SUSTAINABLE PLACES 2023

MAESHA

Demonstration of smart and flexible solutions for a decarbonised energy future in Mayotte and other European islands

Sustainable Places 2023, Madrid

This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement No. 957843.

Project highlights

Start in November 2020 — Decarbonize European islands

Horizon 2020 funding programme

Innovation project — 11.8 M€ budget

WHAT IS MAESHA?

Mayotte — Replicable model of smart energy system — End in October 2024

Means “Future” in Shimaore, a dialect of Mayotte

High dependency today on expensive and polluting fossil fuels — 16 millions inhabitants

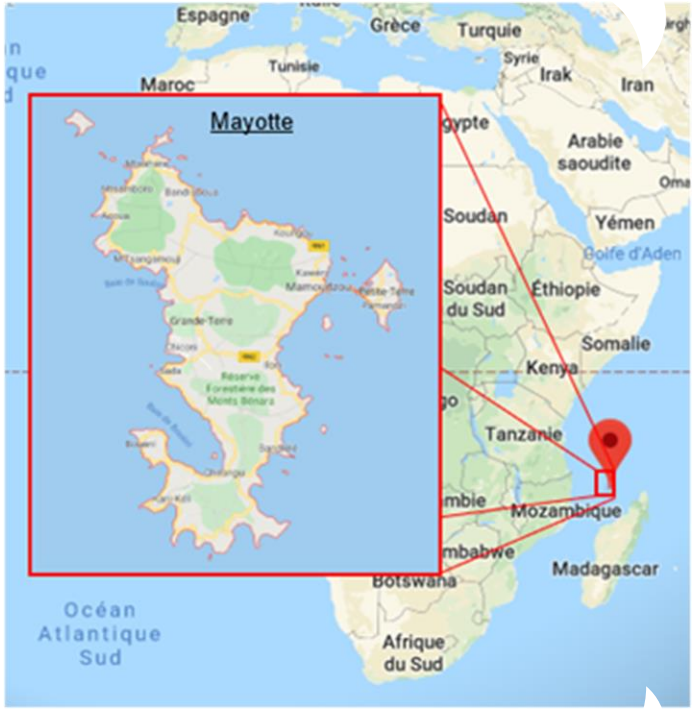
Grid flexibility for intermittent renewable energies integration

2400 islands within the EU

WHY THIS PROJECT?

Demonstration in Mayotte (FR)

Combination of solutions towards a smart network — Renewables = Key for islands decarbonisation



PARTNERS

21 partners from 9 countries

www.maesha.eu

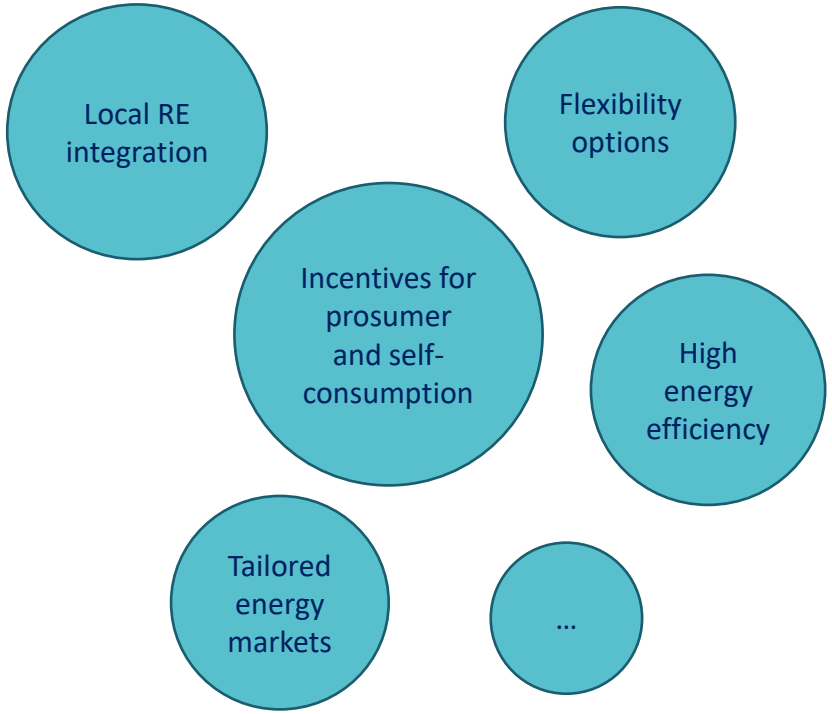
Introduction

Our European islands face serious threats and great challenges today…

MAESHA

MAESHA
– “future” in Shimaore –
has just become present!

