



International Cooperation in Horizon 2020

EU and Russia

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In addition to the topics mentioned herein the European Commission flagged the following call topics (listed on page 8 in the [Roadmap for EU-Russia S&T cooperation](#)) as being particularly and thematically suitable for international STI cooperation with the Russian Federation.

Excellent Science

Horizon 2020 Pillar:	Excellent Science
Programme:	European research infrastructures (including e-Infrastructures)
Call Title:	Integrating and opening research infrastructures of European interest
Call Identifier:	h2020-infraia-2018-2020
Topic Title:	Integrating Activities for Advanced Communities
Topic Identifier:	INFRAIA-01-2018-2019
Type of Action:	RIA Research and Innovation action
Deadline(s):	22-03-2018 (single-stage)

Participant Portal Weblink:

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

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

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

An Integrating Activity will mobilise a comprehensive consortium of several key research infrastructures in a given field as well as other stakeholders (e.g. public authorities, technological partners, research institutions) from different Member States, Associated Countries and other **third countries**^[1] when appropriate, in particular when they offer complementary or more advanced services than those available in Europe.

Funding will be provided to support, in particular, the trans-national and virtual access provided to European researchers (and to researchers from **Third countries** under certain conditions^[2]), the cooperation between research infrastructures, scientific communities, industry and other stakeholders, the improvement of the services the infrastructures provide, the harmonisation, optimisation and improvement of access procedures and

interfaces. Proposals should adopt the guidelines and principles of the European Charter for Access to Research Infrastructures.

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

- i. Networking activities, to foster a culture of co-operation between research infrastructures, scientific communities, industries and other stakeholders as appropriate, and to help develop a more efficient and attractive European Research Area;
- ii. Trans-national access or virtual access activities, to support scientific communities in their access to the identified key research infrastructures;
- iii. Joint research activities, to improve, in quality and/or quantity, the integrated services provided at European level by the infrastructures.

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

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

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

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

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

upon the state of the art in ICT and e-infrastructures for data, computing and networking, and ensure connection to the European Open Science Cloud.

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

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

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

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

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

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

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

2018 deadline

Biological and Medical Sciences

- **Microbial Resource Centres.**
This activity aims at integrating the key Microbial Resource Centres and opening them up to European researchers for biotechnology research and development. Emphasis should be on widening the user base, enlarging and strengthening the offered services, sharing resources at global level, fostering the innovation role of such

infrastructures and ensuring long term sustainability to their integration.

- Facilities for high throughput DNA sequencing.
This activity aims at integrating the key research infrastructures in Europe as well as leading-edge research infrastructures located in **third countries**, to open them up to European researchers and offer services beyond the state-of-art which is already ensured by commercial providers. Adequate consideration should be taken of the produced data and its availability for research.
- Centres for replacement, reduction and refinement (3 Rs) of non-human primate testing.
This activity aims at integrating the key non-human primate centres in Europe promoting 3 Rs, i.e. replacement, reduction, and refinement. The proposal will contribute to the objective of 3Rs, reinforcing the implementation of ethical and good practices at European level, and the protection of animals used in scientific experiments^[3]. The proposal should also develop the necessary collaborations outside Europe.
- High throughput facilities for proteome analysis.
This activity aims at integrating the key high throughput facilities in Europe for proteome analysis, based on state-of-the-art proteomics techniques and tools for data handling and analysis, including structural proteomics and structural bioinformatics. Emphasis should be on widening the user base, enlarging and strengthening the offered services, fostering the innovation role of such infrastructures and ensuring long term sustainability to their integration.

Energy

- Research Infrastructures for solar energy:
concentrating solar power. This activity should bring together the key European research infrastructures in solar concentrating systems (solar concentrators and relating research infrastructures) for carrying out energy and materials research as well as research in other fields using the extreme temperature conditions in solar concentrators, e.g. thermal storage equipment and reuse of stored energy. This topic would support the European Strategic Energy Technology Plan (SET-Plan).
- Research Infrastructures for solar energy:
photovoltaic. This activity aims at integrating and opening the key research infrastructures in Europe for all aspects of photovoltaic research: buildings, transport, new materials, grid connection, efficiency, etc. This topic would support the European Strategic Energy Technology Plan (SET-Plan).

