



Project SMIBIO



***Oportunidades de colaboración entre
CELAC y UE: Presentación y preguntas***

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Project SMIBIO



Horizon 2020 – The R&D&I Programme of EU

Collaborative projects: most of the EU funded projects are collaborative projects with **at least 3 organisations** from different EU Member States or Associated countries.

In addition to these 3 entities, and for the majority of the calls, any organisation from [anywhere in the world](#) can be included in the consortium.



Project SMIBIO



Horizon 2020 work programme 2018-2020

Societal Challenge

"Clean Secure and efficient energy" (SC3)

version Sept 2017 (final)

10. "Secure, clean and efficient energy" (SC3)

Global leadership in renewables

The Energy Union Strategy has set the target for the EU to achieve global leadership in renewable energies. Increased R&I efforts for renewable energy are indispensable hence renewables are identified as a core R&I priority in the Energy Union Strategy and the "**Accelerating Clean Energy Innovation**" **Communication**". The "Clean Energy for all Europeans" package underpins the EU's ambition by a number of legislative proposals and non-legislative initiatives, notably the recast of the Renewable Energy Directive which creates the enabling framework for Member States to unlock their renewables' potential and collectively reach a share of at least 27 % in the Union final energy consumption by 2030 in a cost-effective way

This includes 4 lines of interventions:

1. breakthrough technology development,
2. renewable energy solutions for implementation at consumer scale (encompassing generation of energy in all its form, starting from electricity only generation to also encompass combined heating and cooling solutions, from domestic to industrial and district scale),
3. renewable energy solutions for implementation at the energy system level (oriented to reduce the costs of electricity generated, to optimise system operation and improve processes and components manufacturing, to provide flexibility to the system), and
4. **renewable fuels for transport (aiming both feedstock and process improvements and supporting road, aviation and shipping sectors in particular).**

H2020 Societal Challenge for 2018-2020 on "Clean Secure and efficient energy" (SC3)

■ New Renewable Energy Solutions

■ *LC-SC3-RES-1-2019-2020: Developing the next generation of renewable energy technologies (RIA)*

Opening: 01 August 2018; Deadline: 16 Oct 2018 (first-stage); 25 Apr 2019 (2nd stage)

Expected impact: to reach TRL 3 or TRL 4

Budget to be requested: 2-5 M€/proposal (Call budget: 20 M€)

One of the following (5) technology-specific sub-topics has to be addressed:

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- Sustainable fuel, other than hydrogen for energy and transport application through ground-breaking conversion technologies, addressing for example development of novel microorganisms, enzymes, catalysts, photosensitizers and separation techniques, improvement of biomass and microalgae yields, and development of novel technologies of combined indirect and direct artificial photosynthesis with chemical/biochemical/biological systems;
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H2020 Societal Challenge for 2018-2020 on "Clean Secure and efficient energy" (SC3)

■ New Renewable Energy Solutions

■ *LC-SC3-RES-2-2018: Disruptive innovation in clean energy technologies (RIA)*

Opening: 05 Dec 2017; Deadline: 19 Apr 2018 (one-stage)

Expected impact: from TRL 3 to at least TRL 5

Budget to be requested: 2-3 M€/proposal (Call budget: 12 M€)

Proposals are invited in only one of the following sub-topics:

- Photovoltaics windows....
- **Bionic leaf technology:** advanced renewable fuel production through biological conversion of CO₂ and renewable hydrogen in the presence of inorganic catalysts. The process is based on first using solar energy to split water molecules and then using bacteria to consume the hydrogen together with CO₂ to produce fuel, and currently has an efficiency of 10%. Projects should advance the overall efficiency of the process for existing or new biosynthetic systems up to 15% under ambient air conditions by enhancing the water splitting efficiency and improving the engineering of bacteria and their interface with the catalysts in order to boost their growth at all conditions.

Important Note: A Go/No Go project shall occur after M6 upon external evaluation by InnoEnergy (Dutch Consultant).

H2020 Societal Challenge for 2018-2020 on "Clean Secure and efficient energy" (SC3)

■ Renewable Energy Solutions for Energy System Level Implementation

■ **LC-SC3-RES-11-2018**: Developing solutions to reduce the cost and increase performance of renewable technologies (**RIA**)

Opening: 31/10/2017 Deadline: **31/01/2018** (1st Stage); **23/08/2018** (2nd. Stage)

Expected impact: TRL 3-4 -> 4-5

Budget to be requested: 2-5 M€ (Budget Call= 30 M€)

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

Scope: Proposals will address one or more of the following issues:

a)

b)

...

g) Bioenergy: Improve small and medium-scale combined heat and power (CHP) from biomass to reduce overall costs of investments and operation through achieving at the same time high resource efficiency and high overall and electrical conversion performance.

