



# **International Cooperation in Horizon 2020**

## **EU and Developing Countries**

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## Industrial Leadership

<b>Horizon 2020 Pillar:</b>	Industrial Leadership
<b>Programme:</b>	Leadership in enabling and industrial technologies (LEIT)
<b>Call Title:</b>	Information and Communication Technologies Call
<b>Call Identifier:</b>	H2020-ICT-2016-2017
<b>Topic Title:</b>	International partnership building in low and middle income countries
<b>Topic Identifier:</b>	ICT-39-2016-2017
<b>Type of Action:</b>	IA Innovation action
<b>Deadline(s):</b>	25-04-2017 (single-stage)

### Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-39-2016-2017.html>

**Specific Challenge:** To reinforce cooperation and strategic partnership with selected countries and regions in areas of mutual interest.

Targeted countries: Low and middle income countries<sup>[1]</sup> in sub-Saharan Africa and ASEAN countries

**Scope:** Actions will address the requirements of end-user communities in **developing countries**. This may include technological improvements and adaptations as well as innovative service creation based on existing technologies.

Proposals could include specific technological targets such as co-design, adaptation, demonstration and validation (e.g. pilots) of ICT related research and innovation in relevant thematic areas addressed by Horizon 2020 including Content Technologies and Societal Challenges. Proposals are expected to address take up and scalability of the proposed solutions.

Activities under this topic should be led by a clearly defined user need/market opportunity for the technology being adapted; they should in particular include requirements of **developing countries** (at national and local level), and where possible, have the potential for wider impact by involving a number of countries from the same region. Proposals should feature an explicit element exploring technology adoption, through understanding and evaluating behavioural responses to the introduction of new technologies in different regional settings. Societal and gender issues will be taken into account. Proposals should be submitted by a partnership complementing each other with a particular focus on the participation of relevant **developing country** innovation stakeholders and end-user community representatives (e.g. relevant public, private, education and research, and societal sector organisations, Innovation Hubs or Living Labs).

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

**Expected Impact:**

- Development of relevant technology responding to specific needs and conditions of the target country;
- Sustainable uptake of results within the targeted countries, beyond the project completion date;
- Reinforced international dimension of the ICT and Innovation aspects of Horizon 2020 and a higher level of international cooperation with low and middle income countries in ICT R&D and Innovation, focusing on areas that are beneficial to the target countries/region;
- Reinforcement of strategic partnerships with selected countries and regions in areas of mutual interest and added value in jointly addressing important issues.

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

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[1] See World Bank country classification.

## Science with and for Society

<b>Horizon 2020 Pillar:</b>	Science with and for Society
<b>Programme:</b>	Encourage citizens to engage in science, Make scientific and technological careers attractive for young people, Anticipating and assessing potential environmental, health and safety impacts, Improve knowledge on science communication, Develop the accessibility and the use of the results of publicly-funded research, Promote gender equality in research and innovation, Develop the governance for the advancement of responsible research and innovation, Integrate society in science and innovation
<b>Call Title:</b>	Science with and for Society
<b>Call Identifier:</b>	H2020-SWAFS-2016-17
<b>Topic Title:</b>	A Linked-up Global World of RRI
<b>Topic Identifier:</b>	SwafS-14-2017
<b>Type of Action:</b>	RIA Research and Innovation action
<b>Deadline(s):</b>	30-08-2017 (single-stage)

### Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-14-2017.html>

**Specific Challenge:** At the moment, 'a linked-up global world of RRI', is a future, and speculative, perspective. But the world is definitely linked-up, and there is recurrent mention of, and occasional work on, RRI-type issues all over the world. In the field of nanotechnology, for some time (since the early 2000s) there were platforms and spaces for dialogue. What is the role of regulation and of civil society in a linked-up global society? What is the role of industry, with the dynamics of firms wanting to appear as 'good firms' rather than the contrary? Similarly, what is the role of nation states and international organizations in this global world?

One might actually consider that RRI could become a competitive advantage, definitely for Europe and directly contribute to Europe's jobs and growth agenda. That possibility will be one element of this topic. It is important to give industry's 'ethical behaviour' a concrete foothold, and not to leave it to abstract deliberations. To this end, domain and case studies in key areas, such as Digital Single Market and Energy Union, supporting the Commission's agenda<sup>[1]</sup> for jobs, growth, fairness and democratic change will be relevant. Other sectors of activities can be considered as case studies as well (e.g. bio-economy, waste management) provided that they yield significant insight into the possible rise of the global world of RRI.

