Decarbonising energy systems of geographical Islands

The proposed solutions will contribute to high levels of local renewable energy and a very significant reduction of the use of fossil fuel based energies (ideally achieving full decarbonisation for the whole island), covering also:

- Improve integration and use of digitalised smart grids and/or thermal networks based on high flexibility services from distributed generation, local power balancing, demand response and storage of electricity, heating and cooling, water, etc.; including innovative approaches to energy storage at different scales.
- Improved forecasting through comprehensive modelling of demand and supply (e.g. based on weather, wind, sun, etc.).

Projects should also deliver:

- Effective business models for sustainable solutions for Renewable Energy Communities, in line with the recently adopted Renewable Energy Directive (Directive (EU) 2018/2001);
- Practical recommendations arising from project experience on:
 - regulatory and legal aspects;
 - gender and socio-economics (Social Sciences and Humanities);
 - storage and flexibility solutions (from short to seasonal timescales);
 - data management, data processing and related cyber security;
- Contributions to environmental sustainability, in particular in view of the specificities of islands ecosystems;
- Large scale implementation of self-consumption solutions in households, buildings and/or districts, supported by microgrids and decentralised small-scale storage systems.

Proposals will involve at least two Follower islands (geographical islands). The follower islands are to be members of the consortium although their participation in the project can be limited to actions allowing them to develop plans to adapt similar solutions to their islands in a cost-efficient way. The size of the budget allocated to Follower islands should be clearly correlated to their level of involvement in the project's activities. Follower islands participation will focus on exploring, planning and

initiating the replication of the deployed solutions adapted to the different local conditions. This has to take the form of a detailed replication plan delivered by the end of the project.

The TRL will range between 5 and 8 (see part G of the General Annexes). Proposers will indicate the estimates levels of TRL at the beginning and at the end of the project.

Proposals will include a task on the analysis of obstacles to innovation under the current context and foresee the coordination on policy relevant issues (e.g. regulatory framework, business models, data management, consumer engagement) with similar EU-funded projects through the BRIDGE initiative[[http://www.h2020-bridge.eu/]]. An indicative budget share of at least 2% is recommended for the research work associated with these issues and an additional 2% for the coordination effort.

If relevant, projects should cooperate with the European Islands Facility (LC-SC3-ES-8-2019), and aim to establish synergies with ongoing and planned work on islands in the 'Clean Energy for EU islands' initiative[[<u>https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-</u> <u>union/clean-energy-eu-islands</u>]].To support this, an indicative budget share of at least 2% of the EU contribution is recommended, which for example could include the development of practical training material and courses for island inhabitants, based on the chosen objectives and deliverables.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 to 7 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Energy production costs on geographical island are up to ten times higher than on the mainland; therefore the large-scale deployment of local renewable energy sources and storage systems brings economic benefits and, at the same time, contributes to decarbonising the energy system of the island, reducing greenhouse gases emissions and improving, or at least not deteriorate, air quality.

The projects are expected to contribute to all the following impacts:

- reduce significantly fossil fuel consumption, by developing renewable energy-based systems (including heating and cooling and storage) that allow the island to go towards full decarbonisation goals in a shorter time frame;
- large-scale uptake of validated solutions on the same geographical island and/or on other geographical islands with similar problems;
- Facilitate the creation and/or increase the number of renewable energy communities[['renewable energy community' as defined in DIRECTIVE (EU) 2018/2001 on the promotion of the use of energy

from renewable sources.]];

• enhance stability of the power network for islands that are grid connected with the mainland.

Proposals are invited to include ad-hoc indicators to measure the progress against specific objectives of their choice that could be used to assess the progress during the project life. Indicators are expected to have clear and measurable targets. Proposals are also invited to identify if they impact on future investment perspectives (see also topic LC-SC3-ES-8-2019).

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