H2020 Societal Challenge for 2018-2020 on "Clean Secure and efficient energy" (SC3)

■ Renewable Energy Solutions for Energy System Level Implementation

■ **LC-SC3-RES-12-2018:** Demonstrate highly performant renewable technologies for combined heat and power (CHP) generation and their integration in the EU's energy system (IA)

Opening: Deadline: **13/02/2018** (one-stage)

Expected impact: TRL 5 -> 7-8

Budget to be requested: 15-20 M€ (Budget Call= 30 M€)

Scope: **Proposals will address one of the following sub-topics:**

- a) ***Biomass based combined heat and power (CHP):*** Demonstration of technically feasible and cost-effective installation of medium to large-scale CHP through retrofitting of existing fossil-fuel driven CHP or power plants, as such plants are already integrated in the energy grid. Project will address the transformation of existing fossil fuel power plants >10 MW electrical to CHP plants with the use of sustainable biomass feedstock. Transformations have to demonstrate their overall cost benefits over new biomass-based CHP installations and show at least their state-of-the-art requirements for continuous operation and prove advances in combustion emission reduction. Commercial operation of the plant with biomass after the end of the project is to be envisaged.
- b) B) Geothermal....

Renewable Energy Solutions for Energy System Level Implementation

- **LC-SC3-RES-16-2019**: Development of solutions based on renewable sources that provide flexibility to the energy system (**RIA**)

Opening: 7 May 2019;

Deadline: **27/08/2019** (one stage)

Expected impact: from TRL 3-4 to TRL 4-5

Budget to be requested: 3-5 M€ (Budget Call= 15 M€)

Scope challenge: Supporting the balancing of the power grid and increasing the flexibility of the energy system is possible through dispatchable renewable energy sources, such as for example bioenergy and hydropower. The specific challenge is to increase the potential and performance of dispatchable technologies to provide flexibility services to the energy system by improving their technological characteristics.

Proposals will address one of the following sub-topics (3):

Bioenergy carriers: Development of intermediate bioenergy carriers for energy and transport from biogenic residues and wastes and energy crops from marginal lands not applicable to food or feed production through feedstock flexible technologies at a conversion cost reduced by at least 25% from the state-of-the-art, excluding the feedstock cost, and with increased energy density, storage and trade characteristics, where relevant, and improved GHG performance. The state-of-the art for conversion costs per technology will be clearly presented in the proposal with cost figures and versatility of use where appropriate

■ Renewable Energy Solutions for Energy System Level Implementation

- **LC-SC3-RES-17-2019:** Demonstration of solutions based on renewable sources that provide flexibility to the energy system (**IA**)

Opening: 5 Sept 2018; Deadline: 11/12/2018 (one stage)

Expected impact: from TRL 5 -> TRL 7

Budget to be requested: 12-15 M€ (Budget Call= 40 M€)

Scope challenge: Supporting the power grid balancing and increasing the flexibility of the energy system is possible by means of dispatchable renewable energy sources.

Proposals will address one of the following sub-topics (3):

Intermediate bioenergy carriers: Focus will be on the demonstration of the most cost-efficient intermediate bioenergy carrier pathways for energy and transport, which improve the economic viability of the subsequent energy production by addressing solid, liquid and gaseous intermediate bioenergy carriers from biogenic residues and wastes with increased energy density, storage and trade characteristics where relevant. Reduced conversion costs and improved energy efficiency and GHG performance of the intermediate bioenergy carrier pathway will be demonstrated. **Production at a scale of up to 5000 tons** and process feasibility through applications to fuel production including for the heavy duty, maritime and aviation sectors, as well as to combined heat and power generation, are to be included.

H2020 Societal Challenge for 2018-2020 on "Clean Secure and efficient energy" (SC3)

Renewable Fuels for Transport

LC-SC3-RES-21-2018: *Development of next generation biofuels and alternative renewable fuel technologies for road transport (RIA)*

Opening: 31/10/2017; Deadline: **13/02/2018** (one stage)

Expected impact: TRL 3-4 → TRL 5

Budget to be requested: 3-5 M€ (Budget Call: 25 M€)

Specific Challenge: Current biofuel and renewable fuel technologies are still not competitive compared to technologies of fossil fuel alternatives. This impedes their further development and market penetration. The specific challenge is to increase the competitiveness of next generation biofuel and renewable fuel technologies while diversifying the fuel supply pathways.