**Scope:** There are interesting projects already that can be built on for the present topic. The EU-funded ProGReSS project<sup>[2]</sup>, aims to promote a European approach to Responsible Research and Innovation (RRI) through a global network, including partners and advisers from Europe, the US, China, Japan, India, Australia and South Africa, and involvement of relevant stakeholders

from academia, international organisations, industry, SME research, NGOs, policy advisors and research funders. The GEST (Global Ethics in Science and Technology) project<sup>[2]</sup>, which has recently led to a major publication on Science and Technology Governance and Ethics, comparing Europe, China and India, is another example.

The present topic spans at least over three overlapping foci:

- Identification and analysis of platforms and spaces for RRI-type issues
- Comparative studies of major and minor players, taking into account differences especially the situation of **developing countries**
- Advantages (up to competitiveness) of RRI, and ethical behaviour in general.

It is also important to locate these questions and trends in current and emerging governance frameworks.

In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged, including with third countries beyond Associated Countries.

To address this specific challenge, proposals should have a wide geographical coverage. It is therefore expected that consortia would include at least entities from 10 different Member States or Associated Countries, although smaller consortia will also be eligible and may be selected.

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

This action allows for the provision of financial support to third parties in line with the conditions set out in Part K of the General Annexes.

**Expected Impact:** Better understanding of the dynamics of a 'linked-up global world of RRI' will allow benchmarking European RRI initiatives and integrating good practices from other contexts. It will help industry, civil society and policy makers to take decisions based on evidence. It will produce formal knowledge, easing the dissemination of good practices and improving existing training material.

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

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[1] <http://www.eesc.europa.eu/resources/docs/jean-claude-juncker---political-guidelines.pdf>

[2] <http://www.progressproject.eu>  
[http://www.uclan.ac.uk/research/explore/projects/global\\_ethics\\_science\\_technology.php](http://www.uclan.ac.uk/research/explore/projects/global_ethics_science_technology.php)

## Societal Challenges

<b>Horizon 2020 Pillar:</b>	Societal Challenges
<b>Programme:</b>	Climate action, environment, resource efficiency and raw materials
<b>Call Title:</b>	Greening the Economy
<b>Call Identifier:</b>	H2020-SC5-2016-2017
<b>Topic Title:</b>	Novel in-situ observation systems
<b>Topic Identifier:</b>	SC5-18-2017
<b>Type of Action:</b>	RIA Research and Innovation action
<b>Deadline(s):</b>	07-03-2017 (single-stage)

### Participant Portal Weblink:

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/sc5-18-2017.html>

**Specific Challenge:** A more systematic observation of the Earth system is required at a resolution and accuracy that cannot always be provided through remote sensing technologies. There is therefore a need to extend and improve the in-situ component of the Global Earth Observation System of Systems (GEOSS) and of the EU Copernicus programme in order to collect the relevant data necessary to cover observation gaps, calibrate and validate remote-sensing data and deliver Earth Observation services, including monitoring variables, for policy makers, local users and citizens.

However, components of existing in-situ observing and monitoring systems are too often bulky, expensive and power hungry, which hinders their wide-scale deployment for continuous environmental monitoring. The challenge here is to explore and test new technological solutions that would lower the costs of acquiring, deploying and maintaining monitoring and observing stations which would contribute to filling the in-situ observational gaps of Earth observation systems. This issue is especially acute in **less developed countries** where in-situ Earth observation capacities have deteriorated.

**Scope:** Actions should develop new, in-situ Earth observation systems, taking advantage of new technology and the latest developments in sensor science so that measurements can be performed using low energy sensors and communication systems, requiring less demanding maintenance. Actions should focus on the transfer and adaptation of new technologies into operational systems, enabling a real breakthrough in the efficiency of deploying and maintaining new in-situ observing systems in a cost-effective way. The research and innovation activities under this topic may take into account concepts such as citizens' observatories, disposable sensors, and the use of unmanned platforms. The project should take into account as much as possible relevant research outcomes from programmes of the European Research Council, the Leadership in Enabling and Industrial Technologies and the European Metrology Research Programme[1].

