity, heating, cooling, water, wastes, etc.) so that it is able to integrate higher shares of renewables (than it would in case of separate operation of infrastructures);
- benchmark technical solutions and business models that can be replicated in many local regions and that are acceptable by local citizens.
- Proposals are invited to 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. Indicators are expected to have clear and measurable targets.



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Type of action	Innovation action
Deadline	29 January 2020
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Building a low-carbon, climate resilient future

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

### Specific Challenge

Energy production costs on geographical island are up to ten times higher than on the mainland; therefore the large-scale deployment of local renewable energy sources and storage systems brings economic benefits and, at the same time, contributes to decarbonising the energy system of the island, reducing greenhouse gases emissions and improving, or at least not deteriorate, air quality.

### Scope

The proposed solutions will contribute to high levels of local renewable energy and a very significant reduction of the use of fossil fuel based energies (ideally achieving full decarbonisation for the whole island), covering also:

- Improve integration and use of digitalised smart grids and/or thermal networks based on high flexibility services from distributed generation, local power balancing, demand response and storage of electricity, heating and cooling, water, etc.; including innovative approaches to energy storage at different scales.
- Improved forecasting through comprehensive modelling of demand and supply (e.g. based on weather, wind, sun, etc.).

Projects should also deliver:

Effective business models for sustainable solutions for Renewable Energy Communities, in line with the recently adopted Renewable Energy Directive (Directive (EU) 2018/2001 );

- **Practical recommendations arising from project experience on:**
  - **regulatory and legal aspects;**
  - **gender and socio-economics (Social Sciences and Humanities);**
  - storage and flexibility solutions (from short to seasonal timescales);
  - data management, data processing and related cyber security;
- Contributions to environmental sustainability, in particular in view of the specificities of islands ecosystems;
- Large scale implementation of self-consumption solutions in households, buildings and/or districts, supported by microgrids and decentralised small-scale storage systems.

Proposals will involve at least two Follower islands (geographical islands). The follower islands are to be members of the consortium although their participation in the project can be limited to actions allowing them to develop plans to adapt similar solutions to their islands in a cost-efficient way. The size of the budget allocated to Follower islands should be clearly correlated to their level of involvement in the project's activities. Follower islands participation will focus on exploring, planning and initiating the replication of the deployed solutions adapted to the different local conditions. This has to take the form of a detailed replication plan delivered by the end of the project.

The TRL will range 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 will 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.

If relevant, projects should cooperate with the European Islands Facility (LC-SC3-ES-8-2019), and aim to establish synergies with ongoing and planned work on islands in the 'Clean Energy for EU islands' initiative. To support this, an indicative budget share of at least 2% of the EU contribution is recommended, which for example could include the development of practical training material and courses for island inhabitants, based on the chosen objectives and deliverables.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 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 projects are expected to contribute to all the following impacts:

- reduce significantly fossil fuel consumption, by developing renewable energy-based systems (including heating and cooling and storage) that allow the island to go towards full decarbonisation goals in a shorter time frame;
- large-scale uptake of validated solutions on the same geographical island and/or on other geographical islands with similar problems;
- Facilitate the creation and/or increase the number of renewable energy communities;
- enhance stability of the power network for islands that are grid connected with the mainland.



# Call – Building a low-carbon, climate resilient future

Proposals are invited to 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. Indicators are expected to have clear and measurable targets. 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	29 January 2020
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



# 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 deployment of electro-mobility, its impact on the energy system and its integration in planning.

Lighthouse Cities will closely collaborate with Fellow Cities and should act as exemplars helping to plan and initiate the replication of the deployed solutions in the Fellow 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 balance. They make optimal use of elements such as advanced materials (e.g. bio-based 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 (also from the circular economy point of view). 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 Fellow City will develop during the project, together with the consortium partners, its own bold city-vision for 2050<sup>179</sup>. **The vision should cover urban, technical, financial and social aspects. Each vision will 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, environmental 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, also assessing the benefits of the implemented solutions by means of Life Cycle Assessment and air quality modelling.

Projects will incorporate performance monitoring of at least 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;



# Call – Building a low-carbon, climate resilient future

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.

Projects are expected to cooperate with other Smart Cities and Communities projects funded under Horizon 2020<sup>182</sup> in the Smart city Lighthouse group as well as the European Innovation Partnership on Smart Cities and Communities (EIP-SCC)<sup>183</sup>.

**Therefore, proposals will 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.**

Projects can make use of financial support to third parties for up to 5% of the EU contribution to the project for the incorporation of relevant innovation boosting activities/actions (e.g. SMEs, start-up competitions, Prizes, etc).

The Commission considers that proposals requesting a contribution from the EU of between EUR 15 to 20 million<sup>184</sup> 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;
- Increased share of i) renewable energies, ii) waste heat recovery and iii) storage solutions (including batteries) and their integration into the energy system;
- 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	29 January 2020
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Building a low-carbon, climate resilient future

## LC-SC3-NZE-6-2020: Geological Storage Pilots

### Specific Challenge

The total geological storage capacity in Europe is estimated to be over 300 billion tonnes (Gt) of CO<sub>2</sub>. This is sufficient to permanently hold all the CO<sub>2</sub> that could be captured in the EU for decades to come. The significant lead time for the development and permitting of geological storage, which is in the order of 7-10 years, demands speeding-up storage site identification and characterisation in Europe. The appraisal and development of storage capacity in promising regions has to provide the necessary confidence that the required CO<sub>2</sub> storage capacity will be available when needed. In addition, storage pilots will play a crucial role in unlocking European CO<sub>2</sub> storage capacity, assessing the potential risks and visualising CCS technology to the wider public. A portfolio of pilot storage sites in different geological settings, onshore or offshore, either in depleted hydrocarbon fields or in deep saline aquifers, is therefore needed to catalyse full-scale deployment of CCS in the medium to longer term.

This topic responds to the targets in the SET-Plan CCUS Implementation Plan<sup>196</sup> to have at least 3 new CO<sub>2</sub> storage pilots operating in different settings, and SET Plan countries having completed feasibility studies on applying CCS to a set of clusters of major industrial and other sources by 2025-2030.

### Scope

The objective is to carry out the identification and geological characterisation of new prospective storage sites for CO<sub>2</sub> (including the 3D architecture of the storage complex) in promising regions of future demonstration and deployment (onshore or offshore) through the implementation of new CO<sub>2</sub> storage pilots. This will result in new data, knowledge and detailed models of potential storage complexes and their response to dynamic pressurisation. Important aspects include (but are not limited to): detailed geological characterisation, including faults and fracture systems; analysis of initial stress field and geomechanical behaviour of the storage formations and seals under varying stress and pore-pressure conditions; estimation of storage capacity; accurate modelling of injectivity; overall storage risk assessment, including induced seismicity and blow-out or blockage during injection, and including proposed mitigation action. Detailed plans should propose site-specific solutions for CO<sub>2</sub> injection strategies, pressure management, mitigation of induced seismicity, and MMV (measurement, monitoring and verification).

**For geological storage, in particular onshore, public acceptance is paramount. Therefore projects are expected to identify and engage relevant end users and societal stakeholders and analyse their concerns and needs using appropriate techniques and methods from the social sciences and humanities, noting the significant differences in potential regional consequences where the CO<sub>2</sub> stored comes from power versus industry.**

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

Detailed geological characterisation and development planning of promising and safe storage sites and successful realisation of storage pilots will facilitate the subsequent application for storage permits and the kick-start of CCS in the concerned Member States and Associated Countries. Such a 'pipeline of sweet spots' can provide a baseline for estimation of storage cost, increase public awareness and help prepare the ground for full and active development into operational storage sites in the mid 2020's.

Type of action	Research and Innovation action
Deadline	01 September 2020
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>





# 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 must be submitted under the theme "Social innovation in the energy sector", in 2019 under the theme "Challenges facing carbon-intensive regions" and in 2020 under the theme "Energy citizenship". They have to address one or several of the questions listed under the respective sub-topics below. All proposals have to adopt a comparative perspective, with case studies or data from at least three European Union Member States or Associated Countries.

#### 2020:

**Energy citizenship:** SSH research offers many insights into the conditions favouring civic engagement, active participation and interaction with institutional or corporate actors. Such "energy citizenship" is not limited to early technology adopters or environmental activists, and it goes beyond (but also encompasses) mere "consumer involvement". **Rather than using SSH research as an instrument to achieve particular outcomes (e.g., social acceptance) it can help to understand in what kind of environments collaborative goal setting and commitment can take place, how relevant decisions are made and any trade-offs between competing goals are addressed.** This has important implications for EU energy policymaking. Proposals are expected to examine the factors affecting the emergence and effectiveness of energy citizenship and its potential for achieving the decarbonisation of the energy system. **This should include factors such as digitalisation, social media, social group dynamics (e.g. creating trust, finding shared goals), societal factors (e.g. institutional, corporate or legal environment), demographics and social justice. It should result in practical recommendations for policy-makers.** Specifically, proposals are expected to focus on one or several of the following questions:

- Is energy citizenship more likely to emerge locally, or at regional, national or supranational levels? For what reasons?
- What is the relative importance of processes internal to relevant social groups (e.g., creating trust and connection, finding shared goals and solutions, building coalitions), as opposed to external environmental variables (e.g., relative openness of institutional or corporate environments, availability of sympathetic interlocutors, access to financial or other sources of support, legal or other obstacles)?
- What impact does the digitisation of the energy system and the proliferation of social media have on the emergence and consolidation of energy citizenship?
- Under what conditions is energy citizenship conducive to reaching broader policy goals, particularly the decarbonisation of the energy system, and under what conditions does it have the opposite effect?

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;
- *Social innovation in the energy sector* (2018): 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;
- *Challenges facing carbon-intensive regions* (2019): 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.
- *Energy citizenship* (2020): based on a better understanding of socio-economic, gender, socio-cultural, and socio-political factors, their interrelations with technological, regulatory, and investment aspects, yield practical recommendations for harnessing energy citizenship to achieve the energy and decarbonisation goals in the European Union and Associated Countries.



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Type of action	Research and Innovation action
Deadline	<b>01 September 2020</b>
Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Building a low-carbon, climate resilient future

## LC-SC3-CC-7-2020: European Energy and Climate Modelling Forum (2020-2024)

### Specific Challenge

The European Union aims to decarbonise its economy according to policies for 2020 and 2030 and long-term visions for mid-century. The Commission has extensively used energy and climate economic models to assess the impacts of its policies and has supported the development of new knowledge in this field. As the energy transition will require radical changes in energy production, distribution and use, there is a need for a diversified set of modelling approaches to add robustness to the technical feasibility of the identified pathways and the evaluation of their respective costs and benefits.

Currently, the European energy and climate modelling landscape is quite fragmented. Structured, multilateral communication between modelling groups and other stakeholders was only recently initiated via the Energy Modelling Platform Europe215, whereas similar initiatives have a long history in the USA and at UN level and also exist in China.

The European capacity to explore the pathways to achieve its long-term climate and energy objectives needs to be enhanced and these efforts need to be made within a structured and transparent framework that results in tools that are open for use by all stakeholders.

### Scope

A new "European Energy & Climate Modelling Forum" will structure and manage joint model benchmarking and comparison exercises on the EU energy system, climate mitigation and its regional and sectoral components along relevant policy questions. This does not include new model development, but will:

**a. Benchmark and compare different assumptions, data sources, scenario building and modelling suites to explore the pathways to long-term climate – energy policies;**

**b. Interpret the results across different societal, economic, and policy perspectives;**

**c. Provide robust evidence supporting the development of near-term and long-term policies for the implementation of the 2030 and 2050 objectives;**

d. Support the development of modelling capacity in Member States/Associated Countries and create a technical (IT-based) communication channel between the EC and Member States. This will complement existing channels like the Energy Economics Group220 (which gathers experts from the Member States/Associated Countries) and new groups arising from the regulation on the governance of Energy Union or groups from Framework Programme research projects. No group currently exists for climate policy, but the project could actively support engagement between member states stakeholders and modellers.

e. Link with existing global modelling projects, such as COMMIT, and projects under Horizon 2020 Work Programmes to support the transition to a low-carbon energy system

(LC-SC3-CC-2-2018) or to improve integrated assessment models and use them to inform policy-making (LC-CLA-01-2018)

f. Contribute to joint scientific publications from modelling teams.

Besides managing the core comparison activity, the forum will:

a. Organise regular meetings to share findings and to brainstorm on research questions with policy relevance and directions for the European energy and climate modelling community;

b. Contribute to the development of a truly integrated approach by considering the possible feedbacks between the energy system and the environment;

c. Organise, store or link the quantitative information produced by modelling exercises in a transparent and accessible manner;

d. Interact with a wide range of stakeholders including modelling experts working for Member States/Associated Countries and other entities as well as promoting links with policy makers at all levels.

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

At least 60% of the estimated budget should be allocated directly to climate and energy modelling activities.

### Expected Impact

Results from the Forum's activities (modelling comparisons, scenarios etc.) will inform the development of future energy and climate policies at national and European level.

The Forum will create a closer, stronger, European modelling community. It will present a more coherent, unified evidence base that will, in turn, form a concrete basis for action by policy makers.

It will also improve collaboration beyond Europe, which will lead to a greater influence on global energy and climate policy.



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Type of action	Research and Innovation action
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Call identifier	H2020-LC-SC3-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Building a low-carbon, climate resilient future

## *Topics with minor SSH relevance*

**LC-SC3-B4E-1-2020: Towards highly energy efficient and decarbonised buildings**

[Link](#)

**LC-SC3-B4E-2-2020: Stimulating demand for sustainable energy skills in the building sector**

[Link](#)

**LC-SC3-RES-3-2020: International Cooperation with USA and/or China on alternative renewable fuels from sunlight for energy, transport and chemical storage**

[Link](#)

**LC-SC3-RES-18-2020: Advanced drilling and well completion techniques for cost reduction in geothermal energy**

[Link](#)

**LC-SC3-ES-11-2020: Rapid Relief through Transitions on Islands**

[Link](#)

**LC-SC3-ES-12-2020: Integrated local energy systems (Energy islands): International cooperation with India**

[Link](#)





## Societal Challenge 4

# Smart, green and integrated transport

## LC-MG-1-12-2020: Cities as climate-resilient, connected multimodal nodes for smart and clean mobility: new approaches towards demonstrating and testing innovative solutions

### Specific Challenge

Europe's urban areas are struggling to develop themselves into well-connected multimodal and multi-usage nodes for smart and clean mobility. Multiple trends affect urban and inter-urban areas: urban growth, densification, digitalisation, increasing pressure from freight movements and a shift to a service-oriented economy. Moreover, many European cities and regions areas are committed to develop into zero-emission areas.

New technologies and innovative measures are emerging, but they are not taken up at a scale that is necessary to meet our climate targets and European transport policy objectives. In many instances, the responsible authorities (often operating at different governance levels) cooperate with public and private stakeholders. But the full integration and implementation of new solutions lags behind because little information, data and tested, innovative solutions are available on their effectiveness and on how to overcome the barriers to successful implementation into older legacy systems and ageing infrastructures.

### Scope

This topic is divided in 3 sub-topics.

#### **Innovation Action:**

**The first part of this topic invites for proposals that combine new technologies and nontechnological innovations, more effective forms of governance, and accompanying (policybased) measures for all modes of transport.**

**The proposed projects should be carried out by local/regional authority-led consortia**, covering three different urban or inter-urban areas that have a connection with the TEN-T network or an equivalent size, major transport corridor, each of them **facing different spatial, social and/or economic challenges and/or experiences with the organisation of large/sport events.**

Each urban area should establish a living laboratory where under real life-conditions a set of innovative, complementary and reinforcing scalable mobility solutions, centered around a principal solution can be developed, tested and implemented in an integrated, multimodal approach. The participating urban areas, which may have a geographical coverage that goes as far as the full functional urban area, should demonstrate their common interests and outline how they will ensure a meaningful and close cooperation. Proposals should outline how the proposed approach meets the needs of an efficient, flexible and accessible TEN-T urban node or a city located at an equivalent sized transport corridor, which in turn delivers an optimal use of the transport network and the integration of cost-effective solutions for energy supply/storage (with use of renewable energy as much as possible) and recharging networks for transport, and ICT networks for all modes of transport. The work of relevant Horizon 2020-funded projects, such as VITALNODES, could provide a useful starting point.

Proposals should explain how the proposed work will support the public authorities' efforts to implement their Sustainable Urban Mobility Plan, in combination with urban (land) planning and development, and infrastructure planning and operations. **Attention should be paid to issues related to vulnerable groups of citizens, gender issues and health impact of mobility.** Actions may include research activities, and some preparatory, take up and replication actions, as well as the development of tools to support planning and policy making. Work may also include demonstration of a resilient urban mobility system, capable to address particular challenges in the organisation of large/sport events. Proposals are encouraged to incorporate new approaches to increase the availability and integration of data to support policymaking and business activities in smart, zero and low-emission mobility and to explore innovative ways of increasing the share of active modes of transport.

To capture impacts, the activities should include monitoring, for example, aspects such as modal share, energy intensity, level of emissions, impact on health, transport network performance (demand and supply) and connectivity through interoperability and multimodality. Projects are expected to collaborate with the established impact evaluation framework (using both clear baselines and measurable impact indicators), as well the dissemination and information exchange framework put in place in the field of urban mobility by the Commission.

Additionally, proposals should seek to establish financial and institutional/organisational cooperation models to enable seamless transport across the TEN-T urban node area or equivalent.

The Commission considers that proposals requesting a contribution from the EU of between EUR 7 to 9 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 duration of 48 months and foresee sufficient time for evaluation, dissemination and exploitation activities.

#### **Coordination and Support Action: fast-track and mainstream the replication of innovative, urban, peri-urban and rural mobility solutions**

The second part of this topic is a Coordination and Support Action that aims to fast-track and mainstream the replication of innovative, tested urban, peri-urban and rural mobility solutions (e.g. technological, non-technological, services, goods and infrastructure). Proposals are expected to set up and run a 'Fast-track to innovative sustainable motorised and nonmotorised mobility' action (working title – proposers are invited to choose an appealing title), which offers support and services to at least



# Call – 2018-2020 Mobility for Growth

20 cities and municipalities or their organisational/functional groupings. A 'staged approach' is possible – taking into account mobility, investment or geographical needs as well as delivering the project efficiently. At least one-third of these 20 locations should be located in areas experiencing rapid economic and social change.

The proposal should include all of the following actions:

- Support for the development and towards implementation of innovative mobility solutions in 4 broad areas:
  1. Investments in and management of the transport network
  2. Supporting modal shift towards more energy-efficient, safer and active (whenever possible) modes for transport of freight and/or passengers
  3. New operating and business models in collective public and private transport (in any transport mode).
  4. Supporting mobility actions within the scope of the European Innovation Partnership in Smart cities and communities (or its successor working on smart cities).
- Development and implementation of a programme of tailored actions to deliver capacity building and institutional networking by:
  - a. Supporting staff exchanges, expert visits, and short term training.
  - b. Supporting the identification and access to financial and legal expertise, to define the feasibility to replicate an innovative mobility solution and to develop an innovation deployment programme of scale, notably: meetings with (potential) investors, opportunities for follow-up investments and identification of synergies with European funding and financing.
  - c. Providing matchmaking services for innovative mobility solutions establishing the link between "suppliers" that may be both public and private organisations, or groupings thereof (such as Horizon2020 funded projects) and "customers" that are mainly public organisations (such as city councils, regional authorities, transport operators or their groupings).
  - d. The project should deliver a set of recommendations to bridge the gap in the research and innovation performance and the deployment of the innovative mobility solutions across EU Member States.

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

## Coordination and Support Action: prepare for the deployment of Urban Air Mobility in urban and peri-urban areas

The integration of vertical urban mobility solutions (drones, and other forms of low-aerial mobility, as well as services) into existing surface multimodal transport (both freight and passenger) systems will add further complexity to the organisation of the urban and peri-urban transport and mobility services. It will require changes in public/shared transport management, logistics operations and infrastructure operations. With rapid technological progress in urban air mobility, especially local and regional public sector authorities are faced with challenges such as in financing, procuring, planning (infrastructure, systems), transport operations, safety, noise, security and public acceptance of these solutions.

**The proposal should include all of the following actions:**

**a) To provide a knowledge base (dynamic updated, with a "brand") and to deliver a set of policy recommendations** (in at least 8 languages – for use by local, regional, national and European public authorities, businesses and other organisations) for measures to (seamlessly) integrate the vertical and horizontal dimensions in urban and peri-urban mobility systems. These are notably:

- Minimum required standards for products and processes in for ITS-type applications, urban planning (SUMP), data-exchange, energy infrastructure, payments, environmental objectives, travel information and possibly other sectors such as building, construction, health care, retail etc.
- **Foresight deployment scenarios of up to 10 possible use cases in 5 to 15 years; public acceptance**, governance, mobility systems, energy supply systems, infrastructure, investment opportunities, funding and financing needs, and land-use. **An approach to set up these scenarios with wide consultation should be included in the proposal to ensure that social acceptance aspects are fully understood.**
- Tools for exchange and learning of urban air mobility with and to public authorities (notably local and regional), businesses civil society and research organisations.
- **b) To provide specific project development support and technical assistance for up to 10 deployment 'use cases' in locations (or groups thereof) with a demonstrated commitment from public and private organisations that are planning to start testing urban air mobility applications in the next 3 years.** The type of support should as minimum include feasibility and market studies, programme and urban planning actions (for example procurement strategies).
- This proposal should work closely together with the ongoing actions of the European Innovation Partnership in Smart cities (or its successor) and CIVITAS (or its successor) and possibly other networks with a strong participation of local and regional authorities.

The proposal should propose actions for cooperation with EASA, the SESAR Joint Undertaking, EUROCONTROL and the European U-Space Demonstrator network to ensure that project results are fed into developments in the institutional, regulatory and architectural frameworks for a competitive U-space services market.

The Commission considers that proposals requesting a contribution from the EU of EUR 1 to 1.5 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 – 2018-2020 Mobility for Growth

## Expected Impact

### For the Innovation Action:

Projects should act as European demonstration-type ("lighthouse")<sup>24</sup> examples for integrating new scalable technologies and measures into city transport operations and existing transport infrastructures at real-life scale in order to achieve long-term decarbonisation impacts; reliable solutions for a more sustainable, inclusive, safe and secure mobility system, including for the secure mobility of people and freight during major/sport events; clear improvements of the efficiency and accessibility of the transport networks/systems covering the TEN-T urban nodes or equivalent, and their access to the relevant TEN-T corridor(s) or equivalent transport corridors for transport of freight and/or passengers. Positive long term impacts on social cohesion, economic development and public perception – resulting in behavioural change and policy change - are anticipated.

Projects will contribute to the development of the existing European knowledge base on the effectiveness and impacts resulting from the implementation of innovative mobility solutions.

Clear commitments and contributions to Europe-wide take up during and beyond the project are expected, which could for example be in the form of follow-up actions funded by CEF or similar programmes.

This topic complements CEF-funded activities.

### For the Coordination and Support Action: fast-track and mainstream the replication of innovative, urban, peri-urban and rural mobility solutions.

The following three main impacts are foreseen:

Firstly, proposals are expected to demonstrate how their activities will lead to fast-tracking and mainstreaming the replication of innovative, urban, peri-urban and rural mobility solutions. Proposals should as a minimum requirement provide; the expected number of people involved in the activities that will be undertaken in at least 20 cities/municipalities addressed by the project, information as to how their capacity will be improved to develop urban mobility and investment plans for deployment of innovative transport solutions. Secondly, the CSA is expected to lead to new research and innovation collaborations in sustainable urban mobility between organisations (public/ private), especially those located in countries that are more advanced and those located in countries lagging behind in the deployment of urban mobility innovations.

### For the Coordination and Support Action: prepare for the deployment of Urban Air Mobility in urban and peri-urban areas

This action is expected to address the Amsterdam Drone Declaration<sup>25</sup> which "called upon urban transport actors, policy makers and associations to pioneer cases demonstrating which systems, solutions and services seamlessly integrate smart multimodal solutions" and which "invited cities and regions to co-create with the citizens the public conditions and the infrastructure for integrated air and ground smart mobility solutions to flourish, where new and clean technologies, big data, real-time information and corresponding business models converge towards the enablement and realisation of "mobility as a service".

The expected impact of this CSA project is to provide especially cities and regions with better planning tools and knowledge to integrate new applications of urban air mobility in their passenger and freight systems. This topic complements topic 'MG-3-6-2020: Towards sustainable urban air mobility'.

Type of action	Innovation action, Coordination and support action
Deadline	CSA: 21 April 2020 IA: 1 <sup>st</sup> stage - 09 Jan 2020      2 <sup>nd</sup> stage - 08 Sep 2020
Call identifier	H2020-MG-2018-2019-2020
Topic information	<a href="#">Link</a>



## MG-2-12-2020: Improving road safety by effectively monitoring working patterns and overall fitness of drivers

### Specific Challenge

Driving is a complex activity. **A hierarchy of skills is required for safe driving like operational (basic motor, sensory or perceptual), cognitive, tactical (choice of speed and distance from the other vehicles), and strategic (planning and preparing for long trips).** Operational and sometimes cognitive skills typically decline for a variety of factors like ageing, chronic diseases, medication use, fatigue or a combination of these factors. The consequences of such decline on driver fitness are crucial for road safety and some countries already have procedures in place for assessing fitness to drive, nonetheless practical implementations and the assignment of responsibilities differ from country to country.

A driver's fitness is also greatly affected by the consumption of psychoactive substances (illegal or not), which are incontrovertibly considered one of the major factors for traffic accidents. Establishing practical, reliable, specific and accurate tools for detecting those substances is of primary importance of the law enforcement authorities across EU, especially since their impact on road traffic accidents and associated injuries is undeniably important.

With the objective to further improve road safety, properly monitoring the driver's fitness and physical state is an ongoing challenge that requires innovative techniques which go beyond existing regulations (e.g Regulation (EC) No 561/2006 - "the 'Driving Time Regulation'" - or Regulation (EU) 165/2014 on tachographs in road transport).

### Scope

**Develop and test in at least 3 different sites innovative technological solutions for evaluating a driver's fitness. These should include for example:**

- **Methods and practical solutions for evaluating driver's performance and cognitive load, physical fatigue and reaction time.** These solutions should go beyond the current state of the art and be suitable for roadside tests with particular focus on commercial drivers, whose working patterns could influence their driving performance. Transitional aspects with regard to automation should be considered and training actions for drivers should also be foreseen. **Sex and gender differences should be considered when relevant.** The proposed solutions should be interoperable and standardisation possibilities should be explored.
- **Develop efficient, reliable, cost-effective and socially acceptable solutions for detecting impairing psychoactive substances (e.g. alcohol, prescription medicines, illicit or medicinal drugs etc) for which driving under their influence poses a road safety risk.** The proposed drug screening devices should fulfil practical and scientific requirements and display at least 20% higher sensitivity (how often the test is positive when the condition of interest is present) and specificity (how often the test is negative when the condition of interest is absent) than the current state of the art.
- The Commission considers that proposals requesting a contribution from the EU of between EUR 3 to 3.5 million would allow this specific challenge to be addressed appropriately.

### Expected Impact

- Practical onsite or affordable screening devices that reliably measure the driver's fitness and detect the existence of impairing substances.
- Countermeasures to combat driving impaired by medicines or excess fatigue.
- More consistent implementation across Member States of fitness to drive regulation and driver training, contributing to EU road safety targets.
- Standardised solutions for evaluating fitness to drive.

Type of action	Research and Innovation action
Deadline	1 <sup>st</sup> stage - 09 Jan 2020      2 <sup>nd</sup> stage - 08 Sep 2020
Call identifier	H2020-MG-2018-2019-2020
Topic information	<a href="#">Link</a>



## MG-2-14-2020: The effects of automation on the transport labour force, future working conditions and skills requirements

### Specific Challenge

The European Commission has launched a number of initiatives, studies, workshops and conferences on the challenges and effects that digitalisation and automation in transport may have on the labour force, including on women and persons with disabilities. In road transport, studies and research projects are starting to assess on the future employment needs and the new set of skills required for automation. However, such aspects need to be further explored for all modes of transport (road, waterborne, aviation, rail), as well as in the context of urban transport, logistics and for new forms of work (for instance platform work in transport).

In particular, action is needed to ensure the preparation of a comprehensive, evidence-based, action-oriented, appropriate agenda to tackle the identified challenges. This would also require the investigation of gaps and barriers, which could potentially impede or neutralise any positive effects expected from automation. For this purpose, in order to successfully address this challenge, it is key to have a strong involvement and engagement of all relevant European stakeholders, including European, national and regional social partners<sup>45</sup> (representing employers and workers) and EU Member States.

Attention should also be given to the collaboration with non-EU stakeholders where relevant, in order to solve common challenges, leverage resources, and establish long-term relationships.

### Scope

Proposals shall address all of the following areas:

- Assess the impacts of automation and connectivity in all modes of transport on the labour market as a whole, focusing on both direct effects on the transport workforce and indirect / induced effects in other sectors.
- Review past/contemporary experiences from other automation-driven transitions to derive best practices in the transfer of lessons learned between different environments and social contexts.
- Review and analyse recommendations/contributions from past/ongoing related studies, activities and H2020 R&I projects. Identify and prioritise relevant targets and elaborate an action-oriented agenda aiming to achieve at least an overall neutral impact of automation at the level of the entire economy.
- Activate the wider engagement of the social partners and EU Member States in order to validate the agenda, as well as increase their participation and involvement in the implementation of identified actions. Develop an appropriate framework to foster collaboration and exchange of best practices at EU, national and regional level.
- Provide a forum for EU and international stakeholders (as appropriate) in this field to exchange experiences and knowledge on the effects of transport automation on the workforce and future skills and discuss future challenges. Organise conferences and workshops in this area.

Proposed actions should build on the knowledge and results of past and/or ongoing EUfunded projects (such as SKILLFUL), addressing the socio-economic impacts of automation in transport and/or undertaking related reviews of transport jobs and future skills requirements.

In line with the Union's strategy for international cooperation in research and automation, international cooperation is encouraged. In particular, proposal should consider cooperation with projects or partners from Canada, Japan and the US.

The Commission considers that proposals requesting a contribution from the EU of between EUR 2 and 2.5 million would allow the specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

### Expected Impact

- Demonstrate the expected impacts of automation and connectivity in all modes of transport on the labour market as a whole
- Inform, mobilise and engage all relevant European stakeholders, including the European, national and regional social partners and EU Member States, in an active dialogue on the socio-economic effects of automation on the present and future transportation workforce
- Minimise any potential negative effects of automation on the transport labour force
- Demonstrate the potential to achieve at least an overall neutral impact of automation for the entire society and economy.



# Call – 2018-2020 Mobility for Growth

Type of action	Coordination and support action
Deadline	21 April 2020
Call identifier	H2020-LC-MG-1-12-2020
Topic information	<a href="#">Link</a>



## MG-3-6-2020: Towards sustainable urban air mobility

### Specific Challenge

Urban air mobility (UAM) is a field of disruptive innovation, not only for aviation but also for mobility systems and urban planning at large. At urban / suburban and peri-urban / inter-urban level, point-to-point air connection can help overcome the lack or congestion of surface transport, lighten and complement logistic chains whilst saving time and recurrent infrastructure costs.

The companies enabling urban air mobility and the cities and regions embracing it may develop competitive advantages, both in terms of manned/unmanned aircraft systems' business and in terms of mobility services for people, emergency services and freight.

**Innovation is at the core of the challenge to make urban air mobility not only safe, secure, quiet and green but also more accessible, faster, affordable, inclusive and publicly accepted. Research activities are not only aeronautical but also cross-disciplinary to enable aerial traffic in the urban environment. This will notably encompass more autonomous systems and efficient integration with urban infrastructure, with energy and communication networks and with other transport modes in a system-of-systems approach and in line with the Commission's climate change Long Term Strategy.**

### Scope

Proposals should address novel concepts, technologies and solutions beyond the state-of-the-art. **Proposals should address all the following three research areas:**

A. Safety and security: particularly when operating over populated areas – including several aspects such as adverse weather and airflow conditions at low altitudes, human factors and automation, collision and avoidance; electro-magnetic compatibility; detection and surveillance of physical and cyber threats, prevention, preparedness, response and recovery from threats, including intentional interference and misuse of urban air mobility; and/or other relevant hazards and threats in a operation centric and risk-based approach.

B. Sustainability with regard to the overall environmental footprint (e.g. energy demand; local emissions and global greenhouse gas emissions); and sustainability with regard to noise and visual pollution, including those aspects dealing with perception, monitoring and mitigation in urban environments..

**C. Public acceptance, socio-economic modelling and relevant regulatory and organisational aspects of urban air mobility systems, such as those evolving from noise, visual pollution, privacy, shared-use, land-use, liability, safety (including airworthiness) and security of operations (including enforcement), or dedicated certification schemes. Co-creation and involvement of citizens is key for this area e.g. to anticipate the behaviour, the blocking points, the needs and public tolerance/embrace for such a new mobility. Policy recommendations should also include procurement and deployment strategies**

In addition, the proposals will also have to address one or more of the following research areas:

D. Services: new door-to-door or emergency services concepts allowing UAM traffic to be embedded in multi-modal urban transportation environment; new approaches for regulatory due processes associated to the sign-off of urban air services.

E. Operations: new concepts of operations allowing UAM traffic to be interwoven with the multi-modal urban transportation or emergency systems (e.g. ground/air ambulances), with due account of the safe and secure utilisation of the air space.

F. Power-plant/propulsion system development for safe, economic and environmentally friendly UAM. Characteristics shall include high power/weight ratio, fast battery recharge/fuel-cell refill, high level of reliability and fail-safety and low level of noise, emissions and maintenance requirements.

G. Infrastructure adaptation, evolution and integration into transport, energy and ICT networks for efficient and seamless door-to-door mobility.

Particular emphasis should be addressed to potentially early urban air mobility services (e.g. for air medical emergencies, for safety & security services, for logistics, etc).

TRL can reach up to level 6 depending on the level of resources leveraged for the activities.

Proposals should ensure complementarities with the European U-space Demonstrator Network and with SESAR JU U-space activities. In addition to research and industrial involvement, proposals should ensure a strong commitment for collaboration and communication with local authorities and communities as well as with players from other relevant leading-edge industrial and service sectors that can substantially contribute to meet the challenges at stake. Proposals can leverage synergies with other EU activities such as:

- The European Innovation Partnership on Smart Cities and Communities (EIP-SCC), in particular the initiative on urban air mobility, and the CIVITAS initiative.
- The European Institute of Technology – Knowledge and Innovation Center (EIT-KIC) on Urban Mobility.
- EU satellite-based systems for navigation (EGNOS/Galileo), observation (Copernicus) and EU communication/connectivity initiatives (e.g. 5G, C-ITS).

The proposals may include the explicit commitment from the European Aviation Safety Agency (EASA) to assist or to participate in the actions. This is particularly important in view of the new EU drone regulation.



# Call – 2018-2020 Mobility for Growth

International cooperation is encouraged in cases of mutual benefit, such as sharing of practices with early adopters of urban air mobility in non-European megacities (e.g. Singapore, Dubai, Sao Paulo, Mexico DF, etc.)

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 lower amounts.

## Expected Impact

The following impacts have to be addressed by all proposals:

- Contribute to smarter and more sustainable cities and air transport.
- Contribute to maintain aviation safety levels.
- Contribute to the development of European / international standards and legislation for urban air mobility.
- Contribute to increase the capability of public authorities – such as air regulators and urban planners – to handle the regulatory due processes for UAM services
- Contribute to decrease the overall environmental footprint.

In addition, when relevant, the following impacts can also be addressed:

- Contribute to decrease the time in door-to-door travel or in case of emergency interventions.
- Contribute to reduce the lead time-to-market and de-risk the set-up of UAM services.
- Contribute to new urban planning tools to integrate UAM services in existing plans, in particular Sustainable Urban Mobility Plans (SUMP) and transport/logistics plans of individual institutions.
- Contribute to increase the competitiveness and economic growth, as congestion in cities is detrimental to business reactivity.
- Contribute to inspire and engage new generations of students, engineers and urban planners and mobility managers.

Type of action	Research and Innovation action
Deadline	21 April 2020
Call identifier	H2020-LC-MG-1-12-2020
Topic information	<a href="#">Link</a>



## MG-4-9-2020: The European mobility culture of tomorrow: Reinventing the wheel?

### Specific challenge

Global warming and the need for CO2 reduction drives a search for new lower carbon ways of moving: old modes of transportation seem no longer sustainable in the long term. **When thinking about the future of mobility, changes in mobility are usually addressed in terms of technology.**

However, **there is another – often neglected – aspect of mobility: the value it has in the present European culture**, which legitimises today's focus on speed and efficiency as main performance indicators for development and growth. In parallel to developing new technologies, we also need to explore (an) alternative narrative(s) of mobility.

With a view to Horizon Europe, the next DG RTD Framework Programme, a forward looking exercise taking into account a new transport paradigm is needed to develop a coherent strategy for (near) future transport research with the aim to realising the COP 21 Paris Agreement and the global 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs).

### Scope

- **Critically examine the criteria/objectives on which the actual mobility culture has been based.** In a world engaged to reducing CO2emission, are criteria such as speed and efficiency still relevant? What can be the role of non-motorised transport modes, especially on short distance? Etc.
- **Consider a future being shaped by changes in lifestyles, environmental and climate concerns (COP 21 and the SDGs), and the emergence of new values in order to better understand the mobility of the future, taking into account different type of variables such as gender, age, ethnicity, etc. when relevant.** Propose (an) alternative mobility narrative(s) – well beyond the implicit assumption of useful mobility – with respect for the environmental boundaries of the planet and the wellbeing of the people.
- **Develop a strategy for the transport policy of the future (passenger and freight), based on an alternative mobility narrative.** Therefore launch a forward looking exercise and build scenarios with a roadmap for implementing this strategy. **Develop a holistic and cross sector policy approach**, as required by COP 21 and the SDGs, **to ensure that economic, social and environmental challenges are addressed together.**
- Stimulate the creation of networks and structures with the main transport research and innovation stakeholders (public administrations, companies, universities, citizens, etc.) around which visions and strategies can emerge and converge.

The Commission considers that proposals requesting a contribution from the EU of between EUR 0.5 and 1 million would allow the specific challenge to be addressed appropriately.

Please note that this topic will take the form of lump sums as defined in Commission Decision C(2017)7151 of 27 October 2017. Details of the lump sum funding pilot scheme are published on the Funding & Tenders Portal together with the specific Model Grant Agreement for Lump Sums applicable.

### Expected impact

- (A) new mobility culture(s) would have an important role in opening up new ideas and opportunities and in building strategies for the sustainable transport policy of the future.
- A forward looking perspective on the European mobility culture of tomorrow would enable Horizon Europe to play a more strategic role in shaping and enabling a transformative transport (research) policy, working hand in hand with citizens and local communities.
- The new mobility paradigm would contribute to building innovative ecosystems, which provide the supportive environments for the transformation process to flourish and be disseminated widely.

Type of action	Research and Innovation action Lump Sum
Deadline	21 April 2020
Call identifier	H2020-LC-MG-1-12-2020
Topic information	<a href="#">Link</a>



## *Topics with minor SSH relevance*

**MG-3-8-2020: 'First of a Kind' solutions for sustainable transport and mobility: EU initiative for accelerating EU-wide market access, scale up and derisking**

[Link](#)

**MG-4-7-2020: Digitalisation of the transport system: data sharing**

[Link](#)

**MG-4-8-2020: Advanced research methods and tools in support of transport/mobility researchers, planners and policy makers**

[Link](#)







Societal challenge 5

**Climate action, environment,  
resource efficiency and raw  
materials**

## LC-CLA-10-2020: Scientific support to designing mitigation pathways and policies

### Specific Challenge

The early 2020s will be an important period for EU climate action. In the context of the Paris Agreement, all Parties including the EU were invited to submit by 2020 both an update of the Nationally Determined Contributions (NDCs) regarding short term actions up to 2030 as well as long-term greenhouse gas emission development strategies up to 2050. These strategies are expected to underpin the EU's commitment to the Paris Agreement to limit global warming to well below 2°C and to pursue efforts to keep it below 1.5°C. They will also address the need to reach carbon neutrality by mid-century, as highlighted by the recent IPCC Special Report on 1.5°C. Achieving the Paris climate goals and EU commitments will also depend on individuals, households and communities, who should systematically choose low-carbon options in their daily consumption, lifestyle and investment decisions. Effective communication on climate change and demand-side measures will be instrumental for active engagement of citizens. A reliable policy framework is needed for business and consumers enabling low-carbon consumption, lifestyle and investment decisions. Furthermore, the EU does not act in isolation and cannot achieve the Paris Agreement goals by its own mitigation efforts. Also other countries will be preparing for their next steps related to the development of new NDCs. Achieving the goals of the Paris Agreement will require a very significant increase of ambition and swift implementation at the global scale. Actions under this topic should provide scientific evidence, analysis and support for these processes and reinforce the link between the latest climate science, mitigation pathways and underlying policies.

### Scope

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

#### a) Assessing and designing climate policies for the coming decade:

Actions should analyse what contributed to the delivery on the 2020 energy and climate policy targets, based on available European and national data and outcomes, with special regard to, inter alia, policy implementation, low-carbon investment flows, industrial innovation, the energy- land-use nexus, economic and environmental impact, and technology development and diffusion, as well as consequences for the post-2020 period. **In the context of the EU's 2030 energy and climate targets and in view of providing scientific support to the design of post-2030 climate policies, actions should also analyse the needed evolution of the mitigation, adaptation and innovation policy mix at all relevant scales, including their innovative financing, the associated macro-economic and sector-level impact, including on productivity, competitiveness, environment, health and employment; the required investment flows for zero carbon solutions; the relevant socio-technical transition processes, as well as the interaction between near- to mid-term action, and long-term mitigation pathways. Finally, actions should involve relevant (private and public) stakeholders to enhance further their policy-relevance.**

#### b) Decarbonisation and lifestyle changes:

Citizen engagement in climate action will be indispensable for delivering on the Paris Agreement goals, therefore identifying critical areas of individual level action, relevant structural changes and means to incentivise them are key. **Accordingly, actions should identify and analyse the role of individuals (including gender aspects), households and communities in the socio-technical transition, critical areas of lifestyle change, and associated social innovation processes that are needed globally and in Europe to be in phase with low-carbon emission pathways. The analysis should consider, inter alia, the economic and climate impact of shifting lifestyle and consumption patterns, and the health co-benefits of action, as well as the risks of unintended consequences (e.g. rebound effects). Actions should also explore how citizen and household level changes can be incentivised and analyse enablers for and barriers to public engagement and acceptance. Actions may also explore possible policies and communication strategies on climate action where appropriate in conjunction with health co-benefits in order to engage citizens and stakeholders from relevant economic sectors and develop concrete recommendations.** Already existing low-carbon lifestyles within intentional communities like eco villages, transition towns, slow food, slow city movements or car-free living maybe investigated in terms of what hampers their action despite high motivation and what can be learned for up-scaling or duplicating low-carbon practices. Finally, actions may explore citizen science activities as a way to engage and educate citizens on climate action.

#### c) Science underpinning the preparations of NDCs after the 2023 Global Stocktake at a global scale:

Following the 2018 Talanoa Dialogue which examined countries collective progress in global climate action, the next milestones of global climate governance will be the 2023 Global Stocktake and the preparation of new NDCs for the period beyond 2030, which for most countries have to be submitted by 2025. The need for adequate scientific capacities at national and subnational levels – and going beyond major economies – remains considerable. Actions should provide state-of-the-art evidence to policymakers during this crucial time. In particular, they should: contribute to the evidence base supporting countries efforts to finalise NDCs in 2024 following the Global Stocktake at the end of 2023 by i) reviewing the process of the development of existing NDCs including if and how policies were implemented by 2023 to achieve these NDCs, ii) providing scientific information on the options available for preparing post-2030 NDCs compatible with the goals of the Paris Agreement (mid- and long-term action) and latest climate science, within the context of multiple economic and sustainable development priorities and iii) demonstrating through quantitative modelling techniques how scientific findings such as those assessed in the IPCC can be translated into viable policies and long-term



# Call – Building a low-carbon, climate resilient future

decarbonisation pathways at regional and national levels. Furthermore, actions should provide insights concerning the risks related to stranded assets, as well as possible interactions with policies targeting the achievement of the Sustainable Development Goals. Actions should also assess to what extent, next to national action in the context of NDCs, international bunker fuels can contribute to achieve the Paris Agreement's mitigation goals, and what the risks are for double counting efforts between sectors.

Proposals for all sub-topics are encouraged to extend their analysis to some major emitters outside Europe and to selected less-developed countries.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 3-5 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:

- providing measurable support to the EU's long term strategy on greenhouse gas emission reductions;
- providing national and global pathways towards the Paris Agreement's global temperature goal and insights into how these can inform countries' next NDCs.
- supporting the Stocktake Exercise by taking stock of collective progress towards the Paris Agreement goals and investigating how progress can be accelerated;
- demonstrating how the latest climate science (including the 6th Assessment Report of the IPCC) can be converted into practical advice for national mitigation action;

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 13 February 2020	2 <sup>st</sup> stage - 03 September 2020
Call identifier	H2020-LC-CLA-2018-2019-2020	
Topic information	<a href="#">Link</a>	



# Call – Building a low-carbon, climate resilient future

## LC-CLA-11-2020: Innovative nature-based solutions for carbon neutral cities and improved air quality

### Specific Challenge

Emissions of pollutants in air are a major concern worldwide, due to its direct consequence on human health, as well as its additional impacts on climate. In the EU, air pollution is estimated to cause 400 000 premature deaths per year, with cities producing more than 70% of greenhouse gases world-wide. Urban citizens, due to the concentration of population and sources of pollution in densely populated areas, are particularly vulnerable. Actions aimed at air quality improvement contribute, in many cases, also to reduction of GHG and other airborne pollutants emissions. Nature-based solutions based on the creation, enhancement, or restoration of ecosystems, including soils and green infrastructure, in cities can improve air quality and regulate GHG in the atmosphere, both directly through the removal of air pollutants and carbon storage and sequestration and indirectly by reducing energy needs and pollutants emissions through natural cooling and active mobility. In doing so, they also deliver multiple benefits related to different policy targets, for instance, health and wellbeing, biodiversity, urban regeneration, water, storm water and/or wastewater management and climate adaptation/mitigation. However, the opportunities offered by nature-based solutions to tackling air quality and GHG mitigation in cities depend on complex, highly context dependent processes and interlinkages. Furthermore, the contribution of these solutions in addressing the air and carbon challenge in cities, in tandem with other urban challenges as a result from their multiple services, is neither well understood, nor measured and assessed. Filling these knowledge and evidence gaps will make a strong case for wide deployment of such solutions.

### Scope

Actions should assess the direct and indirect contribution of nature-based solutions in diverse structures and configurations (e.g. mix of vegetation and trees, species, shape, spatial distribution of public green space and vegetation coverage) to combatting air pollution, reducing allergy potential of urban environment and mitigating GHG and other airborne pollutants emissions in cities including under future climate change scenarios.

**Actions should recommend optimal solutions and appropriate typologies fitting to different contexts in terms of different climatic, environmental and socio-economic conditions and different urban designs. Benefits and co-benefits (including citizens' health and well-being, biodiversity and climate change adaptation), synergies (including impacts on social inequalities) and trade-off delivered by the deployed solutions must be evaluated. Tools, models, design guidelines, standards and protocols to integrate these solutions into local decision making and socio-economic transition pathways, including in spatial planning should be developed and validated.**

Actions should enable the continuous monitoring of air pollution and atmospheric carbon concentration and thus contribute to improvement of relevant modelling capacity, deploying indicators enabling easy assessment, communication, 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 in particular the Copernicus Atmosphere Monitoring Service and the Climate Change Service with their value-added products and information) and GEOSS, satellite navigation and positioning services offered by EGNOS/Galileo, and citizens' observatories.

Actions should test innovative governance, business and finance models promoting participatory co-creation processes in developing, implementing and assessing impact of these solutions and taking into account interdependency with the city's hinterland and with others air quality mitigation measures

Furthermore, to secure the widest possible accessibility of the generated data and knowledge for effective communication, public consultation, and exchange of experiences, the funded projects must upload their final data on established networks and information sharing mechanisms at European scale such as Oppla, the European Environment Agency (EEA) air pollution data centre and Climate-ADAPT.

**An interdisciplinary approach, including citizen science and the participation of applied natural sciences, social sciences, data science and humanities disciplines (such as behavioural economics, gender studies, urban planning, design and governance) is considered crucial to properly address the complex challenges of this topic.**

To enhance the impact and promote upscaling and replication of these solutions, actions should account for conditions and mechanisms for how the intervention, as part of the project proposed, works in delivering the desired outcomes to enhance our knowledge about the causal factors for how interventions work in context.

Furthermore, actions should engage in substantial networking and training activities to disseminate and exchange 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 Covenant of Mayors - Europe (supported by the EC) should be sought where appropriate. Actions should envisage clustering activities with other relevant ongoing and future nature-based solutions and relevant citizen observatories projects funded under previous and current H2020 Work Programmes for cross-project co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end, proposals should foresee a dedicated work package and /or task and earmark the appropriate



# Call – Building a low-carbon, climate resilient future

resources accordingly. They should make use and contribute to knowledge exchange and networking European platforms (e.g. Climate-ADAPT, ThinkNature, OPPLA). Action should take advantage of data and information provided by the Copernicus programme.

Proposals should pay attention to the special call conditions for this topic. In grants awarded under this topic, costs for construction and installation of “infrastructure-targeted” interventions shall not constitute more than 20% of the total eligible costs. Beneficiaries’ own resources and/or mobilisation and leverage of additional investments beyond Horizon 2020, whether private or public, should make up the remaining investment costs and should secure economic and financial sustainability for the execution of the project.

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:

- in the mid-term, the creation of an European reference framework and the establishment of EU leadership in a new global market (supply and demand) for nature-based solutions, new economic opportunities, new products, services, protocols and standards, planning approaches and methods, leverage of investments, reduced regulative and administrative barriers, and new local green jobs;
- increased evidence and awareness of the benefits of re-naturing cities for combatting air pollution and mitigating climate change and for improving health, well-being and resilience to the impacts of climate change;
- creation of 'communities of practice', more effective policy making and better informed decision making across Europe, based on an EU-wide evidence base regarding efficacy, efficiency, cost-benefiting and comparative advantages of a range of tested, well documented, up-scalable and marketable nature-based solutions;
- enhanced stakeholder and citizen ownership of the solutions through their effective and systematic involvement in co-creation processes for the development, implementation, monitoring and testing of the solutions and their integration in sustainable urban planning and design;
- enhanced implementation of relevant EU air quality regulations<sup>16</sup> and environmental policies and programmes, such as the EU Water Framework Directive, the 7th Environment Action Programme, the Urban Agenda for the EU, the Clean Air Programme, the EU Biodiversity Strategy, the EU Climate Change Adaptation Strategy and the conclusions of the COP21 Paris Agreement, and the 'Communication on Green Infrastructures', and of the Sustainable Development Goals (SDGs) – in particular SDG 11 'Make cities and human settlements inclusive, safe, resilient and sustainable'.

Type of action	Innovation action	
Deadline	1 <sup>st</sup> stage - 13 February 2020	2 <sup>st</sup> stage - 03 September 2020
Call identifier	H2020-LC-CLA-2018-2019-2020	
Topic information	<a href="#">Link</a>	



# Call – Building a low-carbon, climate resilient future

## LC-CLA-14-2020: Understanding climate-water-energy-food nexus and streamlining water-related policies

### Specific Challenge

Water, energy and food are essential for human well-being, poverty reduction and sustainable development. Projections suggest that the demand for freshwater, energy and food will be on the rise due to, amongst other factors, demographic changes, economic development, and international trade. This puts in jeopardy the availability of these resources for different uses. **Climate change exacerbates water demands, putting additional pressures on water availability and quality, including biodiversity, while at the same time causing extreme events (floods /droughts) that have severe socioeconomic and environmental consequences.** Actions to mitigate and adapt to climate change and variability can have strong implications for the surface and ground water system and its users, for example, when fossil fuels are replaced by hydropower or biofuels. Moreover, changes in energy usage and types of energy production affect water usage and impact agricultural production. All these pressures result in conflicts in allocation of water and between the water – energy – food sectors, which causes additional concerns for the sustainable management of surface and ground water bodies, especially the transboundary ones, where a very large proportion of world's population is living. However, despite this, the strong linkages between water, climate, energy and food are seldom understood and rarely incorporated in the development of national and regional water, food and energy security policies or climate policies. **Therefore there is a need to better align water-related or water-dependent policies looking in a systemic way from the natural climate-water-energy-food nexus perspective at various geographical scales, and taking into account economic, political and societal aspects.**

### Scope

The objective of this action is to develop and test innovative solutions, improved operations and integrated management and planning for achieving water, energy and food security and safety within the planetary boundaries and resolve conflicts between upstream and downstream water users and citizens. Proposals should assess the interlinkages and interdependencies of water, food and energy sectors and ecosystems in different water bodies, in particular transboundary ones. **Climatic, environmental, land-use, social and economic trends and governance regimes in the water and these interlinked sectors should be also considered.**

Proposals should also identify, develop, demonstrate and test innovative, multi-beneficial solutions that can best deliver good water status, in terms of quantity and quality, sustainable food and energy security, enhance human wellbeing and resolve conflicts between different users and different sectors. New integrated policies, governance mechanisms, learning and communication tools that can deliver good water status, sustainable food and energy security, taking into consideration the trade-offs between the 3 sectors, should be also developed. **Sustainability criteria to be considered include full climate-change mitigation effects based on full carbon accounts, impacts on biodiversity and ecosystems, conservation of fertile soils and other biophysical impacts along with socioeconomic equity and justice criteria.**

Mechanisms and tools that support common evidence, build and enhance trust between the different stakeholders and allow them to jointly address the trade-offs and identify win-win strategies, should be also addressed. **This could include innovative monitoring schemes, demand forecasting, socio-economic assessments, scenario planning, behavioural change (including a gender analysis, when relevant), using social science approaches and financial levers to implement a real water- energy-food nexus approach and increase efficiencies, equity and sustainability.**

This action should also address climate impacts on integrated water management, that is, implications for drought risk, water scarcity, drinking water availability and quality, food production and security and energy production and how the vulnerability of water resources can be reduced. Case studies over different geographical regions and challenges to facilitate tailored analyses and test the developed solutions should be considered. Actions to generate and analyse the relevant data required to assess the nexus interlinkages and trade-offs and ensure their long-term availability in the context of relevant EU data infrastructures should be also considered.

Participation of a broad range of different stakeholders around water, energy and food security strategies, including policy makers will be essential.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged. Proposals should avoid duplication with ongoing EU funded research and innovation actions, while strengthening potential synergies. Activities are expected to achieve TLR 5 by the end of the project.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 4-5 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





# Call – Building a low-carbon, climate resilient future

The project results are expected to contribute to:

- more accurate evaluations of future demands for water, energy, food and related infrastructures at both local and global scales, taking also into consideration the ecosystem needs;
- enhance sharing knowledge and best practices in climate-water-energy-food nexus assessment and management and help create critical mass on capacity to innovate;
- improve integrated water resources management and increase resilience to climate change, considering the value of water for ecosystems and their services and ensuring good quantitative and qualitative status of water, sustainable agriculture, food and energy production, as well as water, food and energy security;
- help linking EU water policy objectives with the sustainable objectives of greening the CAP and ensuring sustainability and quality of water resources and resource and energy efficiency policy objectives, achieving for instance, zero energy and minimal water use for renewable energy extraction from water, and net zero carbon emissions by 2050 to hit a 1.5-degree warming target, enabling the combination of water and energy efficiency;
- assess the impacts of EU regulatory framework (e.g. Renewable Energy Directive) on a sustainable water-energy-food nexus;
- reduce institutional fragmentation whilst increase cross water, energy, food collaboration and inclusive multi-stakeholder engagement;
- reduce the water risks for the energy sector and optimise market and trade solutions across the nexus;
- strengthen EU role in international water issues, and become a leading actor on water diplomacy.

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 13 February 2020	2 <sup>st</sup> stage - 03 September 2020
Call identifier	H2020-LC-CLA-2018-2019-2020	
Topic information	<a href="#">Link</a>	



## LC-CLA-15-2020: Forest Fires risk reduction: towards an integrated fire management approach in the E.U.

### Specific Challenge

Forest fires are a major hazard in Mediterranean Europe and increasingly so in Central, Eastern and Northern European countries. There is a limit in our capacity to deter fires, particularly mega-fires when conditions are most severe. This is the result of unbalanced management strategies and policies that can be effective in fire suppression under normal weather conditions but are insufficient to deal with extreme events such as mega-fires. Areas at risk from forest fires are projected to increase by 200% in Europe by the end of the 21st century, in particular due to climate change. Moreover, the development of urban areas in the vicinity of forest areas combined with a lack of risk awareness will increase the exposure and vulnerability of local communities. **This new context calls for more effective science-based fire management and risk-informed decision-making, which takes into account the socio-economic, climate and environmental roots of forest fires.** Improving fire management and governance therefore implies shifting the focus from fire suppression to fire prevention, increasing the awareness and preparedness of people at risk, and developing more balanced and long term forest management strategies that integrate fire prevention with forestry and land management (including conservation of habitats structures, resources and diversity), rural development, urban development, climate and energy policy objectives. An integrated fire management strategy is necessary to ensure that wildfires risks are managed in such a way that people and housing safety, economic growth, well-being, carbon sinks, biodiversity and ecosystem services are maintained or increased.

### Scope

Actions should generate the knowledge, tools, capacity and guidance to underpin an Integrated Fire Management strategy that promotes holistic landscape, land use, and forest management and considers the interaction among all phases of the wildfire management process (i.e. fire prevention and preparedness, fire detection and response, post-fire restoration and adaptation). Proposals should assess the changes in fire regimes under various climate, vegetation and land use change scenarios, including settlement/housing development/infrastructure and rural-urban interface, with particular focus on ignition and fuel patterns, spatial and temporal dimensions of fire activity, including the expansion of the fire-prone area in Europe. Understanding extreme wildfire events, their structural causes, various impacts including on air quality, water quality, soil carbon and nitrogen stocks and greenhouse gas emissions, and the human, biological and physical processes at play is a prerequisite. **The trade-offs and synergies between the various socio-economic, climate, and environmental elements influencing forest fires risk management and conditions of enhanced risk should be explored and analysed, particularly in wildland/rural interface areas.** Methods to assess and mitigate vulnerability of societies to wildfires should also be developed. In addition, the relation of forest fires with other hazards that may trigger or result from fire (e.g., droughts, floods, debris flows, landslides, heatwaves and storms) should be investigated within a multi-hazard risk assessment framework.

**Proposals should capitalise on the existing and develop new scientific knowledge (e.g. fire ecology, soil and water science, landscape restoration, social sciences), enhance understanding of the resistance, resilience and habitat suitability of mixtures of plant species, as well as the human factors (considering human behaviour, gender, economics and socio-demographic issues) affecting fire occurrence and develop strategic guidance for improved forest fire risk management and risk-informed decision-making.**

Participatory approaches with national agencies and competent institutional bodies dealing with wildfire management and protection and land management are required. Actions should also promote increased interaction and strengthened cooperation between scientists, practitioners, forest and land owners and other key stakeholders. To ensure wide accessibility and use, they should also facilitate an inclusive approach in developing land management strategies through involving local communities in the design and planning of innovative fire prevention measures, strengthening the forest sector and promoting bio-economy and nature based solutions as well as in the co-design and co-production of research and corresponding outcomes.

**In this context, actions are sought to develop and implement effective communication and societal outreach strategies to increase the awareness and preparedness of populations at risk towards a common culture of risk and more disaster-resilient communities. The outcomes should be made available through open access platforms (i.e. the Disaster Risk Management Centre, the European Forest Fires Information System). Actions should take advantage of data and information provided by the Copernicus programme, in particular the Copernicus Emergency Service.**

Possibilities for clustering with actions supported under topic LC-CLA-12b-2020, LC-CLA-16b-2020, SC7 DRS-02 and other relevant ongoing and future nature-based solutions, LIFE and Civil Protection relevant projects should be envisaged, as appropriate, for cross-project co-operation, consultations and joint activities on cross-cutting issues and knowledge exchange as well as participating in joint meetings and communication events. To this end, proposals should foresee a dedicated work package and /or task and earmark the appropriate resources accordingly.

Collaboration with leading research institutions with experience in extreme wildfires management such as in Australia, Canada, South Africa, the United States and other non-EU countries is highly encouraged.





# Call – Building a low-carbon, climate resilient future

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:

- National Forest Fires Risk reduction strategies and risk-informed decision-making emerging from collaboration with key stakeholders, in compliance with the policy objectives set out in the EU Forest Strategy and relevant EU policies;
- improved coherence between EU policies' objectives and national legislative frameworks defining the structural measures and operational activities regarding forest and communities protection from fire;
- more disaster-resilient communities through increased awareness and preparedness of populations at risk and a common culture of risk;
- increased knowledge exchange, sharing and access through the Disaster Risk Management Knowledge Centre, the European Forest Fires Information System and other open access platforms;
- innovation, harmonisation and exchange on methods of consistently recording and measuring wildfires and coherent collection of data;
- common framework for forest fire (wildfire) firefighting modules, training, exercises, incident management and command.

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 13 February 2020	2 <sup>st</sup> stage - 03 September 2020
Call identifier	H2020-LC-CLA-2018-2019-2020	
Topic information	<a href="#">Link</a>	



## CE-SC5-25-2020: Understanding the transition to a circular economy and its implications on the environment, economy and society

### Specific Challenge

The transition to a circular economy entails a systemic transformation of entire value chains, covering design, production and consumption phases, so that the value of products, materials and resources can be maintained in the economy for as long as possible, while reducing environmental impact. It also aims at increasing material productivity, including de-materialisation, and exploring new representations and practices of property for individuals and collectives. Such a deep transformation is unlikely to happen suddenly and would rather follow some transition processes and pathways. Understanding, in critical and thoughtful way, the transition to a circular economy and its positive and negative implications on the environment, economy and society (including human health), will be important for the development and adoption of circular economy approaches, including the design of well-targeted transitional policy measures. Moreover, the identification and analysis of best practices of the transition to a circular economy in- or outside Europe, on a citizen, business sectorial and macroeconomic level, possibly covering different cooperation models (including B2B, B2C, P2P, etc.) will serve as an inspiration for specific projects. They also can inform new and adapted policies and policy tools including regulation, taxation and financing, incentives, strategic governance mechanisms and soft tools (e.g. communication and awareness raising tools) to further disseminating the concept of circularity.

### Scope

The research will assess the current state of transition towards the circular economy in relevant economic sectors (public, private and non-profit) and analyse possible transition scenarios, as well as their outcomes and impacts. **It will identify the key factors (regulatory, governance-based, market, technological, cultural, societal, gender, etc.) that can stimulate or hinder this transition.** The selected sectors should be among the ones identified in the EU Circular Economy Action Plan. Additional sectors could also be selected, considering criteria such as environmental footprint, health issues, complexities of value-chain, dependency on imported materials and relevance for European economy. **Implications of the transition, both positive and negative, for the economy, the environment and the society will be assessed qualitatively and as much as possible quantified.** For that reason, appropriate models for analysing and quantifying the various implications and trade-offs and assessing the sustainability of circular economy should be developed. **The implications considered should include social, economic and environmental aspects, such as trade flows, value-chains, labour demand, European industry competitiveness, regulatory frameworks, policy and governance mechanisms, public and occupational health, greenhouse gas emissions, use of energy, land, water, minerals and other resources), flows of resources at all relevant geographical scales, human health, social and territorial cohesion, and value distribution across society. The role of public awareness and acceptance and other social aspects, including gender issues, need to be considered.** Where relevant, particular attention should be paid to the issue of hazardous materials in a circular economy. Policy recommendations for policy-makers at the local, national, European and global levels, including recommendations on governance issues, will be derived from the research. **Involvement of relevant social sciences and humanities disciplines and expertise in behavioural economics and gender issues, is deemed important.**

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, in particular with Africa.

This topic is in support of the European Strategy for Plastics in a Circular Economy. Selected projects under this topic as well as projects selected under other topics in H2020 supporting the Plastics Strategy are strongly encouraged to participate in joint activities as appropriate. These joint activities could take the form of clustering of projects, participation in workshops, common exploitation and dissemination etc. The proposals are expected to demonstrate support to common coordination and dissemination activities. Applicants should plan the necessary budget to cover those activities without the prerequisite to define concrete common actions at this stage.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 3-4 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 project results are expected to contribute to:

- more systemic policy decisions to further facilitate the transition to a safe, environmentally friendly, efficient and effective circular economy in selected sectors;
- efficient and effective use of both primary and secondary resources in Europe, reducing waste generation, negative health impacts, environmental pollution and greenhouse gas emissions;
- new business opportunities for European industries and SMEs;
- creating new tools and methodologies oriented to companies, to consider social, environmental and economic aspects when they design circular business models;



## Call – Greening the economy in line with the SDGs

- creating incentives and support the development of strategic governance mechanisms that enable the transition to a Circular Economy and contribute to the effective implementation of the Sustainable Development Goals in Europe;
- supporting the achievement of climate commitments and specific quantitative targets on resources efficiency, recycling rates or waste disposal quotas.

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 13 February 2020	2 <sup>st</sup> stage - 03 September 2020
Call identifier	H2020-SC5-2018-2019-2020	
Topic information	<a href="#">Link</a>	



# Call – Greening the economy in line with the SDGs

## SC5-26-2020: Sustainable management in extractive industries

### Specific Challenge

The EU is highly dependent on raw materials that are crucial for a strong European industrial base, an essential building block of the EU's growth and competitiveness. In order to secure the sustainable access to primary raw materials, including metals, industrial minerals, construction raw materials, and particularly Critical Raw Materials for the EU economy, there is a need to tackle a number of specific non-technology challenges related to the raw materials policy framework including access to mineral deposits, land use planning and permitting procedures.

### Scope

The actions should strengthen raw materials policy framework and foster mineral production in the EU. **They should ensure cross-sectoral policy coordination and integration aspects covering economic, environmental and social aspects in the value chain of the extractive life cycle from finding and access to deposits to closure and rehabilitation, while focusing on access to deposits and permitting process.** Actions should take into account various external stakeholder interests and the general public, address circular economy and sustainable development aspects.

**The actions should develop a toolkit applicable across the EU Member States for assessing socio-economic and environmental impacts, land-use planning, health and safety issues, and reporting official statistics to support transparent permitting process of mining projects.** Based on the toolkit, actions should develop training materials and organise capacity-building workshops for competent authorities, industry and civil society in different Member States in different regions the EU and at the EU level.

The actions should avoid duplication and build up on the results of the previous actions on the raw materials policy and legislative framework, mineral deposits of public importance, land use planning engaging relevant authorities of different EU regions.

All actions should contribute to improving EU official statistics and building the EU knowledge base of primary and secondary raw materials (EC Raw Materials Information System – RMIS).

In support of the EIP on Raw Materials actions should envisage clustering activities with other relevant selected projects for cross-projects co-operation, consultations and joint activities on cross-cutting issues and share of results as well as participating in joint meetings and communication events. To this end proposals should foresee a dedicated work package and/or task, and earmark the appropriate resources accordingly.

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

The project results are expected to contribute to:

- achieving the objectives and the implementation of both the Raw Materials Initiative and the EIP on Raw Materials, in particular in terms of the improving framework conditions for primary raw materials production in the EU;
- better informed and more efficient decision-making by the EU and Member States policy makers and the producers and users of raw materials regarding the supply of raw materials;
- improving the awareness of relevant external stakeholders and the general public across the EU about the importance of raw materials for society, the challenges related to their supply within the EU and about proposed solutions, duly taking into account the applicable EU environmental legislation;
- facilitating more integrative and coordinated raw materials policy frameworks in the EU and at the Member States level.

Type of action	Research and Innovation action
Deadline	13 February 2020
Call identifier	H2020-SC5-2018-2019-2020
Topic information	<a href="#">Link</a>



## *Topics with minor SSH relevance*

**LC-CLA-12-2020: Advancing climate services**

[Link](#)

**CE-SC5-24-2020: Improving the sorting, separation and recycling of composite and multi-layer materials**

[Link](#)

**CE-SC5-28-2020: Develop and pilot circular systems in plastics, textiles and furniture sectors**

[Link](#)

**SC5-27-2020: Strengthening international collaboration: enhanced natural treatment solutions for water security and ecological quality in cities**

[Link](#)





Societal challenge 6

**Europe in a changing world:  
Inclusive, Innovative and Reflective  
Societies**

## MIGRATION-04-2020: Inclusive and innovative practices for the integration of recently arrived migrants in local communities

### Specific Challenge

The arrival of migrants contributes to diversifying the demographic, cultural, linguistic, ethnic and religious makeup of already diverse European cities and suburbs and rural communities. This may represent an opportunity, but also a significant challenge if taking place in an unordered manner, as occurred in Europe since 2014. **The challenge is to provide policy makers at local, regional, national and supra-national level, civil society organizations and other relevant actors with effective, responsive, flexible, context-specific and culture-specific proposals for measures to promote socio-economic integration and inclusion as well as access to rights and services.** This includes sustainable and participatory strategies, also with the involvement of citizens, civil society actors, education institutions and the private sector.

### Scope

#### a. Innovation action-Lump Sum contribution

The further improvement of the effective integration of newly arrived migrants into societies requires an understanding of existing integration policies and practices. **Proposals should examine the provisions for migrants' rights and their access to social services** in the host countries, in particular, in the aftermath of the recent unordered migration flows since 2014. **Special attention should be paid to past, existing and potential mechanisms to support the integration of migrant men and women, through participatory practices, social innovation** and entrepreneurship, diaspora communities and local civil society initiatives. This Innovation action will develop and test potentially viable approaches through pilots. It will closely involve migrants, members of the host communities, public authorities and researchers, from preparing the concept over their implementation to their evaluation.

The Commission considers that proposals requesting a contribution from the EU in 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.