Scope: Support will be given to next generation non-food/feed drop-in biofuel and alternative renewable fuel technologies for energy and transport, which improve substantially beyond the state-of-the-art the performance as regards conversion efficiency, cost and feedstock supply, as well as end use compatibility.

Proposals have to address one of the following:

- **liquid diesel- and gasoline-like biofuels from biogenic residues and wastes** through either chemical, biochemical and thermochemical pathways, or a combination of them;
- **liquid gasoline-like biofuels through biogenic upgrading of biogas.**

H2020 Societal Challenge for 2018-2020 on "Clean Secure and efficient energy" (SC3)

■ Renewable Fuels for Transport

■ *LC-SC3-RES-22-2018: Demonstration of cost effective advanced biofuel pathways in retrofitted existing industrial installations (IA)*

Opening: 05/12/2017;

Deadline: **05/04/2018** (one stage)

Expected impact: TRL 5 → TRL 7

Budget to be requested: 8-10 M€ (Budget Call: 20 M€)

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

Scope: Proposals will demonstrate **cost-efficient advanced biofuel pathways** which improve the economic viability and reduce capital expenditure (CAPEX) and operating expenses (OPEX). This is to be done through retrofitting of existing industrial installations with necessary innovation specific to the proposed advanced biofuel pathway.

Proposals will address integration in first generation biofuels sites, in pulp and paper industry or in existing fossil refineries with production of advanced biofuels at a scale of a few thousand tons through upgrading the existing sites with innovative installations. The economic feasibility and other socio-economic benefits including the impact on current first generation sites will be included and clearly demonstrated.

H2020 Societal Challenge for 2018-2020 on "Clean Secure and efficient energy" (SC3)

■ Renewable Fuels for Transport

■ *LC-SC3-RES-23-2019: Development of next generation biofuel and alternative renewable fuel technologies for aviation and shipping (RIA)*

Opening: 07/05/2019; Deadline: **27/08/2019** (one stage)

Expected impact: TRL 3 -> TRL 5

Budget to be requested: 3-5 M€ (Budget Call: 20 M€)

Specific Challenge: Decarbonising the aviation and shipping transport sectors, which are expanding fast and increasing the overall fossil fuel consumption, relies on biofuel and renewable fuels. The specific challenge is to increase the competitiveness of next generation biofuel and renewable fuel technologies in aviation and shipping, compared to fossil fuel alternatives.

Scope: Proposals will develop next generation non-food/feed drop-in biofuel and alternative renewable fuel technologies for aviation and shipping transport, which improve substantially beyond the state-of-the-art the performance regarding conversion efficiency, cost and feedstock supply by addressing:

- liquid jet-like biofuels and alternative renewable fuels from biogenic residues and wastes through chemical, biochemical and thermochemical pathways, or a combination of them; and
- bunker fuel-like biofuels for shipping uses.

H2020 Societal Challenge for 2018-2020 on "Clean Secure and efficient energy" (SC3)

■ Renewable Fuels for Transport

■ *LC-SC3-RES-24-2019: Boosting pre-commercial production of advanced aviation biofuels (IA)*

Opening: 05/09/2018;

Deadline: **11/12/2018** (one-stage)

Expected impact: TRL 5 → TRL 7

Budget to be requested: 15-20 M€

(Budget Call: 20 M€)

Specific challenge: The **aviation transport sector** is growing fast and is expected to be responsible for more than 10% of the global greenhouse gas emissions by 2050. Advanced biofuels achieve direct emission reductions and, as drop-in fuels, are the most attractive alternatives for reducing the carbon foot-print of aviation in the long-term. Due to the absence of a market, the specific challenge is to boost commercial availability of advanced biofuels for aviation. This challenge is in line with the specific targets for commercialization of advanced biofuels identified in the Declarations of Intent in the context of the SET-Plan.

Scope: Proposal will demonstrate pre-commercial production of sustainable and cost-competitive advanced biofuels for aviation for boosting their market up-take. Proposals will address large-scale production of aviation biofuels from non food/feed sustainable feedstock and through certified pathways according to international aviation fuel standards and thus suitable for commercial flight operations. 30 to 50 thousand tonnes of aviation biofuel and continuous plant operation of 1000 hr within the project will be included.

H2020 Societal Challenge for 2018-2020 on "Clean Secure and efficient energy" (SC3)

■ Market Uptake Support

■ *LC-SC3-RES-28-2018-2019-2020: Market Uptake support (CSA)*

Opening: 05/09/2018

Deadline: 11/12/2018

Expected impact: n/a

Budget to be requested: 1-3 M€

(Total budget: 15 M€)

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 and financing best practices of renewable energy power plants;
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- 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.

Otras Oportunidades

La UE busca reforzar la cooperación en Ciencia y Tecnología con diferentes regiones en el mundo (FP7 INCO-Nets).

The EULARINET project (*European Union – Latin American Research and Innovation Networks*) (2011-2013), ALCUANET (2015-2017) con la finalidad de establecer un diálogo biregional sobre las políticas de investigación de LA y UE.

La bioenergía y la bioeconomía: 2 áreas prioritarias.

PRIORITIES FOR S&T COOPERATION CELAC-EU H2020

In the area of **energy**, despite the substantial bilateral cooperation with Brazil (biofuels) and Mexico (geothermal) the potential for cooperation in Energy research with CELAC is currently underexploited. Further involvement and participation of the **CELAC** research community in H2020 is encouraged.

Bioeconomy is a priority in R&I for CELAC and for the EU.

International Bioeconomy Forum (IBF) with the objective to align research funding programmes and focus the global effort on specific research areas of global interest; identify emerging needs, issues and future research trends; create a knowledge exchange on critical areas and develop a policy dialogue, especially on bioeconomy indicators and on availability of biomass, essential for measuring progress of the bioeconomy at international level.

IBF is open to the involvement of **CELAC** countries and its funding agencies and could support cooperation on a number of key R&I activities and horizontal activities in the bioeconomy area.

Working group CELAC-EU on Research Infrastructures

During the EU-CELAC SOM 2017, a working group on **Research Infrastructures** was established with the objective to ensure bi-regional policy coordination and sharing of good practices in policy development and mapping of research infrastructures.

The idea is to contribute with the identification of these different countries capacities, in order to add a better understanding on their capability to connect and join with other countries in national, regional and multinational initiatives.

European research infrastructures (INFRASUPP-2018-2020)

(d) Coordination and support actions for the 2019

Actions under this sub-topic, in line with the EU-CELAC SOM32 strategic approach will concretely build on the outputs of the newly established EU-CELAC Research Infrastructure Working Group, and will:

1. Support the identification of priorities for regional and bi-regional cooperation based on the respective strategic road-mapping exercises;
2. Foster the exchange of best practices between the EU and CELAC on issues of common strategic relevance such as regional road-mapping processes, research infrastructure management, RI staff development.
3. Support the identification of a limited number of Research Infrastructures of bi-regional interest on which the project will have to conduct pilot cooperation demonstrators comprising:
 - The organisation of dedicated workshops and meetings between the EU and CELAC involved communities (research infrastructures, ministries, funding agencies). This can also be supported by bi-regional staff exchange activities, dedicated thematic training programmes (e.g. summer schools);
 - The development of specific roadmaps for cooperation for each of the pilot thematic dimensions and the initial implementation of identified actions, such as supporting reciprocal access to Research Infrastructures in the two regions by covering travel and subsistence costs;
 - The regular reporting to the EU-CELAC RI WG on the progress, for which an advisory board should be set up.

Under this sub-topic, legal entities in Brazil and Mexico are eligible for funding from the Union.

Closing nutrient cycles (CE-RUR-08-2018-2019-2020)

IA. 16 October 2018 Deadline: 23 January 2019

B) Bio-based fertilisers from animal manure (IA)

Projects shall demonstrate processes for recovery of mineral nutrients and production of novel fertilisers from animal manure. An integrated assessment of the business model (economic, agronomic, social and environmental) shall be performed. The whole value chain shall be demonstrated to a near-commercial scale (TRL 6-7). Proposals shall fall under the concept of the 'multi-actor approach, including relevant actors such as agro-food industries, technology providers, research centres, end-users (farmers and farmer associations), or public administration.

C) Bio-based fertilisers from other by-products of the agro-food, fisheries, aquaculture or forestry sectors (IA)

- The Commission considers that proposals requesting a contribution from the EU of up to EUR 6 million for sub-topic A and 8 million for sub-topics B and C would allow this specific challenge to be addressed appropriately.
- For sub-topics B and C, participation of partners from CELAC countries^[6] is encouraged.

Otros instrumentos

- Researchers' mobility
 - Short- and long-term mobility of researchers both ways is an important driver of the EU-CELAC research and innovation cooperation.
 - Individual researchers from CELAC can take part in mobility programmes under the [Marie Skłodowska-Curie Actions scheme](#) (MSCA).
 - CELAC researchers may also apply for the [European Research Council](#) (ERC) grants, which are for the most ambitious and highest quality researchers.