Prominent criteria for the selection of the projects will be fulfilling agreed European and international standards regarding the quality of the measurements, and the interoperability for data exchange with other existing monitoring and observing platforms and with user

applications. Proposals should establish formal links, where appropriate, with the GEO Global Initiatives (e.g. GEOGLAM, GEOBON, GFOI, GMOS, AFRIGEOSS, BLUE PLANET) and with the relevant Copernicus services so that the new monitoring and observing platforms fulfil well-identified needs under these two major initiatives. Test phases enabling proof-of-concept of the observation and monitoring platforms in real conditions should be organised during the course of the project. Participation of SMEs in project consortia is encouraged in order to facilitate the development of innovative and operational systems.

Projects should foresee activities to cluster with other projects financed under this topic and – if possible – also under other parts of Horizon 2020.

The Commission considers that proposals requesting a contribution from the EU of between EUR 4 million and EUR 5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

**Expected Impact:**

The project results are expected to contribute to:

- improved in-situ components of the GEOSS and Copernicus programmes;
- cost-effectiveness of the new systems when compared to previous ones;
- new opportunities and market development of the European Earth observation commercial sector and for downstream users;
- measurable added value for the Copernicus and/or GEOSS initiatives;
- the provision of information necessary to ensure food, water and energy security, to cope with the scarcity of natural resources, to develop mitigation and adaptation solutions to climate change, and to make communities more resilient to natural hazards;
- implementing the Sustainable Development Goals (SDGs), in particular SDG 9 'Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation'.

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[1] <http://www.emrponline.eu>

<b>Horizon 2020 Pillar:</b>	Societal Challenges
<b>Programme:</b>	Europe in a changing world - inclusive, innovative and reflective Societies
<b>Call Title:</b>	ENGAGING TOGETHER GLOBALLY
<b>Call Identifier:</b>	H2020-SC6-ENG-GLOBALLY-2016-2017
<b>Topic Title:</b>	The strategic potential of EU external trade policy
<b>Topic Identifier:</b>	ENG-GLOBALLY-05-2017
<b>Type of Action:</b>	RIA Research and Innovation action
<b>Deadline(s):</b>	02-02-2017 (single-stage)

**Participant Portal Weblink:**

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/eng-globally-05-2017.html>

**Specific Challenge:** In its "Strategic Agenda for the Union in Times of Change" for the period 2014 to 2019, the European Council identified the need to "maximize the EU's clout" in global affairs, notably by "ensuring consistency between Member States' and EU foreign policy goals and by improving coordination and coherence between the main fields of EU external action, such as trade (...) development and economic policies".[1] One area which definitely promises maximised EU clout in global affairs is trade. Given the European Union's significant weight as the world's largest trading block, its external trade policies can be a major source of a reinforced European role as a global actor if they are strategically deployed and contribute to a broader, coherent foreign policy approach. EU trade policy has to find the right balance between promoting the EU's economic interests while also taking into account broader EU policy objectives (e.g. promotion of human rights, sustainability, interlinking climate and energy policy objectives, etc.). Such a balance is difficult to achieve and the EU has sometimes been criticised either for letting its economic interests prevail or for being naïve over conditionality in the international trade battles. Coherence between the EU's and Member States' trade policy should be ensured, as well as coherence between trade and other (external) policies. To reap the strategic potential of EU external trade policy, its current functioning, as well as its intended and unintended consequences, need to be fully understood from a multidisciplinary perspective, and forward-looking perspectives have to be developed on how to make it more effective.

**Scope:** Research under this topic should take stock of the European Union's and its Member States' bilateral and multilateral trade strategies and policies, comparing various regional and country-specific trade policy approaches and assessing the coherence and consistency of their objectives, strategies and instruments. Bilateral trade relations with key economic players such as the United States and China, but also **developing countries** from various continents should form part of such comparisons, alongside the Union's multilateral engagement in relevant international institutions, such as the World Trade Organization and its related negotiation processes and the G-20 summit as a major global economic forum. This analysis should in particular comprise detailed scrutiny of the coherence and consistency between the EU's trade policies and those of its Member States.

The results of these stock-taking should lay the foundation for an investigation of the coherence and consistency of trade policies with other EU external policies such as economic (e.g. security of energy supply, green growth), developmental (e.g. trade-related policy coherence for development), environmental (e.g. climate change mitigation, biodiversity), social and labour (e.g. international labour standards, cooperation on decent work) and human rights policies. Research should ultimately evaluate whether and how EU external trade policies can and do serve wider foreign policy objectives, identify the institutional, organisational and behavioural drivers of and obstacles to a coherent and effective strategic use of EU trade policy, and formulate propositions on how to combine trade and other external policies into a comprehensive European foreign policy. A comparative perspective, contrasting the EU's approach with the strategic use of trade policy by other major global players, could be envisaged.