A sustainable transition of the energy system is required to increase resilience of our most vulnerable fellow people!



Main objective: Decarbonizing the energy system of Mayotte and other European islands

DEMONSTRATION IN MAYOTTE (FR)

Fostering the large deployment of RES

Installing tailored innovative flexibility services

Studying and modelling local energy systems and community structures

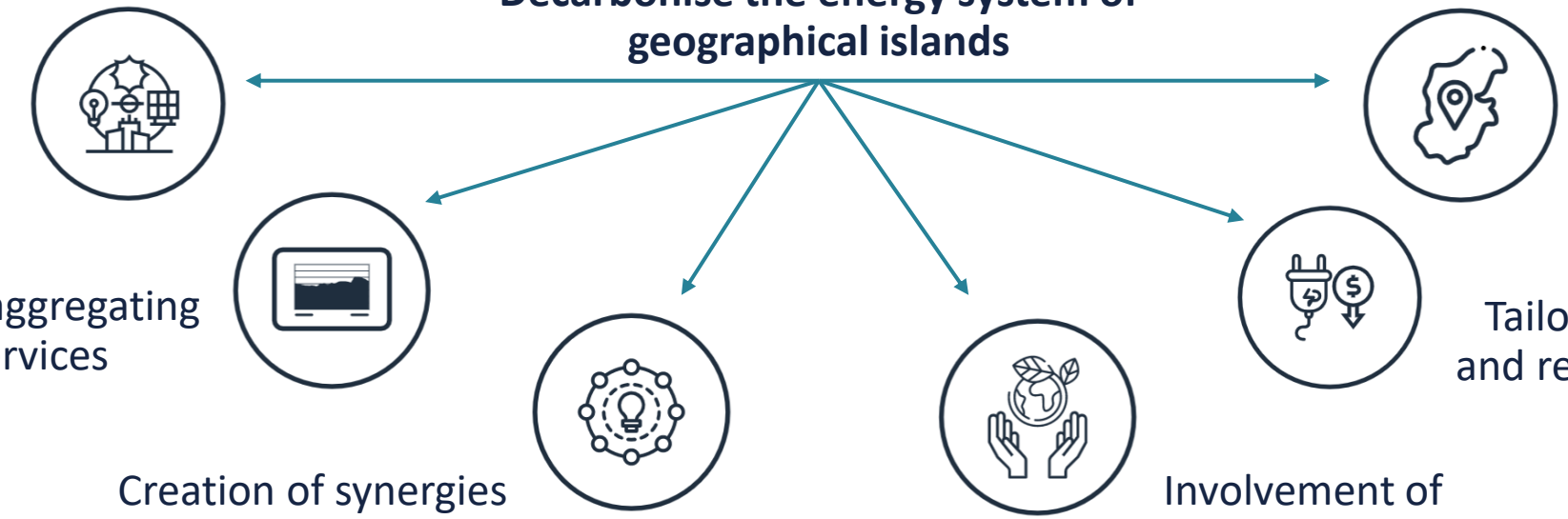
REPLICATION SITES

> 1.2 M island inhabitants

Specific objectives

MAESHA

Decarbonise the energy system of geographical islands



Large scale RES deployment

Demonstration of solution and study of replicability

Smart platform aggregating flexibility services

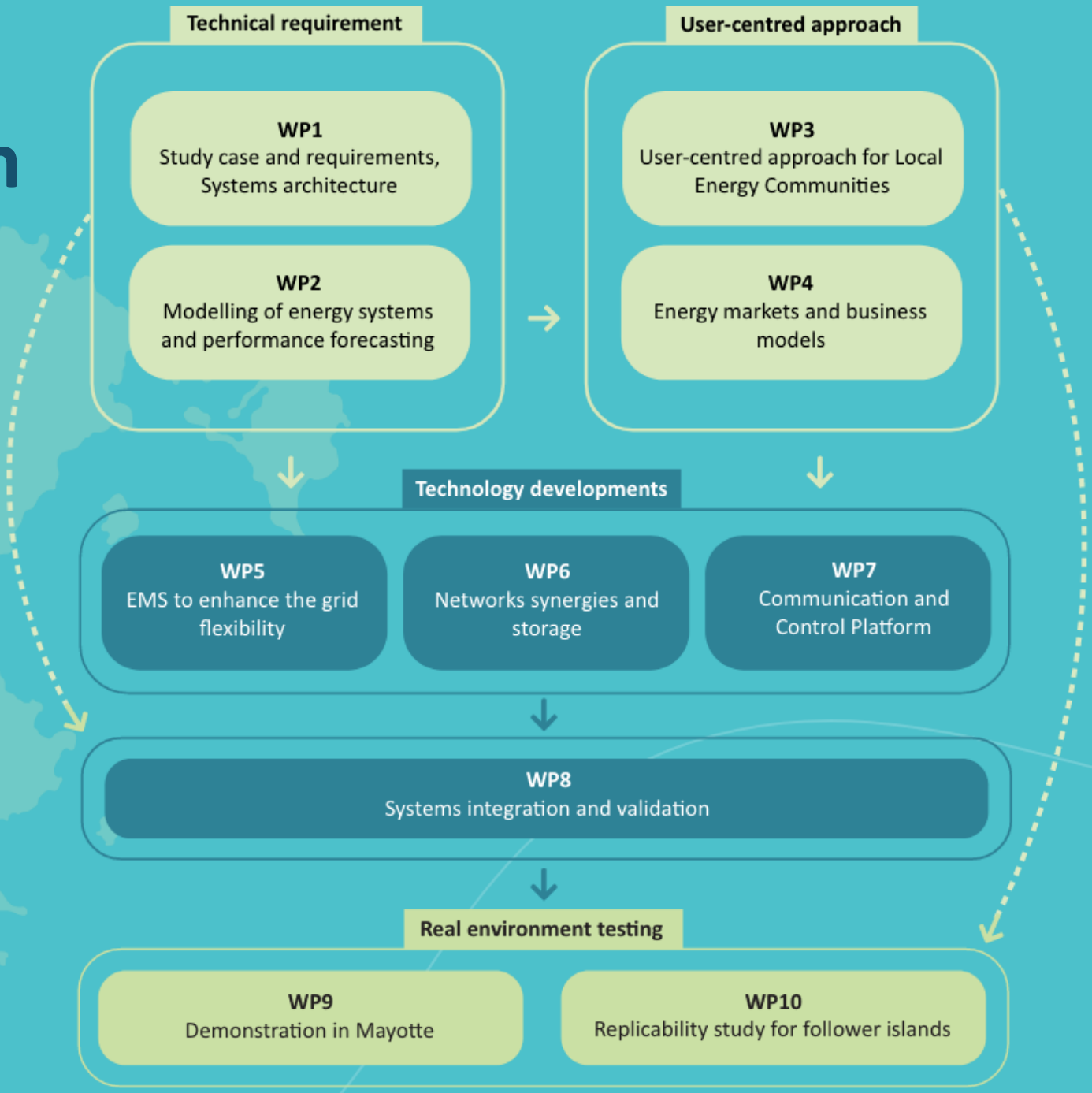
Tailored energy markets and regulatory frameworks