Environmental and Earth Sciences^[4]

- Research infrastructures for forest ecosystem and resources research. This activity aims at further integrating and facilitating broad access to forest research facilities, methodologies and data on genetic and species diversity to enable environmental and biological research including biological effects of air pollution, mitigation and adaptation to climate change, and development of forest management approaches. Emphasis will be on widening the user base and ensuring long term sustainability to the service integration.
- Natural history collections. This activity aims at integrating and improving access to key European Natural History collections and to their related instrumentation facilities. Emphasis should be on improving accessibility to collections to a wide range of scientists, on developing innovative research services to answer the needs of a broader scientific community of users from climate change to human health and food security, and on ensuring long term sustainability of the integrated services.
- Research aircrafts for environmental and geo-science research. This activity aims at integrating key research aircrafts and improving their availability to European researchers from larger multidisciplinary scientific communities. It should develop a long-term strategy towards sustained integrated services and innovative synergies with complementary observing systems and models to study atmospheric processes and the Earth's surface.
- Research vessels. This activity aims at further providing, integrating and improving access to the key European research vessels and associated major equipment. It should include innovative initiatives to ensure a more efficient and coordinated operation of European fleets, to develop synergies with complementary observing systems and infrastructures and to set-up sustained integrated services to the user communities.
- Research infrastructures for Earth's climate system modelling. This activity aims at further integrating and opening the research infrastructures (e.g. data repositories, models) used by the climate modelling community in Europe, promoting the ongoing development of a common distributed modelling infrastructure. Emphasis should be on widening the user base, expanding the interdisciplinary research fields addressed, enlarging and strengthening the offered services, and ensuring long term sustainability to the service integration.
- Sites and experimental platforms of anthropogenic impacts for ecosystem functioning and biodiversity research. This activity aims at bringing together highly instrumented experimental, analytical and modelling facilities, across all major

European ecosystem types and all major pressures on them. It will optimise the collaborative use of these sites by a wider scientific community and develop efficient methods and techniques for rapid data sharing and processing at the European level.

Mathematics and ICT

- Visualisation facilities. This activity aims at further integrating and opening key virtual reality visualisation facilities, holographic image processing facilities and other computer graphics and animation facilities for advanced visualisation of scientific information and massive data, either resulting from academic research or being produced in collaboration with the industrial sector. Emphasis should be on widening the user base, enlarging and strengthening the offered services, and fostering the innovation role of such infrastructures.

Material Sciences, Analytical facilities and Engineering

- Electron Microscopies for advanced imaging, diffraction, spectroscopy and metrology of materials. This activity aims at further integrating and opening advanced electron microscopies for material research and technological development. Emphasis should be on widening the user base, strengthening and enlarging the offered services, stimulating new scientific activities, facilitating access, fostering the innovation role of such infrastructures and ensuring long term sustainability to their integration.
- High and low energy ion beam labs. This activity aims at further integrating and opening key ion beam facilities for material, biomedical and environmental research and technological development. Emphasis should be on widening the user base, enlarging and strengthening the offered services, fostering the innovation role of such infrastructures and ensuring long term sustainability to their integration.
- Infrastructures for Neutron Scattering and Muon Spectroscopy. This activity will provide and facilitate wider access to the key research infrastructures in Europe for Neutron scattering and Muon Spectroscopy. It should present a long-term sustainable perspective on the integration of these facilities and related resources.
- Facilities for research on materials under extreme temperature conditions. This activity aims at integrating research facilities in physics and materials science dealing with extreme low and high temperature conditions, e.g. nanoscience at microkelvin temperatures. Emphasis should be on widening the user base, enlarging the offered services, fostering the innovation role of such infrastructures and ensuring long term sustainability to their integration.

- Infrastructures for studying turbulence phenomena and applications. This activity aims at further integrating key facilities enabling the study of high turbulence phenomena in various areas of science and technology. Emphasis should be on combining modelling and experimental in situ testing, widening the user base, enlarging the offered services, fostering the innovation role of such infrastructures and ensuring long term sustainability to their integration.

Physical Sciences

- Research Infrastructures for hadron physics. This activity will provide and facilitate access to key research infrastructures in Europe for studying the properties of nuclear matter at extreme conditions, turning advances in hadron physics experimentation into new applications. It should present a long-term sustainable perspective on the integration of relevant facilities and related resources.
- Research Infrastructures for high resolution solar physics. This activity aims at further integrating and opening key research infrastructures in the field of high resolution solar physics. It should foster cooperation between theory and observations.