The Commission considers that proposals requesting an EU contribution in the order of EUR 2.5 million would allow this specific topic to be addressed appropriately. This does not preclude submission and selection of proposals requesting other amounts.

**Expected Impact:** Research under this topic will lead to a set of novel insights into the evolving EU and Member States' bi- and multilateral trade strategies and their inter-linkages with other external policies, their coherence and effectiveness. Placing trade at its centre, it will revisit and innovate the debate on coherence and consistency in EU foreign policy so as to provide an understanding of whether and how trade can be utilized strategically in the context of broader EU foreign policy agendas and in support of its foreign and economic policy objectives. Based on these policy-relevant insights, it will formulate recommendations on the institutional, organisational and behavioural adaptations needed to reinforce the EU's clout in global affairs via enhanced coherence of its foreign policy.

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

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[1] European Council (2014): Conclusions. Brussels. 26-27 June 2014.

<b>Horizon 2020 Pillar:</b>	Societal Challenges
<b>Programme:</b>	Secure, clean and efficient energy
<b>Call Title:</b>	COMPETITIVE LOW-CARBON ENERGY
<b>Call Identifier:</b>	H2020-LCE-2016-2017
<b>Topic Title:</b>	Market uptake of renewable energy technologies
<b>Topic Identifier:</b>	LCE-21-2017
<b>Type of Action:</b>	CSA Coordination and support action
<b>Deadline(s):</b>	05-01-2017 (single-stage)

**Participant Portal Weblink:**

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lce-21-2017.html>

**Specific Challenge:** Since the adoption of RES Directive in 2009[1], most Member States have experienced significant growth in renewable energy consumption and the EU and large majority of Member States are on track towards 2020 RES targets. Considering Member States' current and planned policy initiatives, their current implementation rates and the various barriers to renewable energy development, the need for improvements for some RES technologies, like offshore wind, advanced biofuels, CSP and geothermal, however, becomes apparent.

To ensure the level of growth needed to deliver the technology deployment rates at least to the level planned in the National Renewable Energy Action plans and their necessary contribution to the 2020 RES targets. EU targets for renewable energy, and to create the appropriate business environment for EU industrial leadership in low-carbon energy technologies, a number of important market-uptake challenges need to be addressed.

**Scope:** One of the following technology-Specific Challenge has to be addressed:

1. Photovoltaics: Tackling the bottlenecks of high penetration levels of PV electricity into the electric power network: PV electricity is not necessarily generated when mostly needed. Furthermore, small distributed PV systems feed into the grid possibly all at the same time challenging grid stability. To enable the effective and efficient integration of growing shares of PV power into the grid, the idea of PV producers becoming “prosumers” – both producers and consumers of energy – is gaining ground while “self-consumption” is becoming a major driver for the installation of small distributed PV systems. To facilitate this to happen, the following sub-challenges need to be addressed:
  - a. Development of solutions for innovative system-integration and power-management for households/larger buildings (in general small distributed PV systems) including storage, particularly addressing the impact of self-consumption on the operation of the grid and the value of PV electricity when aggregated and offered to the wholesale market;