Please note that this topic will take the form of lump sums as defined in Commission Decision C(2017)7151 of 27 October 2017. Details of the lump sum funding pilot scheme are published on the Funding & Tenders Portal together with the specific Model Grant Agreement for Lump Sums applicable

#### b. Research and Innovation Action

**Proposals should comparatively assess the effectiveness of integration policies and practices** in major migrant-receiving spaces, in local communities, ranging from urban spaces to rural areas. This should include migrants' access to civic and social rights, social services and facilities (e.g. language tuition and healthcare) in accordance with their legal status, as well as intercultural interaction (including gender aspects) and adaptation to increased diversity of the population. **Proposals should also explore social cohesion and societal fragmentation, and how these aspects are accounted for in migrant integration policies.** The urban and rural governance of integration processes should be analysed and assessed against the backdrop of a broader multi-level governance framework, whereby potential and real tensions between the local and other levels of governments should be explored. **Attitudes to migration and integration by both migrants and the host communities should be studied as well. The role of religious communities could also be examined in relation to outcomes of integration processes. The incorporation of historical and comparative insights from migrant integration processes in relevant non-European societies is strongly encouraged.** Cooperation with non-European scholars is also encouraged. This could be done by cooperating with scholars from Africa and the Middle East given the migration relations these regions have in migration policies and dynamics with the EU, as well as with Canada with which strong international cooperation on migration research is ongoing. Processes of exclusion, actions and initiatives to redress them, as well as mutual influences between host and migrant communities could be studied, including the analysis of the impact of these dynamics with relations of migrants with their origin countries. Projects should compare the different practices and experience on their viability, efficiency and transferability. They should deliver policy recommendations. Projects should establish a regular exchange with the stakeholders from the different communities and municipalities.

The Commission considers that proposals 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 amounts.

The outputs of MIGRATION-04-2020 should also be made readily available for cooperation and synergy with MIGRATION-10-2020, a CSA which will compile the outputs of existing research on integration, including such RIAs and IAs.



# Call - Migration

## Expected Impact

Projects will enhance the knowledge base on integration of migrants in local communities. The actions will contribute to improved practices, policies and strategies at local, national and EU level for the integration of migrants in European urban and local settings. This will help increase the possibilities for migrants to thrive and flourish in the labour market and in society. They will advance the implementation of the EU Urban Agenda (building on the specific Partnership on Inclusion of Migrants and refugees 5 and of the UN Sustainable Development Goals related to making cities inclusive, safe, resilient and sustainable).

The pilots developed with the Innovation Action will offer new tools for enhancing the integration of migrants across Europe. This will provide actors working in this multilevel system of governance with already tested options that should be scalable and replicable in different environments with the context specific adaptations. Their evaluation will provide conclusions and recommendations for policy making at local level as well as for the regional, national and European level to create best possible conditions in which local authorities and their stakeholders can operate.

The Research and Innovation Action should deliver analysis for better understanding the phenomenon. Projects should identify approaches and practices, which can be applied in both cities and rural communities, as well as those that would be specific to one or the other. This will expand the knowledge both of dynamics of integration and of the policies managing such process, shedding light on potential gaps and needs which should be addressed by policymakers. The actions will contribute to finding new ways to integrate migrants into European societies, to ensure their cohesion and thus exploit the potential opportunities of migration.

Type of action	Research and Innovation action, Innovation action Lump Sum
Deadline	12 March 2020
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	<a href="#">Link</a>





## *Dedicated Topic*

### **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

##### Innovation Action (2020):

Building on existing evidence, including from projects funded under topic Migration-6 2018 where relevant, proposals should implement pilot actions able to experiment formal, informal and non-formal education solutions to address the integration challenges of children (0 to 18 years old - ISCED 0-3) from recent migration cohorts, in particular children of refugees and asylum seekers, and unaccompanied minors, including those residing in hotspots and reception centres. The proposals shall include actions with local schools, teaching programmes and organizations working with children (with or without migration background) and focus not only on formal educational settings but also on informal social and learning environments, beyond schools. Proposals should address at least three of the following dimensions: governance and funding of education institutions, funding of integration actions targeting children, roles and attitudes of families, gender aspects, communities, civil society organisations and local service providers, preparedness of schools and teaching staff, practices for language learning and use of native languages alongside the language used at school. Proposals should build upon good practices identified with the involvement of stakeholders such as e.g. practices of mutual cultural participation and exchange, or equal opportunities in regards to gender. Attention should be paid to existing educational centres around Europe which having high rates of migrant and ethnic-minority children are achieving academic results above national averages, as well as how the issues already mentioned are being articulated.

Proposals should address at least 3 of the points above, piloted on the basis of clearly defined goals. Processing of personal data of migrants must be conducted in accordance with EU data protection legislation and existing regulation such as eIDAS.

Proposals should engage all actors and consider the potential for co-creation work with all relevant stakeholders, including migrant children and their families themselves, in the design and delivery of services. In addition, proposals should demonstrate their reusability or scalability and should develop a strong and realistic plan to ensure the long-term sustainability as well as take up of the results by the identified users. The involvement of multi-disciplinary and multi-sectoral teams is encouraged to explore the complexity of this challenge, to identify the necessary changes, and the risks and barriers to their implementation, addressing diversity as appropriate (gender, age, social-, cultural-, linguistic-, religious background). Proposals shall combine strong academic knowledge and research-action based support, with stakeholders and practitioners knowledge in the several fields identified above. Children voice must be taken into account in line with Article 12 of the UN Convention on the rights of the child.

The Commission considers that proposals 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 amounts.

#### Expected impact

The actions will inform policymakers, families, teachers and other stakeholders on effective practices for integrating migrant children in schools and more broadly in society, and for developing more inclusive schools, able to increase sense of belonging of all children, including both boys and girls. They will enhance synergies and cooperation amongst these actors for the uptake of innovative practices, for monitoring and data collection and for the definition of research gaps. Proposals should develop and implement actions which can be adapted, rescaled and reproduced in different environments according to the local/regional needs and involve stakeholders from public administrations, civil society, migrants and the host community from a very early stage as appropriate.



# Call - Migration

Type of action	Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	<a href="#">Link</a>



## MIGRATION-09-2020: Narratives on migration and its impact: past and present

### Specific Challenge

The way we collectively discuss about migration has an impact on the production of policies and responses to address this phenomenon. Narratives on migration -be it in the media, public or political discourses- affect political processes across Europe, influence our perceptions on migration dynamics and ultimately have an effect on the integration of migrants in our societies. The challenge is to understand and explain the causes and consequences of such narratives, examining their construction and assessing their effects on attitudes to migration and on society at large. By identifying the responsibility of each stakeholder - policy-makers, civil society organisations, citizens and migrants- in shaping these narratives, and by shedding light on the consequences of discourses on migration, the role and responsibility of each stakeholder will be better defined and their competences enhanced.

### Scope

**Proposals should address the dynamics and developments of migration narratives at local, national and EU level.** Moreover, projects that include countries of origin and transit would be welcome. **They should examine the general and potential long-term societal impact as well as the ethical implications of narratives on policy making. Successful projects should study the historical perspectives and changes in attitudes of non-migrant populations towards migrants and vice versa.** Furthermore, projects should analyse the extent to which migrants' voices are included in the shaping of these narratives. Research could also address innovative ways for migrants to shape their testimonials and narratives. **This could include the role of ICT and social media, literary and artistic representations and may involve cultural heritage representation** e.g. in museums, or other artistic products and events. **Proposals could also explore**, through collaboration with relevant international partners from countries of origin, **how migration narratives and their transmission affect migration decisions and behaviours of potential migrants**, taking into account gender aspects where relevant, including the use of social media to facilitate migration. For the study of the impact of media and public narratives on perceptions, opinions, attitudes and behaviours of different categories of people, the use of innovative research methods, including experimental ones and the methodologies offered by the research infrastructures for social and cultural innovation, is strongly encouraged.

The Commission considers that proposals 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 amounts.

### Expected Impact

Practitioners will be informed by the new knowledge produced on the consequences of discourses on migration. This may have an impact on their conduct and policy choices when relevant. Projects will improve access and dissemination of information on narratives of migration and their effects including their scale, patterns and the social and economic impact on host societies. This will contribute to a more informed debate on migration and about public perceptions of migration. In the longer term, they may contribute to changing the debate on migration in European societies, opening new opportunities for a successful integration of migrants.

Type of action	Research and Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	<a href="#">Link</a>



## MIGRATION-10-2020: Sustainable practices for the integration of newly arrived migrants into societies

### Specific Challenge

The unordered arrival of large numbers of migrants across Europe since 2014 has determined an exceptional mobilisation of resources (often fragmented in multiple small scale and time-limited projects) used to ensure a successful integration of migrants in European societies. Funding has been mobilised at the EU, national, regional and local levels, determining a great number of actions both in policy and in research. After such an emergency response, it is now time to take stock of the work carried out, understanding the impact of the resources used and considering the lessons learnt.

### Scope

**This coordination and support action** will draw on specific actions and research in the integration of new migrants in European societies. **It assesses the types of practices carried out to address the integration challenges** stemming from the migratory crisis in Europe, considering the numerous tools, instruments and actions funded, in policy as well as in research. **Lessons from best practices and difficulties will provide policy recommendations** from which the EU, national, regional and local governments can draw and share experiences through exchanges with all stakeholders. An online platform structure will be developed to provide European visibility.

Proposals are encouraged to identify, monitor and/or engage with relevant EU projects on migration and integration funded under Horizon 2020, as well as those funded under AMIF, European social Fund and Erasmus +. **The collection of new knowledge and innovative practices should include gender-related aspects. It should have a focus on improving the good governance of migrant integration, measuring the impact of the actions implemented, and delivering innovation in support of improved outcomes** for both migrants and the communities in which they live. Project participants are encouraged to work in close contact with local, regional and national administrations, or legal entities designated to act on their behalf on the issue of migrant integration.

Proposals should develop participatory techniques to extract policy implications from research findings, with particular regard to past migration related Horizon 2020 projects, including their research teams where relevant. A strong cooperation is specifically essential with consortia involved in the RIAs and IAs of MIGRATION-04, to readily integrate the outputs produced in this forward-looking CSA action.

This should be complemented by strategies for dissemination to relevant stakeholders in view of exploitation of results. An interactive online repository should be set up that can provide for customised searches and reports. The engagement of the public to increase awareness of the added value of European research and innovation activities on migration is encouraged.

The Commission considers that proposals requesting a contribution from the EU in 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

This CSA action will establish a solid and readily accessible evidence base in support of migration and integration policies and will contribute to improved practices for all stakeholders involved, policies and strategies at local, national and EU level, including urban and rural spaces. It will advance the implementation of the EU Urban Agenda and of the UN Sustainable Development Goals dedicated to making cities and rural communities inclusive, safe, resilient and sustainable. Furthermore, the action may contribute to the deployment of migration-related innovation on the market and in society, by highlighting what most works amongst the great number of actions funded over the past years. Finally, it will reduce the R&I division by improving the flow of knowledge in the field between researchers, practitioners and policymakers across Europe.

Type of action	Coordination and support action
Deadline	12 Mar 2020
Call identifier	H2020-SC6-MIGRATION-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

## 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 tax collection, for decision-making processes etc.). **The political, ethical, socio-economic, legal and cultural implications of disruptive technologies and their acceptance are important not only for public administrations, but also for citizens.**

### Scope

#### Research and Innovation action (2020):

The use of disruptive technologies (such as artificial intelligence and big data analytics, block chain, Internet of Things, virtual and augmented reality, simulations or gamification) in public administrations and in governance including citizens engagement, decision support systems and policy impact assessments is growing. Although the potential positive impact of such technologies is high, 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 experimentations and a thorough assessment of their potential impact, benefits and risks** (e.g. excluding some parts of the population due to age / gender / disabilities / social inequality / lack of e-literacy...). **This includes especially their ethical and legal consequences. Proposals should pilot the technology and should engage multidisciplinary partners including those from social sciences and humanities, stakeholders and users (both public servants and citizens if appropriate) 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 (incl. e.g. the impact on capital, labour and knowledge). One of such issues will be experimenting with Digital Innovation Hubs (DIHs) to engage innovative industrial suppliers such as startups, Govtech and innovative SMEs to pilot the adoption and use of disruptive technologies to improve public services.

Proposals should also lead to the development of implementations and/or business plans that would ensure the long-term 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 governance; 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, culture, social welfare and mobility.

Type of action	Research and Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

## TRANSFORMATIONS-04-2019-2020: Innovative approaches to urban and regional development through cultural tourism

### Specific Challenge

(2020):

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, to the understanding of other peoples' identities and values by driving intercultural understanding and social development in Europe through discovering various types of cultural heritage. 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, including those between the neighbouring countries in Europe, is still unbalanced. Deprived remote, peripheral or deindustrialized areas lag behind, whereas high demand areas are over-exploited in an unsustainable manner. There is also a significant knowledge gap in terms of quantitative and qualitative data on the phenomenon of cultural heritage tourism and on understanding its contribution to cultural Europeanisation and economic and social development in Europe.

### Scope

#### b) Innovation action (2020):

**Through exploring possibilities of cultural tourism in Europe's natural and cultural sites, including those with an industrial heritage, the proposals should propose innovative strategies and pilot solutions for successful and sustainable cross border, regional and local cooperation in cultural tourism**, including those for management, training and services. Various options of the use of the EU Structural Investment Funds should be explored. Minority cultures and regions as well as urban areas currently less attractive to cultural tourism should receive special attention in proposed strategies and pilot activities. Further on, **proposals should include place-based and participatory approaches to investigate relations between intra-European cultural tourism and Europeanisation and their impacts on identities and sense of belonging**. Strategies for cross border cooperation might look beyond EU Member States and Associated Countries and could preferably include partnerships between EU and non-EU countries of the Balkans, the Eastern neighbourhood or the Mediterranean. Proposed solutions should be developed and tested in wide and diversified partnerships of stakeholders. These might include, but not being limited to, entrepreneurs in the tourism industry, SMEs, regional and local governments and municipalities, institutions and organizations representing citizens living in the affected areas. Furthermore, it should cover emerging European networks of heritage sites like the European Heritage Label sites or European cultural routes. Innovative statistical methods, tools and indicators as well as qualitative concepts for measuring and understanding the various impacts of cultural tourism should also be developed and tested.

The Commission considers that proposals requesting a contribution from the EU in 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

The action will contribute to improvements in sustainable cultural tourism policies and practices, at various levels, as well as to further progress in growth, jobs, social and economic development of European regions, and in urban and rural areas. It will provide strategic guidance at European level concerning the efficient use of European Structural Investment Funds in this field. It will contribute to the establishment of partnerships between public and private stakeholders, including citizens at large, and will provide strategies and training tools for cooperation in the area of sustainable cultural tourism. 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	Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

## TRANSFORMATIONS-10-2020: Evolving European media landscapes and Europeanisation

### Specific Challenge

The traditional and social media landscape is changing rapidly. Digitization, the spread of globally interactive delivery platforms, greater emphasis on data, capital concentration, concerns about undue political interference and fake news, plus transformation in journalism and news production are among the triggers for these changes. Media play a crucial socio-cultural and political role through shaping views and aspirations, opinions, political choices and identities. Gap exists in knowledge about the nature and implications for Europe as a whole and at the national and regional levels of recent transformation in the European media landscape. **The role of contemporary media in fostering process of political and cultural Europeanization through re-shaping towards a European political and cultural representations and identities needs to be better understood How are major transformations in the media landscape affecting the evolution of a European political and cultural space?** Do processes of Europeanization and localisation contradict or complement each other? How are media representations of major European political and cultural issues (like refugees, migration, religions, common history, geopolitical and economic crises, terrorism, sport, elections, etc.) affected by new modes of production, consumption, and by new trends of ownership and control over media content? How have global and European media landscape impacted on specifically European political and cultural markers, symbols and identity elements and on perceptions and attitudes towards Europe? To what extent does the European media landscape foster or hamper the European project and societal cohesion?

### Scope

Research on this topic needs to draw on regional, national and European data sources to analyse transformations of the European media landscape from the turn of the 21st century to the current day in the European media landscape in its global context. Where relevant, the **research may put recent transformations in historical perspectives**, including comparisons with other past ‘media revolutions’. Beyond analysing media production, ownership and eventual censorship, **the research should look into the patterns of representation, dissemination and consumption or usage at a certain level of disaggregation, in terms of socio-economic categories and European countries and regions**. It should study the contradiction or compatibility of an emerging European Media landscape with an increasing localisation of the content of European Media. The research should provide new knowledge including data concerning the evolution of the spatial and social, including gendered, distribution of media consumption and use. **This action should study the impacts of the deep transformations of the media landscape on the prospects and evolution of a common European political and cultural space as well as on the media representations and narratives of major European political and cultural issues, markers, symbols and identity elements.**

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

Funded projects will fill the knowledge gap, concerning rapid transformations of the European media landscape, in its global context. The action will provide diachronic and synchronic analysis of the European media landscape and its interlaced patterns of production, representation, consumption and appropriation patterns and will produce reliable forecast about its evolution. This RIA, in examining representations and narratives surrounding major issues commonly seen as being of European relevance and significance will deliver a rigorous analysis of how European political and cultural spaces are evolving and of their prospects.. It will also improve statistical data and methods of researching concerning contemporary media, drawing as appropriate on, for example, national and international statistical institutes, cultural and media support bodies, national research organisations, networks, research infrastructures and Eurostat. It will aim to equip policymakers with knowledge and effective tools for understanding the impact of the changing media landscape on European politics and on political and cultural Europeanisation.

Type of action	Research and Innovation action
Deadline	12 Mar 2020
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	<a href="#">Link</a>





# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

## DT-TRANSFORMATIONS-12-2018-2020: Curation of digital assets and advanced digitisation

### Specific Challenge

In cultural heritage institutions, the quantity of digital content is growing exponentially, together with the potential of new digital technology performance. This large amount of data presents an increasing challenge of management to curators. Work in this area should enable heritage institutions scholars and practitioners to fully use the potential of digital technologies for managing, studying, conserving, restoring, making accessible, interlinking, disseminating and preserving their collections.

On the other hand, the technological advancement presents opportunities, namely with regard to digitisation. So far, digitisation focused mainly on capturing the visual appearance of individual objects, collections or sites. There is a real need to establish a comprehensive picture of the studied assets, capturing and re-creating not only visual and structural information, but also stories and experiences (stored in language data), together with their cultural and socio-historical context, as well as their evolution over time. In addition, the current approach to digitisation is often localised and static: single experts perform the digitisation and the archiving; the digitised cultural tangible (artefacts, historical sites) and intangible resources (stories, experiences, written memory of the society) are rarely consolidated and interlinked, preventing deeper exploitation of the resources through wider searchability via other domains, networks or languages.

### Scope

#### Research and Innovation Action (2020):

Departing from the current paradigm of localised and static archiving, the scope is to develop one or more of the following new technologies and methods:

In order to develop the concept of active digital resources, sound and comprehensive documentation management tools are needed that continuously consolidate digital assets. This will be achieved through capturing over time, results stemming from a variety of digitisation methods connected to active sensor networks or to semantic web technologies. This will allow for analysis and semantic evaluation of digital assets and resources of cultural heritage.

**Consolidation takes also into account the relevance of historical sources** (e.g. monuments and documents) **and resources** (e.g. studies on how language transmits our cultural memory of events) **and that a resource evolves over time through cultural impact, research and curation** (e.g. studies on how culture shaped a specific collection or how historical events shaped spaces). The continuous consolidation should support the collaboration of multiple actors (IT and SSH) providing both sample data and knowledge to the collaborative framework.

Time and space are core aspects of the history of cultural heritage collections. **In addition to the audio-visual appearance, digitisation will include the related cultural, historical, social evolution and events.** It will need to develop the accessibility of the semantic content of the resources. Through connecting the tangible and intangible, stories will emerge as a means to enhance our understanding of cultural heritage.

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 proposals should demonstrate how the new technologies, methods and data formats would help to present cultural and historic remains and memories in a comprehensive and attractive though scientifically based way, supporting the promotion of Europe's cultural heritage. **Proposals should also show how the preservation and analysis of the tangible and intangible resources of our cultural heritage would enhance our understanding of cultural history.** They should also deliver solutions to the problem that language change hampers static ways of retrieving the information from historic data collections. The economic impact for the creative industries and the scientific impact for cultural institutions who own content will include gains from use and re-use of digital assets.

The main area of expected impact will be in the better promotion of Europe's cultural heritage, such as through presenting cultural and historic remains and memories (in a comprehensive and attractive way using new technologies, methods and data formats, including solutions to the problem of language when retrieving information from historic data collections. Curating digital assets will also offer the opportunity to preserve study and disseminate the memory of cultural heritage that underwent dispersal or destroyed. The preservation and analysis of the tangible and intangible resources of our cultural heritage will enhance our understanding of cultural history, and bring economic impact for creative industries and for cultural institutions owning content, such as from the use and re-use of digital assets.





# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

Type of action	Research and Innovation action
Deadline	<b>12 March 2020</b>
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

## *Dedicated Topic*

### **TRANSFORMATIONS-18-2020: Technological transformations, skills and globalization - future challenges for shared prosperity**

#### Specific Challenge

The combined effects of technological transformations, of trade and globalisation have created winners and losers in Europe and in the rest of the world. European economies are confronted with the co-existence of skill shortages, high unemployment, increased inequalities in income and wealth, asymmetrical labour mobility within Europe, as well as emigration and immigration. These structural imbalances need to be addressed, because political concerns in the Western world, and in particular in the European Union, relating to future challenges for shared prosperity are growing, in a context of uncertain futures. Following the assessment of the impact of technological progress, trade and globalisation on skills, employment, inequalities in income and wages and on labour mobility and migration in the EU, realistic and accurate projections into the future on the combined effects of technological progress and globalisation are needed to prepare our economies, societies and policies for what is to come and to build up capacities for influencing these changes.

#### Scope

Proposals should first measure impact of technological progress, trade and globalisation on skills, employment, inequalities in income and wages and on labour mobility and migration in the EU. It should then project how the interactions between technological change and globalisation will transform the current EU and international structure of labour markets and trade in commodities and services in existing and emerging sectors and their impact on income distribution and social inequalities. Particular attention should be paid to skill-biased, capital-biased, talent-biased and gender biased technical change and to possible trajectories for low-skilled work in the European and international context. The analysis should take into account the evolution of the processes through which technological change is integrated in the human world. This includes economic, institutional, political and socio-cultural contexts, needs and obstacles. The future volume and quality of work should be addressed in relation to skills, education, development, migration and mobility, demographic changes and the analysis of economic convergence and divergence within Europe and with the rest of the world. The challenges of competition, cooperation or conflict with emerging and developing countries need to be considered. Both demand and supply side issues, including global value chains, off-shoring and their distributive effects, should be addressed in this topic.

Proposals should produce a comprehensive set of scenarios based on data from national and international agencies, from databases on labour markets, inequalities, globalisation, productivity and growth, and from other relevant official sources as needed (no specific/ad-hoc surveys should be used). The analysis should have a strong focus on disentangling the processes of technological change and of globalisation in important sectors of the economy to assess their impacts on inequalities, and their implications on the development of skills and competences that need to be strengthened in Europe, in order to reduce the uncertainty facing large sections of the population. In addition, proposals should identify priority areas and content for policies that would make share the benefits of technological change and globalisation more equally and widely. For instance, proposals could map pathways for adapting working populations and their flows to trends in the international production and consumption structure. Paradigm changes needed in education, skill and talent development could be anticipated. Due to the specific challenge of this topic, participation of relevant partners from third countries, including developed, emerging and developing countries, is encouraged. This participation would enable a balanced discussion on competing points of view that are critical for the impact of the project. A solid dissemination strategy should be foreseen for bringing findings to the attention of policymakers and into the public domain.

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

Results will contribute to inclusive and evidence based policy choices and informed public debates, especially on methods and processes of upgrading skills, mobility and labour markets. It will propose policies on the areas discussed above for different levels of national and international governance and the means of achieving multilateral cooperation on these objectives.



# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

Type of action	Research and Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

## TRANSFORMATIONS-19-2020: Culture beyond borders – Facilitating innovation and research cooperation between European museums and heritage sites

### Specific Challenge

Today, when communication, media and culture flows freely beyond borders, there is growing need to connect cultural heritage collections and sites and present Europe's tangible and intangible heritage to citizens and tourists in their wider historical and geographical contexts. Museums and heritage sites are also knowledge centres for heritage conservation, management and cultural tourism. Sustained cooperation between museums and heritage sites would increase European public interest, cultural tourism and the innovation potentials of these institutions for heritage sciences and the cultural and creative sectors thus it would contribute to sociocultural inclusion, economic growth and job creation. However, cooperation between museums and heritage sites is hindered by lack of sustained financing, institutional and legal obstacles, IPR and insurance issues, etc. Stakeholder involvement at European level is necessary for identifying gaps and obstacles but also best practices and fields where research and innovation can develop new solutions for successful cooperation.

### Scope

**A network will bring together European museums and heritage sites** (national museums, regional and local museums, European Heritage Label sites and European cultural routes, among others) **with researchers and relevant public authorities for supporting cooperation between European museums and heritage sites.** The network will explore ways for innovating in sharing collections, research facilities and specialized knowledge for restoration/conservation, including skills in traditional heritage crafts and technics. It will jointly prepare traveling exhibitions or shared digital exhibitions during its lifetime. Based on a focused, critical mapping of current practice and obstacles, the objective of the network is to develop an understanding of the challenges and opportunities for the enhanced cooperation of European museums and heritage sites. The network should pay particular attention to the sustainability and employment dimensions of further institutional cooperation. The network will map and share European and extra European best practices. It will evaluate bottlenecks and opportunities of enhanced cooperation. It will also identify the specific research, innovation and training needs for policy makers for improving the cooperation of European museums and heritage sites, thus contributing to shaping the research and innovation agenda for cultural heritage in Horizon 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. This does not preclude submission and selection of proposals requesting other amounts.

### Expected impact

The coordination and support action will create a representative and geographically balanced European network of European museums, heritage sites, researchers and policy makers. The network will support, as a pilot demonstration activity, the joint organisation of travelling exhibitions and shared digital exhibitions. It will develop and share best practises. It will also support knowledge exchange between museum curators, conservators and management. The CSA will provide an agenda with key research and innovation challenges for European museums and heritage sites for Horizon Europe. The research agenda will cover needs for new technologies, materials, management tools, legal solutions, IPR management, financing instruments and visitors' and community involvement. The network will also identify short, mid- and long-term education and training needs for European museum and heritage professionals.

Type of action	Coordination and Support action
Deadline	12 March 2020
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

## DT-TRANSFORMATIONS-20-2020: European Competence Centre for the preservation and conservation of Monuments and Site

### Specific Challenge

The increasing occurrence of disasters such as floods, earthquakes, fires, and pollution can sometimes cause irreversible damage to cultural heritage sites and historical documents, or destroy entire areas together with the documents and monuments therein. Europe's cultural heritage sites and many more historical documents, monuments and historic buildings across the Member States are in danger. Apart from losing our heritage, the culture and creative sectors, and related industries such as tourism and hospitality rely heavily on the appeal and conservation of cultural heritage sites, documents and monuments. Digital technology can help preserve the knowledge of threatened heritage artefacts, museums, monuments, documents and sites and make them accessible for citizens across Europe and for future generations. In addition, online access to high quality holistically documented digital replicas (including storytelling) of artefacts, sites, documents and monuments may increase the appeal and promotion of a place, city or Member State, thus supporting the local tourism and hospitality industries.

### Scope

Proposals under this action should set up a "Competence Centre" aiming at the preservation and conservation of European Cultural Heritage using new state-of-the-art ICT technologies. **The Competence Centre should map past and ongoing research, collect, analyse and promote best practices from Europe and beyond, and become a major point of European reference for transnational and interdisciplinary networking in the preservation of Cultural Heritage.**

The Competence Centre should support cultural institutions to benefit from the opportunities brought by new ICT technologies by sharing best practices on technical, legal, and online publishing requirements, etc. as well as increasing cooperation in the sector, with a special attention to 3D technologies and corresponding standards.

**The Competence Centre should also act as a facilitator for access to finance and mapping possibilities as well as an ambassador for massive digitisation of endangered European Cultural Heritage. The Competence Centre should also pave the way for future European research on cultural heritage that would need a holistic research agenda and an inclusive interdisciplinary approach, bringing together multidisciplinary expertise such as historians, archaeologists, architect, geographers, civil engineering, chemical engineering and conservation scientists, craftsmanship, social and human sciences.**

The Commission considers that proposals requesting a contribution from the EU of around 3 million would allow this specific challenge to be addressed appropriately. The duration should be around 3 years. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. The sustainability of this competence centre should be foresee and set in place during the duration of the project.

### Expected impact

The Competence Centre should increase the quality of preservation initiatives undertaken by Cultural Heritage institutions. It should also demonstrate how it will contribute to an increase in the number of and quality of digitised monuments and documents. This would allow a better use and re-use of new digital assets. The Competence Centre should also strengthen the coordination between all players in the Cultural Heritage domain and upscale the competences of the potential users.

Type of action	Coordination and support action
Deadline	12 March 2020
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

## DT-TRANSFORMATIONS-21-2020: Mentoring scheme for schools: mainstreaming innovation by spreading the advanced ICT-based teaching practices to a wide circle of schools

### Specific Challenge

Education, in particular at school level, has to keep the pace with the digital transformation of our society. While some schools have a culture of well-developed ICT strategies and pursue very innovative practices, they often work in isolation and there is a growing digital gap between schools that are advanced and those who are not leveraging the advantages of ICT-based pedagogies. **The greatest challenge is to mainstream digital innovation in education that contributes to improve educational performance and school climate**, reaching the less advanced schools and teachers. To accelerate the digital transformation of schools in Europe, there is a need for sharing, discussing, spreading and adopting innovative practices, supporting a whole-school approach and promoting a model of school mentoring. This requires implanting and fostering a broader culture of innovation and leveraging networks and hubs of innovation to help disseminate and widely diffuse best practice involving ICT. Accelerating digital transformation in education and delivering high-quality digital education to all students requires bridging this gap and accelerating change by diffusing innovative ICT-based educational practices across schools and stimulating bottom-up diffusion of innovation through school-to-school peer-learning.

### Scope

The action will build, coordinate and seek to expand an inclusive pan-European network of schools where schools (school leaders and teachers) interested in pedagogical uses of ICT can build their know-how by learning from their more advanced peers through demonstrations of best pedagogically sound practice. **The action will in particular focus on mainstreaming the innovation process**, which leads to positive results, **using a policy-connected approach by involving policy-makers at regional and national level**. The action will also include bottom-up, regional grassroots actions that support the situated take up of ICT and ICT-based practices between schools with various levels of technological proficiency, particularly within countries where mainstreaming of innovative use of ICT in schools is still at a relatively low level and paying attention to contexts where such patterns of cooperation are not yet prevalent. **The action will particularly: 1) collect and document evidence of cases where whole-school peer-learning methodologies have been successfully used** in the Member States, and the associated ones, with a view to further scaling-up, and also compare them with less successful cases 2) build on and involve the existing networks, ‘multiplier’ structures and regional hubs to mainstream change; 3) set up collaboration between more advanced and less advanced schools and support the exchange or practice with instructional design, paying attention to their specific educational contexts; 4) **leverage an EU-level awareness-raising platform or infrastructure to promote the idea and models of mentoring scheme**; actions may propose using existing platforms to save resources for other activities 5) **explore which incentives and rewards** for advanced schools make it attractive for them to participate as mentors in school clusters to mainstream their innovative practices 6) will support the development of whole-school approaches to ICT deployment and the mainstreaming of innovative practice involving ICT in schools across Europe 7) provide a strategy and a plan how to achieve greatest impact possibly by involving institutional actors such as Ministries of Education and disseminate the model of mentoring among schools.

The Commission considers that proposals requesting a contribution from the EU in the order 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 proposals should provide meaningful and ambitious indicators on how the whole requested range of impacts will be measured, including the improvements resulting from the digital innovation actions, as well as the number of countries and schools to be reached. A significant number of schools connected and supported by the network to exchange best practices and develop a whole-school approach involving all levels of school governance to implementing ICT and a significant number of policy-makers and educational stakeholder provided with actionable guidance on how to successfully mainstream a culture of innovation across European schools.



# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

Type of action	Coordination and support action
Deadline	12 March 2020
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

## TRANSFORMATIONS-22-2020: Enhancing access and uptake of education to reverse inequalities

### Specific Challenge

Inequalities have been rising over several decades in Europe in spite of increased levels of welfare and public spending as a proportion of GDP. Growing inequality is a threat to economic growth, democracy and equal opportunities for future generations. Social disadvantages and precariousness are to a large extent inherited whereby low educational attainment of both parents and children play a key role. There is ample evidence that children from less privileged social backgrounds trail behind in access and uptake of education. Often disadvantages such as low-skilled parents, mono-parental families, limited access to social services (e.g. health and housing), and cultural resources, and being from a migration background, cumulate. The challenge is to reverse this trend and to enhance upward social mobility by significantly improving access and uptake of education in Europe, in line with the European Pillar of Social Rights.

### Scope

#### a) Research and Innovation Action:

**The research will focus on access and uptake of education** from early childhood to adult education using the most appropriate methods and approaches. Education should be understood comprehensively, including formal and informal education publicly or privately provided. Any means of knowledge, skills and competences acquisition should be considered. **The research should take into account the increasing diversity in Europe and complex interplay of the socio-economic status of parents, family configuration, geographical location, ethnicity, religion, language, traditions, cultural values, gender, disabilities, special educational needs, as well as differences between urban and rural environments.** The diversity requires moving from standardisation to customisation and cross-sectoral policies as well as the involvement of multiple stakeholders. **Research will refine and develop necessary quantitative and qualitative data, learn lessons from existing policies to combat inequalities across a number of policy fields, and propose new or differentiated policies where needed.** Proposals should build on the evidence of the successful contexts in which practices are demonstrating to be effective, considering the diversity of structures and agents influencing the access and uptake of education.

The Commission considers that proposals requesting a contribution from the EU in the order of EUR 3.5 million would allow this specific challenge to be addressed appropriately. This does not preclude submission and selection of proposals requesting other amounts.

#### b) Coordination and Support Action:

**The Coordination and Support Action will run in parallel to the research and innovation actions** and interact with them to enhance synergies and cooperation between them and amongst the relevant stakeholders (including policy makers at all levels in the relevant policy fields,) and decisively promote the policy uptake of the research to overcome inequalities. **It will generate networks for research and policy development and promote and monitor concrete policy guidance** for system-wide, integrated and - where necessary – cross-policy strategies for effective intervention.

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. This does not preclude submission and selection of proposals requesting other amounts.

### Expected impact

The RIA action will support the advancement and uptake of effective and efficient practices in order to reverse inequalities, increase access to quality education for disadvantaged groups, improve uptake of education in key competences (reading, maths, sciences, digital skills), reduce the impact of social disadvantage and thereby increase social upward mobility in Europe. It will produce research results on access and uptake of education and formulate policy recommendations in a cross-sectoral approach and by involving multiple stakeholders. It will deliver best practices and new methodologies (where appropriate), which can be scalable and replicable by other projects and stakeholders. The action will support the breaking of policies and intervention silos toward more cooperation amongst stakeholders.

The Coordination and Support Action will draw policy lessons from previous topics in this field, bring together through networks and conferences different stakeholders and coordinate their efforts to draw policy recommendations and impact lessons that can be implemented. The network structure should enable the sustainability over time of the policy process.