Social Sciences and Humanities

- Research infrastructures for the assessment of science, technology and innovation policies. This activity aims at further integrating and opening research data infrastructures in the field of science, technology and innovation (including social innovation). Emphasis should be on facilitating trans-national access and widening the user base, enlarging and strengthening the offered services, fostering the innovation role of such infrastructures and ensuring long term sustainability to their integration.
- Digital archives and resources for research on European history. This activity aims at further integrating and opening key data collections and services in Europe for European History. Emphasis should be on widening the user base, enlarging and strengthening the offered services, e.g. by covering further historical periods, and ensuring long term sustainability to their integration.
- Archaeological data infrastructures for research. This activity aims at further integrating and opening key archaeological data infrastructures to facilitate research in all fields of archaeology (from prehistory to contemporary society). Emphasis should be on widening the user base, enlarging and strengthening the offered services, including fields such as paleo-anthropology, bioarchaeology and environmental archaeology, sharing resources at global level, and ensuring long term sustainability to their integration.

Expected Impact:

- Researchers will have wider, simplified, and more efficient access to the best research infrastructures they require to conduct their research, irrespective of location. They benefit from an increased focus on user needs.
- New or more advanced research infrastructure services, enabling leading-edge or multidisciplinary research, are made available to a wider user community.
- Operators of related infrastructures develop synergies and complementary capabilities, leading to improved and harmonised services. There is less duplication of services, leading to an improved use of resources across Europe. Economies of scale and saving of resources are also realised due to common development and the optimisation of operations.
- Innovation is fostered through a reinforced partnership of research organisations with industry.
- A new generation of researchers is educated that is ready to optimally exploit all the essential tools for their research.
- Closer interactions between larger number of researchers active in and around a number of infrastructures facilitate cross-disciplinary fertilisations and a wider sharing of information, knowledge and technologies across fields and between academia and industry.
- For communities which have received three or more grants in the past, the sustainability of the integrated research infrastructure services they provide at European level is improved.
- The integration of major scientific equipment or sets of instruments and of knowledge-based resources (collections, archives, structured scientific information, data infrastructures, etc.) leads to a better management of the continuous flow of data collected or produced by these facilities and resources.
- When applicable, the integrated and harmonised access to resources at European level can facilitate the use beyond research and contribute to evidence-based policy making.
- When applicable, the socio-economic impact of past investments in research infrastructures from the European Structural and Investment Funds is enhanced.

Cross-cutting Priorities: International cooperation, Gender, Open Science, Socio-economic science and humanities

^[1] See the Eligibility and admissibility conditions for this call.

^[2] See part D of the section “Specific features for Research Infrastructures”.

^[3] As framed by the directive 86/609/EEC, and by the Commission proposal for its revision, COM(2008)543

^[4] When appropriate, proposals addressing areas under this domain are encouraged to develop synergies with Copernicus data and information as well as with GEO/GEOSS.

Horizon 2020 Pillar:	Excellent Science
Programme:	European research infrastructures (including e-Infrastructures)
Call Title:	Integrating and opening research infrastructures of European interest
Call Identifier:	h2020-infraia-2018-2020
Topic Title:	Integrating Activities for Advanced Communities
Topic Identifier:	INFRAIA-01-2018-2019
Type of Action:	RIA Research and Innovation action
Deadline(s):	20-03-2019 (single-stage)

Participant Portal Weblink:

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

Specific Challenges: 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.

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Funding will be provided to support, in particular, the trans-national and virtual access provided to European researchers (and to researchers from **Third countries** under certain conditions^[2]), the cooperation between research infrastructures, scientific communities, industry and other stakeholders, the improvement of the services the infrastructures provide, the harmonisation, optimisation and improvement of access procedures and

interfaces. Proposals should adopt the guidelines and principles of the European Charter for Access to Research Infrastructures.

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

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

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

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

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

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

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

upon the state of the art in ICT and e-infrastructures for data, computing and networking, and ensure connection to the European Open Science Cloud.

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

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

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

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

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

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

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

2019 deadline

The areas to be addressed under the different domains will be defined at a later stage, before the opening of the related call.

Expected Impact:

- Researchers will have wider, simplified, and more efficient access to the best research infrastructures they require to conduct their research, irrespective of location. They benefit from an increased focus on user needs.