Creation of synergies between energy vectors

Involvement of local communities

12 Work Packages over 48 months

Overall approach



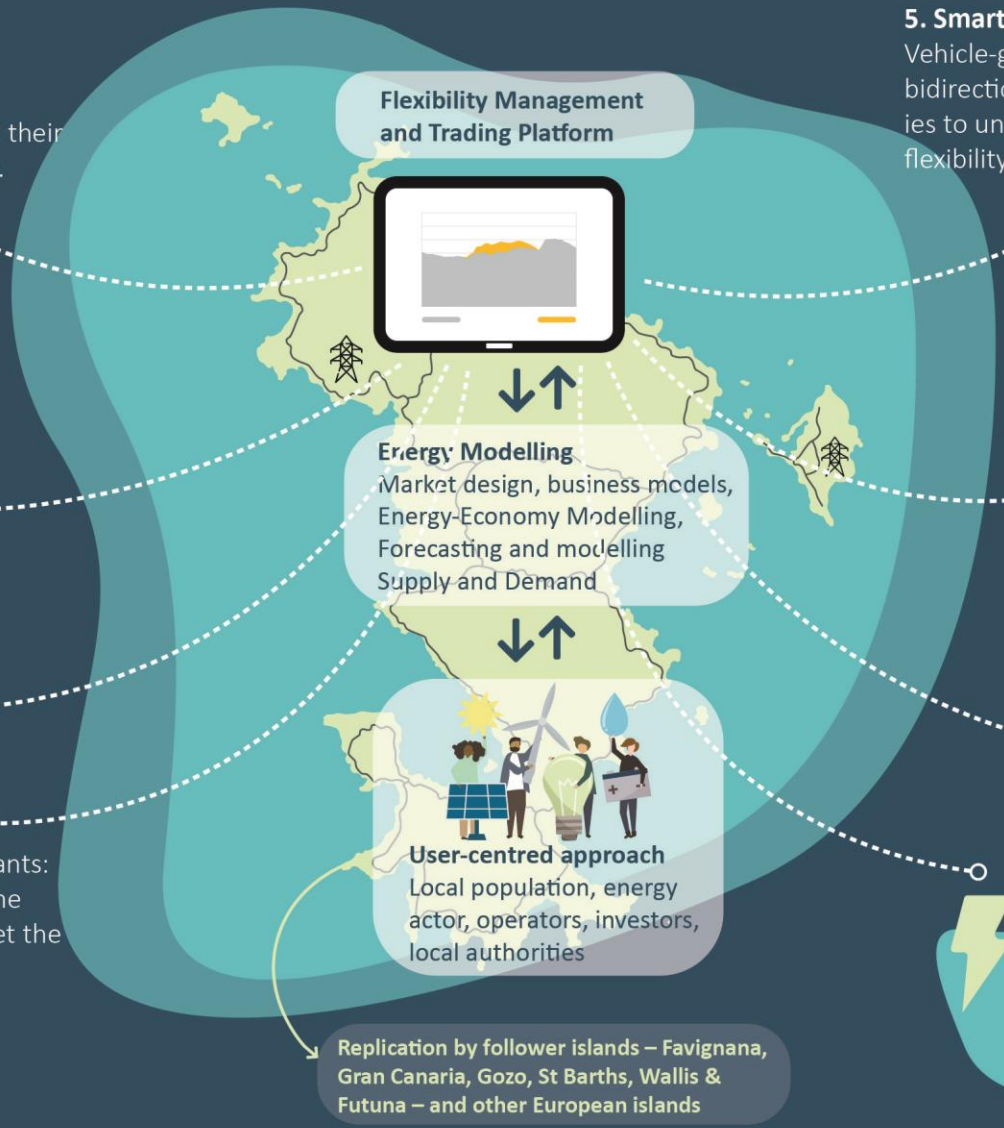
Multi-axis approach

4. Residential Energy and flexibility services
Capacity of residential consumers/producers to adapt their electricity consumption profile.

3. Industrial Energy Management
Switch to local generators or shift activities for a few hours to lighten the load on the grid

2. Community self-consumption
Overall improvement in energy management and potentially lower grid losses

1. Virtual Power Plant
Centralized management of plants: clustering and dispatching of the production is optimised to meet the balancing requirements



5. Smart Charging/V2G
Vehicle-grid-integration (V2G) and bidirectional power flow from EV batteries to unlock an important new source of flexibility for the islands