# Call – Socioeconomic and cultural transformations in the context of the fourth industrial revolution

Type of action	Coordination and support action, Research and Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-TRANSFORMATIONS-2018-2019-2020
Topic information	<a href="#">Link</a>



## 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<sup>31</sup> and the European Interoperability Framework Implementation Strategy<sup>32</sup>. In addition, how can public-private partnerships, big data and algorithms also reduce 1) the legitimacy of public services, and 2) potential bias in how these services are offered when informed by algorithms and big data.

In particular, to deliver better (and ethical) 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 including elderly people, people with disabilities and migrants. Mobile apps providing access to public services are likely to become the norm to facilitate the interaction and engagement of citizens with public administrations. In addition, to ensure a cost efficient provision of inclusive digital services, there is a pressing need to identify gaps in accessibility solutions, to identify related good and bad 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 values over the longer term.

### Research and Innovation action (2020)

Proposals should analyse, 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, in particular leveraging mobile communications and Apps. **The proposals should also evaluate the role, legitimacy 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 ensuring secure mobile single sign-on for cross border access and use of services. Evidence of the benefits of the full implementation of the once-only and digital-by-default principles and user centricity and the transformative impact of new technologies should also be taken into account.

Proposals should also lead to the development of implementation and/or business plans that would ensure the long-term 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.

### 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, in particular mobile ones, 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.



## Call – Governance for the future

Type of action	Research and Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Governance for the future

## SU-GOVERNANCE-07-2020: The Common Foreign and Security Policy and the expanding scope of the EU's external engagement

### Specific Challenge

There is a pressing need for the EU to improve its capacities and capabilities for conflict resolution, prevention and mediation. As highlighted by the EU's Global Strategy and the European Defence Action Plan, **a key challenge is to accommodate multiple action domains, including traditionally internal policy areas, in a joined-up external action alongside the Common Security and Defence Policy**. An integral challenge is to ensure that the EU external policy and the foreign policies of Member States are coordinated when engaging with strategic global partners.

### Scope

**Proposals should ascertain what governance structures are needed for ensuring an effective EU foreign and security policy as well as a coherent and sustainable external action.** They should develop assessment criteria for effective defence, security and intelligence cooperation in the EU, distinguishing between objectives and instruments. Results should take account of the previous calls 'Europe as a Global Actor' (Work Programme 2014/15) and 'Engaging together globally' (Work Programme 2016/17). Proposals should engage with the growing diversification of international relations, e.g. the E3/EU on Iran and regional integration strategies with neighbourhood regions. Cooperation with partners from third countries is encouraged in order to have comparative perspectives that would be an important value added for the projects. **Research should analyse perceptions and the political acceptability of an enhanced EU common defence policy** among Member States and citizens. Crucially, projects must thoroughly investigate the burgeoning peripheral and sectoral diplomacies in traditionally internal policy areas and assess how these could be brought within the joint-up frame of a coherent EU external action.

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. This does not preclude submission and selection of proposals requesting other amounts.

### Expected Impact

Actions will inform policymakers on the governance structures needed to ensure joined-up and sustainable EU diplomatic action and international cooperation. They will contribute to the advancement of the Common Security and Defence Policy and to increased coherence between the EU foreign policy and Member States' foreign policies.

Type of action	Research and Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	<a href="#">Link</a>



# Call – Governance for the future

## SU-GOVERNANCE-09-2020: Addressing radicalization through social inclusion

### Specific Challenge

The spread of radical ideologies leading in some cases to violence has prompted the EU and its Member States to develop prevention policies and effective intervention scenarios supporting social inclusion. To further develop and proactively target the needs of policymakers and practitioners, **a comprehensive evidence base analysis on trends in radical ideologies and extremism and on the drivers of polarisation and radicalisation is necessary.**

### Scope

**Based on empirical and multidisciplinary approaches, proposals should assess the multiple drivers and manifestations of radical ideologies prone to incite or lead to violence, both societal (including religious) and political,** as well as the physical and online contexts for their propagation. Complementary knowledge on non-radicalising identity, belonging, disengagement and detachment should also be formulated in order to provide a holistic framework for assessing and proposing preventive measures in terms of social policies and interventions. **A focus should be on the psychological and social mechanisms of alienation and radicalisation of youth in urban and peri-urban contexts. Research should develop new methodologies, where appropriate and evidence based policy recommendations** in close collaboration with civil society and policy makers. Proposals should rely on extensive fieldwork and construct a solid empirical base. Research must consider gender perspective 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. This does not preclude submission and selection of proposals requesting other amounts.

### Expected Impact

Actions should provide a holistic evidence base to support situation analysis. They will increase the capacity to quickly identify and actions should provide comprehensive data bases, evidence based analysis and sector scenarios to support holistic situation analysis. They should increase the capacity to quickly identify and reach at-risk groups and thereby contribute to better targeted and more effective policies and interventions, as well as identify their optimal implementation tools. The ultimate goal is to increase awareness and resilience in at-risk demographics and introduce preventive, countering and de-radicalisation approaches as applicable.

Where applicable the proposals should demonstrate how they will effectively build on the relevant previous and on-going EU funded (including but not limited to the Horizon 2020 both Societal Challenge 6 and 7, and Internal Security Fund - Police) radicalisation projects.

Type of action	Research and Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	<a href="#">Link</a>



## DT-GOVERNANCE-12-2019-2020: Pilot on using the European cloud infrastructure for public administrations

### Specific Challenge

Given the complexity of our societies, public authorities need innovative means and tools that can enable them to develop better evidence-based policies. The development of such policies needs to involve local actors such as citizens and businesses, in order to better inform policy-making while ensuring higher levels of acceptance for policies and of trust in the authorities. Data analytics and usage of cloud infrastructure to gain access to shared data can help improve policy making at all levels, national but also local. Moreover, engaging citizens and local actors in the generation of data or in the analysis of 'big data' and its ethical issues can assist local governance.

### Scope

The availability of open and big data, in particular as facilitated by high-performance computing (HPC) capabilities offered by the European Cloud Initiative, would provide an infrastructure with data and analytical power for the public administration. **Proposals should develop new ways and methods and ethical aspects of using the cloud infrastructure by public administrations for policy modelling, policy making and policy implementation.** They should also create reusable models that allow for a better, more accurate and more efficient development and management of policies related to health, emergency responses, weather warning etc.

Proposals should demonstrate the interoperability, reusability or scalability of the models and analytical tools.

They should also develop a solid and realistic business plan to ensure the long-term sustainability and take-up of the results. **They should consider the different legal, ethical and security aspects of the models and analytical tools**, depending on what kind of data they contain/are based on. They should also consider how communities can be effectively involved in co-creation of data management and analysis. In addition, they should involve multi-disciplinary and multi-sectoral teams to explore the complexity of this challenge, including the problems raised by big data uses and consideration of precautionary approaches to address such problems.

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 create analytical tools that enable public administrations to reuse common infrastructures and data sets for the development of better targeted and more effective evidence-based policies. It will engage citizens and businesses in the co-creation of the tools, thereby enhancing trust and boosting the perceived legitimacy of authorities.

Type of action	Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	<a href="#">Link</a>



## SU-GOVERNANCE-21-2020: Developing deliberative and participatory democracies through experimentation

### Specific Challenge

Liberal democracies have come under pressure in recent times. Political distrust, polarizing discourses, lower electoral participation and populist narratives that reject the idea of an open society manifest themselves in Europe and beyond, with very strong support. **The challenge therefore is to examine whether and how deliberative and participatory approaches – theoretically and practically – can fulfil the promise of greater and more enlightened participation in the present context and reach out to include those alienated from the political process.** The difficulties deliberative and participatory approaches may face are also important to appraise.

### Scope

In the last two decades deliberative and participative democracy has become increasingly prominent as a response to the challenges besetting liberal representative democracies. Premised on notions of direct democracy, active citizenship and decisions reached through argumentation, these new practices of democracy has in theory the potential to revive democratic legitimacy and help close the gap between citizens and political elites, who are often perceived as representing powerful interest groups.

**Research should elucidate the complex links between political discourses and identities** (including populist standpoints), dialogue guided by reasoned argumentation and the potential for achieving consensus on policy choices. **Projects should also consider issues pertaining to effective participation in deliberative and participatory processes** (especially as regards vulnerable groups and the politically less active) **and as to how effectively these are translated by governments and institutions into concrete action.** Research should equally examine how deliberative and participatory processes relate to polarisation and how (or if) it can assist in reaching mutual understanding among citizens with different views and positions. Lastly, **attention should be paid to how deliberative and participatory democracy can best complement representative institutions.** Issues of coordination, complementarity, scaling up (of such practices) but also opening up more traditional representative institutions should be examined.

The impacts of technology need to be further illuminated. Re-evaluating and re-assessing the contribution of digital technology in implementing deliberative, participatory (and by extension direct) democracy is needed. **Projects should offer exhaustive assessments of experiments and innovations in deliberative and participatory processes highlighting success and failure factors.** The role of the internet should equally be examined (also in connection to social media) in light of recent trends, which have cast doubt on its capacity to act as a platform of rational communication between equal participants.

In the EU context, **the notion of the public sphere**, as a key deliberative element, **should be reconsidered both conceptually and empirically in view of the economic, social and political crises and developments of recent years.** This includes a reappraisal of the question whether there is, could, or should be a European public sphere, which could enrich the democratic quality and the liberal character of the EU, in a context where supra-national European institutions are often perceived as insufficiently democratic and transparent.

**Research should examine how the concept of deliberative and participatory democracy could be used and adapted to facilitate such a process and whether and how it is compatible with polarization tendencies**, which have been prevalent in recent years. **It needs to be investigated whether these new trends contribute to social justice, how societies can be made not only more inclusive but also more reflective**, and how critical capacity and attitudes can be developed which revive deliberative democratic discourses. **In this context, the contribution of the education system needs to be worked out. Connections should be made with questions of (European) identity**, whereby the focus should not lie on an essentialist conception of identity, but reflexive identity, which signifies a critical and transformative self-understanding. Research should investigate how to create arenas or spaces open to citizens which are conducive to collective decisions made through public deliberation. Cooperation with partners from third countries, from both established and emerging democracies, is encouraged in order to have comparative perspectives that would be an important value added for the impact of the project.

A set of concrete actions could look at experimental and participative approaches to civic and social life, and suggest pathways for strengthening democracies at all levels, in terms of concrete actions, pilot projects and experimentation. They could build on previous results of international, European and other projects in these areas. In a context where citizen involvement and citizen participation in research and innovation is strongly stressed for Horizon Europe, this proposal could help to lay the groundwork.

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. This does not preclude submission and selection of proposals requesting other amounts.



# Call – Governance for the future

## Expected Impact

This action will move to another level our understanding of deliberative and participatory democratic processes and identify ways of how they can be improved in practice. Research should make this action on how to create arenas or spaces open to citizens which are conducive to collective decisions made through public deliberation. Proposals should outline methods and policies by which democratic practices can be strengthened in order to rebuild trust in political, economic and social institutions.

Type of action	Research and Innovation action
Deadline	12 March 2020
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	<a href="#">Link</a>





## GOVERNANCE-23-2020: Support to the networking of national R&I Think Tanks for helping co-shape and share a common perspective on R&I policy across Europe

### Specific Challenge

The intended new governance of R&I policy at EU level relies on a combination of co-creation across policy fields and co-design with relevant stakeholders, as part of an open, transparent and cooperative relation between science and society. This implies developing a shared understanding and common views on policy challenges and opportunities based on sound evidence and continuous exchanges with policy advisors and shapers active at national level. In that regard, there is a need to help the transparent networking of R&I Think Tanks across the EU to strengthen and enlarge their input to the co-design of R&I policy.

### Scope

**The coordination and support action should support the networking of R&I Think Tanks across the EU, with the aim to inform EU and national policy-making and help develop and share common views needed for co-designing the EU R&I policy.** Proposals should demonstrate the capacity to develop existing informal or self-organised collaborations across national Think Tanks and/or R&I policy advisers into an actual European network of R&I Think Tanks, to achieve efficiency and effectiveness in codesigning R&I policies. The network should bring together think tanks or advisory communities already organised at national level, and increase their cross-border collaboration and capacity to deliver strategic policy advice at European level. The network should aim at enhancing trust and coherence amongst its members, through transparent, open and collaborative processes involving national and European policy-makers, research and innovation communities and citizens. While the new network should help shape and spread new ideas about EU R&I policy, it should also capture and discuss emerging trends to make R&I policy more impactful and develop methodologies and approaches for co-designing policies with a clear EU added value.

Specific objectives of this action:

1. The network will greatly increase the capacity and diversity of R&I policy advice available in each Member State, by opening up the possibility for national Think Tanks to source or discuss expertise and advice from Think Tanks in other Member States.
2. The network will allow to rapidly bringing to the fore and debating new R&I policy concepts, through e.g. an annual event, in view of developing a common understanding and supporting the coherence of policy making processes across the EU.

The Commission considers that a consortium requesting a contribution from the EU in the order of EUR 0.5 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

Opening up and connecting policy advisers and R&I communities will add value to the governance of the European research and innovation system, will have a measurable impact for policy makers, R&I communities and citizens, and will lead to policies with more relevance and impact.

In the short term, the action will reinforce network collaboration between national R&I policy advisers, with the prospect in the medium term to offer a sounding board for national and EU policy-makers alike. In the longer term, it will facilitate the strategic alignment of R&I policies in Europe by supporting the uptake and dissemination of research and innovation best practices and questioning.

Type of action	Coordination and support action
Deadline	12 March 2020
Call identifier	H2020-SC6-GOVERNANCE-2018-2019-2020
Topic information	<a href="#">Link</a>





## Societal challenge 7

### **Secure societies**

Protecting freedom and security of  
Europe and its citizens

## SU-AI01-2020: Developing a research roadmap regarding Artificial Intelligence in support of Law Enforcement

### Specific Challenge

As indicated in the Coordinated Plan on Artificial Intelligence and in the Cybersecurity Joint Communication 19, there is a need to better understand: how AI-based systems, services and products could enhance the objectives of the security sector; how AI technologies can be protected from attacks; how to address any potential abuse of AI for malicious purposes; how to establish cybersecurity requirements for AI. From the Law Enforcement point of view, these dimensions have to be analysed in a longer term, taking into account that the potential AI benefits for **Law Enforcement Agencies (LEAs)** are threefold, i.e., through: 1) proactive policing (from reactive to anticipative policing); 2) data analysis (e.g., connecting the dots, discovering criminal patterns and defragmenting LEA actions), and 3) identity checks (improving detection, targeting and interdiction).

### Scope

**Proposals under this topic should provide an EU AI roadmap for LEAs**, meeting their specific operational and cooperation needs, by identifying, in a longer-term perspective: the key areas in which AI would be beneficial for LEAs, the key areas in which it could pose a threat to security, cybersecurity requirements for AI based technologies in use or to be used by LEAs as well as means of prevention and mitigation of malicious use of AI for criminal activities. As such this project would not only need to continuously interact (in a cluster mode) with projects funded under SU-AI02-2020 and SU-AI03-2020 but also provide recommendations for further work to be done under Horizon Europe, Digital Europe, or the Internal Security Fund as well as for policy and market uptake. **The objective is to develop a research roadmap that provides answers to, e.g., following questions: What are and will be the AI needs of LEAs in their daily work? What are the major research gaps in the area of AI in support of LEAs? What are the challenges that need to be addressed, both from the fighting crime, including cybercrime and terrorism, and from improving cybersecurity (re)actions? Which approaches might be desirable? What needs to be set up for test and evaluation? How to prevent and mitigate malicious use of AI for criminal activities and terrorism?**

Starting from these considerations, **proposals must demonstrate commitment to produce recommendations** that are updated continuously, and at least every 6 months, **about the following lines of actions: which AI based technologies, systems and solutions could support/enhance the work of LEAs and how, what the corresponding restraints (including ethical and legal) are**, as well as related risks, security challenges and protection measures. The proposal shall provide specific real-life LEAs scenarios, examples and evidence supporting their recommendations. **The proposing consortium is expected to incorporate relevant security practitioners, researchers, civil society organisations and LEAs.**

As indicated in the Introduction of this call, proposals should foresee resources for clustering activities with other projects funded under this call to identify synergies and best practices.

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

#### Short term:

- Effective contribution to the overall actions of this call;
- Medium and longer term:
- In the longer term perspective, identification of key areas in which AI would be beneficial for LEAs, meeting their operational and collaborative needs, and of key areas in which it could pose a threat to security;
- A carefully planned roadmap in order for Law Enforcement to benefit as much as possible from the AI based technologies, systems, solutions, including their protection;
- Increased awareness regarding the state of the art and trends in AI-based criminal activities (short-, mid- and long-term).

Type of action	Coordination and Support action
Deadline	27 August 2020
Call identifier	H2020-SU-AI-2020
Topic information	<a href="#">Link</a>

# Call – Artificial Intelligence and security

## SU-AI02-2020: Secure and resilient Artificial Intelligence technologies, tools and solutions in support of Law Enforcement and citizen protection, cybersecurity operations and prevention and protection against adversarial Artificial Intelligence

### Specific Challenge

The increasing complexity of security challenges, as well as more and more frequent use of AI in multiple security domains, such as fight against crime, including cybercrime and terrorism, cybersecurity (re-)actions, protection of public spaces and critical infrastructure makes the security dimension of AI a matter of priority. Research is needed to assess how to mostly benefit from the AI based technologies in enhancing EU's resilience against newly emerging security threats (both "classical" and new AI supported) and in reinforcing the capacity of the **Law Enforcement Agencies (LEAs)** at national and at EU level to identify and successfully counter those threats. In addition, in security research, data quality, integrity, quantity, availability, origin, storage and other related challenges are critical, especially in the EU-wide context. To this end, a complex set of coordinated developments is required, by different actors, at the legislative, technology and Law Enforcement levels. For AI made in Europe, three key principles are: "interoperability", "security by design" and "ethics by design". Therefore, **potential ethical and legal implications have to be adequately addressed so that developed AI systems are trustworthy, accountable, responsible and transparent, in accordance with existing ethical frameworks and guidelines** that are compatible with the EU principles and regulations.<sup>20</sup>

### Scope

Proposals under this topic should aim at exploring use of AI in the security dimension at and beyond the state-of-the-art, and exploiting its potential to support LEAs in their effective operational cooperation and in the investigation of traditional forms of crime where digital content plays a key role, as well as of cyber-dependent and cyber-enabled crimes. On the one hand, as indicated in "Artificial Intelligence – A European Perspective", AI systems are being and will increasingly be used by cyber criminals, so research into their capabilities and weaknesses will play a crucial part in defending against such malicious usage. On the other hand, Law Enforcement will increasingly engage in active usage of AI systems to reinforce investigative capabilities, to strengthen digital evidence-making in court and to cooperate effectively with relevant LEAs. Consequently, **proposals should:**

- **develop AI tools and solutions in support of LEAs daily work.** This should include combined hardware and software solutions such as robotics or Natural Language Processing, in support of LEAs to better prevent, detect and investigate criminal activities and terrorism and monitor borders, i.e., opportunities and benefits of AI tools and solutions in support of the work of Law Enforcement and to strengthen their operational cooperation.

Building on existing best practices such as those obtained through the ASGAR project<sup>21</sup>, proposals should establish a platform of easy-to-integrate and interoperable AI tools and an associated process with short research and testing cycles, which will serve in the short term perspective as a basis for identifying specific gaps that would require further reflection and development. This platform should, in the end, result in a sustainable AI community for LEAs, researchers and industry as well as a specific environment where relevant AI tools would be tailored to specific needs of the security sector, including the requirements of LEAs. Those AI tools would be developed in a timely manner using an iterative approach to define, develop and assess the most pertinent digital tools with a constant participation of end-users throughout the project. By the end of the project, the platform should also enable a direct access for Law Enforcement to an initial set of tools. Specific consideration should be given to the issue of setting an appropriate mechanism to enable a proper access to the relevant data necessary to develop and train AI based systems for security.

Proposals should also:

- develop cybersecurity tools and solutions for the protection of AI based technologies in use or to be used by LEAs, including those developed under this project against manipulation, cyber threats and attacks, and;
- exploit AI technologies for cybersecurity operation purposes of Law Enforcement infrastructures, including the prevention, detection and response of cybersecurity incidents through advanced threat intelligence and predictive analytics technologies and tools targeting Cybercrime units of LEAs, Computer Security Incident Response Teams (CSIRTs) of LEAs, Police and Customs Cooperation Centers (PCCCs), Joint Investigation Teams.

Finally, in order to have the full picture of all AI-related issues in the domain of work of Law Enforcement and citizen protection, proposals should:

- tackle the fundamental dual nature of AI tools, techniques and systems, i.e.: resilience against adversarial AI, and prevention and protection against malicious use of AI (including malicious use of the LEA AI tools developed under this project) for criminal activities or terrorism.

The improvement of research results, application and uptake should be taken into consideration.

The functionality of existing EU LEAs' tools and systems needs to be analysed since they need to support the prevention, reaction and detection of cyber threats and security incidents.



# Call – Artificial Intelligence and security

Furthermore, the accuracy of AI tools depends on the quantity and on the quality of the training and testing data, including the quality of their structure and labelling, and how well these data represent the problem to be tackled. In the security domain, this issue is further emphasized due to the sensitivity of the data, which complicates the access to real multilingual datasets and the creation of representative datasets. **A huge amount of up-to-date high-quality data needed to develop reliable AI tools in support of Law Enforcement, in the areas of cybersecurity and of the fight against crime, including cybercrime and terrorism, asks for the development of training/testing datasets at a European level. This requires a close cooperation of different national Law Enforcement and judiciary systems.** Namely, training and testing data sets considered legal and used in one country have to be shared and accepted in another one, while simultaneously observing fundamental rights and substantial or procedural safeguards. The lack of legislation at the national and international level makes this particularly difficult. The availability of such datasets to the scientific community would ensure future advances in the field.

Thus, **in order to address the problem of securing European up-to-date high-quality training and testing data sets in the domain of AI in support of Law Enforcement, proposals under this topic should, from a multidisciplinary point of view, identify, assess and articulate the whole set of actions that should be carried out in a coherent framework:**

- **A comparative analysis of existing legal provisions** throughout Europe that apply in these cases and their impact, including obstacles for research community to access datasets used by LEAs and means of overcoming these obstacles;
- **The identification and definition of legislative changes that could be promoted both at the European and Member State level;**
- **Ethical and operational implications for LEAs;**
- The identification of the technical developments that should be carried out to sustain all these aspects;
- **Determination of legal and ethical means at the European level that allow for a creation of European up-to-date, representative and large enough high-quality training and testing data sets for AI,** in support of Law Enforcement and available to the scientific community working with LEAs.

Proposals should have a clear dissemination plan, ensuring the uptake of project results by LEAs in their daily work.

Taking into account the European dimension of the topic, the role of EU agencies supporting Law Enforcement should be exploited regarding:

- effective channels established between industry and LEAs, closing the gap between public investment and uptake of project results by relevant end-users in their daily work;
- increased exchange of experiences, best practices and lessons learnt throughout Europe leading to EU common approaches for opportunity/risk assessment of AI;
- better understanding and readiness of policy makers on future trends in AI;
- enhanced cooperative operations and synergies between EU LEAs.

**Proposals should take into account the existing EU and national projects in this field, as well as build on existing research and articulate a legal, ethical and practical framework** to take the best out of the AI based technologies, systems and solutions in the security dimension. Whenever appropriate, the work should complement, build on available resources and contribute to common efforts such as (but not limited to) ASGARD, SIRIUS22, EPE23, networks of practitioners 24, AI4EU25, or activities carried out in the LEIT programme, namely in Robotics26, Big Data27, and IoT28. As proposals will leverage existing technologies (open source or not), they should show sufficient triage of these technologies to ensure no internalisation of Intellectual Property Rights or security risks as well as demonstrate that such technologies come with adequate license and freedom to operate.

As far as the societal dimension is concerned, proposed solutions of AI applications should respond to the needs of an individual and society as a whole by building and retaining trust. **Proposals should analyse the societal implications of AI and its impacts on democracy.** Therefore, the values guiding AI and responsible design practices that encode these values into AI systems should also be critically assessed. It should be also shown that the testing of the tools represents well the reality. In addition, **AI tools should be unbiased (gender, racial, etc.)** and designed in such a way that the transparency and explainability of the corresponding decision processes are ensured, which would, amongst other, reinforce the admissibility of any resulting evidence in court.

**Proposals' consortia should comprehend, besides industrial and research participants, relevant security practitioners, civil society organisations, experts on criminal procedure** from a variety of European Member States and Associated Countries as well as LEAs. **Proposals should ensure a multidisciplinary approach and have the appropriate balance of IT specialists as well as Social Sciences and Humanities experts.**

As indicated in the Introduction of this call, proposals should foresee resources for clustering activities with other projects funded under this call to identify synergies and best practices.

The Commission considers that proposals requesting a contribution from the EU of around EUR 17 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 lead to:

Short term:

- Effective contribution to the overall actions of this call;



## Call – Artificial Intelligence and security

- Development of a European representative and large enough high-quality multilingual and multimodal training and testing dataset available to the scientific community that is developing AI tools in support of Law Enforcement;
- EU common approach to AI in support of LEAs, centralized efforts as well as solutions on, e.g., the issue of huge amount of data needed for AI.
- Medium term:
  - Improved capabilities for LEAs to conduct investigations and analysis using AI, such as a specific environment/platform where relevant AI tools would be tailored to specific needs of the security sector including the requirements of LEAs;
  - Ameliorated protection and robustness of AI based technologies against cyber threats and attacks;
  - Raised awareness and understanding of all relevant issues at the European as well as national level, related to the cooperation of the scientific community and Law Enforcement in the domain of cybersecurity and the fight against crime, including cybercrime and terrorism regarding the availability of the representative data needed to develop accurate AI tools;
  - Raised awareness of the EU political stakeholders in order to help them to shape a proper legal environment for such activities at EU level and to demonstrate the added value of common practices and standards;
  - Increased resilience to adversarial AI.
- Longer term:
  - Improved capabilities for trans-border LEA data exchange and collaboration;
  - Modernisation of work of LEAs in Europe and improvement of their cooperation with other modern LEAs worldwide;
  - A European, common tactical and human-centric approach to AI tools, techniques and systems for fighting crime and improving cybersecurity in support of Law Enforcement, in full compliance with applicable legislation and ethical considerations;
  - Fostering of the possible future establishment of a European AI hub in support of Law Enforcement, taking into account the activities of the AI-on-demand platform;
  - Making a significant contribution to the establishment of a strong supply industry in this sector in Europe and thus enhancing the EU's strategic autonomy in the field of AI applications for Law Enforcement;
  - Creation of a unified European legal and ethical environment for the sustainability of the up-to-date, representative and high-quality training and testing datasets needed for AI in support of Law Enforcement; as well as for the availability of these datasets to the scientific community working on these tools;
- Development of EU standards in this domain.
- The outcome of the proposal is expected to lead to development from Technology Readiness Levels (TRL) 7-8; please see part G of the General Annexes.

Type of action	Research and Innovation action
Deadline	27 August 2020
Call identifier	H2020-SU-AI-2020
Topic information	<a href="#">Link</a>





## SU-AI03-2020: Human factors, and ethical, societal, legal and organisational aspects of using Artificial Intelligence in support of Law Enforcement

### Specific Challenge

Advantages of AI are numerous. However, the lack of transparency of AI technologies and tools complicates their acceptance by users and citizens. Ethical and secure-by-design algorithms are necessary to build trust in this technology, but a broader engagement of civil society on the values to be embedded in AI and the directions for future development is crucial. This fact is generally correct, and it becomes extremely important in the security domain. Social engagement has to be part of the overall effort to fortify our resilience across institutions, civil society and industry, and at all levels - local, national, European. There is a need to find ways to build a human-centred and socially driven AI, by, amongst other, fostering the engagement of citizens and improving their perception of security. Possible side effects of AI technological solutions in the domain of security need to be considered carefully, both from the point of view of citizens and from the point of view of Law Enforcement: e.g., their concerns regarding a strong dependence on machines, risks involved, how AI will affect their jobs and their organisation, or how AI will affect their decisions. Many open aspects exist that can be a source both of concern and of opportunity and should be addressed in a comprehensive and thorough manner. Finally, the legal dimension should be tackled as well – e.g., how the use of data to train algorithms is dealt with, what is allowed and under which circumstances, what is forbidden and when.

### Scope

**Proposals under this topic should provide an exhaustive analysis of human, social and organisational aspects related to the use of AI tools, including gender related aspects, in support of Law Enforcement, both for cybersecurity and in the fight against crime, including cybercrime, and terrorism. Points of view and concerns of citizens as well as of Law Enforcement should be tackled. Based on this analysis, proposals should suggest approaches that are needed to overcome these concerns and that stimulate the acceptance of AI tools by civil society and by Law Enforcement. 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. The societal dimension should be at the core of the proposed activities. Proposals should be submitted by consortia involving relevant security practitioners, civil society organisations as well as Social Sciences and Humanities experts.**

As indicated in the Introduction of this call, proposals should foresee resources for clustering activities with other projects funded under this call to identify synergies and best practices.

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

Proposals should lead to:

Short term:

- Effective contribution to the overall actions of this call.
- Medium term:
  - Improved and consolidated knowledge among EU Law Enforcement Agency (LEA) officers on the issues addressed in this topic;
  - Exchange of experiences among EU LEAs about human, social and organisational aspects of the use of AI in their work;
  - Raised awareness of civil society about benefits of AI technologies in the security domain and opportunities it brings.
- Longer term:
  - European common approach for assessing risks/threats involved by using AI in the security domain, and identifying and deploying relevant security measures that take into account legal and ethical rules of operation, fundamental rights such as the rights to privacy, to protection of personal data and free movement of persons;
  - Advances towards the implementation of the AI tools and technologies in support of Law Enforcement, in the areas of cybersecurity and fight against crime, including cybercrime, and terrorism, by strengthening the civil society perception of the EU as an area of freedom, justice and security.



## Call – Artificial Intelligence and security

Type of action	Research and Innovation action
Deadline	<b>27 August 2020</b>
Call identifier	H2020-SU-AI-2020
Topic information	<a href="#">Link</a>





## 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). 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	27 August 2020
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	<a href="#">Link</a>



## 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 3: [2020] Methods and guidelines for pre-hospital life support and triage

Development of innovative tools, methodologies and European pre-hospital guidelines for first responders of medical services, fire services and police and hospital trauma teams in order to ensure faster and more effective evaluation and control of numerous seriously injured casualties in disaster and/or emergency situations. This should take account of lessons learned from military mass-casualty techniques such as damage-control surgery. The aim is to ensure more effective pre-hospital triage of victims with appropriate digital traceability of actions and data transfer from the event to the hospital(s), including across administrative and political boundaries.

If appropriate, proposals should demonstrate how they will build on relevant previous and ongoing FP7 and/or H2020 projects.

- 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. Co-funding opportunities from the Korean MSIP/NRF exist for Korean partners.

The centre of gravity for technology development with actions funded under sub-topics 1,2 and open is expected to be up to TRL 4 to 6, whereas under sub-topic 3 it is expected to be up to TRL 6 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 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	27 August 2020
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	<a href="#">Link</a>



## 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, 2020] 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-connected devices, may pose substantial threats to (cyber)security since this fully connected world as well as the network itself have 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 evidence-based approaches to evaluate and to further develop initiatives to prevent and counter violent radicalisation**

**The following issues are of particular interest: factors and pathways into radicalisation; factors influencing resilience to radicalisation, with a focus on groups requiring particular attention (such as children); the nexus between violent extremism and other forms of crime; violent extremism online (e.g., social media) and terrorist propaganda; evaluation and impact of counter-narratives and alternative narratives; how to address returnees, with a focus on children and women; dealing with extremists after their release from prison (and involving penitentiary services and legal authorities); gender and socio-economic aspects of radicalisation; challenges related to the lone actor phenomenon and evaluation of national and local prevent strategies.** The objective of this sub-topic is not to support projects which cover all those issues. Proposals should therefore address one or more of the issues mentioned above. **They should take into account the importance of a multi-disciplinary, multi-agency and multi-stakeholder approach.**

Proposals should refer to evidence-based research that compares and distils various approaches to the issue or issues that they are addressing, providing outcomes which are of direct use for policy makers and practitioners. Proposals should furthermore provide quantitative and/or qualitative indicators to allow for the evaluation of prevent, counter and de- radicalisation initiatives. The proposals could also analyse and evaluate different research methodologies in this field. Proposals should build on the expertise of different disciplines and stakeholders, including practitioners, in order to reflect the horizontal challenge of radicalisation.

The aim is not necessarily to develop new responses, but to focus on comparative analyses and evaluations of existing responses in order to identify transferrable and effective approaches based on what has been done so far, and/or to elaborate performance indicators and/or evaluation methods.

In line with the EU's strategy for international cooperation in research and innovation (COM(2012)492), international cooperation is encouraged.

If appropriate, the proposals should demonstrate how they will effectively build on relevant previous and on-going EU funded (including but not limited to the Internal Security Fund - Police) radicalisation projects.

### **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	28 August 2020
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	<a href="#">Link</a>



## 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.

- 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. Proposals should be submitted under only one of the following sub-topics:**

- Sub-topic 3: [2020] Money flows tracking

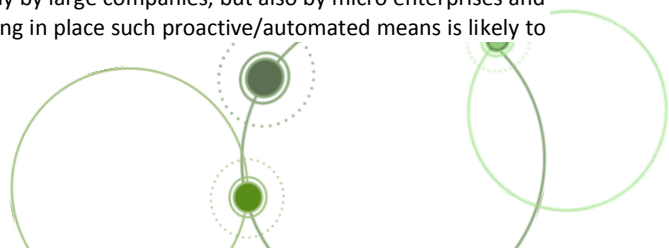
Organized crime increasingly adopts technology (for example, pseudo-legal sales, shadow economy, internet/Darknet as well as cryptocurrencies) as a facilitator for preparation, organisation and execution of various physical/traditional criminal activities (e.g., child sexual abuse, trafficking of organs or human embryos, trafficking of human beings, trafficking of firearms, drug trafficking, money laundering and terrorism) and/or as a tool for online criminal activities (e.g., ransomware, domain-name piracy, phishing). Furthermore, there is a need for governing and detecting cross-border money flows with the potential to support terrorism, for reinforcing effective and legitimate public-private cooperation for the sharing of financial data, and for strengthening the effectiveness of current methods of countering terrorism financing and of modelling abnormal transactions in the fight against terrorism.

Research should address the following issues: approaches to identify new developments (new markets and networks; new mod operandi); tools for tracing money flows as well as those engaged in criminal activities online whilst ensuring privacy and protection of personal data; Darknet marketplace analysis and mobility; tools for locating and mapping hidden service directories; tools for forensic analysis of digital media in order to identify digital currency datasets; data provenance models (providing evidence that is admissible in court), including the relationship between algorithmic proof artefacts and legal evidence.

- Sub-topic 4: [2020] Development and deployment of technologies, tools and relevant infrastructure to identify speedily terrorist content online, and prevent its re-upload

To address the threat of terrorist content online, the Commission has adopted a proposal for a Regulation on 12 September 2018. **Under the proposal a number of measures would be required to be taken by Member States (in particular law enforcement authorities)/Europol and hosting service providers.** Hosting service providers from around the world (covering social media, cloud services, file sharing, etc.) offering their services to EU citizens would be required to put in place a certain number of measures, ranging from speedy reactive ones e.g. one hour deadline to remove or disable terrorist contents following a removal order from a Member State authority (considering that terrorist content is most harmful in the first hours of its appearance online) to proactive measures, including automated detection, in order effectively and swiftly to remove or to disable terrorist content and to stop it from reappearing and being disseminated once it has been removed.

Under the proposal, these measures would need to be implemented not only by large companies, but also by micro enterprises and SMEs, irrespective of size or turnover, albeit remaining proportionate. Putting in place such proactive/automated means is likely to





create a burden on resources, hence mitigating measures for the benefit of smaller companies should be envisaged. Research should therefore be leveraged to support the development and deployment of technologies, tools and relevant infrastructure to identify speedily terrorist content online, and to prevent its re-upload. The media content analysis could play a relevant role in the development of tools for the active detection of harmful online behaviour (e.g. with natural language processing or image/video content analysis). The beneficiaries of such projects should include SMEs so as to ensure that the technology developed would be of direct relevance to their platforms. A further global take-up and dissemination of these technologies, tools and infrastructure where relevant should also be encouraged.

- 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.

Type of action	Research and Innovation action
Deadline	28 August 2020
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	<a href="#">Link</a>



## 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.).

In 2020, proposals should address exclusively point b), with a focus on private operators. Although public authorities are primarily responsible for security, public-private cooperation is key in protecting public spaces. As an example, the first persons on the scene of a terrorist attack are often not police officers, but private security staff from local shops or transport operators. Moreover, public spaces are often owned and operated by private entities.

**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.

Type of action	Innovation action
Deadline	28 August 2020
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	<a href="#">Link</a>



## 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 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.**

Participation of Border or Coast Guards Authorities or those working with at-risk groups, for example first responders, municipalities, social workers, educators, civil society actors etc. is welcome.

- Sub-topic 3: [2020] Developing indicators of threats at the EU external borders on the basis of sound risk and vulnerability assessment methodologies

EU border guards have to deal with diverse serious challenges at external borders, e.g. management of flows of people, smuggling and the use of counterfeit documents. Arrivals of thousands of people through one border area will quickly trigger a reaction, whereas the detections of a few cases of document fraud on a daily basis will be considered as part of the routine work and is unlikely to trigger a strong reaction. Research that assesses the impacts on the EU's internal security of different threats and that proposes a model to compare those threats would assist in improving the situational awareness of decision-makers across the EU. This research on external threats would also further enrich the vulnerability assessment tasks as defined in the European Border and Coast Guard Regulation.

Proposals should aim at improving the effectiveness of border control, including air, land and maritime borders, by developing dynamic composite indicators of threats, so that various threats occurring simultaneously at the border can be compared and priority for mitigation can be proposed. This should be based not only on the absolute number of detections at the border, but also on their synergies and inter-relationships, as well as on the impact that such detections may have on the internal security of the EU. The fitness for purpose of the concepts proposed should be duly demonstrated in the relevant environment.

The Common Integrated Risk Assessment Model considers risk as a function of threat, vulnerability and impact. More information is available at: <https://frontex.europa.eu/intelligence/ciram/>.

More information on vulnerability assessment activities is available at: <https://frontex.europa.eu/intelligence/vulnerability-assessment/>.

- 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.
- [2020] Contribution to the development of EU joint capabilities for border management and support to the implementation of policy priorities

Type of action	Research and Innovation action
Deadline	28 August 2020
Call identifier	H2020-SU-SEC-2018-2019-2020
Topic information	<a href="#">Link</a>



## SU-DS02-2020: Intelligent security and privacy management

### Specific challenge

In order to minimise security risks, ICT systems need to integrate state-of-the-art approaches for security and privacy management in a holistic and dynamic way. Organisations must constantly forecast, monitor and update the security of their ICT systems, relying as appropriate on Artificial Intelligence and automation, and reducing the level of human intervention necessary.

Security threats to complex ICT infrastructures, which are multi-tier and interconnected, computing architectures, can have multi-faceted and cascading effects. Addressing such threats requires organisations to collaborate and seamlessly share information related to security and privacy management.

The increasing prevalence and sophistication of the Internet of Things (IoT) and Artificial Intelligence (AI) broadens the attack surface and the risk of propagation. This calls for tools to automatically monitor and mitigate security risks, including those related to data and algorithms. Moreover, storage and processing of data in different interconnected places may increase the dependency on trusted third parties to coordinate transactions.

Advanced security and privacy management approaches include designing, developing and testing: (i) security/privacy management systems based on AI, including highly-automated analysis tools, and deceptive technology and counter-evasion techniques without necessary human involvement; (ii) AI-based static, dynamic and behaviour-based attack detection, information-hiding, deceptive and self-healing techniques; (iii) immersive and highly realistic, pattern-driven modelling and simulation tools, supporting computer-aided security design and evaluation, cybersecurity/privacy training and testing; and (iv) real-time, dynamic, accountable and secure trust, identity and access management in order to ensure secure and privacy-enabling interoperability of devices and systems.

### Scope

Proposals are invited to address one of the sub-topics below. In addition, it would be an asset for proposals to include solutions for hands-on and state-of-the-art training, such as cybersecurity exercises.

Four pilot projects are launched under Horizon 2020 LEIT ICT, as a result of the call H2020SU-ICT-2018, topic SU-ICT-03-2018 “Establishing and operating a pilot for a Cybersecurity Competence Network to develop and implement a common Cybersecurity Research & Innovation Roadmap”. Proposals should therefore foresee actions to collaborate with these four projects and also with similar ongoing projects funded under H2020, and take account of the results and work done in other relevant H2020 projects on cybersecurity/privacy.

SME participation is strongly encouraged.

#### **(a): Dynamic governance, risk management and compliance**

**Proposals should develop and integrate beyond state-of-the-art approaches to security and privacy management** which are: automated, dynamic and adaptive, allowing to identify the vulnerabilities, threats, such as advanced persistent threats, and attacks (including zero-day attacks).

Proposals should include pilots with significant scale involving complex ICT systems and addressing several of the following: forecasting, risk-based situation awareness, evidence-based system and software assessment, visualisation techniques, real-time monitoring and alerts with high level of accuracy, support to fair automated decision-making, run-time adaptation and autonomous recovery from faulty states.

**Proposals should address the technical, operational, financial and ethical dimensions of cybersecurity.** Concrete application cases should be foreseen. Adapted tools, techniques and formats for collaborative security/privacy event management and reporting should be proposed. Solutions involving advanced, highly representative simulation environments (cyber-ranges) might be proposed.

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 2 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.

#### **(b): Cyber-threat information sharing and analytics**

**Proposals should develop and test threat detection frameworks**, which should to the extent possible include: (i) collaborative, open, and dynamic repositories of information on threats and vulnerabilities; (ii) build on and update existing ontologies, taxonomies and models; (iii) dynamic tools for automated detection with advanced analytic capabilities, and where possible response and recovery; (iv) accountability and audit techniques; and (v) synchronised real time self-encryption/decryption schemes with recovery capabilities.



**Novel technologies enabling collaboration in cyber threat intelligence and alerting should be proposed, taking into consideration not only technical aspects, but also human aspects such as behavioural patterns, gender differences, privacy, ethics, sovereignty, psychology, linguistic and cultural boundaries.**

The tools and services that will be developed should be in a position to support the operations of CERTs/CSIRTs and networks of CERTs/CSIRTs. Proposals should develop incident response tools and test respective processes for coordinated response to large-scale crossborder cybersecurity incidents and crises in line with Commission Recommendation (EU) 2017/1584 of 13 September 2017 on coordinated response to large-scale cybersecurity incidents and crises.<sup>61</sup>

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 2 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.

(c): Advanced security and privacy solutions for end users or software developers

Proposals should develop automated tools for checking the security and privacy of data, systems, online services and applications, in view to support end users or software developers (possibly including developers of AI solutions) in their efforts to select, use and create trustworthy digital services. Proposals should address real application cases and at least one of the following services: automatic code generation, code and data auditing, trustworthy data boxes, forensics, certification and assurance, cyber insurance, cyber and AI ethics, and penetration testing.

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 2 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.

(d): Distributed trust management and digital identity solutions

With particular consideration to IoT contexts, applicants should propose and test/pilot innovative approaches addressing both of the following points: (i) distributed, dynamic and automated trust management and recovery solutions; and (ii) developing novel approaches to managing the identity of persons and/or objects, including self-encryption/decryption schemes with recovery ability. Proposals should address real application cases.

The outcome of the proposal is expected to lead to development up to Technology Readiness level (TRL) 5-6; please see Annex G of the General Annexes.

The Commission considers that proposals requesting a contribution from the EU of between EUR 3 and 6 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

In the short term, project outcomes should make relevant contributions to the following:

- reduced number and impact of cybersecurity incidents;
- efficient and low-cost implementation of the NIS Directive and General Data Protection Regulation;
- effective and timely co-operation and information sharing between and within organisations as well as self-recovery;
- availability of comprehensive, resource-efficient, and flexible security analytics and threat intelligence, keeping pace with new vulnerabilities and threats;
- availability of advanced tools and services to the CERTs/CSIRTs and networks of CERTs/CSIRTs;
- an EU industry better prepared for the threats to IoT, ICS (Industrial Control Systems), AI and other systems;
- self-recovering, interoperable, scalable, dynamic privacy-respecting identity management schemes.

In the medium to long term, project outcomes should make relevant contributions to the following:

- availability of better standardisation and automated assessment frameworks for secure networks and systems, allowing better-informed investment decisions related to security and privacy;
- availability and widespread adoption of distributed, enhanced trust management schemes including people and smart objects;
- availability of user-friendly and trustworthy on-line products, services and business;
  - better preparedness against attacks on AI-based products and systems;
  - a stronger, more innovative and more competitive EU cybersecurity industry, thus reducing dependence on technology imports;
  - a more competitive offering of secure products and services by European providers in the Digital Single Market.



# Call – Digital Security

Type of action	Innovation action, Research and Innovation action
Deadline	27 August 2020
Call identifier	H2020-SU-DS-2018-2019-2020
Topic information	<a href="#">Link</a>





### *Topics with minor SSH relevance*

**SU-DS03-2019-2020: Digital Security and privacy for citizens and Small and Medium Enterprises and Micro Enterprises**

[Link](#)

**SU-DS04-2018-2020: Cybersecurity in the Electrical Power and Energy System (EPES): an armour against cyber and privacy attacks and data breaches**

[Link](#)

**SU-DS05-2018-2019: Digital security, privacy, data protection and accountability in critical sectors**

[Link](#)





Leadership in Enabling and Industrial Technologies

# Information and Communication Technologies

Net **4** Society

## ICT-48-2020: Towards a vibrant European network of AI excellence centres

### Specific challenge

**To ensure European strategic autonomy in such critical technology as AI, underpinning most of our future professional and private activities, with huge potential socio-economic impact, it is essential to reinforce and build on Europe's assets in AI, including its world-class researcher community, in order to stay at the forefront of AI developments.**

As stated in the communication from the European Commission on Artificial Intelligence for Europe and the coordinated action plan between the European Commission and the Member States, while Europe has undeniable strengths with its many leading research centres, efforts are scattered. Therefore joining forces will be crucial to be competitive at international level. Europe has to scale up existing research capacities and reach a critical mass through tighter networks of European AI excellence centres. The objective is to foster cooperation among the best research teams in Europe, joining forces to tackle more efficiently major scientific and technological challenges in AI hampering deployment of AI-based solutions.

### Scope

#### a) Research and Innovation Actions (RIA)

As announced in the Communication on Artificial Intelligence for Europe, the Commission will invest in strengthening AI research excellence centres across Europe and facilitate their collaboration and networking. The objective of this action is to develop networks of excellence centres aiming at boosting the research capacity in Europe and the status of Europe as a research powerhouse for AI, and making it attractive for scientists and new talents. **This initiative is also expected to contribute to the development of ethical and trustworthy Artificial Intelligence, the trademark for AI "made in Europe".**

Such networks are expected to mobilise researchers to collaborate on key AI topics, to reach critical mass on these topics and to increase the impact of the funding in progressing faster in joined efforts rather than working in isolation, with fragmented and duplicated efforts.

#### Objectives of the Networks:

- Up to four networks will be selected, focusing on scientific or technological major challenges, with the primary goal to reinforce Europe's capacity and progress in critical technologies.
- In addition, building on existing efforts by the AI-on-demand platform and in cooperation with the coordination and support action of this topic, these networks will develop mechanisms to spread the latest and most advanced knowledge to all the AI-labs in Europe and prepare the next generation of talent in AI. Such mechanisms will have to be defined in the proposal.
- Another objective is also to develop synergies and cross-fertilization between industry and these networks of excellence centres, in particular through internships of academic staff (at all levels) in industry, or PhD programmes with industry.
- The set of networks will form a common resource and will become shared facility, as a virtual laboratory offering access to knowledge and expertise and attracting the talents. It should become a reference, creating an easy entry point to AI excellence in Europe and should also be instrumental for its visibility.

#### Composition of the Networks:

- Each network should be driven by leading figures in AI from major excellent research centers, bringing the best scientists distributed all over Europe. They will bring on board the necessary level of expertise and variety of disciplines and profiles to achieve their objectives.
- Industrial participation will be ensured through industrial research teams and also in bringing expertise to identify important technological limitations hampering deployment in industrial context. Such industrial involvement will thus help defining the research priorities of the network and will raise new research questions.
- Each network will have to demonstrate access to the required resources and infrastructure to support R&D, such as data, HPC (central, GPUs, edge computing), storage, robotics equipment, IoT infrastructure, support staff and engineers to develop experiments, etc. All available data sources, including Copernicus data where relevant, should be made use of.

Activities of the Networks: for each of the following activities, the most appropriate mechanisms should be selected and detailed in the proposal:

- In order to structure the activities, the proposals will focus on important scientific or technological challenges with industrial relevance and where Europe will make a difference, either in building on strengths, or strengthening knowledge to fill gaps critical for Europe.
- Based on these challenges, the networks will develop and implement common research agendas. The main vision and roadmap with targets within the projects, as well as methodology to implement and monitor progress will have to be specified in the proposal and can be further developed during the project.
- Progress will be demonstrated in the context of use-cases, also helping to foster industry-academia collaboration.
- Strong links will be developed among the members of the networks, notably through collaborative projects, exchange programmes, or other mechanisms to be defined by the consortia



# Call – Information and Communication Technologies

- The proposals should define mechanisms to foster excellence, to increase efficiency of collaboration, and to develop a vibrant AI network in Europe.
- Each network will disseminate the latest and most advanced knowledge to all the academic and industrial AI laboratories in Europe, and involving them in collaborative projects/exchange programmes. (This could involve projects defined initially or via financial support to third parties, for maximum 20% of the requested EU contribution).
- Each network will develop interactions with the industry (inside the consortium and beyond), in view of triggering new scientific questions and fostering take-up of scientific advances
- Each network will develop collaboration with the relevant Digital innovation Hubs, to disseminate knowledge and tools, and understand their needs.
- Proposals will include common academic/industrial PhD programmes and post-PhD programmes with a focus on industrial challenges. The ambition is to establish a unique and world-recognised brand for a European programme for industrially-oriented PhDs in AI and to keep researchers in Europe after they complete their PhDs.
- **These networks should also foster innovation and include mechanisms to exploit new ideas coming out of the network's work (for instance via incubators).**
- Overall, each proposal will define mechanisms to become a virtual center of excellence, offering access to knowledge and serve as a reference in their chosen specific field, including activities to ensure visibility.

## Technology focus:

Collaborative projects carried out in networks should focus on one or several of the following topics and would involve the necessary competencies available in the network to address these:

- Advances in foundations of AI (e.g.: learning and reasoning approaches) and approaches for trusted AI solutions (including explainable AI, unbiased AI, safety, reliability, verifiability etc.),
- Developing the next generation of intelligent robots,
- **Advanced perception or interaction with humans (for human-centered AI) and environments,**
- AI at the edge and hardware for AI.

## Synergies with the AI-on-Demand platform:

The AI-on-demand platform should serve as the backbone of these networks in:

- Providing tools and algorithms, data, support services, also to the research community;
- Establishing the link to the community at large in order to spread the knowledge and develop collaborations.

The networks will aim at strengthening the AI-on-Demand-platform in enriching its capacity in terms of tools, competencies, services, to make it the reference and quality label for resource in AI. Being the one-stop-shop for AI resource in Europe, the tools, algorithms, resources developed in the networks of excellent centres will be made available to all via the AI-on-Demand platform.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 12 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 (CSA)

The coordination and support action will help develop synergies and exchange between the selected projects, and with other relevant projects, such as the AI-on-demand platform, and the community at large, both academic and industrial. **It will support the running projects in allowing economies of scales regarding common activities run by the individual networks (e.g.: organization of events, logistics support for calls for FSTP, exchange mechanisms among labs, etc.), exchanges of best practices to reinforce and optimize cooperation, etc.**

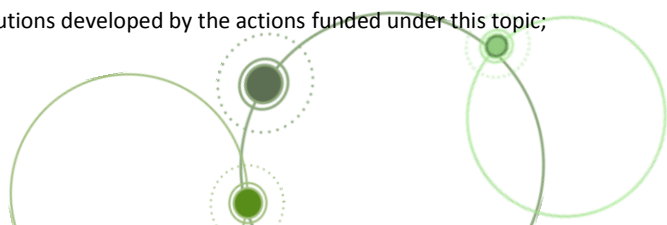
**It is also expected to support the RIA projects in their dissemination activities towards industry, users, and citizens. Diversity and gender aspects should be addressed, when relevant.**

In addition, due to the importance of equipping the professionals with the right skills in order to maximise the benefits offered by AI-based system, this action will support the academia, in cooperation with industry, via organisation of workshops, and other appropriate approaches, to identify AI courses and modules that could be integrated in non-ICT education master programmes, and corresponding mechanisms to foster such integration.

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

## Expected impact

- Make Europe a research powerhouse for AI;
- Increase Europe's attractiveness for scientists, so that it notably becomes the nest for future generations of scientists and breakthrough in AI;
- Ensure Europe's leadership in key strategic research topics,
- Strengthen the AI-on-Demand platform with algorithms, tools solutions developed by the actions funded under this topic;



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- Foster mobilization and commitment from the community, including high level experts to contributing to the AI-on-Demand platform, making it the reference resource for European researchers, developers, integrators and users;
- Reinforce Europe's research capacity in AI;
- **Pave the way to enrich the education offer in order to equip a broad range of non-ICT professionals with the necessary AI skills, to make the best of this technology.**

Type of action	Research and Innovation action, Coordination and support action
Deadline	13 November 2019
Call identifier	H2020-ICT-2018-2020
Topic information	<a href="#">Link</a>



## ICT-49-2020: Artificial Intelligence on demand platform

### Specific challenge

**The challenge is to fully exploit the potential of AI in the economy and society. Building notably on Europe's Scientific and Technology strengths in the field, the supported activities should reinforce industrial competitiveness across all sectors including for SMEs and non-tech industries and help address societal challenges (e.g. ageing, transport, gender equality).** The ambition is to bring AI technologies and resources to integrators and innovators in all sectors and actively engage with a wide user community, to foster adoption of AI, via use-cases experiments.

AI-on-demand platform: consolidation and exploitation --

### Scope

This topic builds on the AI-on-demand-platform funded in ICT26-2018-20, a reference access point gathering and providing access to AI-related knowledge, algorithms and tools and access to related infrastructures, equipment, and data resources, offering also experts support to potential users of AI in order to facilitate the integration of AI into applications, making it a compelling solution for users, especially from non-tech sectors.

**This activity aims at consolidating the eco-system by bringing in a larger user community, especially from the non-tech sector, and by reinforcing the service layer of the platform.** At this stage, it will be particularly important to refine mechanisms to ensure the platform's long-term sustainability. The platform should provide a good European coverage, both in terms origin of the resources made available on the platform, but also in terms of users of the platform, making sure its resource is available everywhere in Europe.

### The objectives:

- Reinforce the service layer of the AI-on-demand-platform funded in ICT26-2018-20 to facilitate the use and uptake of the platform resources.
- Reaching out to new user domains and boosting the use of the platform through use cases and small-scale experiments. The task will involve financial support to third parties, in line with the conditions set out in part K of the General Annexes. Minimum EUR 2 million funding should be dedicated to it, with EUR 50.000 to 200.000 per third party (amount higher than EUR 60.000 should be justified, based on need of expensive hardware or infrastructure for instance). The selection process should prioritise projects maximising the impact of the platform and demonstrating the benefit of AI in products, processes or services. Particular attention will be paid to SMEs and low-tech sector, which can best benefit from the support offered by the platform. The selected projects should also cover a wide spread of application sectors, to demonstrate the versatility and scalability of the platform offer.

Proposals will ensure continuity with the project selected under ICT26-2018-20, having access to all the knowledge and offer needed to fully exploit it and be able to build on it. The improvements resulting from the selected projects should be made available and open to the community via the platform, to allow full exploitation, and also further developments by entities outside the consortia, building on these results.

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

- Enriching and optimising the AI on-demand platform service offer and reinforcing its sustainability
- Boosting the deployment of AI-based solutions and services, enabling a larger user community to reap the economic benefits of AI, especially SMEs and non-technology sectors

Type of action	Innovation action
Deadline	22 April 2020
Call identifier	H2020-ICT-2018-2020
Topic information	<a href="#">Link</a>



## ICT-54-2020: Blockchain for the Next Generation Internet

### Specific challenge

The Next Generation Internet initiative aims at developing a more human-centric Internet supporting values of openness, decentralisation, inclusiveness and protection of privacy and giving the control back to the end-users, in particular of their data. It should provide more transparent and accessible services, more intelligence, greater involvement and participation, leading towards an Internet that is a true engine of growth and social progress.

**Blockchain and distributed ledger technologies (DLT) have the potential to enable more decentralised, trusted, user-centric digital services, and stimulate new business models benefiting society and the economy as stressed by the European Parliament resolution on the topic.** These technologies will create opportunities to enhance services and processes in both the public and private sectors, notably providing better control of data by citizens and organisations, reducing fraud, improving recordkeeping, access, transparency and auditability, within and across borders. As a key component of the Next Generation Internet initiative, the specific challenge is to foster research and innovation at technology, infrastructure and application levels to position Europe at the forefront of the blockchain revolution.

This topic contributes to the European Commission strategy on blockchain. The first milestones of this strategy were the launch of the European Blockchain Observatory and Forum, which aims to accelerate blockchain innovation and the development of the blockchain ecosystem within the EU, and the European Blockchain Partnership, signed by 26 Member States and Norway, to cooperate in the establishment of a European Blockchain Services Infrastructure.

The Research and Innovation Actions mentioned below are complemented by a blockchain pre-commercial procurement action, which is presented under the “Other actions” part of the Work Programme.

### Scope

Research and Innovation Actions (RIA) will be called for in the following three sub-topics. Proposals should address only one of these sub-topics.

#### i. Advancing research on Blockchain and Distributed Ledger Technologies

Conducting research, proofs of concepts, piloting, testing and benchmarks to improve and further develop advanced blockchain technologies, for example regarding energy efficiency and sustainability, consensus protocols, a priori usage control, scalability and throughput, security, privacy, robustness, interoperability, cryptography, smart contracts, governance, compliance to regulatory frameworks. This action should contribute to standardisation activities.

#### ii. Fostering trust in internet information exchange and content with blockchain

Develop decentralised blockchain-based solutions that can be scaled in a sustainable manner, combined with the use of trustworthy electronic identification, authentication and verified pseudonyms, to preserve the integrity and reliability of information and content, including the underlying sources, on the internet. Two use cases: a) develop and implement new transparent and accountable reputation-based models to increase trustworthiness of the information exchange on the internet and social networks and b) provide solutions for transparency, trustworthy transactional content handling, on the internet and social networks.

#### iii. Bringing forward the emergence of collective intelligence on the internet:

**Develop approaches for scientific understanding and technology-based stimulation of collective intelligence on social media and the internet to foster trustworthy knowledge and information sharing, and to enhance social inclusion.** Two use cases: a) develop new community-based service models on social networks that exploit collective intelligence to provide enhanced community services, and increase the availability of trustworthy content and b) in the context of collective intelligence develop and implement new concepts for connecting people and smart objects/agents/AI on social media. Approaches for both use cases must be rooted in scientific analysis of collective behaviour (taking into account gender difference, where relevant) and network mechanisms, harness decentralised technologies such as P2P or blockchain for governance and support a dependable collective memory.

**Each RIA in the three sub-topics above, through an agile and flexible process, will support third party projects from outstanding academic research groups, hi-tech startups, SMEs and other multidisciplinary actors, so that multiple third parties will be funded in parallel contributing to the research and innovation area.** The RIA will provide the programme logic and vision for the third-party projects, ensure the coherence and coordination of these projects, provide 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 applied research that is linked to relevant use cases and that can be further developed into viable solutions. 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 sub-topic, their capacity to attract relevant top 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.

RIAs should encourage open source software and open hardware design, open access to data, standardisation activities, access to testing and operational infrastructure as well as an IPR regime ensuring lasting impact and reusability of results.





# Call – Information and Communication Technologies

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.

The Commission considers that proposals with an overall duration of 24 to 36 months and requesting a contribution from the EU of EUR 8 million for sub-topic i); and EUR 6 million for each sub-topic ii) and iii) would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other durations or amounts. As the primary purpose of the action is to support and mobilise internet innovators, a minimum of 70% of the total requested EU contribution should be allocated to financial support to the third parties. For ensuring focused effort, third parties will be funded through projects typically in the EUR 50 000 to 200 000 range per project, with indicative duration of 12 months. In line with Article 23 (7) of the Rules for Participation, the amounts referred to in Article 204-205 of the Financial Regulation may be exceeded in order to achieve the objective of the action up to a maximum funding per third party of EUR 500 000.

## Expected impact

Proposals should provide appropriate metrics for the claimed impacts.

- **Shape a more human-centric evolution of the Internet.**
- For sub-topic i): Reinforcing the European Blockchain ecosystem and excellence in research.
- For sub-topic ii): Scalable blockchain based solutions for ensuring trustworthy content and information exchange
- For sub-topic iii): Service models for community services building on collective intelligence and novel approaches for connecting people and smart objects/agents to stimulate use of collective intelligence
- Promoting interoperability and strengthening the role of Europe in international standardisation.
- Create a European blockchain ecosystem integrating research and innovation communities.
- Generate new business opportunities and new Internet companies with maximum growth and impact chances.

Type of action	Research and Innovation action
Deadline	16 January 2020
Call identifier	H2020-ICT-2018-2020
Topic information	<a href="#">Link</a>





# Call – Information and Communication Technologies

## ICT-55-2020: Interactive Technologies

### Specific challenge

Interactive Technologies such as Augmented (AR) and Virtual Reality (VR) are set to transform the ways in which people communicate, interact and share information on the Internet and beyond. **This will directly impact a larger number of European industries ranging from manufacturing, data life cycle, healthcare, engineering, to education, entertainment, media and culture, enabling new business opportunities.** The challenge is to forge a competitive and sustainable ecosystem of European technology providers in Interactive Technologies.

### Scope

The full scope of the EU intervention in this areas includes: 1/ support a pan-European coordination effort to strengthen the collaboration among the constituency (ICT-25-2018); 2/ improve competitiveness through research into future high-quality multi-sensorial interactive hardware and multi-user interaction systems (ICT-25-2018) and 3/ increase the European innovation capacity through the development of new authoring tools and the access to a broader community which will be the objective of this specific call through Innovation Actions.

### The uptake of Interactive Technologies in various industrial and societal domains

To maintain competitiveness and allow the European industry to embrace these new technologies, the objective of the proposal should be either to:

- develop authoring tools for automated interactive content creation that can be used also by non-expert users on various platforms and environments; The authoring tools are expected to:
- rely on less manual input enabling quicker content creation
- manage large quantities of data
- allow higher fidelity
- allow improved immersion, engaging all senses
- **or develop solutions in key sectors such as in manufacturing, automotive, healthcare or cultural and creative industries or in sectors where the use of such technology is not mainstream.**

Focus should be on developing richer virtual environments, new user interfaces and improved immersion maximizing the feeling of presence.

Proposals should ensure that the targeted industries have a leading role in the design of solutions and guarantee the take up of the technology. Actions are expected to engage and contribute to the exchange platforms developed in the frame of the CSA on Interactive Technologies funded under H2020 ICT-25-2018 eXtended Reality for All (XR4All – GA 825545).

The Commission considers that proposals requesting a contribution from the EU of between EUR 1.5 and 2 million with a duration from 12 to 24 months 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 use of Interactive Technologies in the industrial and societal domains.**
- Increase in the number of European SMEs and start-ups who benefit from technology transfer.
- Increase in market opportunities in the Interactive Technologies sector for European SMEs.

Type of action	Innovation action
Deadline	13 November 2019
Call identifier	H2020-ICT-2018-2020
Topic information	<a href="#">Link</a>



## ICT-56-2020: Next Generation Internet of Things

### Specific challenge

**Internet of Things (IoT) technologies and applications are bringing fundamental changes to all sectors of society and economy and constitute an essential element of the Next Generation Internet (NGI).** The challenge is to leverage EU technological strength to develop the next generation of IoT devices and systems which leverage progress in enabling technologies such as 5G, cyber-security, distributed computing, artificial intelligence (AI), Augmented Reality and tactile internet. In addition it is important to build and sustain a competitive ecosystem of European technology and system providers in IoT as well as ensuring end-user trust, adequate security and privacy by design.

### Scope

The scope is to develop and demonstrate novel IoT concepts and solutions to underpin the NGI vision and make provision for predicting future events, trigger actions and moving decisions to the point of interest in order to better serve the end-user

#### a) Research and Innovation Actions (RIA)

Proposals must provide reference implementations in terms of a dynamically configured infrastructure and integration schemes for smart devices into self-adaptive, robust, safe, intuitive, secure and interconnected smart network and service platforms. Reference implementations should include proof-of-concept, demonstrations and validation, driven by realistic use cases with advanced needs in areas such as wearables, transportation, agriculture homes, health, energy, and manufacturing.

Proposals should clearly explain how access to the necessary infrastructure for leveraging key technologies such as 5G, edge computing and distributed AI will be ensured. The action may involve cascading calls through financial support to third parties in line with the conditions set out in Part K of the General Annexes, duly justified as a means to achieving the overall objectives. The consortium will define the selection process of additional users and suppliers for which financial support will be granted (typically in the order of EUR 50.000 to 150.000 per party but smaller amounts may also be justified). Maximum 30% of the requested EU contribution requested by the proposal should be allocated to this purpose.

Proposals must address all the following challenges (sub-topics):

- Next generation IoT architectures with a focus on user-aware, self-aware and semi-autonomous IoT systems. This should also address new real-time capable solutions, which solve performance challenges such as streaming and filtering at the edge, latency and network constraints. A further challenge is to make use of distributed AI, address security, privacy and trust requirements by design and allow for new de-centralised topologies and governance.
- Interoperability to cope with the increased complexity of connecting vast numbers of heterogeneous devices with increasing demands for data sharing, protection of privacy, data monetization and contractual arrangements (e.g. blockchains/DLTs) for secure and trusted interaction.
- Intelligent IoT devices supporting the proposed use cases and drawing from applicable results in micro-nano-bio technologies, including resource-aware hardware/software concepts, low power processor platforms integrating computing, networking, storage and acceleration elements, new communication schemes and topologies that range from the cloud continuum towards mesh, and securing computing and communication at device level with constrained resources.
- Tactile/contextual Internet of Things based on human-centric sensing/actuating, augmented/virtual reality and new IoT service capabilities such as integration with parallel and opportunistic computing capabilities, neuromorphic and contextual computing.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 and 8 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 (CSA)

**A support action will support measures for further development of IoT ecosystems, partnerships, stakeholders networking, contribution to pre-normative activities and to standardisation, development of business models, innovation activities and skills building.**

It will liaise also with NGI and other initiatives of the work programme that are relevant to IoT related research and innovation activities.

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



# Call – Information and Communication Technologies

## Expected impact

- Contribution to human-centred IoT evolution improving usability and user acceptance, notably through strengthened security and user control.
- Contribution to emerging or future standards and pre-normative activities
- Long-term evolution of next-generation IoT infrastructures and service platforms technologies and contribution to scientific progress enabling novel, future semi-autonomous IoT applications.
- **Propose novel and disruptive business models**
- Mobilise key IoT players in security and privacy
- Maintain an active ecosystem of all relevant IoT stakeholders

Type of action	Research and Innovation action, Coordination and support action
Deadline	16 January 2020
Call identifier	H2020-ICT-2018-2020
Topic information	<a href="#">Link</a>



# Call – Information and Communication Technologies

## ICT-57-2020: An empowering, inclusive Next Generation Internet

### Specific challenge

As the digital transformation of society accelerates, the use of mobile devices and applications can significantly improve the daily life of citizens. **Leveraging on multidisciplinary expertise drawing on knowledge from both the technological and human sciences, novel technologies, such as automatic translation as well as speech and sign recognition and synthesis, could offer inclusive human-centric solutions facilitating communication between people with and without hearing impairments.**

### Scope

Develop novel mobile applications translating between speech and sign languages to assist people with hearing impairments. **The projects should leverage on current state-of-the-art in translation between all official spoken and sign languages of the EU Member States and associated countries for efficient and effective use on mobile devices. Projects should explore how end-users can best interact and cooperate with the application and how the system adapts to users in real-life conditions and prevents unintended gender bias in translation. The resulting applications should be open source, robust, cost-effective and validated across a wide spectrum of users. Priority will be given to projects addressing a wide range of languages, in particular under-resourced languages.**

The Commission considers that proposals requesting a contribution from the EU between EUR 2 and 4 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

### Expected impact

- **Improve multilingual speech processing and sign language detection on mobile devices, and deploy solutions allowing wide take up by people with hearing impairments.**

Type of action	Research and Innovation action
Deadline	22 April 2020
Call identifier	H2020-ICT-2018-2020
Topic information	<a href="#">Link</a>



## ICT-44-2020: Next Generation Media

### Specific challenge

The rise of the digital era has brought novel immersive, accessible, and personalized user experiences to media, thereby disrupting traditional media. Today, media form a complex ecosystem of users and producers, audiences and performers with interchangeable roles where traditional boundaries of media are blurring. In this process, media has also become a key element in societal discourses. The challenge for the traditional media sectors is to compete in this extended ecosystem and to meet user expectations by rapidly embracing new technologies for creation, management, and distribution of content. **The rise of digital also means that creative minds in culture including artists have an influential role in shaping the development or the use of technologies for media, as they are often being the first to embrace technological innovation in their work. Hence, another challenge for the media industry is to embrace these new viewpoints and actors.**

### Scope

Innovative solutions 1) to facilitate the integration of emerging technologies such as 5G, Cloud, the Internet of Things, Virtual/Augmented Reality, smart objects, wearables, data analytics, artificial intelligence, etc. in next generation media that overcome traditional boundaries and sectors; 2) to help the new media ecosystem become more adaptive and inclusive, and better promote content, e.g. with new online strategies and business models or new forms of content creation/distribution/presentation; 3) to support synergies across media, operators, technologists and cultural/artistic actors, in order to develop a network of stakeholders which, building on the existing STARTS (Science+ Technology+ ARTS) network, will explore innovative paths for the next generation of media.

Proposals are invited against at least one of the following three subtopics:

#### a) Innovation Action (IA)

##### i. Business Innovation Ecosystems

Develop new business innovation ecosystems by using approaches, such as a sandbox, for technology-driven innovation in media, e.g. for new business models, through at least two incubators (project component), financed through the action and hosted in existing operational environments. These incubators have to be interlinked and should foster technology-driven innovation for open and interoperable media with a particular focus on SMEs and start-ups. The incubators shall also exploit synergies with non-media sectors. Each incubator will, through the project financing, host third party projects selected by open calls, provide access to relevant infrastructures and services as well as internal support. The action shall carry out two open calls, attracting submissions from at least from five different European regions (the first shall be entirely defined in the proposal; the second shall include the lessons learned from the first one). Typically, each third-party project will last from 5 to 12 months with a size from EUR 50.000 to 350.000. Actions should provide specific, mentoring and coaching to third party projects, connect high-performers to the venture capital market through dedicated tasks, and cooperate with actions of the subtopic ii through a specific task). At least 70% of the requested EU contribution shall be allocated to financial support for these third-party projects. Financial support to third parties should be in line with the conditions set out in Part K of the General Annexes. Criteria used to evaluate proposals should be clearly specified.

##### ii. New User Driven and Enriched Experiences in Future Media

Contribute to the creation of a user driven, fair, sustainable and technologically advanced media ecosystem by the development, demonstration and validation of new services and solutions through large scale demonstrators, pilots or close-to-market prototypes focused on one or more of the following themes:

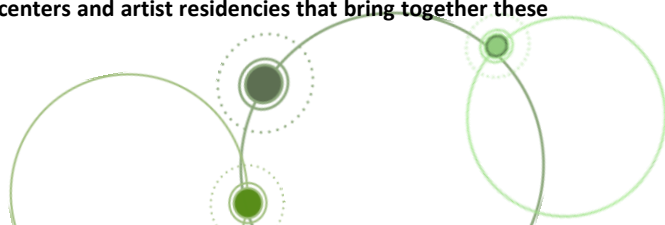
- Exploiting solutions for platforms enabling all-Internet Protocol content value chain and new business opportunities based on cross-media and cross-sectorial data analytics; for content distribution solutions that facilitate the availability of European content online, also tackling cross-border content restriction issues.
- User driven, immersive and accessible media services;
- Transmedia and cross media experiences and services;
- Immersive and interactive experiences in publishing;
- Agile media rights management and content identification solutions to improve online content distribution.

Subtopic ii. will cooperate and work closely with subtopic i. and vice-versa through a specific task.

#### b) Coordination and Support Action (CSA)

Starts – Technology and Arts Alliance as Driver for Next Generation Media

**This subtopic will ensure a networked approach to next generation media that thrives from synergies of cultural, media and technology actors. The main activity is to create a network of actors from across Europe and if appropriate international partners (media industry, innovation hubs, technology and cultural/art institutions, civil society) to foster synergies between art, media and technology in order to create new uses and forms of media and employ media as a social catalyst; in the spirit of digital innovation hubs develop a strategy how to promote local art-technology centers and artist residencies that bring together these actors.**



# Call – Information and Communication Technologies

Additionally, this subtopic will support activities to organise the next annual European STARTS prizes that unites technology, arts and media. The support action will ensure publicizing the prize, handling of submission and evaluation in a scalable manner, and the award ceremony. There will be two annual prizes (EUR 20.000 each) covering different aspects of STARTS: one on artistic exploration where appropriation by the Arts has altered (the use, deployment, or perception of) technology and one on collaboration of ICT and the Arts (technological or artistic) that open new pathways for innovation and/or society in particular in context of regional development. Organize itinerant exhibitions and performances the will stimulate new alliances between art, technology and media and help promote novel role of media in societal context.

This action allows for the provision of financial support to third parties in the form of prize in line with the conditions set out in Part K of the General Annexes.

The Commission considers that proposals with an overall duration of 30 to 36 months and requesting a contribution from the EU of EUR 5.5 million for sub-topic a)i., EUR 5 million for sub-topic a)ii. and EUR 2 million for subtopic b) would allow this specific challenge to be appropriately addressed. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. At least one proposal for subtopics a)i. and b), and two proposals for subtopic a)ii. will be selected.

## Expected impact

Concrete development towards a user-driven and user-centric media value chain triggered by an alliance of media producers, media users, technology and cultural players.

- Validated new media services tested in real operational environments.
- Improved users' experiences and new solutions for access to media content
- Open and interoperable solutions enabling a genuine Digital Single Market for media.
- Improvement of the technological transfer from European technological SMEs to the media value chain.
- An enhanced and enriched media ecosystem.

Type of action	Innovation action, Coordination and support action
Deadline	16 January 2020
Call identifier	H2020-ICT-2018-2020
Topic information	<a href="#">Link</a>



## ICT-46-2020: Robotics in Application Areas and Coordination & Support

### 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.

In each of these PAs it is critical to develop appropriate autonomous capability that has impact on the efficiency of key applications in the PAs and moves beyond the current state of the art. This capability is built from core technologies and is proved and tested through pilot demonstrators that embed within real or near real environments.

User needs, safety, ethical, gender, 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 Actions (RIA) - Robotics Core Technology

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 safely interact with people, their environments or other robots, 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 (including all modalities), 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, navigation in complex work environments, human-friendly and human assistive interactions, 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).

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-ICT-02-2018.

The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 7 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Proposals are requested to specify the Core Technology in which their centre of gravity lies. At least one action in each Core Technology will be funded.

#### b) Innovation Actions (IA) - Robotics for agri-food, and agile production

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 one of the two application areas:

- In the Agri-Food sector from farming to processing and distribution
- Agile Production.

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, paving the way towards establishing strong collaborations for innovative robotic applications in industry. 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 AI, Big Data and IoT. Where appropriate, applications should leverage synergies among EU satellite-based systems for navigation (EGNOS/Galileo), and/or observation (Copernicus) and communication.



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The Commission considers that proposals requesting a contribution from the EU of between EUR 6 and 7 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. The objective is to fund at least 3 proposals per application area.

## c) Coordination and Support Action (CSA) - Robotics

Proposals should address issues concerning the whole European robotics community and provide support actions that develop awareness and knowledge transfer. Proposals should consider the development of a high-level stakeholder forum and an associated communication strategy; the development of mechanisms that create a continuing discussion around legal and societal issues concerning AI-based robotics technology that leads to strategic development and the dissemination of best practice to robotics stakeholders and particularly to developers and policy makers.

Proposals should address the issues of socio-economic analysis, cyber-security, data protection, ethical and privacy issues that arise from the increased deployment of robotics to ensure that there is relevant and effective strategic development and best practice advice available to robotics stakeholders.

Proposals should address the public understanding of robotics through the development of news articles, public and media engagement and awareness activities.

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

### Research and Innovation Actions:

- 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.

### Innovation Actions:

- Demonstration of the potential for robotics to impact at scale in the chosen application areas prioritised in this call.
- Reduction of technical and commercial risk in the deployment of services based on robotic actors within the selected application 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

### Coordination and Support Action:

- Effective dissemination of knowledge surrounding non-technical aspects of robot deployment.
- Greater awareness of robotics among key stakeholders and policy makers.
- Improved understanding of legal, socio-economic and ethical issues and their impact on robotics deployment.

Type of action	Research and Innovation action, Innovation action, Coordination and support action
Deadline	22 April 2020
Call identifier	H2020-ICT-2018-2020
Topic information	<a href="#">Link</a>





## *Topics with minor SSH relevance*

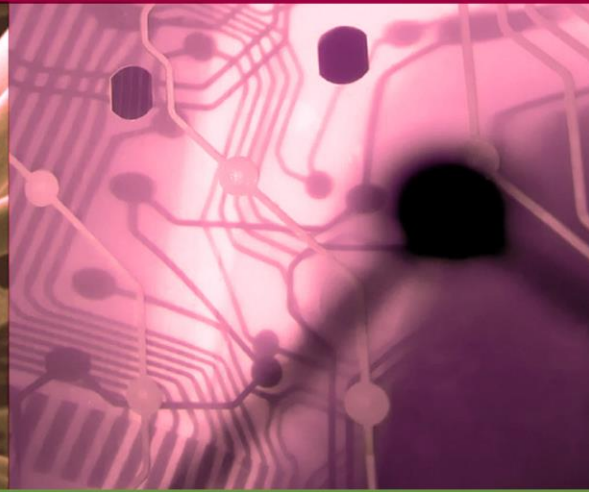
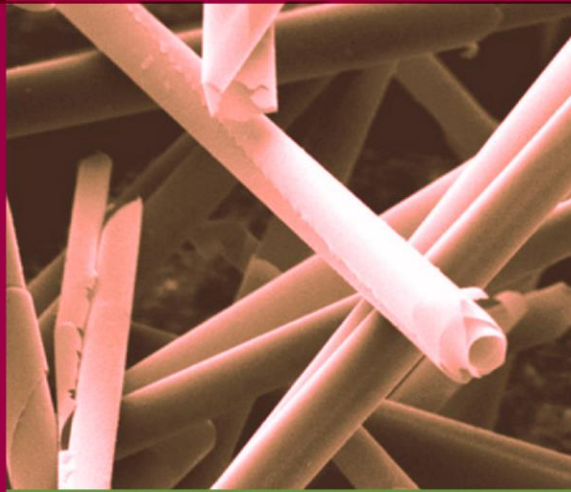
**DT-ICT-03-2020: I4MS (phase 4) - uptake of digital game changers**

[Link](#)

**ICT-36-2020: Disruptive photonics technologies**

[Link](#)





Leadership in Enabling and Industrial Technologies

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

## NMBP-36-2020: Monitoring and safety of transport infrastructures

### Specific challenge

Bridges can be particularly vulnerable elements of transport infrastructures. In particular, road bridges may be approaching end of life be subject to higher volumes of traffic than designed to support for. Sound procedures to ensure monitoring, quality control and preventive maintenance systems are therefore vital. Various procedures are in place at national level in Europe, which must be analysed in order to identify the actions needed at EU level to enhance coherence and promote best practice for bridges and where relevant for transport infrastructures at large.

### Scope

The proposals should include at least the following activities:

- A critical review of the relevant maintenance and monitoring procedures in all EU Member States and in a number of relevant other countries;
- An inventory and a complete analysis of the proven most advanced technologies, methodologies and standards used to monitor and control the safety, stability and good operation of bridges and other relevant transport infrastructures across their lifespan;
- Identification of the international state of the art for damage detection technologies (both non-destructive and destructive) and methods for assessment, retrofitting and assuring reliability and safety of bridges and other relevant transport infrastructures;
- **Identify technical, economic, environmental, social and administrative barriers for the safe operation and maintenance of bridges and other relevant transport infrastructures;**
- Identify ways to adequately reflect deviations from design specifications (increased use, higher loads, climate change, extended life) in maintenance programmes;
- Propose a roadmap for the systematic adoption of easily and quickly deployable technologies to predict durability of materials, components and overall reliability of existing bridges and other relevant transport infrastructures;
- Provide the technical input for an EU standard and guidance material based on best practices for the control, risk assessment and maintenance of bridges and other relevant transport infrastructures;
- Creation of relevant stakeholders networks (e.g. authorities, industry, academia, etc.) to share the findings of this CSA and develop implementation strategies.

Although this action focuses in particular on existing bridges, the results may also be of relevance for other ageing large infrastructures, such as tunnels.

Proposals under this topic should take into account the work and the outcomes of relevant projects in this field funded by H2020 or the JRC.

The Commission considers that proposals requesting a contribution from the EU around 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

- Contribution to a possible mandate for a standard (CEN TC 250) setter at EU level for the maintenance and control of bridges and where relevant for transport infrastructures at large;
- Identification of best practices for monitoring the safety and maintenance of bridges and other relevant transport infrastructures, including outcomes of the most promising research projects which facilitate assessing and thus lowering significantly the risk of an unexpected collapse of bridges and other relevant transport infrastructures in the EU;
- Significant improvement of the safety of bridges and other relevant transport infrastructures through better maintenance and control.



## Call – FOUNDATIONS FOR TOMORROW'S INDUSTRY

Type of action	Coordination and support action
Deadline	05 February 2020
Call identifier	H2020-NMBP-TO-IND-2018-2020
Topic information	<a href="#">Link</a>



## NMBP-38-2020: Citizens and industrial technologies

### Specific challenge

Key enabling technologies, in addition to their importance to industry, provide new solutions to global challenges and are changing both societies and working conditions. Dialogue with citizens is therefore essential, in order to focus on the correct priorities and in identifying issues during development, as well as for building trust. The challenge is two-fold: (i) enhance public understanding of cutting-edge technologies and their diverse applications; and (ii) engage citizens in dialogue and co-creation on priorities, expectations and concerns.

### Scope

Previous work on societal engagement has focused on specific technologies, notably nanotechnology, and their potential benefits and risks. The human dimension has also been considered, notably in manufacturing technologies. The proposal should build on this work, to engage with wider society in the broader context of key enabling technologies, in order to develop those technologies in ways that intrinsically reflect societal values and needs.

The proposal should launch a participatory multi-actor engagement process, including workshops, deliberations and working groups, using primarily existing practical models of engagement. The proposal should consider selected applications addressing global challenges, e.g. health, climate and the circular economy, as well as the changing nature of work.

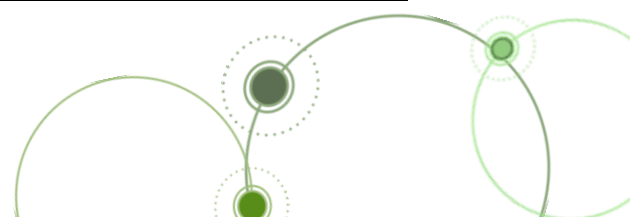
**This multi-actor engagement process should include appropriate disciplines of Social Sciences and Humanities (SSH), researchers, industry, manufacturers, professional users and citizens, paying attention to the roles of citizens as workers and consumers.** The proposed action should take into account the diversity of cultural contexts of processes and communication within Europe, and start with an evaluation of previous related projects and societal debates on emerging technologies. It should use dynamic public engagement concepts designed specifically for co-creation. . The activities should take into account gender, social and cultural aspects, as well as existing knowledge on Responsible Research and Innovation (RRI).

The Commission considers that proposals requesting a contribution from the EU around EUR 1.5 million (depending on the additional activities pursued) 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 toolbox, freely available to all stakeholders, for citizen engagement in key enabling technologies. This should cover practical steps to enable industry to work with citizens in order to recognise and respond to societal trends, and develop corporate social responsibility. This would subsequently be of use to technology projects and industrial partnerships.
- Recommendations and tested activities for citizen engagement in technologies, usable by industry, procurers (such as cities) and other stakeholders;
- An enhanced understanding of the role of key enabling technologies in society and in the workplace; and
- two-way citizen engagement in the strategies behind the support for, and applications of, key enabling technologies;

Type of action	Coordination and support action
Deadline	05 February 2020
Call identifier	H2020-NMBP-TO-IND-2018-2020
Topic information	<a href="#">Link</a>



## BIOTEC-06-2020: Reprogrammed microorganisms for biological sensors

### Specific challenge

A biological sensor involves an organism, or a biological component produced by an organism, and is used to detect target analytes. Biological sensors are used across different industrial sectors, capitalising on technical characteristics such as high specificity, robustness and adaptability. These enable detection of a potentially endless variety of compounds and conditions in different environments, a feature that can both deliver tailored treatments and facilitate automation, for example controlling the production process in a bioreactor.

However, the complexity of the biological mechanisms involved in the production of a new biosensor and the resources and time needed to develop and market new biological sensors limit their use on a widespread scale. Modern biotechnology offers tools for developing much more advanced biological sensors.

The challenge is to realistically engineer microorganisms that (1) use synthetic networks to expand the portfolio of molecules that are currently known to be detected by natural systems, and (2) perfect the networks for improved performance in given industrial settings.

### Scope

The aim is to re-programme microorganisms or synthetic biological systems with properties to be used as biological sensors in critical industrial sectors. Reprogramming microorganisms must comprise sensor, processor and reporter elements. Sensed molecular events will be associated with specific signal processing operations of synthetic circuits; processor elements will integrate multiple signals and reporter elements will be easy to read in low-resource settings. Proposals should:

- Address sensitivity, specificity and the possibility of detecting multiple analytes. Portability and production costs should also be taken into account. Solutions may involve cell consortia, whole-cell, and cell-free systems;
- Include demonstration activities at medium scale in order to confirm the performance and robustness of the reprogrammed microorganisms as biosensors in the selected application. Demonstration activities must incorporate biosafety in the design and development of a biosensor system both at technical and procedural levels;
- **Address Social Sciences and Humanities (SSH) elements regarding acceptability of the technologies used by stakeholders and regulatory aspects.**

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the Introduction to the LEIT part of this Work Programme.

Activities should start at TRL 3 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

- The development of three or more reprogrammed microorganisms or the development of reprogrammed microorganisms for three or more different biosensors to be used either as biological sensors or for the production of novel molecules used as biological sensors;
- The applicability of the novel biological sensors in at least two different industrial sectors;
- Quantifiable demonstration at medium scale of the increased performance and benefits arising from the innovations compared to the state of the art.

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



# Call – Transforming European industry

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 12 December 2020	2 <sup>nd</sup> stage - 14 May 2020
Call identifier	H2020-NMBP-TR-IND-2018-2020	
Topic information	<a href="#">Link</a>	



# Call – Transforming European industry

## CE-BIOTEC-09-2020: Upcycling Bio Plastics of food and drinks packaging

### Specific challenge

The European Strategy for Plastics in a Circular Economy acknowledges the usefulness of plastics for the economy and our daily lives, but points out that plastics' use fails to capture the economic and environmental benefits of a more 'circular' approach. The progressive substitution of consumer products derived from fossil fuels, at all steps along the industrial value-chain, is crucial to successfully decarbonise our society. Most plastic (>98%) is produced from non-renewable sources. This is more than 400 million tonnes globally, which could become 900 million tonnes by 2050, i.e. 20% of oil consumption. The majority of plastic cannot be recycled and contains toxic additives. Some plastics are bio-based; however not all are recyclable, reusable or biodegradable.

Annually, Europe produces 78 million tonnes of plastics, 40% of is used for packaging and mainly for packaging food, drinks and other consumer products with a short shelf-life. Packaging that cannot be recycled ends up in landfills or is burnt in, a process that releases large amounts of CO<sub>2</sub> and toxic chemicals into the atmosphere.

The challenge is to develop technologies to deal with the upcycling of plastics for food and drinks packaging. Upcycling in this context means transforming them into new materials or products of better quality or for better environmental value, ensuring that micro-plastics are avoided. This will allow the sustainable recycling or biological degradation in accordance with existing and novel technologies, standards and certification schemes.

### Scope

Proposals will address as many as possible of the following aspects:

- Expand the potential of current technologies and materials for the manufacturing and design of bio-plastics that are recyclable and/or bio-degradable;
- Exploit known or develop new biotechnologies, based on enzymes or enzyme combinations and microorganisms, for improved recycling or biodegradation of plastics;
- Develop novel standards and certification schemes applicable to packaging materials made from recyclable and biodegradable bio-plastics;
- **Include Social Sciences and Humanities (SSH) elements and gender aspects to improve consumer attitude and behaviour with respect to purchasing and recycling food and drink packaging;**
- Take a systemic approach and involve cooperation among actors in the supply chain, from producer to final consumer, and from research to policy makers.

Projects should perform an analysis of the state of the art to avoid duplications and overlaps with past or ongoing research, including projects funded by the Bio-based Industries Initiative<sup>32</sup> and the Circular Economy calls under H2020.

Clustering activities to capitalise on synergies with relevant projects selected under this topic and topic CE NMBP 26-2018 is encouraged.

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the Introduction to the LEIT part of this Work Programme.

Activities should start at TRL 3 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

- 60% food and drink packaging is upcycled by 2030;
- A viable roadmap to prove that by 2030 60% of the plastics still to be used for packaging of foods and drinks with short-shelf life will be produced from renewable sources;
- Contribute to the increase in new and upgraded waste recycling facilities designed to facilitate recycling via biotechnological or biochemical methods;
- Increased awareness among European citizens of products and materials upcycling capacity;





# Call – Transforming European industry

- Novel standards and certification schemes to be applied together with market pull measures such as public procurement and tax exemptions;

Indicators and metrics, with baseline values, including demonstration activities should be clearly stated in the proposal.

This topic is in support of the European Strategy for Plastics in a Circular Economy. Projects selected under this topic as well as projects selected under other topics in H2020 supporting the Plastics Strategy are strongly encouraged to participate in joint activities as appropriate. These joint activities could take the form of clustering of projects, participation in workshops, common exploitation and dissemination etc. The proposals are expected to demonstrate support to common coordination and dissemination activities without the prerequisite to define concrete common actions at this stage.

Type of action	Research and Innovation action
Deadline	1 <sup>st</sup> stage - 12 December 2020                      2 <sup>nd</sup> stage - 14 May 2020
Call identifier	H2020-NMBP-TR-IND-2018-2020
Topic information	<a href="#">Link</a>



## NMBP-21-2020: Biological scaffolds for tissue regeneration and repair

### Specific challenge

The increasing availability of novel biomaterials with tissue regeneration properties offers the solution for many diseases, including those of a degenerative nature, particularly as integral parts of advanced therapy medicinal products or medical devices. These disorders are often poorly amenable to current healthcare interventions. The design of new biomaterials capable of inducing tissue specific regeneration, which can derive from many different pathological processes or tissue defects, as elements of these medical technologies, results from their increasing fusion/combination. The production of these technologies is highly warranted. EU intervention in this field is required to achieve this goal and thereby develop new and innovative affordable technologies delivering personalised services.

### Scope

Research activities on functional biomaterials for regenerative medicine should show their advanced properties and their eventual field of application. These may include association with pluripotent stem cells, biostimulators, microfluidic devices, cellularised and/or biomimetic scaffolds, biological agents and appropriate disease models etc.

Proposals should cover one of the following domains:

- Targeted musculoskeletal delivery of cells or biologically active agents and innovative biomaterials for articular cartilage/disc, ligament and tendon repair in weight-bearing joints;
- Stimulation of healing in chronic and infected wounds and ulcerative processes (with or without biofilms as necessary);
- Preventing microbial infection and concurrently promoting tissue regeneration in dental implants and/or dental root surgery;
- Implementation of innovative manufacturing technologies (e.g. 3D printing) for affordable fabrication of patient-specific scaffolds planned in respect of the foregoing.

Proposals should address relevant local, national and international ethical and regulatory requirements, take into account gender aspects and include a section on research data management.

**Proposals should liaise with a broad and multidisciplinary community of stakeholders (e.g. in the form of a user committee) and should include the appropriate disciplines of Social Sciences and Humanities (SSH) working in the health domain.** Therefore, proposals should foresee a dedicated work package for cooperation and earmark appropriate resources.

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the Introduction to the LEIT part of this Work Programme.

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 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

- Development of technologies to discover, produce and improve performance of custom-made innovative biomaterial structures for the repair or regeneration of human scaffolds and organs as outlined above, e.g. additive manufacturing, rapid prototyping, electrospinning, etc. of prototypes on demand;
- Enhanced competitiveness of the biomaterials and biomedical industries of the EU, in particular, through interdisciplinary technology transfer effects between biotechnology companies;
- Reduction of healthcare costs related to rehabilitation time or medical device associated infections.

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



# Call – Transforming European industry

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 12 December 2020	2 <sup>nd</sup> stage - 14 May 2020
Call identifier	H2020-NMBP-TR-IND-2018-2020	
Topic information	<a href="#">Link</a>	



## LC-EEB-07-2020: Smart Operation of Proactive Residential Buildings

### Specific challenge

Rising energy costs and an increasing focus on environmental performance create challenges in building energy management and a demand for new solutions for residential buildings. Smart operation of proactive buildings needs to be based on innovative components, accurate energy performance predictions, control technologies, predictive maintenance and data supply for the customer. Future energy management and contracting will include operating and maintaining a building in a smarter way, i.e. turning it from reactivity into proactivity. Such a building should be able to control a situation rather than just responding to it, enabling maximum utilisation of renewable energy systems and storage of excess energy. It should act in advance and ensure interoperability between grid components and Building Energy Management Systems to enable integration with smart devices and district-wide systems. At the same time, it is necessary to consider the creation of customer experiences that are simple, smooth and delightful.

### Scope

Proposals should cover the following activities:

- Develop, test and promote the necessary technologies, devices and systems for a smart approach of energy management in line with the latest reforms of the Energy Performance and Building Directive and beyond this framework.
- Develop solutions for proactive buildings, which should be safe, healthy (strengthening of the indoor environment quality requirements) and energy-efficient, e.g. by cognitive, intelligent and adaptive systems, forecast based systems, including the cooperation with user communities.
- Develop solutions to provide the pivotal parameters to be measured and controlled for integrated and demand-based control of the building service system. Self-management, self-monitoring, self-healing and self-optimisation will be required.
- Utilise a systematic, standardised approach to process the data generated by the sensors, forecasting services and end-users.
- Tackle utilisation of big data by advanced data visualisation to optimise the operation of the building.
- Ensure that fully integrated systems have the capacity to be compact, exchangeable, easy to commission and to operate, and easy to interact with the grid thus adapting energy consumption to the real needs of the occupants.
- Implement and demonstrate new business models providing services that enable buildings to be proactive.

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the Introduction to the LEIT part of this Work Programme.

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.

### Expected impact

- Maintenance cost reductions of at least 20%;
- Significant decrease of energy use in buildings through application of technologies such as dynamic models, big data analytics, predictive analytics and ultimately artificial intelligence;
- Improved indoor environment quality and user satisfaction;
- High replication potential;
- Optimise the use of renewable energy resources used in buildings;
- Contribution to standards, namely the establishment of a Smart Readiness Indicator.

Replication potential should be assessed, together with the possible environmental gains in absolute figures, weighted against EU and global environmental footprints.

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



## Call – INDUSTRIAL SUSTAINABILITY

Type of action	Innovation action
Deadline	05 February 2020
Call identifier	H2020-NMBP-ST-IND-2018-2020
Topic information	<a href="#">Link</a>





Leadership in Enabling and Industrial Technologies

# Space

Net **4** Society

## DT-SPACE-01-EO-2018-2020: Copernicus market uptake

### Specific challenge

Copernicus, the Union's Earth observation and monitoring programme produces a wealth of data and information services on the Earth, its lands, atmosphere, oceans and inland waters, as well as on climate change and in support of disaster management and security. Copernicus data and information services are available with a free and open data licence. Copernicus data is an integral part of the European Data Economy. Europe needs to strengthen its position as provider of products and services based on data, enabling new market opportunities.

Copernicus data value will be greatly enhanced by its integration with data assets contributed by other vertical domains (i.e. not necessarily from the space/geospatial sector) as well as by leveraging the synergies with EGNOS/Galileo to seize new market opportunities. Many vertical domains, other than space, can benefit from the use of Copernicus.

Mature software technologies such as big data processing and linking technologies, machine learning and artificial intelligence, are widely developed also within the LEIT-ICT Work Programmes of H2020, shall be adopted to offer user-friendly solutions at the scale of the large quantities of data involved. **They shall be adopted to contribute to the digitization challenges of the European industry by opening up innovative business avenues and to support societal challenges.**

Real-world industrial/commercial requirements, or societal needs, shall drive the Innovation Actions so that the projects' results can find their logical path towards market adoption.

### Scope

Actions under this topic should be instrumental to help European companies innovate, develop and bring to market new or improved products and services by exploiting Copernicus data assets and, whenever relevant, the link with European satellite positioning/navigation/timing technologies.

Copernicus data will be at the core of the data value chains and integration activities needed to fulfil the industrial requirements that will drive the proposals.

Proposals should adopt state-of-the-art ICT technologies, such as big data processing and linking technologies, machine learning and artificial intelligence to address the challenges of making sense of large volumes of diverse data from distributed sources, at the scale required to address European and global challenges.

Proposers are strongly encouraged to make use of existing European data infrastructures such as (but not limited to) Copernicus' DIAS platforms, European open data portals, industrial data platforms, and explore synergies with EGNOS/Galileo signals and services whenever those are relevant. Use and re-use of existing data and computing assets is also strongly recommended.

The participation of industry is required to define the project's industrial requirements from the very beginning of the action and to take ownership of the results.

End users (i.e. professional experts and decision-makers as opposed to researchers or software developers) should also be involved to rigorously test the project's solutions to make sure the human factor is considered appropriately.

Proposals must demonstrate that they have access to appropriately large, complex and realistic data sets, in addition to Copernicus. The data assets to be used in the Action should be described in the proposal.

**Solid, quantitative and innovative business models should support the proposal giving evidence of the expected industrial, commercial, or societal benefit, and demonstrating a plan towards sustainability after the project's end.**

A clear distribution of IPRs amongst the members of the consortium is expected.

For proposals under this topic:

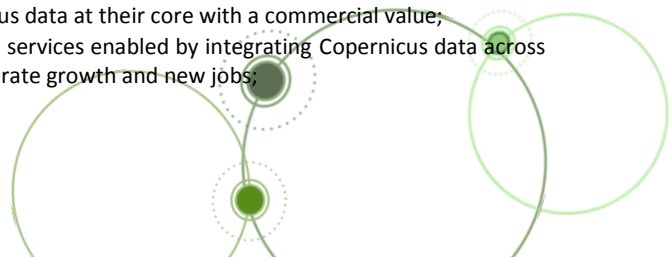
- The participation of at least one industrial partner is mandatory, and the participation of SMEs and start-ups is encouraged;
- Involvement of post-graduate scientists, engineers and researchers and promotion of gender balance is also encouraged, for example through professional work experience or through fellowships/scholarships as applicable;
- A business plan and evidence of user engagement is compulsory and is to be provided as part of the proposal, to demonstrate the user need and sustainability of the project.

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

- Establishment of new sustainable data value chains with Copernicus data at their core with a commercial value;
- Substantial increase in the market of the number of products and services enabled by integrating Copernicus data across sectors with state-of-the-art innovative technologies, able to generate growth and new jobs;



# Call – Space 2018-2020

- Enhance European industry's potential to take advantage of market opportunities and establish leadership in the field, as well as boost business activity;
- Increased market share for European companies in the supply of innovative geospatial products and services.

Type of action	Innovation action
Deadline	12 March 2020
Call identifier	H2020-SPACE-2018-2020
Topic information	<a href="#">Link</a>





## SU-SPACE-EGNSS-3-2019-2020: EGNSS applications fostering societal resilience and protecting the environment

### Specific challenge

The aim of this topic is to develop innovative EGNSS applications to support societal resilience, safeguard the wellbeing of EU citizens, improve emergency and disaster management as a response to climate related, natural and man-made disasters and ensure green growth that protect the environment while generating economic growth.

The challenge is to make these applications more affordable, easy to use and integrated with other solutions and technologies, including for example earth observation, e.g. Copernicus services, in order to enable new targeted innovative solutions.

The following specific challenges are covered by this topic:

- EGNSS is offering additional accuracy and features, such as the Search and Rescue service (SAR). The current SAR service, provided free of charge by Cospas-Sarsat to national Rescue Coordination Centres, is used by about one million beacon owners for maritime, aviation and leisure applications and over the last 30 years has on average contributed to saving 1300 lives per year. Galileo Forward Link Service initial service was declared operational in 2016 and the unique Return Link service is planned to be launched in 2018, delivering acknowledgement of reception of the distress alarm. Emergency services, disaster early detection and efficient management can also benefit from increased accuracy and added value provided by other sensors.
- The power networks, telecommunication networks and financial transactions are today synchronised, many of them using GNSS. These networks are becoming more and more distributed (e.g. distributed power generation of renewable energies), interconnected and more demanding in terms of synchronisation performances (e.g. in 4G-LTE and future internet), or requiring authenticated solutions as for the financial transaction time stamping. The specific challenge is in this case to build on the enhanced capabilities offered by Galileo that will provide high accurate timing information and authentication services, to develop a new generation of high performing, reliable and EU independent timing and synchronisation applications that can cope with these emerging and demanding needs. Integrity and trustworthiness of the synchronization mechanism offered by GNSS should also be addressed.
- Precision agriculture, mapping and surveying have been the pioneers in the use of GNSS since the early years. Innovative EGNSS applications in agriculture and surveying should take into account the possibility to minimise the adverse consequences of climate change and the impact on the environment (e.g. fertiliser use and air quality). Other EGNSS differentiators, like multiple frequencies and the Galileo High Accuracy service that will be offered free of charge are contributing to enabling EGNSS innovative solutions, including in challenging environments.

### Scope

**Proposals may address social and professional applications.** Promising areas of activities are:

- Applications supporting e-health, safety and emergency management;
- Search and Rescue applications, including tracking of distress situations and response management; **resilience and management in crisis situations following a disaster** in a context where conventional means are no longer available (telecommunications in particular);
- Emergency and disaster management;
- Management and related operation of critical infrastructure (e.g. electricity network, telecommunication networks, financial transactions), timing and synchronisation;
- Efficient Agriculture: Automated machine guidance, precision farming and machine control;
- Surveying and Mapping: Land survey, marine survey, cadastral and geodesy, and construction.

For all the professional areas, the development and innovation should build on:

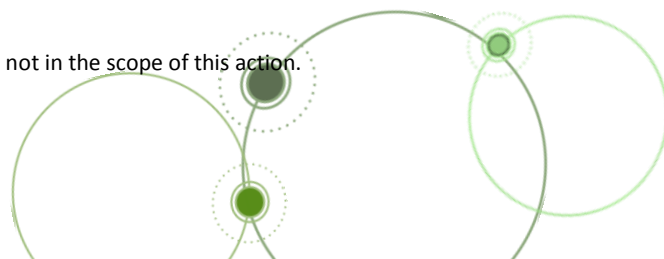
- Multiple-frequencies E1, E5 and E6;
- Galileo specific signal modulation, e.g. AltBOC;
- Galileo High Accuracy service that will be offered free of charge and Authentication features that will be provided by Galileo;
- Fusion with other data, such as from EO satellites or other in-situ sensors.

Actions should deliver new innovative applications, with commercial impact and a clear market uptake perspective (a Business Plan is required as part of the proposal). EGNSS should be part and parcel of the envisaged solution(s). However, where a combination of EGNSS with other technologies is required to make the application(s) work, this is not excluded from the scope.

For proposals under this topic:

- Participation of industry, in particular SMEs, is encouraged;
- Involvement of post-graduate researchers (engineers, scientists, and others) and the promotion of gender balance is also encouraged, for example through professional work experience or through fellowships/scholarships when applicable;
- A Business Plan and evidence of user engagement shall be compulsory and shall be provided as part of the proposal, to demonstrate the user need and sustainability of the project.

Proposals addressing PRS (Public Regulated Service) related applications are not in the scope of this action.



# Call – EGNSS market uptake 2019-2020

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.

This topic contributes to the Horizon 2020 focus area "Boosting the effectiveness of the Security Union".