- New or more advanced research infrastructure services, enabling leading-edge or multidisciplinary research, are made available to a wider user community.
- Operators of related infrastructures develop synergies and complementary capabilities, leading to improved and harmonised services. There is less duplication of services, leading to an improved use of resources across Europe. Economies of scale and saving of resources are also realised due to common development and the optimisation of operations.
- Innovation is fostered through a reinforced partnership of research organisations with industry.
- A new generation of researchers is educated that is ready to optimally exploit all the essential tools for their research.
- Closer interactions between larger number of researchers active in and around a number of infrastructures facilitate cross-disciplinary fertilisations and a wider sharing of information, knowledge and technologies across fields and between academia and industry.
- For communities which have received three or more grants in the past, the sustainability of the integrated research infrastructure services they provide at European level is improved.
- The integration of major scientific equipment or sets of instruments and of knowledge-based resources (collections, archives, structured scientific information, data infrastructures, etc.) leads to a better management of the continuous flow of data collected or produced by these facilities and resources.
- When applicable, the integrated and harmonised access to resources at European level can facilitate the use beyond research and contribute to evidence-based policy making.
- When applicable, the socio-economic impact of past investments in research infrastructures from the European Structural and Investment Funds is enhanced.

Cross-cutting Priorities: International cooperation, Gender, Open Science, Socio-economic science and humanities

^[1] See the Eligibility and admissibility conditions for this call.

^[2] See part D of the section “Specific features for Research Infrastructures”.

Horizon 2020 Pillar:	Excellent Science
Programme:	European research infrastructures (including e-Infrastructures)
Call Title:	Support to policy and international cooperation
Call Identifier:	h2020-infrasupp-2018-2020
Topic Title:	Policy and international cooperation measures for research infrastructures
Topic Identifier:	INFRASUPP-01-2018-2019
Type of Action:	CSA Coordination and support action, RIA Research and Innovation action
Deadline(s):	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 the following sub-topic:

[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

Societal Challenges

Horizon 2020 Pillar:	Societal Challenges
Programme:	Climate action, environment, resource efficiency and raw materials
Call Title:	Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement
Call Identifier:	h2020-lc-cla-2018-2019-2020
Topic Title:	The changing cryosphere: uncertainties, risks and opportunities
Topic Identifier:	LC-CLA-07-2019
Type of Action:	CSA Coordination and support action
Deadline(s):	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

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 the above sub-topic, in line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged^[1], 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^[2].

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: Open Innovation, Socio-economic science and humanities, International cooperation

^[1] Proposals should pay attention to the special call conditions for this topic.

^[2] 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

Horizon 2020 Pillar:	Societal Challenges
Programme:	Climate action, environment, resource efficiency and raw materials
Call Title:	Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement
Call Identifier:	h2020-lc-cla-2018-2019-2020
Topic Title:	The changing cryosphere: uncertainties, risks and opportunities
Topic Identifier:	LC-CLA-07-2019
Type of Action:	RIA Research and Innovation action
Deadline(s):	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

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.

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

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

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^[1], 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^[2].

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^[3];
- the IPCC assessments and other major regional and global initiatives;
- enhanced engagement of and the interaction with residents from local communities and indigenous societies.
- For projects addressing part d), the project results are expected to contribute to:
 - enhanced stakeholder capability to operate in cold climate environments;
 - better servicing of the economic sectors that operate in the Arctic (e.g. shipping, tourism);
 - promoting sustainable Arctic opportunities arising from climate change and supporting the leverage of regional (EU) funds into these opportunities;
 - supporting the competitiveness of European industry, particularly SMEs, engaging in sustainable development of the Arctic.

Cross-cutting Priorities: Open Innovation, Socio-economic science and humanities, International cooperation

^[1] Proposals should pay attention to the special call conditions for this topic.

^[2] 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

^[3] JOIN(2016) 21 final

Horizon 2020 Pillar:	Societal Challenges
Programme:	Europe in a changing world – Inclusive, innovative and reflective societies
Call Title:	GOVERNANCE FOR THE FUTURE
Call Identifier:	h2020-sc6-governance-2018-2019-2020
Topic Title:	Partnering for viability assessments of innovative solutions for markets outside Europe
Topic Identifier:	GOVERNANCE-08-2018
Type of Action:	CSA Coordination and support action
Deadline(s):	13-03-2018 (single-stage)

Participant Portal Weblink:

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

Specific Challenges: New and emerging markets outside Europe offer huge opportunities for the European industry. To compete effectively in these markets, European companies and especially SMEs need to develop partnerships with innovation players in these economies from early on and to develop receptiveness for local success. This is crucial to better understand the specific market context and the consequent needs and demands of emerging users and consumers. The end goal is to bring a new product, service or process to the foreign market, possibly through an innovative application of existing technologies, methodologies, or business processes.

Scope: This action will enhance the evidence base for EU R&I policy through in-depth analyses of the outcomes, experiences and impacts of a critical number of viability assessment projects of innovative solutions for markets outside Europe.

The assessment projects will be selected following a series of open calls organised by the action. The proposal for undertaking the action should define the organisational process for selecting the assessment projects for which financial support will be granted, including the process of selecting, allocating and reporting on the use of independent experts and ensuring no conflicts of interest.

At least 80% of the EU funding shall be allocated to financial support for the third parties carrying out the selected assessment projects. The series of open calls shall address markets of developing countries, large **Emerging**

Economies (Brazil, Russia, India, China, Mexico) and developed countries with roughly the same allocation for each of these three country category.

The calls should specify that each assessment project should include a wide variety of activities to explore the practical, technological and commercial viability of an innovative solution in particular in terms of how it needs to meet local conditions and demands.

The proposal must clearly detail a fixed and exhaustive list of the different types of activities for which a third party may receive financial support such as market studies, partner search and networking, approaches for client/user involvement including societal, behavioural and cultural aspects, and other activities aimed at overcoming barriers for market introduction and uptake.

The proposal must clearly detail the criteria for awarding financial support and simple and comprehensive criteria for calculating the exact amount of such support, which may not exceed EUR 60 000 for each assessment project. The award criteria must be objective and non-discriminatory.

Each assessment project shall be led by an entity established in an EU Member State or Horizon 2020 Associated Country and shall involve at least one entity not established in an EU Member State or Horizon 2020 Associated Country. The proposal shall specify whether and how the latter would be funded according to its type of involvement (e.g. subcontractor, cooperation agreement) and its geographic origin (country automatically eligible for funding or not according to Horizon 2020 rules). Highly innovative SMEs with clear commercial ambitions and potential for high growth and internationalisation shall be targeted in particular.

The open calls must be published widely, including on the Horizon 2020 Participants Portal and through National Contact Points, and Horizon 2020 standards with respect to transparency, equal treatment, no conflict of interest and respect of confidentiality must be adhered to. The results of the calls must be published without delay, including, for each assessment project, a description of the project, the legal name and country of the third party, the start date and duration of the project, and the amount of the award.

The proposal should specify how it will promote the calls, how it will monitor and report on call results and how it will assess the quality of the outcomes and experiences from the assessment projects, as well as how it will provide regular in-depth analyses and which indicators will be used for measuring the impacts achieved. Analyses should draw up R&I policy conclusions on questions such as which additional joint R&I activities in third countries should be supported, what framework conditions for R&I cooperation need improving, and what further R&I support services should be implemented.

The Commission considers that a proposal requesting a contribution from the EU of up to EUR 9 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting another amount. The selected beneficiary or beneficiaries should have a solid operational and financial capacity.

Expected Impact:

- Economic growth and job creation, both in Europe and in the target countries, as well as additional societal and environmental benefits.
- Increased European economic and industrial competitiveness and excellence and participation in international value chains.
- Inclusion of locally developed and accepted technology and business models, including through co-creation with innovation players in the target countries.
- Greater availability, uptake and use of innovative solutions responding to the specific local needs and circumstances of the target countries and markets.
- R&I policy conclusions based on better connections and larger insights into market conditions outside Europe.

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

Horizon 2020 Pillar:	Societal Challenges
Programme:	Health, demographic change and wellbeing
Call Title:	Better Health and care, economic growth and sustainable health systems
Call Identifier:	h2020-sc1-bhc-2018-2020
Topic Title:	Research on HIV, tuberculosis (TB) and/or hepatitis C (HCV) in patients with mono-, co-infections and/or comorbidities in the context of fostering collaboration with the Russian Federation
Topic Identifier:	SC1-BHC-21-2018
Type of Action:	RIA Research and Innovation action
Deadline(s):	18-04-2018 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc1-bhc-21-2018.html>

Specific Challenges: ECDC (European Centre for Disease Control) and WHO-Europe (World Health Organisation) report high number of cases for HIV and TB infections (both in incidence and prevalence) in the European regions and in recent years the epidemic situation has deteriorated in **Eastern Europe**^{[1], [2]}.

