European Commission

H2020 Challenge Secure, clean and efficient energy :
Smart Citizen-Centred Energy System & Smart Cities and Communities

#H2020Energy info days

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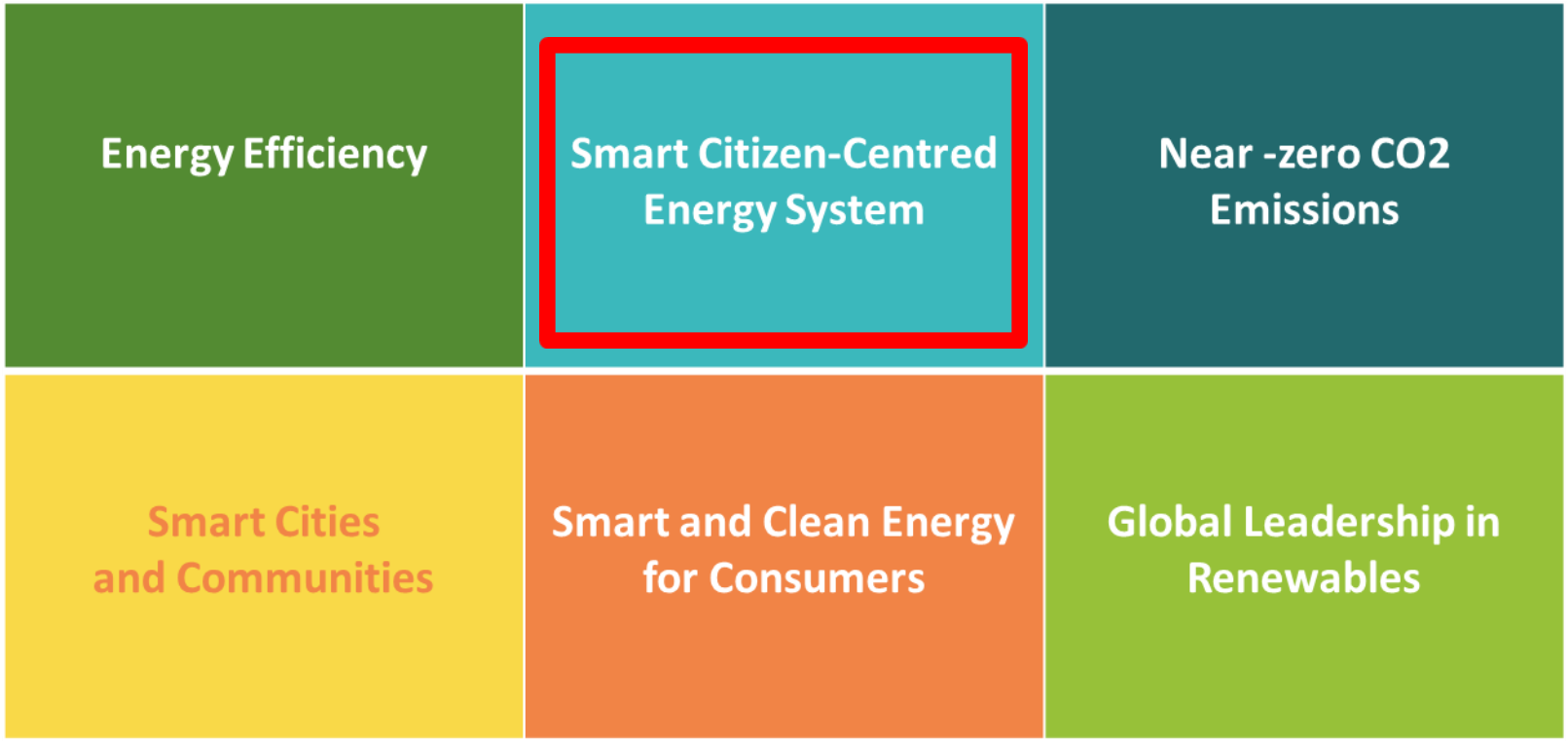
Research and Innovation

European Commission

H2020 Energy Challenge: Secure, clean and efficient energy system



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Research and Innovation

Smart and Clean Energy for Consumers

EC-2
Mitigating households energy poverty
2018-2019-2020
Support

EC-1
Role of consumers in a changing market

2018-2019-2020
Support

EC-4
Non-energy impacts and behavioural insights on EE

2020
RIA

EC-5
Supporting public authorities in energy transition

2020
CSA

EC-3
Consumer Engagement / Demand Response

2020 - Demo

Energy Systems:

Grid

ES-10
DC – AC/DC hybrid grid

2020 - Demo

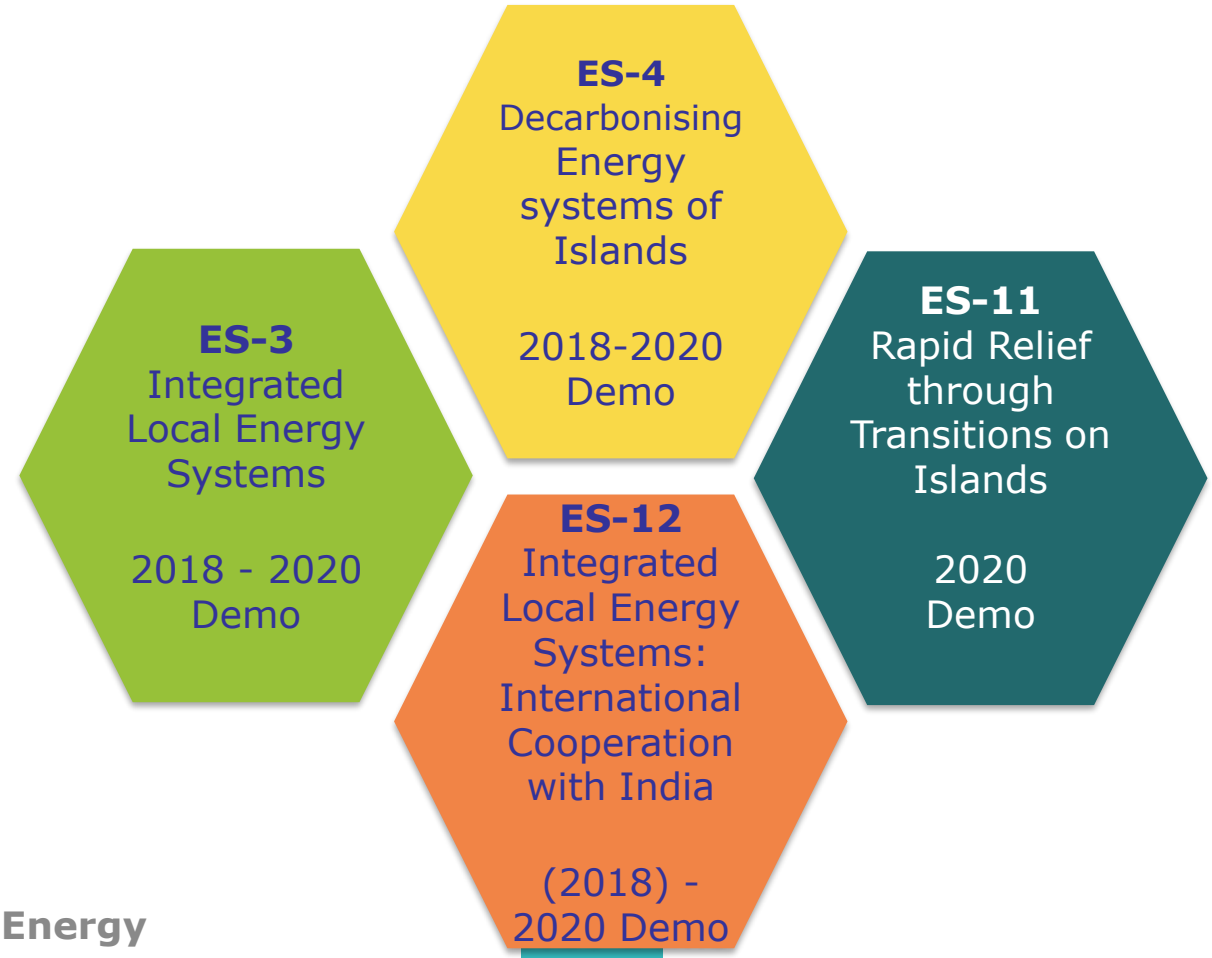
ES-5
Innovative grid services
(Consumers, DSO, TSO)

2018-2020
Demo

Digitisation: Cyber-security
2018-2020

Smart Citizen-Centred Energy System

Smart Citizen-Centred Energy System: Local and Islands



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Common requirements

Applicants should demonstrate a good knowledge and compatibility with:

- Current **regulations**
- Available or **emerging standards** and **interoperability issues** *(see work of the Smart Grid Task Force and its Experts Groups in the field of Standardization - CEN-CLC-ETSI M/490)*
- Smart grid deployment, infrastructure and industrial **policy**
- A high level of **cyber security**; compliance with relevant EU security legislation, due regard of best available techniques
- **Regulatory environment** for privacy, data protection, data management and alignment of data formats *(see "My Energy Data" and its follow-up, General Data Protection Regulation and industry standards, Data Protection Impact Assessment Template)*

BRIDGE

Accelerating smart grid and storage deployment by removing barriers to innovation

bridge
HORIZON 2020

Footnote: all WGs can contribute to the task forces, especially the one marked with « X » below

BRIDGE – GENERAL ASSEMBLY

	Working Groups			
	Regulations	Business Models	Data Management	Customer Engagement
Task Forces				
Energy Communities & Self-consumption	X	X	X	X
Replicability & Scalability		X		
Joint Communication				X
Topics / Questions to be addressed by the WGs				
TSO-DSO Cooperation	X		X	
Cybersecurity – Resilience			X	

bridge HORIZON 2020

		Instrument	TRL	EU funding per project (in M €)	Budget in 2020
EC-3	Consumer Engagement & Demand Response	IA	5-8	4-6	€ 16 M
ES-5	Innovative Grid services (DSO-TSO)	IA	5-8	20-22	€ 22 M
ES-10	DC – AC/DC hybrid grid	IA	5-8	7	€ 14 M
ES-3	Integrated local energy systems	IA	5-8	5-6	€ 15 M
ES-12	Integrated local energy systems: International Cooperation with India	IA	5-8	5-6	€ 9 M
ES-4	Decarbonising energy system of islands	IA	5-8	5-7	€ 40 M
ES-11	Rapid Relief	IA	6-8	2-3	€ 4 M
				ES+EC3 total budget 2020	**€ 120 M**

EC-3-2018-2020: Consumer engagement and demand response

Deadline to apply: 29 Jan 2020

Instrument: Innovation Action

TRL: between 5 and 8

EU funding per project: € 4-6 M

Total budget in 2020: € 16M

EC-3-2020: Consumer engagement and demand response

The Challenge

- Put **consumers/prosumers at the heart** of the energy market
- **New cost-effective solutions for consumers** based on the next generation of energy services:
  - Beneficial to **RES integration** into an efficient operation of the power system
  - Better predict and incentivise **consumer behaviour**
- Engaging consumers/prosumers in **demand-response mechanisms** and other energy services, bringing a **fair share of benefits** to consumers and the energy system.
- **New ways for consumers to engage** in the energy transition - energy cooperatives, peer-to-peer trading and citizen energy communities.
- **Integration of services across different sectors**, e.g. combining energy services with mobility and health.

EC-3-2020: Consumer engagement and demand response

The Scope

Develop and test solutions and tools for demand response and energy services:

- **Using real consumption data** to better predict **consumer behaviour** (digital twin)
- **Focus on households**, other type of consumers may be included. Target **one or multiple type of loads**, small-scale **production**, energy **storage**, **aggregation**

- Preferably relying on **advanced automation, ICT tools, communication protocols and interoperability**
- Preferably including **several energy vectors and sectors**
- Address **privacy, data protection and cybersecurity**

EC-3-2020: Consumer engagement and demand response

The Scope

- **Consumer perspective on the power system:** social science and humanities-related work is to be closely associated with the development of technological solutions

- **Services, customer information, engagement strategies should be designed and demonstrated taking into account the different types of consumers** (e.g. segmentation along different categories, e.g. social category, age, technology literacy, gender, etc.)

- Participation of **local energy communities, energy cooperatives, aggregators and consumers associations** is encouraged.

EC-3-2020: Consumer engagement and demand response

The Scope

- Proposals are expected to include a task on developing a **business model and a clear path to finance and deployment** (delivery of affordable energy within 5 years)

- Proposals should include a task/work package on **analysis of obstacles to innovation** in the **current context and in future market design** context

- Proposals should foresee to **coordinate** with at least one project supported under **topic ES-5** as well as with similar EU-funded project through the **BRIDGE initiative** (consider additional coordination effort and budget)

EC-3-2020: Expected impact (1/2)

Contribute to at least seven elements:

- **Increased use of demand response** across the European energy system
- **Increased number and types of consumers** engaged in demand-response across Europe
- **Demonstrated and improved viability of innovative energy services**, best practices and effective incentives that can be replicated at large scale
- **Increased uptake of services** that combine energy efficiency with other energy services, technologies and non-energy benefits
- **Increased reliability and accessibility** of innovative energy services
- Developed and demonstrated **viable solutions for customers: best practices and effective incentives** that can be replicated at large scale

EC-3-2020: Expected impact (2/2)

Contribute to at least seven elements:

- **Increased predictability of consumption** patterns and consumer behaviour
- **Increased data protection and privacy** for customers
- **Improved modelling of the flexibility levers** from the new energy services
- **Increased share of energy or power that can be mobilised** to provide flexibility to the grid and increase the hosting capacity for RES

Include ad-hoc indicators to measure the progress against specific objectives that could be used to assess the progress during the project life

LC-SC3-ES-5-2018: TSO – DSO: Large-scale demonstrations of innovative grid services

Deadline to apply: 29 Jan 2020

Instrument: Innovation Action

TRL: between 5 and 8

EU funding 1project: € 20-22 M

Total budget in 2020: € 22M

LC-SC3-ES-5-2018: TSO – DSO – Consumer: Largescale demonstrations of innovative grid services

The Challenge

- Demonstrate at a **large-scale** how **markets and platforms enable TSOs and DSOs to procure energy services** from large-scale and small-scale assets connected to the electricity network.

LC-SC3-ES-5-2018: TSO – DSO – Consumer: Largescale demonstrations of innovative grid services

Key objectives:

- will lead to the development of a **seamless pan-European electricity market** that makes it possible for all **market participants** (if necessary via intermediaries such as energy suppliers or aggregators) **to provide energy services** in a transparent and non-discriminatory manner;

- **enables TSOs and DSOs to give incentives to connected consumers**, buildings, devices (including small-scale generation) to **improve predictability** and anticipate problems, based on jointly developed grid-models;

LC-SC3-ES-5-2018: TSO – DSO – Consumer: Largescale demonstrations of innovative grid services

Key issues:

- The selected project should **build on experience and best-practices from previous and ongoing projects** and aim to deliver **one set of protocols and standards with respect to platforms for the procurement of grid services;**

- Include a **credible business plan to ensure that the tested and demonstrated platforms and markets will continue operation** in real-life after the project ends

- Design and develop **ICT systems and infrastructure that will facilitate open (non-proprietary) standardised and interoperable multi-party data-sharing** and facilitate scaling-up, including across borders (at least in the EU), between all actors that use the markets and platforms for grid services.

LC-SC3-ES-5-2018: TSO – DSO – Consumer: Largescale demonstrations of innovative grid services

Expected impact:

demonstrated cost-efficient & replicable model(s) for electricity network services that can be scaled up to include networks operated by other TSOs and DSOs.

Key conditions:

- Cooperate in Bridge: at least 2% is recommended
- a dedicated work package for cooperation with other selected projects (EC-3) and earmark appropriate resources (5-10% of the requested EU contribution).

LC-SC3-ES-10-2020: DC – AC/DC hybrid grids

Deadline to apply: 29 Jan 2020

Instrument: Innovation Action

TRL: between 5 and 8

EU funding per project: € 7M

Total budget in 2020: € 14M

LC-SC3-ES-10-2020: DC – AC/DC hybrid grids

The Challenge

- increasing **complexity of AC based grid** architectures
- **cascading effects** due to faults/**cyberattacks**
- need to **increase the share of renewables** in the grid

The Scope

- design, modelling, simulation, development, demonstration, test and validation of **DC-based grid architecture(s)**
- **modular grid** planning and development, the "**firewall" effect against faults or cyberattacks** and the accommodation of **higher shares of renewables in a DC-based system** will be part of the demonstration and validation exercise.

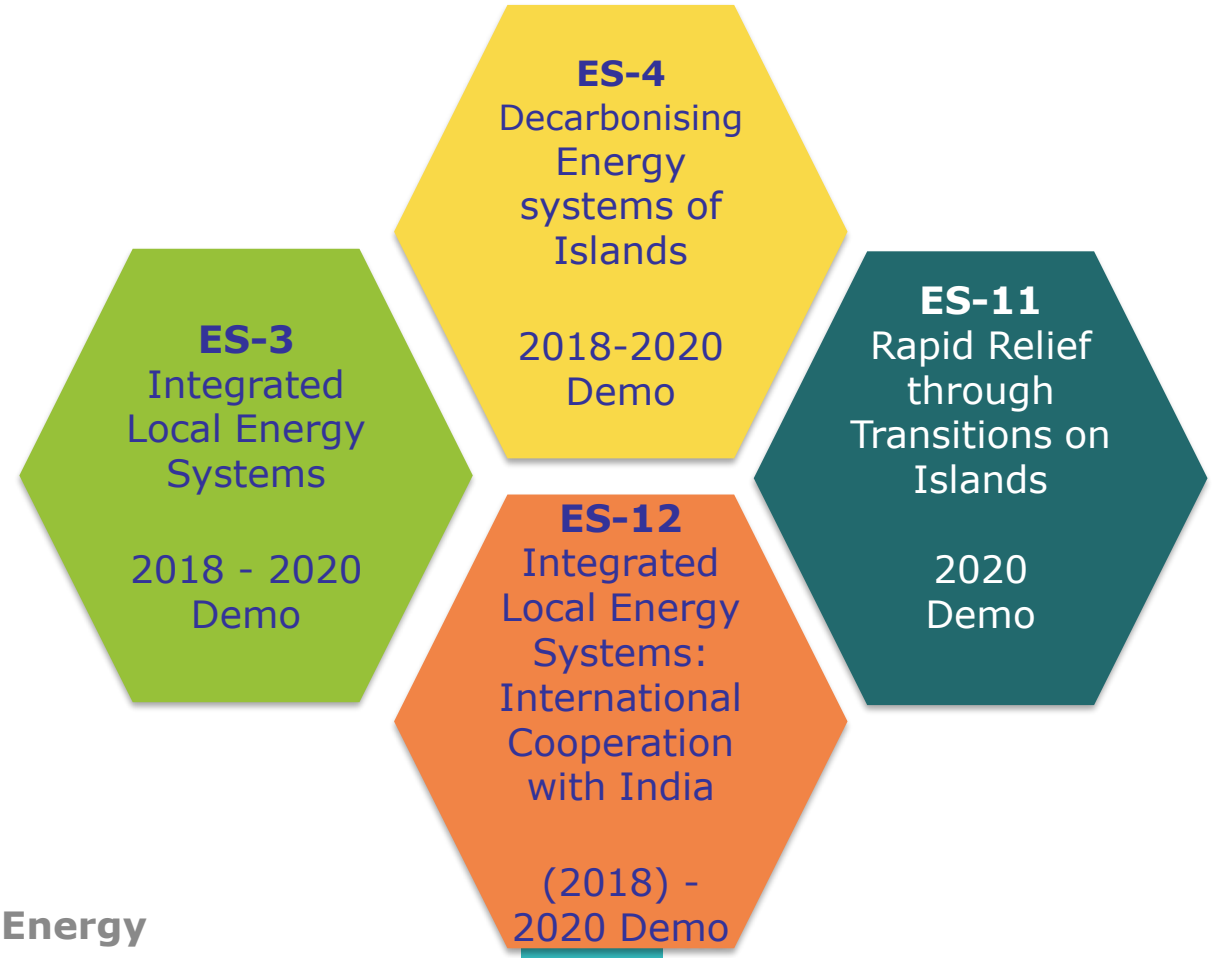
LC-SC3-ES-10-2020: DC – AC/DC hybrid grids

Expected impact:

Contribute to :

- facilitating **planning and targeting investments** in the sector;
- **increasing resilience** of the electricity grid to faults and cyberattacks
- increasing penetration of **RES in the power network**
- **increasing the efficiency** of the electricity system

Smart Citizen-Centred Energy System: Local and Islands



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LC-SC3-ES-3-2018-2020: Integrated local energy systems (Energy islands)

LC-SC3-ES-12-2020: Integrated local energy systems (Energy islands): International cooperation with India

Deadline to apply: 29 Jan 2020

Instrument: Innovation Action

TRL: between 5 and 8

EU funding per project: € 5-6M

Total budget in 2020:
ES-3: € 15M
ES-12: € 9M

ES-3-2018-2020: Integrated local energy systems

ES-12-2020: Integrated local energy systems: INCO with India

The Challenge

- Decarbonisation of **local energy systems** on the mainland
- **All energy vectors**, storage, demand-response, digitization
- **Local economy** and **business cases**

ES-3-2018-2020: Integrated local energy systems

ES-12-2020: Integrated local energy systems: INCO with India

The Scope

Develop and demonstrate solutions which analyse and combine all energy vectors that are present in a well delimited system

- Preliminary **analysis of the local case**
- Develop **solutions and tools for the optimisation** of the local energy network
- High **replication** potential
- Local **consumers, small to medium industrial production facilities and commercial buildings** should be involved

ES-12INCO with India:

- 3 participants established in India
- Demonstration in either EU or India or both
- Meaningful contribution from both EU and Indian partners

ES-3-2018-2020: Integrated local energy systems

ES-12-2020: Integrated local energy systems: INCO with India

Expected impact: **Projects are expected to contribute to all of the following:**

- Validate solutions for decarbonisation of the local energy system, positive impact on the wider energy infrastructure, on the local economy, local social aspects and local air quality;
- Involvement of local energy consumers and producers, create energy communities, test new business models;
- Safe and secure local energy system that integrates significant shares of renewables
- Benchmark technical solutions and business models that can be replicated in many local regions and that are acceptable by local citizens.

Include ad-hoc indicators to measure the progress against specific objectives (could be used to assess the progress during the project life)

Why islands?

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Islands – Key facts for Europe

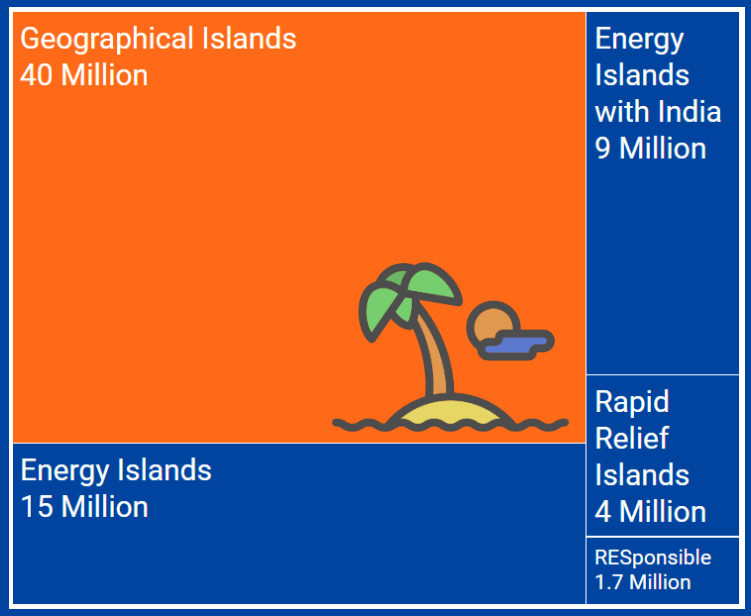
- 17.5 Million people (3.4% of the EU)
- 1000 islands with > 10 inhabitants
- 100 > 10,000 inhabitants
- Electricity production X10
- Installation costs X4

Why islands?

- **Dirty Fuel**
- **High Costs**
- **Strong Communities**

European Commission

Decarbonising energy systems of geographical Islands



ID: LC-SC3-ES-4-2018-2020

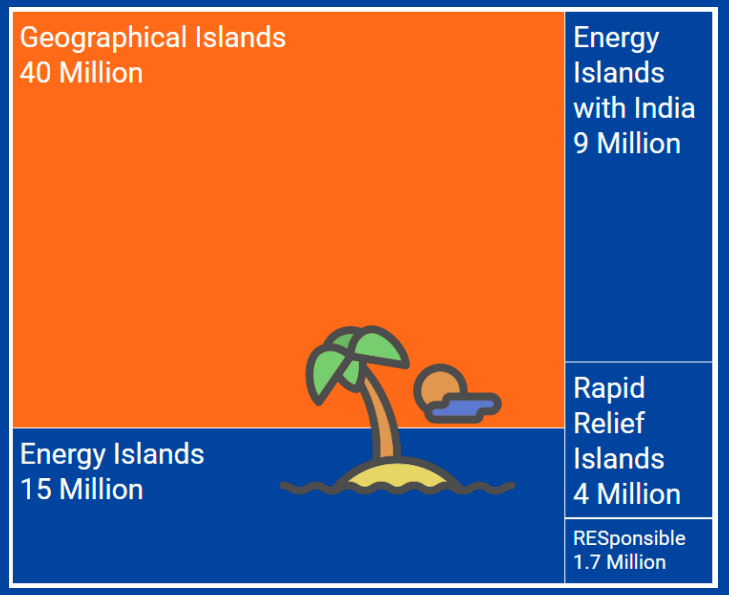
5-7 Million Euro per project

4% 2% Budget for BRIDGE and 2% wider EU Islands Initiative

5-8 TRL level

Deadline: 29 January 2020

Decarbonising energy systems of geographical Islands



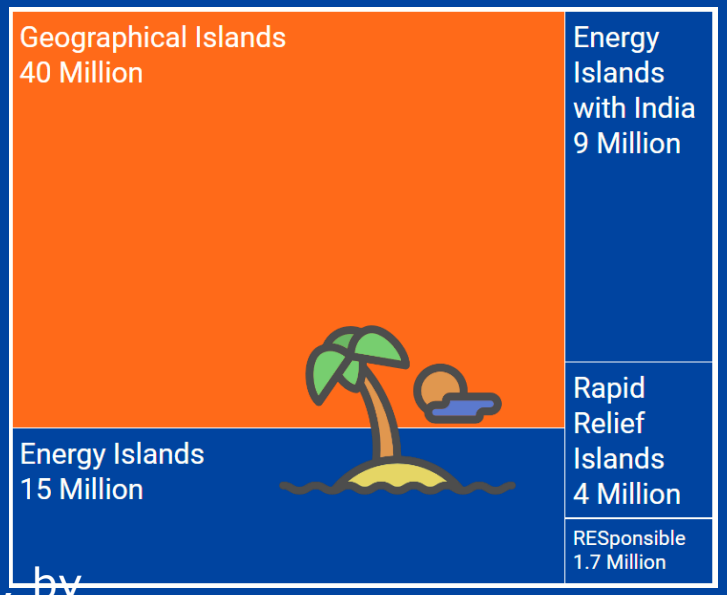
Scope

- High levels of local renewable energy
- Improve **integration** and use of digitalised smart grids and/or thermal networks
- Improved **forecasting**
- Effective business models for sustainable solutions for **Renewable Energy Communities**
- **Self-consumption** solutions

Key Characteristic

2 **Follower islands (geographical islands)**

Decarbonising energy systems of geographical Islands



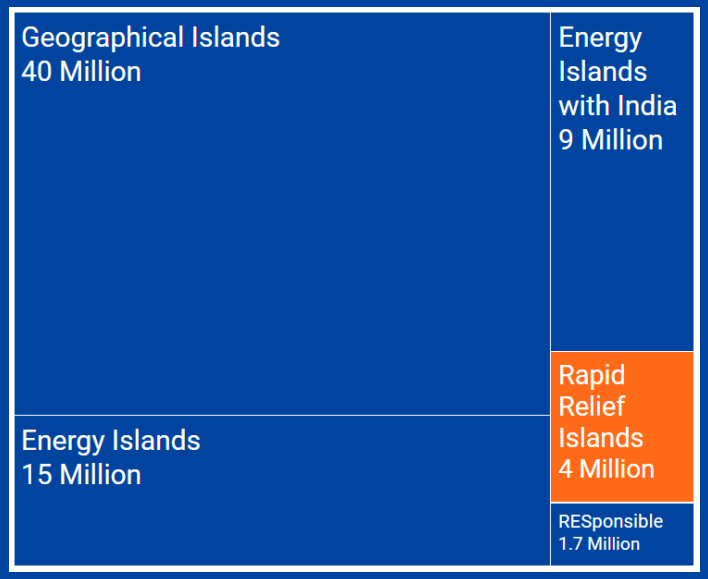
Expected impact

- Reduce significantly fossil fuel consumption, by developing RES-based systems that allow the island to go towards full decarbonisation goals
- Large-scale uptake of validated solutions on other geographical islands with similar problems;
- Facilitate the creation of renewable energy communities
- Enhance stability of the power network (for grid connected islands)

Include ad-hoc indicators

Rapid Relief through Transitions on Islands

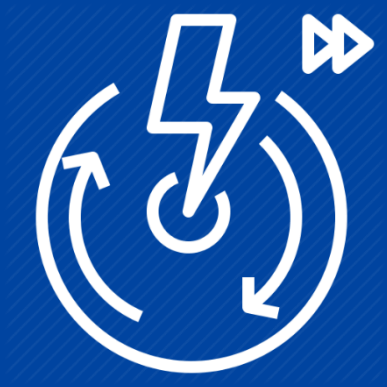
ID: LC-SC3-ES-11-2020



2-3 Million Euro per project

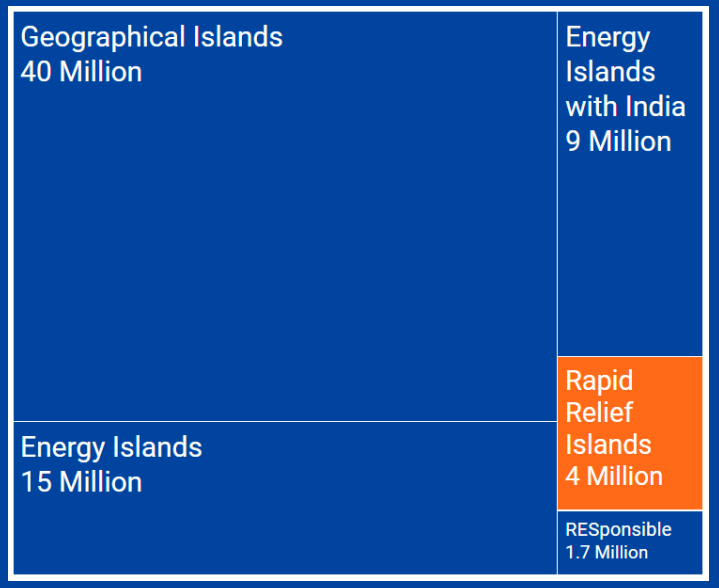
2-4% Collaboration with other EU projects

6-8 TRL level



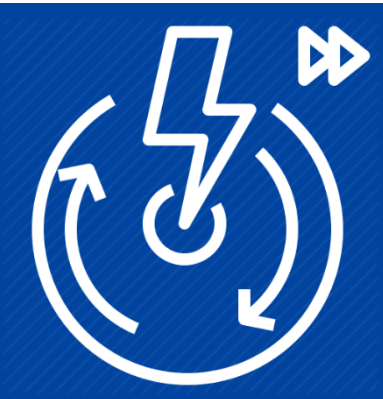
Deadline: 29 January 2020

Rapid Relief through Transitions on Islands



Scope

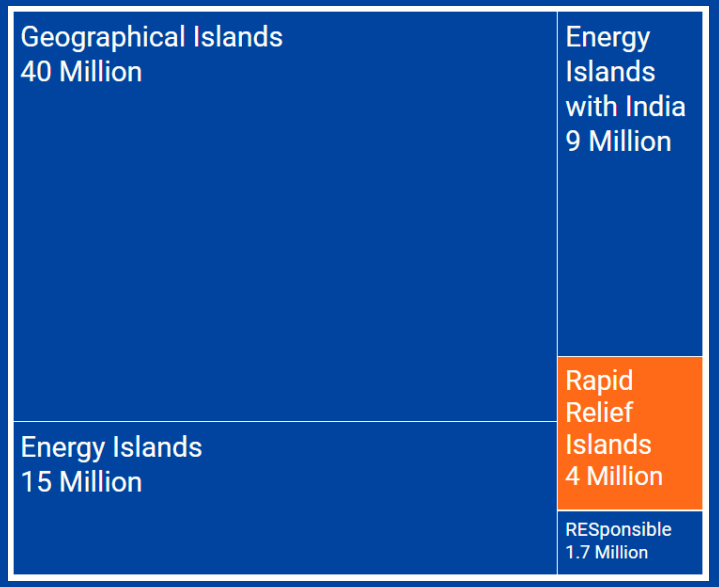
- *"From zero-to-hero":* demonstrate solution(s) on one island that is over 90% reliant on fossil fuels for generating its electricity.
- Mid-sized islands: population of **5,000 -100,000** are particularly encouraged.
- **Renewable Energy Communities**



Key Characteristic

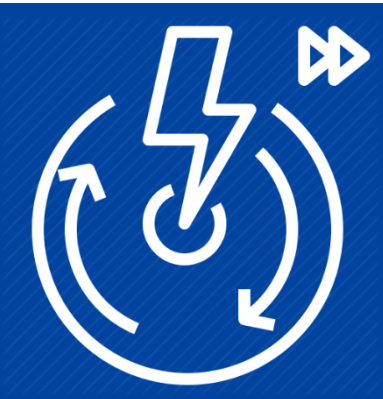
90% renewable energy electricity generation by the end of the project

Rapid Relief through Transitions on Islands



Expected impact

- contribute towards a significant increase in the number of islands that have a stable energy system generating at least 90% of their annual electricity demand from renewable sources



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Thank you!

EU Funding & Tenders Portal

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