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**Call Topics for International Cooperation  
in Horizon 2020  
EU and Russia**

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# Content

Excellent Science ..... 3  
Industrial Leadership ..... 6  
Societal Challenges ..... 9

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## Excellent Science

<b>Horizon 2020 Pillar:</b>	Excellent Science
<b>Programme:</b>	European research infrastructures (including e-Infrastructures)
<b>Call Title:</b>	Support to policy and international cooperation
<b>Call Identifier:</b>	H2020-INFASUPP-2018-2020
<b>Topic Title:</b>	Policy and international cooperation measures for research infrastructures
<b>Topic Identifier:</b>	INFASUPP-01-2018-2019
<b>Type of Action:</b>	RIA Research and Innovation action, CSA Coordination and support action
<b>Deadline(s):</b>	20-03-2019 (single-stage)

### Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/infrasupp-01-2018-2019.html>

**Specific Challenges:** High-quality, accessible research infrastructures are at the heart of the knowledge triangle of research, education and innovation. They enable tens of thousands of researchers in academia and industry to develop innovative ideas, products and services that foster European competitiveness and help tackle societal challenges facing our continent. However, ensuring the availability of state-of-the-art facilities requires multi-billion Euro long-term investments across the European Research Area. In the context of implementing the ERA Roadmap, the focus of this action is to set the conditions for effective investment and optimise the use of research infrastructures of European interest.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation for research infrastructures is needed with a number of key partners located in third countries/regions seen as strategic both for the development, exploitation and management of world-class research infrastructures and for ensuring the necessary complementarities on the international scene required to address research challenges with a global dimension by optimising the use of the available resources.

**Scope:**

Proposals will address one of the following sub-topics:

(c) Research and Innovation actions for the 2019 deadline

The purpose of this sub-topic is to support the further structuring of the cooperation with the **Russian Federation** in the Research Infrastructure domain.

Proposals will have to demonstrate the involvement of relevant entities on both European and **Russian** side and will cover the following 3 dimensions:

- i. Building on the strategic recommendations deriving from the CREMLIN project, support the strengthening of the complementarity between **Russian** Mega Science initiatives and their European counterparts. Proposals will specifically address:
  - Joint development and acquisition of specific instrumentation to be used by the European and **Russian** Infrastructures. This activity will specifically target the NICA and PIK initiatives and their European counterparts.
  - Joint conceptual and technical design of **Russian** Infrastructures of European interest. This activity will particularly target the SSRS-4 initiative and its European counterparts.
  - Joint development of future technologies required for Research Infrastructures' instrumentation;
- ii. Contribute to overcoming the barriers that prevent European scientists from accessing **Russian** Research Infrastructures of European interest. The project will support **Russian** Facilities in setting-up the appropriate access conditions and cover the travel and subsistence costs that European researchers would sustain in accessing the facilities. In this context, the project will have to also take into account the list of Research Infrastructures open to International collaboration produced by the **Russian Federation** and the European Charter for Access to research infrastructures.
- iii. The proposal will develop a staff exchange programme and thematic courses and workshops (e.g. summer schools), aimed at fostering exchanges of best practices on management practices, access procedures and scientific collaboration between infrastructure Staff and Scientists belonging to both the **Russian Federation** and European Union.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 25 million would allow this activity to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

**Expected Impact:**

(c) Research and Innovation actions for the 2019 deadline

- strengthen the structured cooperation between European and **Russian** Research Infrastructures;
- promote the harmonisation of procedures and framework conditions for access;
- develop the framework conditions to improve access of European Scientists to **Russian** Research Infrastructures;
- promote the participation of **Russian** researchers in EU projects.

**Cross-cutting Priorities:** International cooperation

## Industrial Leadership

<b>Horizon 2020 Pillar:</b>	Industrial Leadership
<b>Programme:</b>	Leadership in Enabling and Industrial Technologies - Space
<b>Call Title:</b>	Space 2018-2020
<b>Call Identifier:</b>	H2020-SPACE-2018-2020
<b>Topic Title:</b>	International Cooperation Copernicus – Designing EO downstream applications with international partners
<b>Topic Identifier:</b>	DT-SPACE-06-EO-2019
<b>Type of Action:</b>	RIA Research and Innovation action
<b>Deadline(s):</b>	12-03-2019 (single-stage)

**Participant Portal Weblink:**

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-space-06-eo-2019.html>

**Specific Challenges:** Copernicus, the Union's Earth observation and monitoring programme produces a wealth of data and information regarding the Earth sub-systems (land, atmosphere, oceans) and cross-cutting processes (climate change, emergency and security). Cooperation with international partners is key to promoting the uptake of Copernicus globally, exploiting possibilities for integrating in-situ, space data and information technologies. Building the Copernicus full, free and open data policy, the Commission seeks to facilitate access to Copernicus data and information for interested international partners. Administrative cooperation arrangements on Copernicus data access and earth observation data exchange have already been signed with the United States and Australia, and discussions towards similar cooperation have been started with other countries and regions (including Africa, Latin American countries and Asia-Pacific countries).

Cooperation with partner countries should be fostered with a view to using Copernicus data to jointly develop algorithms, services and/or products which serve local user needs and/or enhance the Copernicus global product quality.

Proposals are encouraged to use the Copernicus Data and Information Access Services (DIAS), or other existing data access solutions instead of setting up their own download and processing infrastructure. They are also encouraged to integrate third-party data (including in-situ data) and envisage data assimilation into models and products made available on the Copernicus platform of the Copernicus services..

For such applications and developments to succeed in the market or with public users, the products need to be shaped according to users' needs and their value to users must be openly demonstrated to the wider user community. This needs

to be achieved in an environment integrated at the level of the user, in order for users to accept the innovative potential which the product promises. This will require also specific attention to be given to the various processes in place in the users' workflows which incorporate the EO information. Furthermore, the transition of R&D product prototypes to viable commercial product lines after the end of the EU funded phase remains a challenge to be addressed early on during product development.

**Scope:** Proposals shall address a wide variety of applications stemming from the use of Earth observation and their smart integration with other related technologies. Copernicus should be considered as part of the solution which may include other space or non-space inputs. This is likely to lead to greater value, opportunities and especially market uptake. Applications shall be sustained by a production process capable of delivering to the user a product which is validated and accepted as a marketable product in the international partner country. International collaboration has a key role to play in this context, as it enhances access to markets beyond the national borders, notably by enabling space application providers to absorb market-related tacit knowledge and know-how of their partners. Corresponding validations and customisations are to be undertaken, and the business case for the application is to be demonstrated. Service level models are to be developed, with appropriate quality of service definitions for the application. Application products are expected to adopt open standards for data documentation, data models and services including data processing, visualisation and cataloguing on a large scale.

Tasks shall include joint calibration and validation activities or integration of local in-situ systems to enhance the quality of data and service products. It is important to exploit the added value of integration of EO observation technologies (both satellite, airborne and ground based) with positioning ones, and ICT (enhancing new frontiers opened by cloud computing) from international partner countries through the development of applications, and encourage their insertion into the market.

The choice of EO application is left to the proposer.

Applicants are advised to consult further information on the availability of Copernicus Sentinel Data, access to Copernicus Contributing Mission data, as well as issues recommended to be detailed in the proposals via the Commission's Copernicus website<sup>[1]</sup>.

For proposals under this topic:

- Participation of at least one partner from a country that has signed a Copernicus Cooperation Arrangement<sup>[2]</sup> is required;
- Participation of industry, in particular SMEs, is encouraged;
- Involvement of post-graduate scientists, engineers and researchers is encouraged, for example through professional work experience or through fellowships/scholarships as applicable;
- Participation of partners involved in international **GEO Initiatives** is encouraged.

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

This topic contributes to the Horizon 2020 focus area "Digitising and transforming European industry and services".

**Expected Impact:**

- Establish sustainable supply chains for innovative EO value added products and services with demonstrated commercial value with international client communities;
- Complete integration, based on international standards, into the customer's existing business processes and processing chains, as well as the economic viability of the application is to be demonstrated;
- Enhance the European industry's potential to take advantage of market opportunities and establish leadership in the field and to boost business activity;
- Lead to new or improved products, processes or services on the market that are capable of generating within 3 years after the end of public funding a significant turnover for the participants, and create new jobs;
- Lead to an improved quality of the Copernicus global product, thereby enhancing the stating of Copernicus data and information in a global environment and **GEOSS**.

**Cross-cutting Priorities:** International cooperation

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<sup>[1]</sup> <http://www.copernicus.eu/main/data-access>

<sup>[2]</sup> See Copernicus.eu for list of countries concerned

## Societal Challenges

<b>Horizon 2020 Pillar:</b>	Societal Challenges
<b>Programme:</b>	Climate action, environment, resource efficiency and raw materials
<b>Call Title:</b>	Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement
<b>Call Identifier:</b>	H2020-LC-CLA-2018-2019-2020
<b>Topic Title:</b>	The changing cryosphere: uncertainties, risks and opportunities
<b>Topic Identifier:</b>	LC-CLA-07-2019
<b>Type of Action:</b>	CSA Coordination and support action
<b>Deadline(s):</b>	19-02-2019 (single-stage)

### Participant Portal Weblink:

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

**Specific Challenges:** Globally, glaciers and the large ice sheets of Antarctica and Greenland are particularly vulnerable to climate change, risking a significant future contribution to changes in sea levels. At present, there are significant uncertainties, e.g. relating to their stability, which prevent an accurate assessment of their vulnerability. The '**Arctic** amplification' of global warming is putting pressure on the ecosystems and communities of the region and having an impact at global level as well. The **Arctic's** fragile natural ecosystems and societies are under serious threat, and additional human activities, linked to the new economic opportunities that are made possible by climate change, are putting additional pressure on them.

**Scope:** Actions should aim at developing innovative approaches to address the following sub-topic:

**Arctic** standards (Coordination and Support action): The action should propose guidelines and protocols to develop '**Arctic** standards', also including the legal framework, based on the translation of research outcomes into cold-climate technologies and services with commercial potential and the assessment of the sustainability of associated processes and technologies. The action should cover a wide range of technologies and services that have the potential to bring broad social and economic benefits within and beyond the **Arctic** region. The action should also provide requirements on how to design, build, install, and operate equipment and services to safely perform activities in the **Arctic** and to respond to emergencies.

The participation of standardisation organisations is encouraged.

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

For all sub-topics, in line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged<sup>[1]</sup>, in particular with countries – beyond the EU Member States and countries associated to Horizon 2020 – that took part in the first **Arctic Science Ministerial** of 28 September 2016<sup>[2]</sup>.

**Expected Impact:**

the project results are expected to contribute to:

- enhanced stakeholder capability to operate in cold climate environments;
- better servicing of the economic sectors that operate in the **Arctic** (e.g. shipping, tourism);
- promoting sustainable **Arctic** opportunities arising from climate change and supporting the leverage of regional (EU) funds into these opportunities;
- supporting the competitiveness of European industry, particularly SMEs, engaging in sustainable development of the **Arctic**.

**Cross-cutting Priorities:** Blue Growth, International cooperation, RRI, Socio-economic science and humanities, Open Innovation

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<sup>[1]</sup> Proposals should pay attention to the special call conditions for this topic.

<sup>[2]</sup> i.e. the United States of America, Canada, the People’s Republic of China, Japan, the **Russian Federation**, South Korea, New Zealand, India, Singapore, and Greenland; see [https://www.Arctic.gov/publications/other/supporting\\_Arctic\\_science.html](https://www.Arctic.gov/publications/other/supporting_Arctic_science.html)

<b>Horizon 2020 Pillar:</b>	Societal Challenges
<b>Programme:</b>	Climate action, environment, resource efficiency and raw materials
<b>Call Title:</b>	Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement
<b>Call Identifier:</b>	H2020-LC-CLA-2018-2019-2020
<b>Topic Title:</b>	The changing cryosphere: uncertainties, risks and opportunities
<b>Topic Identifier:</b>	LC-CLA-07-2019
<b>Type of Action:</b>	RIA Research and Innovation action
<b>Deadline(s):</b>	19-02-2019, 04-09-2019 (two-stage)

**Participant Portal Weblink:**

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

**Specific Challenges:** Globally, glaciers and the large ice sheets of Antarctica and Greenland are particularly vulnerable to climate change, risking a significant future contribution to changes in sea levels. At present, there are significant uncertainties, e.g. relating to their stability, which prevent an accurate assessment of their vulnerability. The 'Arctic amplification' of global warming is putting pressure on the ecosystems and communities of the region and having an impact at global level as well. The Arctic's fragile natural ecosystems and societies are under serious threat, and additional human activities, linked to the new economic opportunities that are made possible by climate change, are putting additional pressure on them.

**Scope:** Actions should aim at developing innovative approaches to address only one of the following sub-topics:

- a. Sea-level changes (Research and Innovation action): Actions should assess the processes controlling changes to global ice mass balance - including ice dynamics - such as ice shelf-ocean and sea-ice interactions, surface components, effects of crustal de-loading (Glacial Isostatic Adjustments) on relative sea-level changes and/or gravitational effects of ice mass changes on the spatial patterns of sea-level changes. Actions should assess the status of ice sheets and glaciers, report on how their changes are likely to affect future sea-levels, and increase confidence in predicting changes in the cryosphere including through better representation of poorly represented processes. Actions should also analyse low-probability high-impact scenarios including those associated with the collapse of ice sheets (sea-level fingerprints). Actions may be focused on specific issues which substantially contribute to

sea-level changes and to the assessment of the associated major risks to and impacts on coastal communities, coastal ecosystems and critical infrastructure across the globe. Clustering with relevant projects funded by the ESA Earth Observation Programme is encouraged.

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

- b. Changes in **Arctic** biodiversity (Research and Innovation action): Actions should identify and analyse major drivers and implications of changing biodiversity in the **Arctic**, such as the role of invasive species, and how vulnerable land and/or marine ecosystems are with respect to combined human and natural influences. Actions should assess the ecosystems' responses to both external and internal factors and how these responses are impacting on indigenous populations and local communities at socio-economic level. Actions should also identify adaptation strategies in relation to the changes in **Arctic** ecosystems.

The participation of social sciences and humanities disciplines is important for addressing the complex challenges of this topic.

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

- c. Sustainable opportunities in a changing **Arctic** (Research and Innovation action): Actions should assess the viability of new economic activities – such as resource exploitation, shipping and tourism – and their ecological and socio-economic impacts and feedbacks at various scales, and their impact on the provision of ecosystem services. Actions should investigate key processes with high societal and economic impacts and provide appropriate, solution-oriented adaptation and mitigation responses, as well as capacity building for sustainable livelihoods while considering – in a co-design approach – the needs, priorities and perspectives of indigenous populations, local communities and economic actors operating in the region.

The participation of social sciences and humanities disciplines is essential for addressing the complex challenges of this topic.

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

For all of the above sub-topics, in line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged<sup>[1]</sup>, in particular with countries – beyond the EU Member States and countries associated to Horizon 2020 – that took part in the first **Arctic** Science Ministerial of 28 September 2016<sup>[2]</sup>.

**Expected Impact:** For projects addressing parts a), b) or c), the project results are expected to contribute to:

- the implementation of the new integrated EU policy for the **Arctic**<sup>[3]</sup>;
- the IPCC assessments and other major regional and global initiatives;
- enhanced engagement of and the interaction with residents from local communities and indigenous societies.
- support the EU **Arctic** Research Cluster<sup>[4]</sup>

**Cross-cutting Priorities:** Blue Growth, International cooperation, RRI, Socio-economic science and humanities, Open Innovation

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<sup>[1]</sup> Proposals should pay attention to the special call conditions for this topic.

<sup>[2]</sup> i.e. the United States of America, Canada, the People's Republic of China, Japan, the **Russian Federation**, South Korea, New Zealand, India, Singapore, and Greenland; see [https://www.Arctic.gov/publications/other/supporting Arctic science.html](https://www.Arctic.gov/publications/other/supporting_Arctic_science.html)

<sup>[3]</sup> JOIN(2016) 21 final

<sup>[4]</sup> <http://www.eu-polar.net/eu-Arctic-cluster/>

<b>Horizon 2020 Pillar:</b>	Societal Challenges
<b>Programme:</b>	Food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy
<b>Call Title:</b>	Blue Growth
<b>Call Identifier:</b>	H2020-BG-2018-2020
<b>Topic Title:</b>	Coordination of marine and maritime research and innovation in the Black Sea
<b>Topic Identifier:</b>	LC-BG-09-2019
<b>Type of Action:</b>	CSA Coordination and support action
<b>Deadline(s):</b>	23-01-2019 (single-stage)

**Participant Portal Weblink:**

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

**Specific Challenges:** The **Black Sea** is going through rapid changes in response to closely interlinked natural and anthropogenic pressures. Climate change is influencing the physical dynamics and hydrological structure of the **Black Sea**, while nutrient and pollutant loads are flowing from growing urban areas, inland and coastal activities. Increasing maritime traffic is also leading to safety concerns, water and air pollution and the introduction of invasive alien species. Fishing activities in the **Black Sea** are unsustainable. The area's marine heritage and its ecosystem services are also at risk. The geo-political complexity of the area further complicates the establishment of favourable framework conditions to support the growth of the blue economy (e.g. in trans-border cooperation on sea-related activities, including maritime spatial planning). Coordinated and integrated actions need to be carried out by countries bordering the **Black Sea** individually and together in order to create synergies and complementarities between sectors and countries. A common marine and maritime R&I strategy needs to be developed in order to achieve knowledge-based, sustainable and long-lasting Blue Growth in the region.

**Scope:** Proposals shall develop a Strategic Research and Innovation Agenda and Implementation Plan and contribute to the further alignment and convergence of national research and innovation activities and other relevant initiatives and investments by and with the different actors and across different sectors in primis between the countries bordering the **Black Sea** coasts and the whole EU. Activities shall establish and consolidate an operational network of marine and maritime research funders and other key players. Activities shall support the design and implementation of new transnational joint activities This action shall

build on past and on-going regional, international as well national and EU projects/initiatives (e.g. SEAS-Era ERA-NET, PERSEUS, COCONET, European research infrastructures such as EMBRC, Euro-Argo ERIC, ICOS ERIC and EMSO ERIC, **Black Sea Economic Cooperation**, DANUBIS-RI etc.). It must integrate research, policy, industry (including aquaculture) and society (including the preservation of local coastal cultures). It shall also contribute to pooling different funding streams at national and EU level, and combine them in an effective way. In agreement with the Commission services, projects should ensure appropriate flexibility so as to respond in real time to potentially fast-changing policy scenarios.

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

**Expected Impact:** Contributing to the implementation of the EU Bioeconomy Strategy, the EU Integrated Maritime Policy and its environmental pillar, the EU Marine Strategy Framework Directive, the EU Maritime Spatial Planning Directive, the EU Common Fisheries Policy and the EU Blue Growth Strategy, activities shall

In the short term:

- Deliver a Strategic and Innovation Research Agenda, structuring and consolidating research and innovation around the **Black Sea** and in cooperation with the rest of the EU.
- Boost the knowledge base and contribute to creating the right conditions for the development of new technologies and services and to improve human capacity and infrastructure in the **Black Sea** region.

In the medium term:

- Boost the blue economy and contribute to creating more jobs in the **Black Sea** region by coordinating and aligning EU, national and regional marine and maritime research programmes.
- Increase the competitiveness of EU researchers, industry and SMEs within the marine and maritime sectors.
- Maximise the impact of science diplomacy through enhanced marine cooperation in the **Black Sea** region.
- Improve the professional skills and competences of those working and being trained to work within the blue economy.
- Contribute to making the **Black Sea** healthier, more productive, resilient, better known and valued.
- Contribute to policymaking in research, innovation and technology.

**Cross-cutting Priorities:** Socio-economic science and humanities, International cooperation, Blue Growth

<b>Horizon 2020 Pillar:</b>	Societal Challenges
<b>Programme:</b>	Food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy
<b>Call Title:</b>	Sustainable Food Security
<b>Call Identifier:</b>	H2020-SFS-2018-2020
<b>Topic Title:</b>	European Joint Programme on agricultural soil management
<b>Topic Identifier:</b>	LC-SFS-20-2019
<b>Type of Action:</b>	COFUND-EJP COFUND (European Joint Programme)
<b>Deadline(s):</b>	23-01-2019 (single-stage)

**Participant Portal Weblink:**

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sfs-20-2019.html>

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

**Scope:** The European Joint Programme will boost soil research with main emphasis on agricultural soil management and its contribution to climate change mitigation and adaptation. The aim is to construct a sustainable framework for an integrated community of research groups working on related aspects of agricultural soil management<sup>[2]</sup>. The activities should look at how management of agricultural soils can reduce degradation of land and soils (in particular soil erosion and loss of organic matter), preserve and increase fertility of soils and how the processes related to organic content and water retaining capacity can support mitigation and adaptation to climate change. The EJP will evaluate and foster implementation of novel technologies for soil management and carbon sequestration. The aim of the EJP is also to look for synergies between different

approaches used in Europe for farm level accounting of emissions and removals from agricultural activities and particularly of carbon storage. In doing so, activities will contribute to improving inventories, measurements, reporting and accounting activities at different scales. Sustainable agricultural productivity and environmental aspects will also be targeted in connection with climate change mitigation and adaptation, so that optimisation of land management is ensured.

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

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

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

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

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

The activities will need to be coordinated as appropriate with other international soil related activities under the United Nations umbrella among them the **Global Soil Partnership** and more particularly with European Soil Partnership node; with The Global Research Alliance on Agricultural Greenhouse Gases; Horizon 2020 project CIRCASA<sup>[5]</sup>; 4% Initiative: soils for food security and climate; Joint Programming Initiatives (FACCE, CLIMATE); the Belmont Forum and soil activities coordinated by the European Commission Joint Research Centre <sup>[6]</sup> when relevant and appropriate. The work of the EJP will also support a number of policies: the Common Agricultural Policy, Climate Change related policy and relevant environmental policies, in particular the implementation of the EU Soil Thematic Strategy<sup>[7]</sup>.

Financial support provided by the participants to third parties is one of the aims of this action and, in order to achieve the objectives of the action, the 60 000 EUR threshold provided for in Article 137(1)(c) of the Financial Regulation N°966/2012 and Article 210(a) of the Rules of Application Regulation N°1268/2012 can be exceeded.

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

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

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

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

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<sup>[1]</sup> Soil management includes: soil conservation, soil fertility and soil biodiversity.

<sup>[2]</sup> Agro-forestry is included in the topic.

<sup>[3]</sup> See definition of the 'multi-actor approach' in the introduction of this Work Programme part.

<sup>[4]</sup> Land use/cover area frame statistical survey, abbreviated as LUCAS, is a European field survey program funded and executed by Eurostat [http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Land\\_use/cover\\_area\\_frame\\_survey\\_%28LUCAS%29](http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Land_use/cover_area_frame_survey_%28LUCAS%29)

<sup>[5]</sup> Project selected under SFS-50-2017 topic

<sup>[6]</sup> European Soil Data Centre; EIONET - European Environment Information and Observation Network – soil network

<sup>[7]</sup> COM(2006)231

**Horizon 2020 Pillar:** Societal Challenges

**Programme:** Secure, clean and efficient energy

**Call Title:** BUILDING A LOW-CARBON, CLIMATE RESILIENT FUTURE: SECURE, CLEAN AND EFFICIENT ENERGY

**Call Identifier:** H2020-LC-SC3-2018-2019-2020

**Topic Title:** Market Uptake support

**Topic Identifier:** LC-SC3-RES-28-2018-2019-2020

**Type of Action:** CSA Coordination and support action

**Deadline(s):** 11-12-2018 (single-stage)

**Participant Portal Weblink:**

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-res-28-2018-2019-2020.html>

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

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

- Recommendation for harmonisation of regulations, life cycle assessment approaches, environmental impact methodologies of renewable energy solutions;
- Development of additional features for RES to be compliant with the electricity market requirements, making them "market fit", such as developing the possibility to provide additional services to the grid such as peak power and having an active role in electricity balancing/reserve market;

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

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

national and European level and how, why and under what conditions these (could) act as a barrier or an enabling element.

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

**Expected Impact:**

It is expected that the solution proposed will contribute to:

- Facilitate the introduction of these technologies and increase the share of renewable energy in the final energy consumption;
- Lead to substantial and measurable reductions for project developments, whilst still fully addressing the needs for environmental impact assessments and public engagement;
- Develop more informed policy, market support and financial frameworks, notably at national, regional and local level, leading to more cost effective support schemes and lower financing costs for RES facilities.

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

**Cross-cutting Priorities:** Clean Energy, Open Innovation, International cooperation, RRI, Socio-economic science and humanities

<b>Horizon 2020 Pillar:</b>	Societal Challenges
<b>Programme:</b>	Smart, green and integrated transport
<b>Call Title:</b>	Building a low-carbon, climate resilient future: Green Vehicles
<b>Call Identifier:</b>	H2020-LC-GV-2018-2019-2020
<b>Topic Title:</b>	InCo flagship on “Urban mobility and sustainable electrification in large urban areas in developing and Emerging Economies”
<b>Topic Identifier:</b>	LC-GV-05-2019
<b>Type of Action:</b>	IA Innovation action
<b>Deadline(s):</b>	25-04-2019 (single-stage)

**Participant Portal Weblink:**

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-gv-05-2019.html>

**Specific Challenges:** Climate change, energy security and local air pollution are some of the key questions for the 21st century. Urban areas in developing and **Emerging Countries** are major driving factors in growing global energy demand and Greenhouse Gas emissions.

Although cities cover only 2% of the earth's surface, 50% of the world's population lives in cities, but they are responsible for three-quarters of the global energy consumption as well as approximately 80% of the global greenhouse gas emissions. While the trend towards urbanisation and the associated increase of personal and freight transport creates massive challenges, in particular in developing and **Emerging Economies**, it also offers the unique opportunity to shape energy use especially in the transport and urban form towards a low carbon pathway. Moving towards sustainable mobility will also help addressing urban congestion, access to jobs and public services, and local air pollution.

This is why urbanisation requires integrated mobility solutions that bring together technology opportunities with local and national policy, including land use and mobility planning. Efficient transport and mobility, based on a balanced mix of public and private transport and dependent on the characteristics of each city, is and will continue to be the backbone of cities' growth and competitiveness.

Whereas environmental issues are very high on urban mobility agendas, the importance of transport in urban social and economic structures is often neglected in discussions. All three aspects of urban sustainability must be treated with equal importance and have to be examined in parallel.

**Scope:** Actions should bring together European, Asian (e.g. China), CELAC (Community of Latin American and Caribbean States) and African research partners, government agencies and urban authorities, private sector and civil society with relevant expertise and competence within the corresponding cooperation framework and foster participatory engagement in urban electrification in order to reduce air pollution and CO2 emissions. All types of vehicle are considered under this topic (powered 2 wheelers, cars, buses, trucks and LDV).

Proposals should address all of the following activities:

- Development of a toolbox for advanced management strategies towards a more efficient private and public electric mobility: E-mobility management strategies, focusing on smart deployment and operation of vehicles, in particular electrified vehicle, to increase mobility and energy efficiency, emission reduction and user acceptance of electrified vehicles
  - A smart and cooperative management of the vehicle in urban operation, (intermodal route planning, ecorouting eco-driving charging and parking infrastructure availability...).
  - Deployment and operation of infrastructure use charging infrastructure (conventional and wireless) and network, availability of parking places. Adaptation and integration of existing/ adapted vehicles of different types if necessary.
  - Efficient integration of the operations of different electrified road public transport, from e-bike to bus rapid transit ( e- BRT) including mini-buses, taxi and mobility services on demand through smart navigation and routing, coordinated traffic management, demand-responsive service and dispatching
- Comparative demonstrations activities and pilots in cities will include at least one demonstrator in the following regions: Europe, Asia, Africa and CELAC (leading to a minimum of 4 city demonstrators). Demonstrations will involve local partners. Innovative concepts for electrified road public transport (passenger and freight), jointly designed through International Partnerships as a contribution to a wider sustainable mobility concept, from the perspective of a seamless mobility, taking in account the acceptance of users (travellers or freight operator).
- Implementation concepts to scale up the demonstration activities. Evaluation of the relative outputs and accordingly the development of implementation concepts to scale up the demonstration activities and exploration of the sustainable mobility planning in the city transformation process :
  - Sustainable planning of city and transportation infrastructure: link city planning with policy discussion and implementation solutions and city goals and with any Air Quality Plans
  - Dedicated plans for financing solutions, including public and private operations.
  - Regional and international replication conditions to reach out to a larger number of cities and countries

Cooperation and synergies with ongoing activities undertaken with international initiatives such as Decarbonising Transport (International Transport Forum) and

the Urban Electric Mobility Initiative (UN-Habitat) and other joint initiatives of European Member States international cooperation initiatives and the European Commission (e.g. Mobilise Your City) should be sought where appropriate.

In line with the strategy for EU international cooperation in research and innovation<sup>[1]</sup>, international cooperation is encouraged.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 15 and 18 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 contribute to:

- Capability to quantify the potential reduction of greenhouse gas and pollutant emissions as well as traffic congestion, by demonstrating improvements that can be achieved with new urban mobility systems and electrification, for each stakeholder in the value chain (in line with the objectives set by the COP21 and the New Urban Agenda)
- UN's Sustainable Development Goals 11 "Sustainable cities and communities" and 13 "Climate Action"
- Reference models of the mobility system to provide a basis in order to assess the ability to replicate sustainable concepts by demonstrating the short- and long-term benefit for the stakeholders involved, and especially considering the relevant boundary conditions (i.e infrastructure, vehicle, usage needs and patterns, governance, financing schemes, urban organisation, etc) and how the result contributes to key EU policy goals (including climate goals and competitiveness of European industry)
- A basis for strengthening the collaboration of the European Union with Asia (e.g. China, India, etc), Latin America (CELAC) and Africa, which also offers both a common starting point for common future legislative efforts, as well a favourable setting for new business opportunities for innovative local and European entrepreneurs.

**Cross-cutting Priorities:** Open Innovation, Clean Energy, Contractual Public-Private Partnerships (cPPPs), EGVI, RRI, Socio-economic science and humanities, International cooperation

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<sup>[1]</sup> (COM (2012) 497)

**Horizon 2020 Pillar:** Societal Challenges

**Programme:** Smart, green and integrated transport

**Call Title:** 2018-2020 Mobility for Growth

**Call Identifier:** H2020-MG-2018-2019-2020

**Topic Title:** Future propulsion and integration: towards a hybrid/electric aircraft (InCo flagship)

**Topic Identifier:** LC-MG-1-7-2019

**Type of Action:** RIA Research and Innovation action

**Deadline(s):** 25-04-2019 (single-stage)

**Participant Portal Weblink:**

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-mg-1-7-2019.html>

**Specific Challenges:** This action is part of the Aviation International Cooperation Flagship called "Safer and Greener Aviation in a Smaller World" mentioned in the introduction to this work programme 2018-2020.

The third challenge of Flightpath 2050 is related to environmental protection and the security of energy supply. At the Paris climate conference (COP21), countries agreed to limit climate change to well below 2°C. Without considerable contributions from the aviation sector to global mitigation efforts, this goal cannot be achieved. Carbon Neutral Growth from 2020 is possible through a combination of non-market and market measures. Regarding aircraft technologies, there is growing evidence that indicates that for airframe as well as for Propulsion and Power Systems (PPS), the projected cumulative impact of developed technologies will fall short of the year 2035 target. These projections account for the latest developments in airframe, weight gains from more-electric aircraft systems as well as advanced gas-turbines, such as expected high thermal efficiencies through intercooling and recuperation and propulsive efficiencies from Open Rotor.

Against this background it is necessary to develop future aviation propulsion and integration technologies with emphasis on hybrid-electric and full-electric propulsion. There is also a need for establishing a common roadmap and prioritize the key enabling technologies for the hybrid/electric configurations, including energy storage (batteries), for the aviation sector.

**Scope:** Proposals are expected to address feasibility design studies for aircraft energy system with integrated hybrid/electric propulsion and power generation architectures as well as sub-systems enablers in the context of appropriately

projected advances in the next twenty-year framework. Each proposal may aim at several of the following areas:

- Development of tools for tightly-coupled inter-disciplinary new architectural feasibility assessment for the hybrid/electric propulsion and power systems, including detailed feasibility design studies for innovative energy distribution, use and storage solutions.
- Explore concepts on energy harvesting technologies to identifying, capturing, storing and re-using energy in flight and/or during take-off, landing, breaking and taxiing, which have potential to offer synergies with hybrid-electric architectures.
- Explore emerging storage technologies that have potential to comply with aerospace requirements (e.g. performances, safety, dispatch...) for hybrid/electric propulsion and power systems.
- Advance further Electro-Magnetic Interference solutions as well as thermal management trade-offs at system level.

Projects are expected to perform an assessment on the applicability, availability and upgrade of research infrastructures for testing and validation with focus on electrical and propulsion benches and computational tools. (incl. wind tunnels, electrical and propulsion benches and computational tools). Projects are also expected to develop updated roadmap with reference to key enabling technologies towards fully electric or hybrid-electric aircraft and explore new relevant regulatory frameworks. Proposals may include the commitment from the European Aviation Safety Agency to assist or to participate in the action.

The implementation of the proposed areas of this topic should cover TRLs ranging from 1 to 4.

In line with the strategy for EU international cooperation in research and innovation<sup>[1]</sup>, multilateral international cooperation is encouraged, in particular with countries such as Japan, **Russia**, USA and Canada.

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

**Expected Impact:** Overall, the topic is expected to contribute to Flightpath 2050 goals, namely towards “environmental protection and the security of energy supply” as well as “maintaining global leadership”. Specific impact is expected in the following areas:

- New paradigm shift towards emission-free aviation.
- Strengthen the medium and long-term European aeronautics competitiveness.
- Engagement of European aviation research community to a highly ambitious topic.
- Establishment of roadmaps and prioritization key enabling technologies.
- Foundations for next-generation European demonstrators.

- Contribution to UN's Sustainable Development Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all.

**Cross-cutting Priorities:** International cooperation

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<sup>[1]</sup> (COM(2012)497)