For TB, in particular diagnosis and treatment of multidrug-resistant TB (MDR-TB) poses a major challenge. In the east of Europe there is still high burden of TB and HIV and their comorbid forms. Additionally, a significant proportion of the infected patients are also affected by co-infections and comorbidities that may adversely affect their prognosis, which is a global challenge in healthcare and in particular refers to TB/HIV cases.

Several issues in the current epidemiological situation are still to be addressed to reduce the cases of new infections and deaths, including investigation of reasons underlying fast spread of M-DR-TB and HIV/AIDS in some regions, development of rapid tools for an accurate detection of TB infections and management of HIV and TB drug resistance. Adverse effects of treatments and the requirement for strict adherence to antiretroviral treatment further complicate management of these diseases.

Furthermore, in the WHO European Region an estimated 15 million people live with hepatitis C (2.0% of adults) with two-thirds of infected persons in the Region living in **Eastern Europe** and central Asia^[3]. Also for HCV there are many challenges, including the need to analyse genetically determined

factors affecting disease progression in HCV infected patients (with mono-infection or HIV-HCV co-infection).

Given the dynamics of the epidemics and the need to contain them, there is a commitment from the European Union and from the **Russian** Federation to support joint research and further strengthen the collaboration between research and healthcare centres to address the issues outlined above.

Scope:

Proposals should address one or more of the following subtopics:

1. TB: To investigate biomarkers or new diagnostic tests for early screening of TB risk groups for TB infection and identification of antimicrobial drug resistance.
2. HIV: To investigate the susceptibility to HIV and/or disease progression rate after infection, including various HIV subtypes and/or transmission clusters, and/or the development of adverse effects during antiretroviral therapy and concomitant diseases (comorbidities and/or co-infections, including with tuberculosis).
3. HCV: To evaluate the genetic determinants of the virus and the host, and comorbid conditions that can be involved in disease progression and create the basis for the development of future HCV treatment strategies.

In performing the research agenda to address one (or more) of the listed subtopics, the applicants might make use of already established European cohort networks or establish new collaborations thus widening their geographical scope and include HIV, HCV and/or TB mono or co-infected individuals and perform retrospective or prospective studies. Proposed actions should take into consideration vulnerable groups and target populations, which may include, but not limited to: ageing subjects, injecting drug users and other social risk groups. Sex and gender differences should be taken into account where relevant.

Due to the specific challenge of this topic, in addition to the minimum number of participants set out in the General Annexes, proposals shall include at least one participant from the **Russian** Federation. Also, the duration of the proposed action cannot exceed 24 months (until end of 2020), with a foreseen start of the action no later than 1 January 2019. For more information, interested entities in the **Russian** Federation shall consult the website of the **Russian** NCP for Health at <http://www.h2020-health.ru/ru/competition-ru-eu>, as well as the website of the Ministry of Education and Science of the **Russian** Federation http://www.fcpir.ru/participation_in_program/contests/list_of_contests/, where the corresponding **Russian** call will be published.

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

Expected Impact:

- Improvement of coordination and integration between European and **Russian** clinical and research centres dealing with HIV, TB and/or HCV infected patients.
- Produce scientific evidence leading in the long-term to the reduction of the burden of these infection diseases.
- Produce scientific evidence and contribute to the optimisation (and personalisation) of diagnosis, treatments and improvement of quality of life of patients affected by HCV, HIV and/or TB infections (mono or co-infections) and comorbidities.
- Contribute to the achievement of the Sustainable Development Goal 3: Ensure Healthy lives and promote wellbeing for all at all ages, the WHO end TB strategy^[4], the WHO global health sector strategy on HIV^[5], and the WHO global health sector strategy on viral hepatitis^[6].

Cross-cutting Priorities: Gender, International cooperation

^[1] <http://ecdc.europa.eu/en/publications/Publications/HIV-AIDS-surveillance-Europe-2015.pdf>

^[2] <http://ecdc.europa.eu/en/publications/Publications/tuberculosis-surveillance-monitoring-Europe-2015.pdf>

^[3] <http://www.euro.who.int/en/health-topics/communicable-diseases/hepatitis/data-and-statistics>

^[4] <http://www.who.int/tb/strategy/end-tb/en/>

^[5] <http://www.who.int/hiv/strategy2016-2021/ghss-hiv/en/>

^[6] <http://www.who.int/hepatitis/strategy2016-2021/ghss-hep/en/>

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):	13-02-2018 (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: International cooperation, Open Innovation, Clean Energy, RRI, Socio-economic science and humanities

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.