## Expected impact

- Develop highly innovative applications taking advantage of Galileo and EGNOS differentiators in order to decrease the barriers to access such professional applications, reduce the price and increase the effectiveness of the solution, facilitate its use and increase the number of users;
- Commercialise the products and services developed;
- Proposals addressing Galileo SAR service should leverage the Forward and Return Link Services to improve the users' safety and efficiency of the rescue activity by reducing the time to accurately locate the distress alert;
- Emergency and disaster management applications should target integration of different sensors and position sources to identify, locate and react in critical situations, as well as delivering efficient response to ensure the wellbeing of citizens and monitor the infrastructure;
- Innovative GNSS applications in agriculture improving the productivity and decreasing the negative environmental impact;
- Timing and synchronisation applications focussing on emerging network synchronisation needs in terms of accuracy and robustness, while reducing EU dependency from other GNSS.

Type of action	Innovation action
Deadline	05 March 2020
Call identifier	H2020-SPACE-EGNSS-2019-2020
Topic information	<a href="#">Link</a>





# 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	13 May 2020
Call identifier	H2020-FETOPEN-2018-2020
Topic information	<a href="#">Link</a>



# Call – FET Proactive – Boosting emerging technologies

## FETPROACT-EIC-05-2019: 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. Human-Centric AI. Artificial intelligence (AI) is gaining more and more footholds in various aspects of our life. However, machine learning algorithms are difficult to understand, opaque and may have implicit biases in their decision making. Explicability has become an essential element if users are to trust, accept and adopt the next generation of intelligent machines on a wider scale. This initiative seeks to advance to the next AI frontier with verifiable, evidence-based features of trustworthiness (i.e., reliable and unbiased alignment of values, goals and beliefs) and transparency (explainable performance), exploring radically new approaches (e.g., inspired from neuro-science, cognition or social science). For instance, explanation could be more tightly intertwined with the decision making process itself so that decisions can be challenged, interpreted, refined and adjusted through mutual exchange, introspection (e.g., self-awareness of biases, reflecting on the internal functioning of the learning system, or on what caused a wrong or unacceptable decision) and active learning of both system and user, for example through dialogue or other forms of multi-modal interaction aimed at establishing mutual trust. New data collection and ownership/governance models that go beyond the dominant off-line and centralised data processing should be investigated, and new avenues, such as for incremental, unsupervised, active, one-shot and 'small data' machine learning, should be explored. The projects are expected to contribute to the wider debate on the sociotechnical, organisational and AI-ethical dimensions of such technologies and systems, and link to the 'Commission's broader AI strategy.

b. Implantable autonomous devices and materials. Radically new biomedical technologies that will lead to enhanced life quality for people are urgently needed, particularly for mitigating the impact of chronic health conditions that are placing a rapidly growing and ultimately unsustainable burden on healthcare systems. A key goal will be to demonstrate dramatically extended functional lifetimes of implantable devices, for example, through incorporation of smart sensing, self-awareness, adaptation (form and/or function) and self-repair capabilities. Included are mobile micro/nano devices based on biological models that can perform advanced functions e.g. site specific automigration, ability to distinguish tissue types (diseased, normal) and perform highly localised actions (e.g., delivery of therapeutic agents). Entities incorporating (bio)materials that provide instances of totally autonomous biomimetic behaviour and in-situ integration and adaptation are particularly welcome, such as an ability to blend-in with the native biological environment, to independently generate power, synthesise active agents or sense and respond to changes in the local molecular environment. Work on ethical implications should be included.

c. Breakthrough zero-emissions energy generation for full decarbonization. Clean and sustainable energy is one of the major challenges of our time. This sub-topic aims at the multidisciplinary exploration of new directions (starting from TRL 1-3) for power generation that is clean, compact and low-cost, aimed at stand-alone, mobile or portable uses in specific application contexts, for instance, in the transport sector (road, air, sea and either for motive or auxiliary needs), for portable uses, in remote places or in emergency situations. Breakthrough concepts and techniques for energy generation have to be explored for generating heat and/or electricity efficiently with zero emissions and with a minimal use of rare or toxic materials. Research areas could include, for example, long duration high heat sources from hydrogen-metal systems (e.g., using nickel), energy generation in plasma and cavitation systems. These or any other concepts with similar compact, high energy density and low-cost energy generation capabilities should be harnessed to make them usable for specific application contexts. Clear and ambitious performance targets and milestones to achieve them shall be provided.

FET Proactive projects should establish a solid baseline of knowledge and skills and assemble the interdisciplinary communities around them. They should 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).

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



# Call – FET Proactive – Boosting emerging technologies

## 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	<b>13 November 2019</b>
Call identifier	H2020-FETPROACT-2019-2020
Topic information	<a href="#">Link</a>



# Call – FET Proactive – Boosting emerging technologies

## FETPROACT-EIC-06-2019: EIC Transition to Innovation Activities

### Specific Challenge

**To turn promising results from FET-funded projects into genuine technological or societal breakthrough and disruptive innovations.** Since the typical researchers' mind-set is to identify further opportunities for research, promising research results that could be the basis for breakthrough and disruptive innovation risk to remain unexploited. The challenge is to create a fertile ground for those results to mature, to a level where exploitation and investment opportunities can start to be discussed, and ultimately towards future market uptake. While recognising that this may still take further research and development, it is crucial to complement research excellence with a focus on entrepreneurial ambition and commitment at an early stage.

### Scope

The EIC Transition Activities pilot aims at bringing promising technologies as they are at the end of a typical FET-Open or FET Proactive project (i.e., TRL 2/3) to a level of development, validation and demonstration where they become a credible basis for entrepreneurship, business creation, investment and, ultimately, economic and/or societal returns. The project shall be driven by a partner with the vision, ambition and commitment to bring the technology to actual use (possibly through the creation of a start-up or spin-off).

Proposals must build on results from an ongoing or finished project (Research and Innovation Action), funded as a result of a FET-Open or FET Proactive call under Horizon 2020. The targeted technology should be in one of the following areas:

- Micro- and Nano-technologies
- Artificial Intelligence and advanced robotics
- Technologies for the life sciences, health and treatment
- Low-carbon energy and climate change technologies
- Interaction technologies (including virtual- augmented- and mixed reality,...)

The precise link(s) with the relevant FET project(s) is to be explicitly described in the proposal. This topic does not fund research or activities that are/were already foreseen in the original FET project(s).

Participants must have essential capabilities to increase the maturity of the targeted technology. Activities proposed should reflect the level of maturity of the result to be taken up. Proposals can include activities with, for instance, partners for technology transfer, licence-takers, investors and other sources of financing, user/client organisations or potential end-users.

Proposals should specify the intended outcome(s) of the project and describe its key performance indicators/success criteria. Proposals must also include an exploitation plan describing the market or societal potential (potential users/customers and benefits for them; targeted European/global markets, etc.), measures to enhance the probability of take-up and a credible development strategy that identifies next steps, possibly using the services and funding/financing opportunities offered in the context of the EIC Accelerator pilot. Particular attention should be paid to IP protection and ownership and to the possibility of commercial exploitation ('freedom to operate').

The Commission considers that proposals for actions up to 24 months and requesting a contribution from the EU of between EUR 1.00 and 2.00 million would allow this specific challenge to be addressed appropriately.

### Expected Impact

- Increased value creation from FET projects and contributing to the competitiveness of European industry/economy by developing further promising technologies and innovation opportunities.
- Fast development, demonstration and economical/societal take-up of promising FET technologies.
- Increased H2020 first time participation of high tech SMEs (including Spin-offs and Start-ups) and industry.
- Leveraging more private investment into research and/or innovation.

Type of action	Research and Innovation action
Deadline	13 November 2019
Call identifier	H2020-FETPROACT-2019-2020
Topic information	<a href="#">Link</a>





# Call – FET Proactive – Boosting emerging technologies

## FETPROACT-EIC-07-2020: 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. Future technologies for social experience.** This sub-topic explores new technologies for interaction that are based on new kinds of immersion for virtualised or augmented social interaction and that will lay the basis for the social media in 10-20 years from now. Virtual, Augmented and Mixed Reality (XR) will be as ubiquitous as Smart Phones are today. XR will serve as a starting point for new kinds of social media in which some of the participants may not be real people, where time differences are abolished, and where information and experiences will be shared in radically new ways. It is currently not known whether the sociocultural parameters implicit in natural social interaction carry over to virtual or hybrid settings or whether this leads to adaptations, new potential conflicts requiring recalibration of affective signals, cues carrying trust, empathy, conflict resolution. **The sub-topic thus addresses the redefinition of the personal and social interaction space in light of increasing virtualisation, space-time displacement, information pressure, ubiquitous intelligence, uncertainty and trust issues (dis- and mis-information, anomaly detection in information sources and content, unwanted information, and similar concepts in the social realm, like opinion dynamics and social belief formation).** Technologically this will be driven by a more active role of the interaction environment and an ever tighter coupling of the technologies with sensori/motor- and cognitive processes through advanced and multimodal XR setups, including for instance spatial audio, smart skins, haptics, wearable or other minimally invasive interfaces. **Impacts on a 'person's self-perception and behaviour, gender differences, the formation of knowledge and beliefs, the theory of mind and brain and the ability to act and interact should also be studied, especially in scenarios of extensive and always-on use.**

**b. Measuring the unmeasurable — Sub-nanoscale science for Nanometrology.** This sub-topic seeks to find and test new approaches for nano- and sub-nano metrology. Proposals should target new techniques, for example, physics-, biochemistry- and chemistry-based methods incorporating nano- and picometre-length scales in the spatial domain with femto- and atto-seconds in the temporal domain. The proposal must address research from a novel measurement concept up to a technique and/or method including prototype measuring devices/setups and procedures, and sound metrological aspects like quantification of uncertainty or traceability. Proposals should seek to approach theoretical limits in challenging domains (physical, chemical, biological) while minimising any potential damage or change to the object being measured. Full three-dimensional characterisation (tomography) or the application of metrological procedures to transient phenomena on a sub-nanosecond time-scale could push the limits in metrology. Research on refining existing techniques is excluded. Proposals will address emerging issues of nano-metrology in spatial and temporal dimensions, including for example morphology, composition, reactivity, energy, dynamics or relevant optical, electronic, chemical and biochemical properties. Challenges in measurement that could be used as test cases are, e.g., understanding and controlling changing morphology impacting chemical properties in nano-photonics devices or battery electrodes; integrating metrology with sub-nanoprinting, nano-engineering or self-characterisation techniques; the measurements of heat transfer across interfaces down to the atomic size level; or the characterisation of the dynamics of molecular interactions in or with biological systems for health or smart materials. The use of advanced modelling, statistical methods, big data and machine learning methods is welcome where appropriate.

**c. Digital twins for the life-sciences.** The sub-topic aims at the close integration and real-time interaction of dynamical models of biological structures (from biochemical pathways to cells, tissues, organs and individuals), with imaging and sensing technologies for biological mechanisms and processes. It extends concepts and technologies of digital twins beyond their industrial versions, which are typically supporting the life-cycle of engineered products, into the domain of the life sciences. The core challenge is to derive and update the digital twin using information from the imaging, sensing and monitoring of its biological counterpart, taking the achievements of systems biology, metabolomics and systems medicine into account. This can be done in vivo at whole-body (e.g., using wearable and implantable sensors) or organ level or in vitro – e.g., for interacting cells and organoids, 3D cell co-cultures, organ/body-on-chip). Beyond the development of static and structural models, a further challenge is to include dynamics at multiple temporal scales (e.g. for deriving adaptive, predictive values), through new principles of imaging and sensing that take the time-dimension into account. Biological dynamics can be observed in the unmanipulated state or under manipulation by chemical, biological, physical agents such as pharmaceuticals, viruses acoustic waves, electromagnetic fields, light, forces, or altered temperature. This will offer unprecedented insights into the molecular and cellular dynamics underlying human disorders such as metabolic, cardiovascular, neurological, oncological or rare pathologies, where personalised precision medicines and advanced diagnostic and therapeutic approaches but also prevention measures (lifestyle, nutrition, environmental factors) are needed to make healthcare more effective, more convenient, cheaper and uniquely tailored to each patient. Work on ethical implications should be included.





# Call – FET Proactive – Boosting emerging technologies

FET Proactive projects should establish a solid baseline of knowledge and skills and assemble the interdisciplinary communities around them, **including from the social sciences and humanities**. They should further foster the emergence of a broader innovation ecosystem and create a fertile ground for co-design of the new technological paradigm and its future take-up (e.g., wider stakeholder/public engagement, informal education, policy debate), in line with the discussion on Responsible Research and Innovation (RRI) in the introduction to this FET work programme.

The Commission considers that proposals requesting a contribution from the EU of EUR 4 to 5 million and with a duration of up to 4 years would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts or project 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 2020.19
- 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 April 2020
Call identifier	H2020-FETPROACT-2019-2020
Topic information	<a href="#">Link</a>



# Call – FET Proactive – Boosting emerging technologies

## FETPROACT-EIC-08-2020: Environmental Intelligence

### Specific Challenge

**New synergies between the distant communities of environmental modelling, advanced sensor research, social sciences, and artificial intelligence can lead to radically new approaches** to creating and using dynamic models of the environment, including predictive modelling and scenario testing and tracking. The ultimate vision is to use the fusion and analysis of this rich, dynamic data coming from a variety of sensing modalities and their characteristic locations to build a deeper understanding of the socio-environmental inter-relationships, for example, by testing and validating complex theoretical models.

### Scope

Proposals are expected to have their main focus in only one of the following sub-topics:

**a. new techniques for creating and using dynamic models of environmental evolution** that combine, analyse and interpret data provided by in-situ sensing technologies with satellite remote sensing/earth observation and other environmental data sources, **including human behaviour and gender differences, and economics and social sciences. The focus is on a better understanding of the interplay dynamics of natural and societal systems, for example on how policies and economics modelling predict human behaviours' impact on the environment, how social norms interact with the environment evolution and exploitation**, or how the decisions based on changes in the environment in turn affect the state of the natural environment and vice-versa.

**b. radically novel approaches to resilient, reliable and environmentally responsible in-situ monitoring. In-situ sensing technologies (physical, chemical, biological, behavioural) for environmental monitoring**, in particular favouring sensors for parameters and environments that are currently under-sampled but at the same time critical for improving predictive models for understanding environmental processes. Proposals should look for ground-breaking concepts of affordable sensor deployment, spanning maintenance, communication and retrieval, possibly based on concepts like self-deployment, self-awareness, self-repair and controlled decomposition; or using new concepts from micro-robots to optimise sensing or increase monitoring frequency. Advanced research on the networking aspects is not addressing this sub-topic.

Projects are to focus on one or a few critical resources (e.g., water, air) and to establish fundamental advances on the most critical challenges that will underpin a step improvement in monitoring, analysis and management of important social/environmental processes for improving quality of life and environmental sustainability (possibly including aspects of waste, noise, ...). Citizen involvement, for example for prioritizing resource challenges, data collection, raising awareness towards environmental issues or better understanding of behavioural change in relation to environmental sustainability, is encouraged, in line with the discussion on Responsible Research and Innovation (RRI) in the introduction to this FET work programme. The collected and simulated data should adhere to the FAIR data principle and be compliant with European Standards.

Selected projects under this topic will be expected to collaborate, jointly aiming at delivering a blueprint for a full-fledged system for environmental intelligence.

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

### Expected Impact

- Enabling new approaches to monitoring, analysis and management of critical resources in Europe;
- Availability of reliable data and models at multiple levels of granularity for environmental policy making;
- Reduced environmental footprint for environmental ICT;
- Increased local and citizen awareness of environmental impacts.



# Call – FET Proactive – Boosting emerging technologies

Type of action	Research and Innovation action
Deadline	<b>22 April 2020</b>
Call identifier	H2020-FETPROACT-2018-2020
Topic information	<a href="#">Link</a>



# Call – FET FLAGSHIPS – Tackling grand interdisciplinary science and technology challenges

## FETFLAG-07-2020: Training and Education on Quantum Technologies

### Specific Challenge

Quantum technology (QT) is a rapidly accelerating field of research and development with a strong potential for economic growth. While quantum physics is included in all university curricula as well as school curricula in some European countries, this does not satisfy the needs for quantum awareness, a quantum-ready workforce, and modern quantum education. This topic aims at creating a pan-European agenda for the development of modern quantum technology education serving the necessary key-actors to reach industrial target groups.

### Scope

The action should propose a pilot programme that aims to develop a quality-controlled educational master programme for quantum engineering and industrial applications of pan-European reach. It should be developed and launched in close cooperation with the relevant European industry players in order to provide a programme that addresses concrete industry needs in QT. The action should also facilitate companies to host students of the QT master programme for a period of 3 to 6 months. One outcome should be a network of the training programme pilots based on well-documented best practices, tools and reusable training material, and linked with the industrial target group(s). Another outcome should be a concrete set of lessons learned in launching a pan European educational activity in QT inspired by such pilot programme, including a roadmap and concrete recommendations for achieving it. The scope of the activities of the pilot programme of the action should include at least five EU Member States or countries associated with Horizon 2020, along with a plan to reach the whole of Europe. **The consortium should demonstrate a good mix of excellence in education research** and in quantum technologies and engineering, with solid links to the emerging QT industry in Europe. **It should have a clear strategy on how to stimulate the cooperation between education stakeholders and the emerging quantum industry in Europe.** The action shall further contribute to raising awareness in QT, building on the CSA funded under topic FETFLAG-03-2018. The Commission considers that proposals requesting a contribution from the EU of up to EUR 300.000 would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

### Expected Impact

- Development of a European quantum education community and of a European education research agenda towards modern, quality- controlled education in quantum technologies and engineering
- Establishment of high quality quantum engineering programmes across the union addressing industry needs
- First generation of joint MSc students connected to industry and more broadly preparing a skilled young future workforce in quantum technologies and engineering ready to be employed by the European industry

Type of action	CSA Coordination and support action
Deadline	13 November 2019
Call identifier	H2020-FETFLAG-2018-2020
Topic information	<a href="#">Link</a>





# 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

## Call – Development and long-term sustainability of new pan-European research Infrastructures

Type of action	Research and Innovation action
Deadline	<b>12 November 2019</b>
Call identifier	H2020-INFRADEV-2018-2020
Topic information	<a href="#">Link</a>

# Call – Integrating and opening research infrastructures of European interest

## INFRAIA-02-2020: Integrating Activities for Starting 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

A 'Starting Community' has never been supported for the integration of its infrastructures under FP7 or Horizon 2020 calls, in particular within an integrating activity.

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.

The research infrastructures of a 'Starting Community' usually show a limited degree of coordination and networking at present. The strongest impact of an integrating activity is expected typically to arise from a focus on networking, standardisation and establishing a common access procedure for trans-national and/or virtual access provision.

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, when relevant, contribute to fostering the potential for innovation, including social innovation, of research infrastructures by reinforcing the partnership with industry, public administrations and/or other stakeholders, through e.g. transfer of knowledge and other dissemination activities, activities to promote the use of research infrastructures by industrial researchers or policy-makers, involvement of industrial associations and other stakeholders 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.



# Call – Integrating and opening research infrastructures of European interest

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, at most one proposal per field is expected to be submitted.

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.

**Integrating activities for starting communities range across all areas of science and technology.** Proposals should not restrict their services to too narrow research fields and should address the wider scientific communities, even multidisciplinary ones, which can be served by the involved sets of research infrastructures.

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

## 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. , . Economies of scale and improved use of resources across Europe are also realised due to less duplication of services, common development and the optimisation of operations.
- When applicable, innovation is fostered through a reinforced partnership of research infrastructures 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 non-academic stakeholders, including industry.
- 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.

Type of action	Research and Innovation action
Deadline	17 March 2020
Call identifier	H2020-INFRAIA-2018-2020
Topic information	<a href="#">Link</a>



## European Research Council (ERC)

**The ERC's frontier research grants operate on a 'bottom-up' basis without predetermined priorities.**

The fundamental activity of the ERC is to provide attractive, long-term funding to support excellent investigators and their research teams to pursue ground-breaking, high-gain/high-risk research. Research funded by the ERC is expected to lead to advances at the frontiers of knowledge and to set a clear and inspirational target for frontier research across Europe.

The evaluation of ERC grant applications is conducted by peer review panels composed of renowned scientists and scholars selected by the ERC Scientific Council. The panels may be assisted by independent experts working remotely. The ERC's peer review evaluation process has been carefully designed to identify scientific excellence irrespective of the gender, age, nationality or institution of the Principal Investigator and other potential biases, and to take career breaks, as well as unconventional research career paths, into account. The evaluations are monitored to guarantee transparency, fairness and impartiality in the treatment of proposals. ERC calls are expected to be competitive.

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 Starting, Consolidator and Advanced Grants will support projects carried out by individual teams which are headed by a single Principal Investigator. ERC Synergy Grants will support small groups of two to four Principal Investigators and their teams with a designated Corresponding Principal Investigator. The constitution of the research teams is flexible. Depending on the nature of a project the research team may involve team members from other research organisations situated in the same or a different country (see "Eligible host institution"). The nature of the collaboration within an ERC Synergy Group is expected to be fundamentally different from that of a network or consortium of undertakings, universities, research centres or other legal entities (see "Synergy Grant profile "). The ERC supports individual Principal Investigators. Support for consortia is provided by other calls under Horizon 2020.

**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.**

## Summary of main features in 2020

The four main ERC frontier research grants will be available under Work Programme 2020: Starting; Consolidator; Advanced; and Synergy Grants. ERC Principal Investigators will continue to be able to apply for Proof of Concept Grants.

Work Programme 2020 will continue to pilot the award of Proof of Concept grants on the basis of a lump sum of EUR 150 000.

Restrictions on applications will apply to the 2020 calls based on the outcome of the evaluation of previous calls – see restrictions on submission of proposals under "Eligibility criteria".



# ERC – Starting Grant

## Indicative summary of main calls from the 2020 budget

	<i>Starting Grant</i>	<i>Consolidator Grant</i>	<i>Advanced Grant</i>	<i>Synergy Grant</i>	<i>Proof of Concept Grant</i>
<i>Call Identifier</i>	<b>ERC-2020-StG</b>	<b>ERC-2020-CoG</b>	<b>ERC-2020-AdG</b>	<b>ERC-2020-SyG</b>	<b>ERC-2020-PoC</b>
<i>Call Opens</i>	17/07/2019	24/10/2019	14/05/2020	18/07/2019	15/10/2019
<i>Deadline or cut-off dates for PoC</i>	16/10/2019	04/02/2020	26/08/2020	05/11/2019	21/01/2020 23/04/2020 17/09/2020
<i>Budget € million (estimated grants)</i>	677 (455)	657(343)	492 (209)	350 (39)	25 (167)

These opening dates and cut-off dates are indicative. The Director of the European Research Council Executive Agency may open it up to one month prior to or after the envisaged opening date. The Director may delay the envisaged deadline by up to two months. The budget amounts for 2020 are subject to the availability of the appropriations provided for in the draft budget for 2020 after the adoption of the budget for 2020 by the budgetary authority or if the budget is not adopted as provided for in the system of provisional twelfths.



## ERC Starting Grant

### Objectives

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

### Size of ERC Consolidator Grant

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

However, up to an additional EUR 1 000 000 can be requested in the proposal to cover the following eligible costs when these are necessary to carry out the proposed work: (a) "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 and/or (d) other major experimental and field work costs, excluding personnel costs.

Additional funding is not subject to pro rata temporis reduction for projects of shorter duration.

All funding requested is assessed during evaluation.

### Profile of the ERC Consolidator Grant Principal Investigator

The Principal Investigator shall have been awarded their first PhD at least 2 and up to 7 years prior to 1 January 2020 (for the call under Work Programme 2020). The eligibility period can be extended beyond 7 years in certain properly documented circumstances.

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

For further information please see the ERC Work Programme 2020.

Type of action	ERC-STG Starting Grant
Deadline	16 October 2019
Call identifier	ERC-2020-STG
Topic information	<a href="#">Link</a>



## 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 Consolidator Grant

Consolidator Grants may be awarded up to a maximum of **EUR 2 000 000** for a period of **5 years**. (The maximum award is reduced pro rata temporis for projects of a shorter duration. This does not apply to ongoing projects). However, up to an **additional EUR 1 000 000 EUR** can be requested in the proposal to cover (a) eligible "start-up" costs for Principal Investigators moving to the EU or an Associated Country from elsewhere as a consequence of receiving the ERC grant and/or (b) the purchase of major equipment and/or (c) access to large facilities (As any additional funding is to cover major one-off costs it is not subject to pro-rata temporis reduction for projects of shorter duration. All funding requested is assessed during evaluation).

### Profile of the ERC Consolidator Grant Principal Investigator

The Principal Investigator shall have been awarded their first PhD **more than 7 and up to 12 years prior to 1 January 2020** (for the call under Work programme 2020). The effective elapsed time since the award of the first PhD can be reduced in certain properly documented circumstances (see ERC Work Programme 2020).

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	<b>4 February 2020</b>
Call identifier	ERC-2020-COG
Topic information	<i>Link is not yet available</i>



## ERC Advanced Grant

### Objectives

Support for excellent Principal Investigators at the career stage at which they are already established research leaders with a recognised track record of research achievements. Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal.

### Size of ERC Consolidator Grant

Consolidator Grants may be awarded up to a maximum of **EUR 2 500 000** for a period of **5 years** (The maximum award is reduced pro rata temporis for projects of a shorter duration. This does not apply to ongoing projects).

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

### Profile of the ERC Consolidator Grant Principal Investigator

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 him/her as an exceptional leader in terms of originality and significance of his/her 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. This benchmark is relevant to research fields where publication of monographs is the norm.

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 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.

If a Principal Investigator so chooses, his or her achievements over a longer period than the past ten years can be considered in the following circumstances which should be highlighted in the CV. For maternity, the track record considered can be extended by 18 months, or if longer by the amount of leave actually taken until the call deadline, for each child born before or during the last ten years. For paternity leave, the track record considered can be extended by the amount of paternity leave actually taken until the call deadline for each child born before or during the last ten years. For long-term illness, clinical qualification or national service the track record considered can be extended by the amount of leave actually taken until the call deadline and clearly explained in the career break section of their CV for each incident which occurred during the last ten years.



## ERC – Advanced Grant

Type of action	ERC-ADG Advanced Grant
Deadline	26 August 2020
Call identifier	ERC-2020-ADG
Topic information	<i>Link is not yet available</i>





## ERC Synergy Grant

### Objectives

The aim is to provide support for a small group of two to four Principal Investigators to jointly address ambitious research problems that could not be addressed by the individual Principal Investigators and their teams working alone. Synergy projects should enable substantial advances at the frontiers of knowledge, stemming, for example, from the cross-fertilization of scientific fields, from new productive lines of enquiry, or new methods and techniques, including unconventional approaches and investigations at the interface between established disciplines. The transformative research funded by Synergy Grants should have the potential of becoming a benchmark on a global scale.

Principal Investigators must demonstrate the ground-breaking nature, ambition and feasibility of their scientific proposal. Principal Investigators must also demonstrate that their group can successfully bring together the scientific elements necessary to address the scope and complexity of the proposed research question.

One of the Principal Investigators must be designated as the Corresponding Principal Investigator. At any one time, one Principal Investigator per Synergy Grant Group except the Corresponding one can be hosted or engaged by an institution outside of the EU or Associated Countries.

### Size of ERC Consolidator Grant

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

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

### Profile of the ERC Consolidator Grant Principal Investigator

The 'Synergy Grant Group' applying for the ERC Synergy Grant must be made up of a minimum of two and a maximum of four Principal Investigators with competitive track records and, as necessary, their teams.

Each Principal Investigator must present as part of the proposal either an early achievement track-record or a 10-year track-record, whichever is most appropriate for their career stage (see Starting, Consolidator and Advanced Grant profiles in the ERC Work Programme 2020). There is little prospect of an application succeeding in the absence of such a record.

Type of action	ERC-SyG Synergy grant
Deadline	05 November 2019
Call identifier	ERC-2020-SyG
Topic information	<a href="#">Link</a>



# ERC – Proof of Concept Grant

## ERC Proof of Concept Grant

### Objectives

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

The ERC Proof of Concept call aims at supporting ERC grant-holders to establish the innovation potential of their idea during the pre-demonstration phase.

This would help among others:

- establishing viability, technical issues and overall direction
- clarifying IPR position and strategy
- providing feedback for budgeting and other forms of commercial discussion
- providing connections to later stage funding
- covering initial expenses for establishing a company

### Size of ERC Proof of Concept Grant

The financial contribution will be awarded as a lump sum of **EUR 150 000** for a period of **18 months**. The ERC expects that normally proof of concept projects should be completed within 12 months. However, to allow for those projects that require more preparation time, projects will be signed for 18 months. Given this initial flexibility, extensions of the duration of proof of concept projects may be granted only exceptionally. The lump sum offered will cover the beneficiaries' direct and indirect eligible costs for the project: if the project is implemented properly the amounts will be paid regardless of the costs actually incurred. Specifically, the lump sum has been designed to cover 100% of the eligible direct costs and indirect costs calculated by applying a flat-rate of 25% to the direct cost categories.

The indicative budget for this call for 2020 is **EUR 25 000 000** (approximately one-third of which will be for each of the three evaluation rounds following three specific cut-off dates -proposals submitted before each cut-off date will be evaluated with the proposals submitted before the same cut-off date).

### Eligible Principal Investigator

All Principal Investigators in an ERC frontier research project, that is either ongoing or has ended less than 12 months before 1 January 2020 (for the call under Work Programme 2020), are eligible to participate and apply for an ERC Proof of Concept Grant. This action is open to Principal Investigators (PI) already benefitting from an ERC frontier research grant (Starting, Consolidator, Advanced and Synergy) of any nationality who intends to conduct their Proof of Concept activity in any EU Member State or Associated Country. Principal Investigators may submit only one proposal under Work Programme 2020. If multiple submissions are made at different cut-off dates under the Work Programme 2020 only the first eligible proposal will be considered. A Principal Investigator whose proposal was rejected on the grounds of a breach of research integrity in the calls for proposals under Work Programmes 2018 or 2019 may not submit a proposal to the calls for proposals made under Work Programme 2019.

Type of action	ERC-POC Proof of Concept Grant
Deadline	<b>ERC-2020-PoC-1: 21 January 2020</b> <b>ERC-2019-PoC-2: 23 April 2020</b> <b>ERC-2019-PoC-3: 17 September 2020</b>
Call identifier	ERC-2020-PoC
Topic information	<i>Link is not yet available</i>





## Marie Skłodowska-Curie Actions

The Marie Skłodowska-Curie actions (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. As such, the MSCA are highly relevant for research topics from Social Sciences and Humanities. Furthermore, it is an explicit aim of the MSCA to support interdisciplinary aspects and collaboration.

The different MSCA in a nutshell

Individual Fellowships (IF) is a funding scheme for experienced researchers (usually Post-Doc) to undertake a personalized research project abroad. The grant is awarded to the host organisation (university, research centre, company etc.) and provides funding for the fellow's salary, travel and family costs, as well as for costs related to research, training and networking and management / indirect costs of the project.

Co-funding of regional, national and international programmes (COFUND) provides additional financial support to organisations for training researchers abroad and across various sectors. COFUND supports financially both new and existing doctoral programmes for PhD candidates, as well as fellowship programmes for experienced researchers.

Innovative Training Networks (ITN) are collaborative projects bringing together universities, research institutes and organisations from the non-academic sectors (companies, NGOs, etc.) from across the world to train early stage researchers to doctorate level. ITNs provides funding for the recruitment and training of early stage researchers (pre-doc). Funded early stage researchers are hired under an employment contract up to three years. The grant includes funding for the salary costs, a mobility allowance and, if applicable, a family allowance for the early stage researchers. Furthermore, funding is provided for research, training and networking costs, for example for the organisation of joint activities like workshops, summer schools and conferences, and for management and indirect costs.

Research and Innovation Staff Exchange (RISE) is a MSCA scheme which 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 grant supports the secondment of staff members for one month to one year, funding for costs related to research, training and networking, as well as for management and overheads. Funding for a RISE project can last up to four years.

The European Researchers' Night (NIGHT) brings researchers closer to the general public in order 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.

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## MSCA-ITN-2020: 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 (EU Member States and Horizon 2020 Associated Countries), 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.



# MSCA – Innovative Training Networks

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<sup>26</sup> 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<sup>27</sup>, double or multiple doctoral degrees<sup>28</sup> awarded by institutions from at least two different countries, primarily within Europe (EU Member States and Horizon 2020 Associated Countries).

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

## Expected impact

### At researcher level:

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

### At organisation level:

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

### At system level:

- Increase in international, interdisciplinary and intersectoral mobility of researchers in Europe
- More structured and innovative doctoral training, enhanced implementation of the European Charter and Code and the EU Principles for Innovative Doctoral Training
- Stronger links between the European Research Area (ERA) and the European Higher Education Area (EHEA), notably through supporting the knowledge triangle between research, innovation and education
- Improvement in the working and employment conditions for doctoral candidates in Europe
- Increased societal and economic relevance of European higher education
- Strengthening Europe's human capital base in R&I with a new generation of more entrepreneurial and highly-skilled early career researchers
- Increase in Europe's attractiveness as a leading research destination, accompanied by a rise in the numbers of talented researchers attracted and retained from abroad
- Better quality research and innovation contributing to Europe's competitiveness and growth



## MSCA – Innovative Training Networks

Type of action	MSCA-ITN-ETN European Training Networks , MSCA-ITN-EJD European Joint Doctorates , MSCA-ITN-EID European Industrial Doctorate
Deadline	14 January 2020
Call identifier	H2020-MSCA-ITN-2020
Topic information	<a href="#">Link</a>



## MSCA-IF-2019 and MSCA-IF-2020: 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.



# MSCA – Individual Fellowships

## Expected impact

### At researcher level:

- Increased set of skills, both research-related and transferable ones, leading to improved employability and career prospects both in and outside academia
- 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 & 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

## Last Calls for Individual Fellowships in Horizon 2020

Type of action	Career Restart panel, Reintegration panel, Standard European Fellowships, Society and Enterprise panel, Global Fellowships
Deadline	<b>09 September 2020</b>
Call identifier	H2020-MSCA-IF-2020
Topic information	<a href="#">Link</a>





# MSCA – Research and Innovation Staff Exchange

## MSCA-RISE-2020: 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

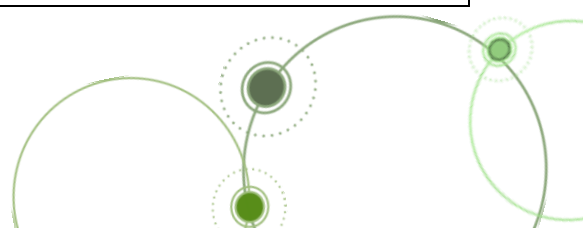
#### At organisation level:

- 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

Type of action	MSCA-RISE Research and Innovation Staff Exchange
Deadline	28 April 2020
Call identifier	H2020-MSCA-RISE-2020
Topic information	<a href="#">Link</a>



# MSCA – Co-funding of regional, national and international programmes

## MSCA-COFUND-2020: 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 encouraged<sup>10</sup>.

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 – Research and Innovation Staff Exchange

## 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	MSCA-COFUND-FP Fellowship programmes , MSCA-COFUND-DP Doctoral programmes
Deadline	29 September 2020
Call identifier	MSCA-COFUND-2020
Topic information	<a href="#">Link</a>



# MSCA – European Researchers' Night

## MSCA-NIGHT-2020: 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.

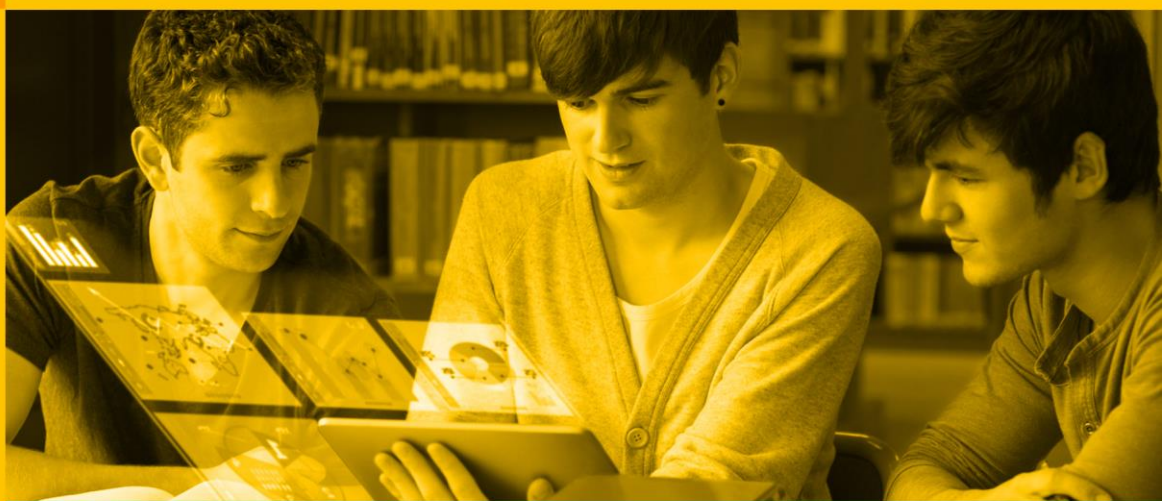
High-quality applications not retained due to lack of funding may be granted the status of associated events.

### 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	09 January 2020
Call identifier	MSCA-NIGHT-2020
Topic information	<a href="#">Link</a>





## Science with and for Society

Net **4** Society

# Call - Science with and for Society

## SwafS-01-2018-2019-2020: 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	1 <sup>st</sup> stage -15 April 2020	2 <sup>nd</sup> stage - 17 November 2020
Call identifier	H2020-SWAFS-2018-2020	
Topic information	<a href="#">Link</a>	



## SwafS-09-2018-2019-2020: 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, including universities, are invited to implement institutional change through Gender Equality Plans (GEPs). The Council conclusions of 1 December 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 women 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 funding organisations and research performing organisations including 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 and strategies (legislation, specific incentives, etc.) relating to gender equality in research and innovation.** In 2020 they will also indicate to which extent they strengthen and/or complement national frameworks. The proposal should also explain previous steps taken by the organisation regarding 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 should 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.

In 2020 a further focus will be on impact at national level. It is therefore recommended the participation of national authorities as part of the projects' advisory structures.

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. 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.

In 2020 other actors such as scientific publishers should also be considered, Furthermore special attention should be given to GEP-implementing organisations from countries for which the implementation of ERA Priority 4 (gender equality and gender mainstreaming in research) has shown slower progress as shown in the ERA Progress Report 2018.

The Commission considers that proposals requesting a contribution from the EU between EUR 2.50 million and 3.00 million and a duration of 48 months would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts or duration.

### 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.





# Call - Science with and for Society

Type of action	Coordination and support action
Deadline	15 April 2020
Call identifier	H2020-SWAFS-2018-2020
Topic information	<a href="#">Link</a>





## SwafS-14-2018-2019-2020: 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 quadruple helix 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, alongside organisations representing the other parts of the quadruple helix. 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. Involvement of citizens must be in line with Article 21 of the Charter of Fundamental Rights of the European Union.

**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).**

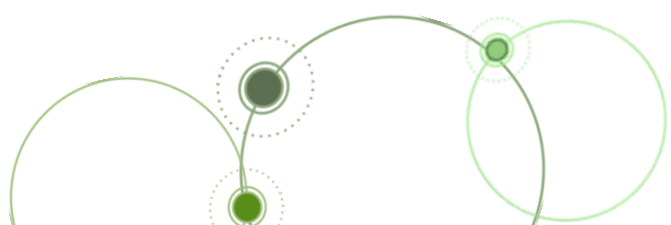
### Expected impact

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 instance GE1, SLSE1, SLSE4, PE1, PE2, PE5, PE7, PE8, E1, OA6, GOV2), and to the Sustainable Development Goals (for instance goals 4, 5, 9, 11, 12, 13, 16 or 17).



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Type of action	Coordination and support action
Deadline	15 April 2020
Call identifier	H2020-SWAFS-2018-2020
Topic information	<a href="#">Link</a>



# Call - Science with and for Society

## SwafS-19-2018-2019-2020: 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 1.20 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

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	Coordination and support action
Deadline	15 April 2020
Call identifier	H2020-SWAFS-2018-2020
Topic information	<a href="#">Link</a>



# Call - Science with and for Society

## SwafS-23-2020: Grounding RRI in society with a focus on citizen science

### Specific challenge

Institutional changes are required to respond to the increased interactions between R&I stakeholders in society. Through institutional changes, research funding and performing organisations become more “porous” and accept inputs from citizens and organisations that used to be considered outsiders to the world of R&I. Examples include citizen science, extended peer review in funding agencies, co-creation of public policies, agenda setting in research and innovation programmes, co-production of research and innovation content, co-design of R&I programmes, and co-evaluation of proposals, activities or other R&I funding decisions.

**Good practices are widespread in Europe in terms of citizens’ and citizens’ associations engagement in science; formal, informal and non-formal science education”; gender equality in science; Research ethics and integrity; Open access to research results including data.**

**The good practices in these five fields are much more easily, efficiently and sustainably implemented when the organisations funding, performing or associated to R&I have adapted significantly their governance frameworks to open up through a process of institutional change.**

### Scope

**Consortia are expected to implement institutional changes to promote citizens’ and their associations’ engagement in science, and possibly through an integrated approach covering some or all five fields. All scientific disciplines are covered. Consortia members should aim to ensure that the institutional changes are sustainable beyond the lifetime of the project funding. Consortia are expected to evaluate their activities and provide evidence of societal, democratic, economic and scientific impacts of institutional changes.**

The action is addressed at organisations funding or performing activities in the field of R&I as one of their significant objectives or activities. All parts of the “quadruple helix” model, which sees close co-operation between industry, government, research (e.g. universities of applied sciences) and society (e.g. citizens and Civil Society Organisations) in R&I, are addressed – and it is encouraged that consortia ensure truly engaged roles for all organisation types. Consortia should be composed of organisations that already have some experience of processes of institutional change and beginners (i.e. organisations that have not worked before on implementing institutional changes for SWAFS), so as to encourage mutual learning. Moreover, proposals will be favoured that involve partners that have not worked together in SwafS before, so as to increase the reach and potential impact of the programme’s funding. Consortia should aim for broad geographical coverage (e.g. using the MoRRI study to involve partners from across different country clusters).

The Commission considers that proposals requesting a contribution from the EU in 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

Results should contribute to a greater involvement of all stakeholders in R&I, a better and more sustainable engagement with citizens and society as a whole, and a more scientifically interested and literate society. Consortia are expected to contribute to one or more of the MoRRI indicators, in particular PE5, PE7, PE8, GOV2 & GOV3, and to the Sustainable Development Goals (for instance goals 4, 5, 9, 12, 16 or 17) . The expected number of institutional changes, including their quality and sustainability, will be taken into account in evaluation. As such, it is expected that the topic will support a significant number of impactful and sustainable institutional changes in partner organisations.

Type of action	Coordination and support action
Deadline	15 April 2020
Call identifier	H2020-SWAFS-2018-2020
Topic information	<a href="#">Link</a>



# Call - Science with and for Society

## SwafS-24-2020: Science education outside the classroom

### Specific challenge

Much analysis has been carried out on the importance of science education both in schools and in higher education. However, science education outside the classroom, which refers to informal science education, and the science education effects of non-educational activities, are not well explored in terms of their nature and effects. Acquiring knowledge, and in particular, evaluating knowledge, often with the help of the Internet, is happening in reality frequently, and should be recognised for what it contributes in terms of more sophisticated consumers and scientific citizenship. Consideration of what is available and what is being learnt would be useful to understand how science education outside the classroom influences today's citizens.

### Scope

**The available knowledge on science education outside the classroom and its impact on citizens** (including students of all ages from school children to college students) **need to be analysed**, taking into account possible gender and geographical differences. The proposed action shall specify if this type of learning complements the classroom or succeeds where classrooms might have failed. **Consideration should be given to the impact that can be achieved in science education outside schools and how this form of informal schooling might be accredited and whether there is a way of assessing the quality of the educational contents.**

The Commission considers that proposals requesting a contribution between EUR 1.30 million and EUR 1.70 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 term, the proposed action should identify good practices outside the classroom. It should consider what impact this information might have on formal and informal science education for students and citizens. In the medium term, the results of the present action will help the EU to better understand the effects of science education outside the regular education institutions and will increase the range of innovative products in science education that reflect societal needs. In the long term the results of the research should contribute to considerations on accrediting the available information.

Type of action	Research and Innovation action	
Deadline	1 <sup>st</sup> stage - 15 April 2020	2 <sup>nd</sup> stage - 17 November 2020
Call identifier	H2020-SWAFS-2018-2020	
Topic information	<a href="#">Link</a>	



# Call - Science with and for Society

## SwafS-25-2020: Gender-based violence including sexual harassment in research organisations and universities

### Specific challenge

Gender-based violence (GBV) is happening across the European Union (EU) and is a human rights violation. It is both a cause and a consequence of inequalities between women and men. There exist numerous reports of women and men within European universities and research institutions, who have experienced sexual harassment and who report its detrimental effects on their personal wellbeing as well as their scientific career. GBV including sexual harassment in European universities and research organisations tends to be underestimated and there is little knowledge about it. Several studies have shown that women in precarious working conditions (e.g. PhD students) or exchange students seem to be particularly at risk to experience GBV or sexual harassment.

### Scope

Building on existing studies and knowledge generated in previous research initiatives, at national or European level, such as EU-funded Horizon 2020 Gender Equality Plan projects, the Gender Equality in Academia and Research (GEAR) tool<sup>41</sup>, as well as projects<sup>42</sup> funded through the DAPHNE strand of the Rights, Equality and Citizenship Programme<sup>43</sup>, this research and innovation action will:

- **Investigate the various forms of GBV including sexual harassment in European higher education systems and research organisations**, for both staff and students, including the particular situation of those with short-term affiliations to the organisation (e.g. visiting academic staff, exchange students) **as well as potential additional social determinants, (e.g. ethnicity, sexual orientation)**. It will build on previous research and, where needed, collect quantitative and qualitative data from at least 15 Member States and Associated Countries, taking various geographical locations into account. **National legal and policy frameworks should be also taken into account.**
- Identify the role of universities and research organisations, including research funding organisations as well as the role of support networks in A) preventing various forms of GBV (e.g. changing social attitudes and behaviour in order to end tolerance of all forms of violence; awareness raising through e.g. forum theatre); B) protecting victims (e.g. psychological, medical and legal support; anti-retaliation policies; training staff, including bystanders, to respond to early signs of GBV; securing campuses and workplaces and C) prosecuting the perpetrators (e.g. procedures to document GBV incidents; consequences for perpetrators at organisation-level; reporting to the police)
- Develop evidence-based case studies of implemented measures at organisation-level for each of the above-mentioned aspects (prevention, protection and prosecution) and outline what works and what does not work in various contexts
- Formulate concrete recommendations for universities and research organisations, including research funding organisations, on how to combat GBV in its various forms; and develop prevention plans, hands-on tool-kits, training material and dissemination material (like videos, infographics, brochures, etc.) that can be implemented and used by universities and research organisations through their Gender Equality Plans or as standalone measures.
- Disseminate its outcomes and materials (case studies, recommendations, toolkits, awareness-raising material etc.) to European research organisations and universities on GBV including sexual harassment and carry out information sessions and trainings for decision-makers, staff and students. Produced material will be made available at the "Gender Equality in Academia and Research" (GEAR) tool's website.

The Commission considers that proposals requesting a contribution from the EU between EUR 2.80 million and EUR 3.20 million and duration of 36 months would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts or duration.

### Expected impact

Better understanding of GBV in European universities and research organisations. Effective policies and measures implemented at universities and research organisations. Increased capacity of staff and students to address GBV. Reduction of GBV in academic environments and research workplaces in Europe.

Type of action	Research and Innovation action
Deadline	15 April 2020
Call identifier	H2020-SWAFS-2018-2020
Topic information	<a href="#">Link</a>



## SwafS-27-2020: Hands-on citizen science and frugal innovation

### Specific challenge

Citizen science is blooming across scientific disciplines. It can potentially bring a wide variety of benefits to researchers, citizens of diverse socioeconomic and cultural backgrounds, 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 lead to innovations that meet the needs of disadvantaged population groups; it can contribute to active citizenship, civic education and empowerment of the individuals and society to build social capital in communities through stimulating social networking and knowledge exchange, and social capacity in terms of the knowledge-producing capacity of society, thus helping policy makers to make more informed and targeted policies; 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, citizen science may have difficulties obtaining mainstream science funding, participating in international collaborations, sharing research data so that it can be used by other science actors, partnering with leading scientific establishments, building capacities and learning among the citizen scientists themselves, evaluating the impacts of the activities undertaken, and engaging in long-term activities as part of a structured and ambitious scientific agenda.

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.

Involvement of citizen scientists must be in line with Article 21 of the Charter of Fundamental Rights of the European Union, e.g. regardless of sex, age, social origin. In order to improve science-society relations, efforts should be made to include all parts of society, including hard-to-reach and vulnerable groups, in citizen science activities.

The present topic will focus on two specific aspects of citizen science.

### Scope

**Sub-topic A, Citizen science:** This will focus on hands-on citizen science activities. Proposals may focus on one particular area of scientific enquiry or tackle several, though social sciences and humanities and/or transdisciplinary approaches would be particularly welcomed. The intended citizen science activities should be clearly defined and result in novel means of social inclusion, and the development of new knowledge, new technologies, or new means of using existing technological or social innovations better. Effort should also be made to evaluate the impacts on society, democracy, the economy, science itself, and the individual citizen scientists involved. Lines of communication should be established with SwafS projects (e.g. EU-Citizen.Science, CitiS-Health, MICS, ACTION, SUPER\_MoRRI) in order to share information on activities, evaluation data and research and innovation content arising from the citizen science in the spirit of open science (see Grant Conditions).

**Sub-topic B, Frugal innovation:** This sub-topic will support hands-on activities to develop frugal innovations. Frugal innovations minimise cost and complexity and are aimed at low-income population groups in any part of the world that are scalable, durable and environmentally sustainable, but often using state-of-the-art technologies and know-how. The intended activities should involve citizens and/or civil society organisations alongside innovators, with the primary aim of developing frugal innovations. **Particular attention should be paid to ethical issues related to the innovation processes, the involvement of low-income populations in the development processes themselves, the sustainability of the innovations, and their likely cost effectiveness; this sub-topic therefore requires the involvement of SSH expertise in consortia.** Efforts should be made to showcase the developed innovation(s) with a view to encouraging their widespread adoption/market take-up. Effort should also be made to evaluate the impacts on society, democracy, the economy, innovation processes and the individual citizen innovators involved in the activities. Lines of communication should be established with other relevant SwafS projects (e.g. EU-Citizen.Science, CitiS-Health, MICS, ACTION, SUPER\_MoRRI, RRING, RiConfigure, SISCODE, LIV.IN and I AM RRI) in order to share evaluation data arising from the activities in the spirit of open science (see Grant Conditions)..

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged in both sub-topics.

The Commission considers that proposals requesting a contribution from the EU between EUR 1.80 million and EUR 2.20 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

1. **Citizen science:** Development of new scientific knowledge and/or innovations with/by citizen scientists. Evaluation evidence 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. 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.
2. **Frugal innovation:** Development of one or more frugal innovations with/by citizens. Evaluation data concerning the societal, democratic and economic costs and benefits of the frugal innovation activities. Consortia should choose a basket of indicators to



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measure the impact of their work. 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

Type of action	Research and Innovation action
Deadline	15 April 2020
Call identifier	H2020-SWAFS-2018-2020
Topic information	<a href="#">Link</a>





# Call - Science with and for Society

## SwafS-29-2020: The ethics of technologies with high socio-economic impact

### Specific challenge

Technologies with potentially high socio-economic impact<sup>68</sup> raising complex ethical issues must be analysed from an ethical perspective to maximise their societal benefit and minimise harm. The exponential scientific progress resulting in the mushrooming of these new technologies (e.g. gene editing, DNA digital data storage, Artificial Intelligence, etc.), calls for a coherent research and innovation ethics approach at EU level

### Scope

This work aims at complementing the work started in the context of SwafS-18-2016 call that addressed three areas: genomics, human enhancement and man-machine interactions (project SIENNA). The action should conduct a similar analysis and refine the model and guidelines produced by the project funded under the above call. In order to do so, the action should carry out a thorough scanning of the technology horizon to identify three or four different technologies (or family of technologies) with an equivalent socio-economic impact.

This horizon scanning constitute an important part of the action since it aims at **selecting the technologies that have or are likely to have the most significant ethics dimension and societal impact** while best complementing the work already carried out by SIENNA. Cooperation and synergies with SIENNA and other relevant projects (notably PANELFIT, SHERPA, EnTIRE, I-CONSENT, ENERI, PRINTEGER, and TRUST) will be established, via a dedicated horizontal coordination work package. This work package should also pay particular attention to the cooperation with the project(s) resulting from call SwafS-28-2020.

For each (family of) technology, the action should explore the attitudes of the various stakeholders, including the research community and the broader public, towards this type of research and innovation and its ethical implications.

The action should also examine the impact of these technologies notably with a view to identifying the necessary elements that could best support the research community in integrating the ethics dimension into their research protocols.

A comparison within the EU and with other regions of the world, on both the legal/regulatory and procedural framework (existing or under development) as well as on the level of societal awareness and acceptance, constitutes an important element of the work. This analysis should integrate the role of ethics committees and other advisory and regulatory structures.

The work undertaken should result in (A) operational guidelines for the research and innovation conducted in each of the studied fields. The guidelines should ensure “ethics by design” and be drafted to support the work of the research community, research ethics committees and integrity bodies. They must be in line with the new European code of conduct for research integrity.

The action should also propose (B) a code of responsible conduct for researchers (in academia and industry), taking into account the expectations of the different stakeholders. This should be achieved by actively involving civil society organisations and panels of citizens from different socio-economic groups including vulnerable populations, taking into consideration gender aspects.

Considering the rapid scientific evolution of the field, ways to enhance existing ethics and normative frameworks © should be proposed.

As regards the research integrity aspects per se, the need to complement the above mentioned European Code with specific guidelines should be assessed. If needed, a proposal for (D) short documents complementing the Code should be made.

The extension of the analysis to other new or emerging technologies, initiated by SwafS-182016, should be used as a basis **to develop a detailed ethics framework for new and emerging technologies** which should go through a validation process (e.g. using case studies involving key stakeholders).

**The action should also assess the possible need for dedicated legislation at EU level.** This tasks should be covered by the horizontal coordination work package mentioned above.

**The action should include relevant expertise on ethics and research integrity** as well as scientific and technical expertise. Furthermore, in line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

Publicly available results from relevant other EU funded research projects (the projects covered by the horizontal coordination work package should be taken into account.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 4.00 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 address the growing ethics challenges and expectations vis-à-vis new technologies to ensure the highest ethics standards at EU and at an international level. It will provide an ethics framework, which should enable the effective ethics governance of these technologies.

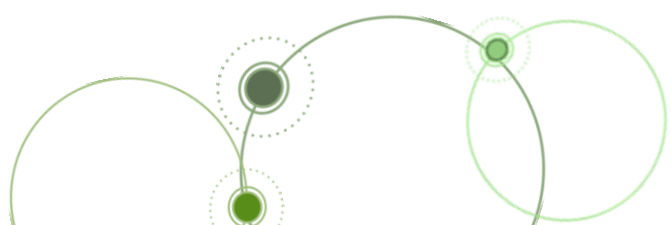
The work undertaken will help reconciling the needs of the research teams and the legitimate concerns of the citizens, while stimulating innovation and contributing to the reduction of socio-economic inequalities including, in health treatment, social status and social inclusion and gender equality. It will support the work of the field actors confronted with these issues. Overall, the action will lead to reducing the risks while proving an enabling framework for researchers and innovators.



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Overall, it will contribute to the development of new approaches in addressing ethical issues of new and emerging technologies, promoting research integrity and responsible conduct of research.

Type of action	Coordination and support action
Deadline	15 April 2020
Call identifier	H2020-SWAFS-2018-2020
Topic information	<a href="#">Link</a>



## SwafS-30-2020: Responsible Open Science: an ethics and integrity perspective

### Specific challenge

Open Science constitutes a "new approach to the scientific process based on cooperative work and new ways of diffusing knowledge by using digital technologies and new collaborative tools." As opposed to traditional practices in science and technology, which largely focus on the publication of research results in scientific journals, Open Science focuses on sharing and (re)using all available knowledge and data throughout the research process.<sup>73</sup> This includes among others, the more active participation of citizens in the scientific process (citizen science), open access to peer-reviewed scientific publications and scientific research data, open peer reviews and metrics for measuring research output (e.g. altmetrics).

Open Science aims to promote transparency and reproducibility of results, increase and widen the diffusion of knowledge and may overall accelerate scientific progress and innovation.

At the same time, in order to maximize the benefits of Open Science, there are several ethical, legal and social challenges that need to be addressed. Such challenges include:

- possible development of new forms of malpractice
- risk of diluting research results of high quality (emergence of fake science)
- risk of new bias in the assessment of the quality of the research output and impact notably via the alternative metrics
- issues related to content-mining, the privacy of data subjects, potential conflicts with intellectual property and data protection rights
- the emergence of questionable dissemination/publication practices like the proliferation of predatory journals that exploit the open access publishing business model.

The strong connection between Open Science and research integrity has been underlined in the Council conclusions on research integrity, where the Member States recognise "the importance of open science as a mechanism for reinforcing research integrity, while, at the same time, research integrity contributes to open science."

### Scope

**The action should examine and map the ethical, legal and social implications/challenges as well as the research integrity issues related to Open Science, and consequently identify and analyse the necessary elements to support the integration of research ethics and integrity as structural component of Open Science.**

Issues to be addressed include, among others, the need to develop appropriate infrastructure and tools for handling sensitive personal data (especially with regards to the anonymisation/pseudonymisation mechanisms, the possibility to seek the informed consent of the data subject in case of further research, data storage and security measures in place). In this context, the action should explore, among others, to what extent the application of Blockchain in the context of open data could address concerns related, for example, to privacy, and examine further the use of this technology in the context of open data, evaluating the opportunities and limitations.

**The action should also explore ethical issues and opportunities** related to the implications of Open Science on reproducibility, on the evaluation of science and scientific reputation, on scholarly communication and on the involvement of citizens in the scientific process.

The specificities of different disciplines should be clearly delineated (e.g. with regards to qualitative data from social sciences and humanities research) and issues related to interinstitutional, inter-disciplinary and international collaboration among all actors in research and innovation should be explored.

The work should be based on a bottom-up approach, gauging the attitudes of all relevant stakeholders (e.g. researchers, research funders, publishers and citizens) through the organisation of workshops and consultations and encourage change in the research culture by promoting communication and dialogue.

Ultimately, **the work undertaken should result in (A) a detailed strategic/policy assessment that will enable the Commission to establish policy options** as well as practical ways to support the work of relevant stakeholders in promoting responsible Open Science - defined as Open Science adhering to the highest research ethics and integrity standards. The European code of conduct for research integrity will be a main reference.

The work undertaken should also result in (B) operational guidelines to support the work of research teams. This should notably address the need to respect Open Science related obligations in the preparation of proposals to request funding at EU level or in other contexts.

The need to complement the European Code with specific guidelines should be also assessed. If needed, a proposal (C) for short documents complementing the Code should be made.

In addition, this action should produce (D) traditional and online training material (reflecting the guidelines) on responsible Open Science for students, young and experienced researchers. The material will form part of the training e-platform created by European Network of Research Ethics and Research Integrity (ENERI) and hosted by European Commission platform SINAPSE.

In addition to the above cited network, it is essential to ensure that the publicly available results from relevant EU funded research projects (e.g. PRINTEGER, EnTIRE TRUST, MoRRI and RRI-Practice) are taken into account. Cooperation with the projects should be the subject of a dedicated horizontal coordination work package.



# Call - Science with and for Society

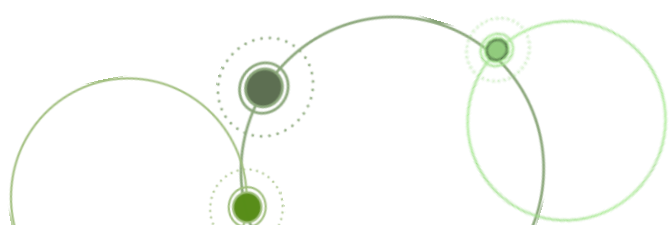
In line with the strategy for EU international cooperation in research and innovation [COM(2012)497], international cooperation is encouraged.

The Commission considers that proposals requesting a contribution from the EU of the order of EUR 2.50 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 action will provide a comprehensive overview of the ethics and research integrity issues and opportunities related to Open Science and how they can be effectively handled at EU level. Furthermore, the action will promote a model balancing the need for openness with relevant ethical, legal, social and research integrity considerations.

Type of action	Coordination and support action
Deadline	15 April 2020
Call identifier	H2020-SWAFS-2018-2020
Topic information	<a href="#">Link</a>



# Call - Science with and for Society

## SwafS-31-2020: Bottom-up approach to build SwafS knowledge base

### Specific challenge

The objectives of the SwafS part of Horizon 2020 are to build effective co-operation between science and society, foster the recruitment of new talent for science, and to pair scientific excellence with social awareness and responsibility. There are eight lines of actions (science careers, gender equality, public engagement, science education, open access/open data, governance and ethics, the precautionary principle, science communication), all of which are pertinent to reaching the SwafS' objectives.

The SwafS Work Programmes have included a range of topics that may be characterised as being relatively open ('bottom-up') or closed ('prescriptive'), the choice of which has depended on the area of activity, the policy/research demands, and awareness of the need to open up space for creativity and good ideas to flow from applicants on transdisciplinary issues of concern. Even with this balance of open and closed topics, it is necessary to create space for ideas that fill gaps, 'connect the dots' between projects, activities and objectives, or focus on innovative or emerging issues that have so far not been broached.

### Scope

**This topic is completely bottom-up ("open")**, and therefore a challenge to applicants to propose innovative research and innovation actions that are needed to help meet SwafS objectives.

To respond this specific challenge, **applicants could choose to consider: 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; how digital technologies can lead to new forms of science-based advocacy, 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; research and innovation gaps in relation to people's needs and concerns and in any of the areas or dimensions covered by RRI**; RRI achievement rewards to highlight the organisations that are more RRI aware (answering questions such as how such a reward could work and based on which criteria); the 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. Applicants should demonstrate that they aim to fill important gaps in the evidence base, how they will fill these gaps, and how they will deepen the evidence base. Scientific and other types of publication should be foreseen. Activities to involve stakeholders from all parts of the quadruple helix within the research and innovation activities will be favoured.

The Commission considers that proposals requesting a contribution from the EU between EUR 0.90 million and EUR 1.10 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

Consortia should choose a basket of indicators to measure the impact of their work. In particular, consortia are expected to contribute to one or more of the MoRRI indicators. 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	15 April 2020
Call identifier	H2020-SWAFS-2018-2020
Topic information	<a href="#">Link</a>



## *Topics with minor SSH relevance*

**SwafS-08-2019-2020: Research innovation needs & skills training in PhD programmes**

[Link](#)





## Cross-cutting activities

# Call - Competitive, low carbon and circular industries

## CE-SPIRE-01-2020: Tapping into the potential of Industrial Symbiosis

### Specific Challenge

Industrial Symbiosis holds significant potential to provide major improvements in resource and energy efficiency for all energy intensive industries. Exploiting this potential could accelerate the transition to a circular economy and to renewable energy systems, reduce waste heat energy and lead to significant reduction of GHG emissions. However, Industrial Symbiosis is currently not yet widely implemented. The challenge is to tackle all technological and non-technological barriers. The full potential of industrial symbiosis could only unfold if the consequences for energy grids and adjacent infrastructures (e.g. waste heat recovery through district heating or heat integration in chemical processes, waste to energy, or waste and gaseous effluents management), as well as the regional dimension are taken into account.

### Scope

Technology based innovations should prove the potential for novel symbiotic value chains in demonstrators involving multiple industrial sectors in real industrial settings. Proposals are expected to address e.g.:

- Broader symbiosis, from local and regional perspectives, with infrastructures (e.g. waste and water management infrastructure, gas networks), communities and energy grids (e.g. smart operations scheduling, district heat integration), including distributed generation and the role that symbiosis can play in fluctuating energy grids (i.e. grid services, seasonal storage, biomass or heat pumps integration);
- Management of side/waste streams (through e.g. capturing, purification, concentrating, sorting, collecting, exchanging or preparation) specifically for the use as resource for other plants and companies across sectors and/or across value chains;
- Process (re-)design and implementation to integrate and adapt existing processes to enhance industrial symbiosis (energy and material flow coupling, infrastructure and logistics).
- Integration of information technology, including artificial intelligence, and operational technology; appropriate ICT tools (e.g. aggregation technologies) for multi-criteria decision making, for the design and the operation management of exchange streams in a dynamic production environment, advanced modelling to design and establish novel symbiotic interactions; data sharing and preservation of data confidentiality;
- **Assessment methodologies and KPIs to measure the performance of symbiosis, including environmental, economic and social impacts. Life cycle assessment and life cycle cost analysis should take into account existing sustainability standards (e.g. ISO 10410) and existing best practices;**

Creation of an inventory of successful symbiotic relations and solutions, as well as best practices. Non-technological aspects, which may include regulatory issues, the need for redefining standards, and new business models, covering ownership, management and fair sharing of benefits, should be considered. This may entail devising collaboration strategies via contracts and platforms for cross-sectorial sharing of resources and benefits in industrial parks, clusters or distributed plants.

Clustering and cooperation with other selected projects under this cross-cutting call and other relevant projects is strongly encouraged.

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the Introduction of this part of the Work Programme.

Activities should start at TRL 6 and achieve TRL 7 at the end of the project.

The Commission considers that proposals requesting a contribution of EUR between EUR 12 and 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

Several of the following impacts are expected:

- Step change towards closing circular loops;
- Improvement of at least 15% in energy efficiency of the targeted industrial processes, compared to the non-symbiotic scenario;
- Reduction of at least 30% in total energy intensity, on the basis of full life cycle considerations;
- Overall reductions in CO<sub>2</sub> emissions of 40% compared to the non-symbiotic scenario;
- Reduction in primary raw material intensity of up to 20%;
- Reduction of waste generation by at least 25%;
- Better understanding of relevant barriers (e.g. end of waste criteria);
- Effective dissemination of major innovation outcomes to the current and next generation of employees, through the development of learning resources with flexible usability. These should be easy to integrate in existing curricula and modules for undergraduate level and lifelong learning programmes;



## Call - Competitive, low carbon and circular industries

- The environmental gains in absolute figures, and weighted against EU and global environmental footprints, should be demonstrated;
- In addition, the replication potential should also be assessed.

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

<b>Type of action</b>	Innovation action
<b>Deadline</b>	<b>05 February 2020</b>
<b>Call identifier</b>	H2020-LOW-CARBON-CIRCULAR-INDUSTRIES-2020
<b>Topic information</b>	<a href="#">Link</a>

# Call - Competitive, low carbon and circular industries

## CE-SC5-08-2020: Raw materials policy support actions for the circular economy - Expert network on Critical Raw Materials

### Specific Challenge

In order to secure the sustainable access to primary and secondary raw materials, including metals, industrial minerals, construction raw materials, wood, and particularly Critical Raw Materials (CRMs) for the EU economy, there is a need to tackle a number of specific non-technological challenges at local, regional, national, EU and global levels.

The supply of CRMs to the EU is at risk as they are often mined as by-products and usually still have recycling rates below 1% after decades of use. There is a need for an expert advice in support of decision-making at the EU level covering all the raw materials and their value chains screened in the CRMs assessment.

### Scope

All actions should contribute to improving EU official statistics and to building the EU knowledge base of primary and secondary raw materials (EC Raw Materials Information System – RMIS).

Clustering and cooperation with other selected projects under this cross-cutting call and other relevant projects supporting the EIP on Raw Materials is strongly encouraged.

Actions should strengthen an EU expert network and community covering all raw materials screened in the CRM assessment of 2017, and once available also the raw materials of 2020 assessment. **The consortium should organise the expert community across the EU covering expertise on primary and secondary resources; production, including exploration, mining, processing, recycling and refining; substitution of CRM; raw materials markets; future demand and supply; materials flows; socio-economic analysis, and strategic value chains and end-use sectors, including batteries, e-mobility, renewable energy, electronics, defence and aerospace.**

The actions should improve data and knowledge on all screened raw materials; flexibly support the Commission in policy making related to CRM in general or linked to specific applications or sectors; as well in the relevant events organised by the Commission. The actions should also support the Commission in the analysis of the future supply and demand of raw materials, policy and technology gaps and innovation potential along the raw materials value chains.

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

The project results are expected to contribute to:

- achieving the objectives and the implementation of both the Raw Materials Initiative and the EIP on Raw Materials, in particular in terms of securing the supply of critical raw materials (CRMs);
- better informed and more effective decision-making by the EU and Member States policy makers and the producers and users of raw materials regarding the supply and demand of raw materials and the associated environmental and social aspects;
- improved awareness of society across the EU about importance of the critical raw materials and other relevant materials for strategic value chains in support of the implementation of the Sustainable Development Goals (SDGs) in the EU;
- in the longer term improved diversification of CRMs supply to the EU.

Type of action	Coordination and support action
Deadline	05 February 2020
Call identifier	H2020-LOW-CARBON-CIRCULAR-INDUSTRIES-2020
Topic information	<a href="#">Link</a>

# Call - Competitive, low carbon and circular industries

## LC-SC3-NZE-5-2020: 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 CO<sub>2</sub> emissions, and in the 2 degree scenario, should represent half of the stored CO<sub>2</sub> by 2050. Relevant sectors with high CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub>. Important aspects to address are of technical (e.g. the optimised integration of capture plant with industrial processes; scalability; CO<sub>2</sub> 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.**

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.

Proposals submitted under this topic should include a business case and exploitation strategy, as outlined in the Introduction of this part of the Work Programme.

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.

### 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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	01 September 2020
Call identifier	H2020-LOW-CARBON-CIRCULAR-INDUSTRIES-2020
Topic information	<a href="#">Link</a>

## Call - Competitive, low carbon and circular industries

*Topics with minor SSH relevance*

**CE-NMBP-42-2020: Materials life cycle sustainability analysis**

[Link](#)