- b. Based on these solutions, elaboration of business and management models, including cost-benefit analysis and assessing economic feasibility for the European urban landscape.
2. Heat Pumps: Accelerate the penetration of heat pumps for heating and cooling purposes: Heating and cooling represents almost 50% of the final EU energy consumption and cooling demand is increasing. The cost associated with the purchase and installation of heat pumps remains an obstacle for a wider penetration on the market. In order to accelerate the penetration of heat pumps for heating and cooling purposes, proposals should address the following challenges:
  - a. identification of the most promising cost reduction options for CAPEX, installation costs, and OPEX as well as development of EU wide scenarios of deployment; proposed prioritisation of R&I investments;
  - b. development of solutions for innovative system integration and integrated power management for household/industrial buildings.
3. CSP: Facilitating the supply of electricity from CSP plants in Southern Europe to Central and Northern European countries - By means of CSP Southern European countries could supply renewable electricity on demand to the entire European energy market, including Central and Northern European countries – in particular, the Renewable Energy Directive foresees cooperation mechanisms to this end to allow Member States to meet their national targets cost-efficiently. The exploitation of this possibility would greatly facilitate the market uptake of CSP, but this has not happened so far. The challenge is to identify all issues (technological, legal, economic, political, social, financial, etc.) that may constitute an obstacle to the supply of renewable electricity on demand from CSP plants to Central and Northern European countries (other than those bottlenecks related to building new physical interconnections), and to identify possible solutions and propose options for addressing the issues in the context of a concrete project case.
4. Wind energy: Increasing the market share of wind energy systems: One of the following specific sub-challenges need to be addressed: i) Develop spatial planning methodologies and tools for new onshore wind and repowering of old wind farms taking into account environmental and social impacts but also the adoption of the latest developments in wind energy technology; ii) Identify the bottlenecks for further deployment in Europe and the regulations which limit the adoption of technological innovation and their deployment possibilities; iii) Increase the social acceptance and support for wind energy in 'wind energy scarce regions' using, with solid involvement of social sciences and humanities and local communities and civil society to understand best practices and to increase knowledge about social and environmental impact of wind energy.
5. Geothermal energy: Tackling the bottlenecks of high penetration levels for geothermal energy systems: Geothermal energy suffers from a level of penetration that is limited compared to its potential and there are growing concerns regarding the environmental and the social impact of geothermal installations. The challenge is to remove environmental and social concerns that pose barriers limiting the contribution of geothermal energy to the energy mix. The challenge is to assess the nature of public concerns and the elements that influence individual and group's perception of geothermal installations, to increase the understanding of the socio-economic dimension of geothermal energy, and to promote change in community responses to new and existing geothermal installations. Different technologies and possible technological solutions, with particular reference to reinjection of incondensable gases in deep geothermal plants, are key elements of the environmental and social impact assessment. Specific Challenge related to deep and shallow geothermal energy require separate considerations. Risk management strategies and adequate technology selection, for example induced seismicity or emission reduction should be addressed, when relevant.
6. Sustainable Fuels: Facilitating the market roll-out of liquid advanced biofuels and liquid renewable alternative fuels: The challenge is to enable commercialisation of advanced biofuels to help meeting the 10% target for Renewable Energy Sources in the EU transport

energy consumption by 2020 and then contribute to the EU targets of 27% share of Renewable Energy Sources in the EU energy consumption and of 40% GHG reduction by 2030. Fossil fuels and biofuels produced from starch, sugar and oil fractions of food/feed crops are excluded. Proposals shall address one or several of the following sub-challenges:

- a. Development of tools for predicting the fuel cost in relation to different supply and demand scenarios taking into account technology performance, economies of scale, feedstock costs, market demand, socio-economic aspects, etc. and including sensitivity analysis through conceptual engineering and cost estimation for the most common conversion routes;
- b. Development and implementation of innovative crop rotation schemes for the production of lignocellulosic biofuels with improved sustainability;
- c. Development of numerical tools for prediction of fuel and fuel blend properties and model validation to facilitate the certification process in the transport sector;
- d. Development of communication strategies to increase the public acceptance for advanced biofuels for the most common conversion routes;
- e. Setting up sustainable and cost-effective European biomass supply chains for the industrial production of advanced biofuels;
- f. Actions aiming at development and implementation of common standards and certification schemes for fuels at EU-level;
- g. Actions aiming at harmonization of national standards and certification schemes for fuels at a European level;
- h. Development of tools and actions for capacity building among relevant stakeholders of all steps in the advanced biofuel value chain aiming at substantially reducing biofuel costs at large scale.

Proposals should address one of the sectorial technology challenges mentioned above. The complexity of these challenges and that of the related market uptake barriers calls for multi-disciplinary research designs, which may include contributions also from the social sciences and humanities. Regional specificities, socio-economic, spatial and environmental aspects from a life-cycle perspective shall be considered. For all actions, the consortia should involve and/or engage relevant stakeholders and market actors who are committed to adopting/implementing the results. Where relevant, proposals should 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.

Participation of **developing 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.

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 to increase the share of renewable energy in the future energy mix and to increase the share of sustainable advanced biofuels and renewable alternative fuels in the final EU transport energy consumption or facilitate those increases in the future. In addition, contribution to market understanding for possible policy and regulatory development is anticipated.

**Cross-cutting Priorities:** Socio-economic science and humanities

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[1] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources