



H2020 Energy
virtual **info day**

Renewable Energy Sources

Presentation of the H2020 2019 calls for funding



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LC-SC3-RES-1-2019

Developing the next generation of renewable energy
technologies



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*Irene Bonvissuto
Policy Officer
DG RTD*



LC-SC3-RES-1-2019

Developing the next generation of renewable energy technologies

- *Bringing new energy conversion solutions, new renewable energy concepts and innovative renewable energy uses faster to commercialization*
- *Proposals are expected to bring to TRL 3 or TRL 4*
- *Research and Innovation Action*
- *Budget: EUR 20 million*
- *Two Stage call*
- *Deadline: 16 Oct 2018 (First Stage)*



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LC-SC3-RES-1-2019

Developing the next generation of renewable energy technologies

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

- Developing new energy technologies;
- Innovative materials for geothermal heat exchangers;
- Innovative testing methods and design tools for wind energy;
- Sustainable fuels other than hydrogen for energy and transport application;
- Innovative very high efficiency thin-film photovoltaics concepts.



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LC-SC3-RES-1-2019

Developing the next generation of renewable energy technologies

- Beside the development of the technology, the proposal will have to clearly address the following related aspects: the potential lower environmental and climate impact on a life cycle basis, the better resource efficiency, issues related to social acceptance or resistance to new energy technologies, related socioeconomic and livelihood issues.
- Support will be given to activities which focus on converting renewable energy sources into an energy vector, or the direct application of renewable energy sources.





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LC-SC3-RES-8-2019: Combining RES Technologies for a Renewable District Heating and/or Cooling System



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*Piero De Bonis
Policy Officer RES H&C
EC - DG RTD Unit G.3*

Specific Challenge:

- Large potential to integrate substantial shares of renewable energy generation in district heating and/or cooling systems
- Renewable energy technologies to be combined, excess heat to be considered
- Operators and users expect systems to be reliable with limited installation and running costs



*TRL
to 6*

IA 70%

Scope

- Cost-effective solutions for district heating and/or cooling systems which allow satisfying at least 50% of the energy demand of the system by the use in the district of one or more renewable energy technologies
- Otherwise wasted excess heat is in the scope
- Solutions should be demonstrated in real conditions within an operational district heating and/or cooling system
- Operators and final users to be engaged, their requirements to be considered



Expected impact & budget

- Reduced dependency of district heating and/or cooling systems on fossil fuels
- Reduced greenhouse gas emissions
- Improve attractiveness of "renewable" district heating and/or cooling systems, especially in those EU countries where such systems currently have very limited or no application
- EUR from 8 to 15 million





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LC-SC3-RES-14-2019

Optimising manufacturing and system operation



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LC-SC3-RES-14-2019

Optimising manufacturing and system operation

- *Optimisation of several key processes in their respective value chains*
- *Proposals are expected to bring technologies from TRL 3-4 to TRL 4-5*
- *Research and Innovation Action*
- *Budget: EUR 20 million*
- *Two Stage call*
- *Deadline: 16 Oct 2018 (First Stage)*



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LC-SC3-RES-14-2019

Optimising manufacturing and system operation

- **Marine energy** (ocean and offshore wind) Development of a new monitoring system (intelligent sensors, fault detection and communication) for accurate condition and structural health monitoring to enable predictive and preventive operation and preventive maintenance processes;
- **Geothermal** Develop a better understanding of the chemical and physical properties of geothermal fluids (including hot and super-hot fluids) as transport media, in order to optimize site development and operation;
- **Photovoltaics** Development of innovative crystalline silicon wafer techniques to produce high-efficiency solar cells and modules.



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Increase the competitiveness of the EU PV manufacturing industry



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*Maria GETSIOU
Renewable Energy Sources Unit G3
European Commission - DG Research
Innovation*



LC-SC3-RES-15-2019

Improve competitiveness of the EU PV manufacturing industry

TRL 5-6 to 6-7

IA

EUR 10 to 13 million

New investments in the EU PV industry, via the establishment of pilot lines for innovative/optimised production processes/equipment

Increase the competitiveness of the EU PV manufacturing industry

Demonstrating manufacturing/product innovation for highly performing **PV** technologies (e.g. crystalline-silicon, thin-film and concentration PV). Demonstration at pilot-line level, showing the potential to be scaled up to GW-size, high-yield-throughput and cost-effective industrial production.

- New production routes for cells and modules based on innovative materials and/or architectures (e.g. perovskite/crystalline-silicon tandem cells);
- Optimization of one or more steps in the value chain (by e.g. increased automation, laser processing, etc.);
- Tailored development of production equipment;
- Enhanced durability and/or recyclability of the final product.



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LC-SC3-RES-17-2019

Demonstration of solutions based on renewable sources
that provide flexibility to the energy system



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Policy Officer
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LC-SC3-RES-17-2019
**Demonstration of solutions based on renewable sources that
provide flexibility to the energy system**

- *Increase the potential and performance of dispatchable technologies to provide flexibility services to the energy system*
- *Proposals are expected to bring technologies from TRL 5 to TRL 7*
- *Innovation Action*
- *EUR 40 million*
- *One Stage call*
- *Deadline: 11 Dec 2018*



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LC-SC3-RES-17-2019

Demonstration of solutions based on renewable sources that provide flexibility to the energy system

- **Bioenergy** Demonstration of the most cost-efficient intermediate bioenergy carrier pathways for energy and transport, addressing solid, liquid and gaseous intermediate bioenergy carriers from biogenic residues and wastes with increased energy density, storage and trade characteristics and improved GHG performance.
- **Hydropower** Improvement of the average annual overall efficiency of hydroelectric machinery.
- **Concentrated Solar Power (CSP)** Demonstration of innovative storage systems.



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Renewable Fuels for transports LC-SC3-RES-24-2019



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*Dr Maria Georgiadou
Policy Officer
European Commission - DG RTD*

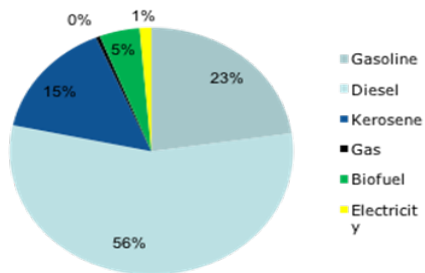
Objectives

- Competitiveness of the next generation of biofuels and renewable fuel technologies
- Up-scaling of advanced biofuels for specific transport needs in a cost-effective way
- European leadership in global development of specific disruptive technologies for a complete ultimate replacement of fossil fuels
- Drop-in renewable fuel solutions for fossil-fuel substitutions
- Feedstock diversification

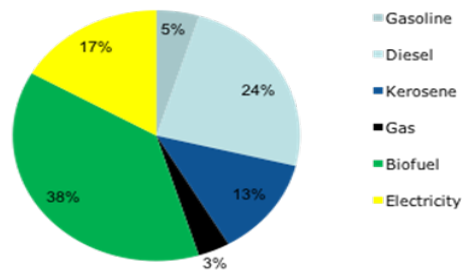


Share of Fuels in EU transport sector

Current share

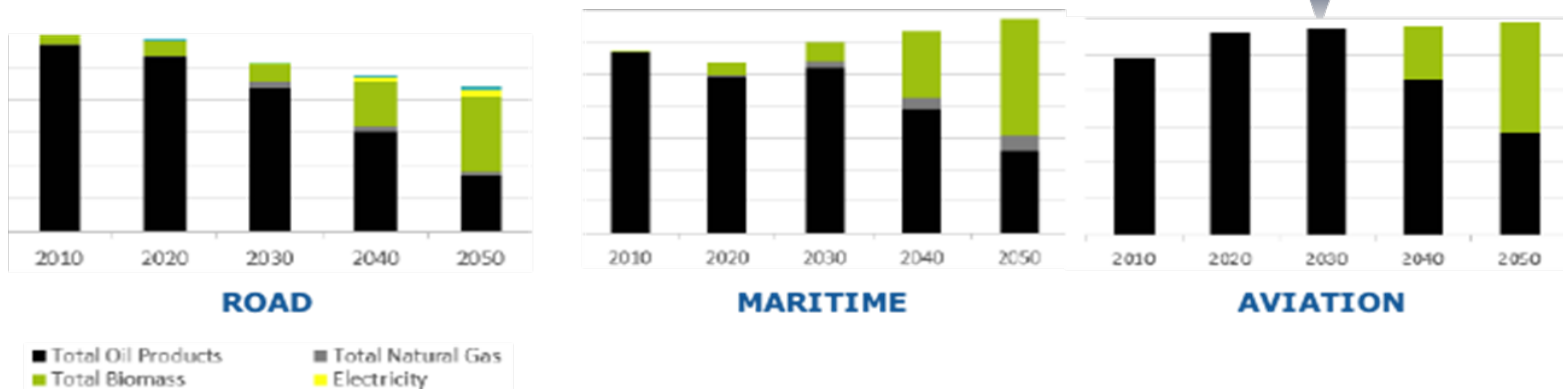


Projected share of transport fuels in 2050 (compatible with decarbonisation objectives)



Advanced biofuels dominate maritime and aviation in the long term. In 2050, cars run on batteries and fuels, ships on LNG and fuels but planes only on Advanced Biofuels

EC studies





- *Reduce the carbon footprint of aviation in the long-term by producing drop-in advanced biofuels for aviation at pre-commercial scale*
- *TRL 5 to 7*
- *IA*
- *EUR 15 to 20 million*

Boosting pre-commercial production of advanced aviation biofuels

- Demonstrate **pre-commercial** production of sustainable and cost-competitive advanced biofuels for **aviation** for boosting their market uptake
- **Large-scale production** of aviation biofuels from **non-food/feed** sustainable feedstock and certified pathways according to international aviation fuel standards



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- *Reduce the carbon footprint of aviation in the long-term by producing drop-in advanced biofuels for aviation at pre-commercial scale*
- *TRL 5 to 7*
- *IA*
- *EUR 15 to 20 million*

Boosting pre-commercial production of advanced aviation biofuels

- **30 to 50 thousand tonnes** of aviation biofuel and continuous plant operation of **1000 hr within project**
- Pre-commercial plants
- Facilitate market entry and increase **commercial capacity of advanced biofuels for aviation**
- Deployment will allow the competitive production of bio-jet fuels on a commercial scale





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LC-SC3-RES-28-2019

Market Uptake support



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Policy Officer
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LC-SC3-RES-28-2019 Market Uptake support

- *Facilitate technology market introduction and increase RES share*
- *Lead to substantial and measurable reduction in project development*
- *Develop more informed policy, market support and financial framework*
- *Coordination and Support Action*
- *EUR 15 million*
- *Proposals requesting a contribution between EUR 1 to 3 million would allow this specific challenge to be addressed appropriately*
- *One Stage call*
- *Deadline: 11 Dec 2018*



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Market Uptake support

Support for a **broad range of issues**, including:

- 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';
- 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'
- Development of insurance schemes
- Development of innovative financing mechanisms/schemes





LC-SC3-RES-28-2019 Market Uptake support

Support for a broad range of issues, including (continued) :

- Support tools to facilitate export markets
- Development of tools for environment impact assessment for RES projects
- Development of tools or services using GEO data
- Determining conditions and defining options for retrofitting existing energy and industrial installations for the complete or partial integration of bioenergy
- Development of optimisation strategies for bioenergy and sustainable renewable fuels in upgraded energy and industrial installation
- Development of cost-effective logistic, feedstock mobilisation strategies and trades centres for intermediate bioenergy carriers



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LC-SC3-RES-30-2019: Demonstration of plug and play solutions for renewable off-grid electricity



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Thomas SCHLEKER, PhD

Policy Officer

Renewable Energy Sources - DG RTD



LC-SC3-RES-30-2019: Demonstration of plug and play solutions for renewable off-grid electricity

- Specific Challenge:

For **off-grid communities**, research and development is needed to bring down the **cost of renewable electricity solutions** in **diverse geographic and climate conditions** by improving at the same time their **performance in respect of robustness, reliability, network stability and autonomous operation**. Existing micro-grid solutions do not fully respond to the **needs of communities** in respect of **investment costs, versatility, plug and play capabilities, easy installation and connection** to the renewable energy source, **easy and cost-saving logistics** as well as maximisation of the **renewables share**.





LC-SC3-RES-30-2019

Scope: **Container-based integrated solutions** for sustainable and long-term **renewable electricity production**, storage and distribution which demonstrate better performance than state-of-the-art solutions with respect to the overall installation, commissioning, operation and maintenance costs. The following **parameters and features are expected to be optimised:**

- **Versatility of renewable energy sources** to utilise (e.g. photovoltaics, wind, microhydropower, bioenergy);
- **Plug and play capabilities** towards the external electricity sources as well as storage options;
- Maximising the **share of renewable electricity sources** vis-à-vis diesel generation;
- **Demonstrated solutions** should support power demand of **decentralised communities up to 100 kW**, in line with targets of **Mission Innovation Challenge Nr. 2**.





LC-SC3-RES-30-2019

... Scope: A **plug and play prototype should be fully demonstrated, including single shipment of the core system in an intermodal container. Local installation of the fully operational system by the local community** should also be demonstrated. Demonstrations shall take place in **at least two communities with diverse physical landscape and climate conditions, which are located in different continents.** Those demonstrations should **use different renewable energy sources** locally available. ... providing necessary **hardware and software interfaces**, including those for **remote** operation and maintenance **training**. The container should include equipment for energy management and metering as well as system monitoring for demand response optimisation. ...





LC-SC3-RES-30-2019: Demonstration of plug and play solutions for renewable off-grid electricity

- ... This topic will contribute to the **Challenge #2 (Off-grid access to electricity) of Mission Innovation.**
- **TRL: 6-7 to 7-8**
- Budget: ~ EUR 5 million
- Expected Impact: Successful projects will **demonstrate the attractiveness of renewable integrated container solutions for off-grid communities** in diverse physical landscape and climate conditions by **lowering the overall costs** of the renewable energy generation and energy system components while ensuring their **robustness, reliability, sustainability and autonomous operation.**
- Type of Action: Innovation action
- Opening: 05 Sep 2018; Deadline: 11 Sep 2018



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The calendar of the calls

Call identifier	Opening date	Deadline to apply	Total budget
RES 1 RES 14	ALREADY OPEN	16 OCT 2018 <i>(2nd stage 25/04/19)</i>	€40 M
RES 8 RES 15 RES 17 RES 24 RES 28 RES 30	ALREADY OPEN	11 DEC 2018	€125 M





Thank you!

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 **@inea_eu**

EU Participant Portal

www.ec.europa.eu/research/participants



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