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- 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: International cooperation, Open Innovation, Clean Energy, RRI, Socio-economic science and humanities

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:	Innovative technologies for improving aviation safety and certification in icing conditions (InCo flagship)
Topic Identifier:	MG-2-5-2018
Type of Action:	RIA Research and Innovation action
Deadline(s):	04-04-2018 (single-stage)

Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/mg-2-5-2018.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.

Aviation is inherently and increasingly international. Aviation impacts globally the atmosphere, and vice-versa. Aviation emissions to the atmosphere are increasing. In-flight weather hazards are also increasing worldwide.

Meanwhile, the demand for aviation keeps growing globally. Commercial Air-Transport (CAT) fatal and non-fatal accidents are continuously decreasing with EASA Member States accident rate much lower than the world-wide one^[1].

However, in-flight weather hazards, in particular icing conditions, are a contributing factor in accidents and incidents world-wide. In line with ACARE Strategic Research & Innovation Agenda, further advancements in understanding, modelling, detection, avoidance and mitigation of in-flight performance degradation are necessary towards enabling harmonised certification with less flight trials.

Scope: Although several research activities addressed the issue of ice accretion on aircraft, resulting in improved understanding of icing phenomena, and also in promising strategies to detect and to remove ice accretion, those advancements were mostly focused on airframe. Future advancements should also include engines as well as rotorcrafts. In addition, reduction of power consumption of in-flight anti/de-icing devices and of the negative environmental impact of anti/de-icing processes is necessary, both in-flight and on the ground.

The proposals may aim at addressing several or all of the following areas:

- Further advancements in the detection, understanding, sensing, modelling, simulation and testing of icing, de-icing and anti-icing of all types in aviation (e.g. mixed-phase, ice crystals, super cooled large droplets, etc).
- Explore/propose/validate new certification methods, means of compliance, standards and protection systems (e.g. either active or passive, including coatings) for all types of icing and air vehicles, engines and on-board systems.
- Address the overall system integration, including operational and maintenance aspects.

The range of TRLs to address is broad, from fundamental research up to TRL 5 (at the end of the project). In line with the strategy for EU international cooperation in research and innovation^[2], multilateral international cooperation is encouraged, in particular with countries such as United States, Canada, **Russia**, Japan, Brazil and Australia. International cooperation can include work towards global monitoring of in-service events and icing hazards and towards joint tests, standards and certification, taking into account the activities of bodies such as the European Aviation Safety Agency (EASA), Federal Aviation Administration (FAA), EUROCAE and United Nations' International Civil Aviation Organisation (ICAO). Proposals may include the commitment from the European Aviation Safety Agency to assist or to participate in the action.

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:

- Contribute to increase passenger safety by fewer accidents and less in-flight events worldwide.
- Contribute to decrease costs for all parties (e.g. industry, authorities, research & test centres) by improved and internationally accepted certification, standards and means of compliance, covering all types of icing hazards.
- Contribute to decrease delays in operations thanks to more efficient avoidance of icing hazards and to fewer damages in need of inspection and repair.

Cross-cutting Priorities: International cooperation

^[1] EASA, Annual Safety Review, 2016

^[2] (COM(2012)497

Horizon 2020 Pillar:	Societal Challenges
Programme:	Smart, green and integrated transport
Call Title:	Building a low-carbon, climate resilient future: Green Vehicles
Call Identifier:	h2020-lc-gv-2018-2019-2020
Topic Title:	InCo flagship on “Urban mobility and sustainable electrification in large urban areas in developing and Emerging Economies ”
Topic Identifier:	LC-GV-05-2019
Type of Action:	IA Innovation action
Deadline(s):	24-04-2019 (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 in Europe, Asia, African and/or CELAC countries: 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). Comparative demonstrations activities and pilots (in European and Chinese's Cities, African, CELAC countries) of such jointly designed concepts developed by local partners.
- 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

- 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^[1], international cooperation is encouraged.

Applicants are invited to read the eligibility and admissibility conditions for this topic.

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)
- 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, Contractual Public-Private Partnerships (cPPPs), EGVI, International cooperation, Socio-economic science and humanities

^[1] (COM (2012) 497)