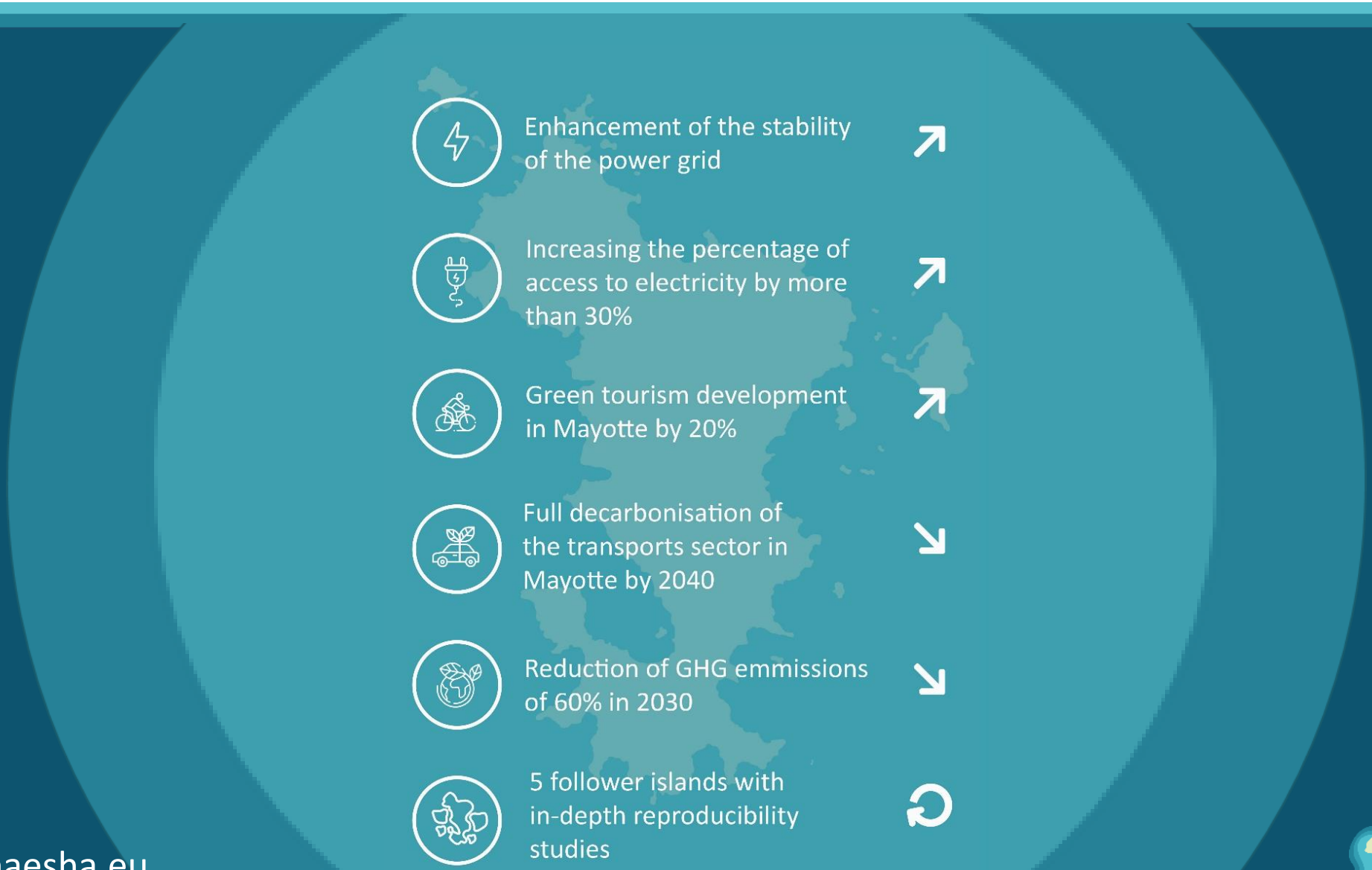
6. Hybridization of PV production and EV charging
Higher levels of solar self-consumption and lower expenses for operating electric vehicle charging infrastructure

7. Technologies to provide virtual inertia
Frequency and voltage stability enhancement

8. Battery Storage
Efficient way of storing energy from the grid

9. Power to Hydrogen
Hydrogen as an energy vector for long-term energy storage

Outlook on expected impacts



Current status

- Architecture fixed for Mayotte – Solutions lost meaning due to island specificities
- Solution development finalised - All assets and platforms have been developed or are close to being finalised
- Testing phase is ongoing – First specifications are being generated and systems will be tested throughout the summer
- Deployment is already being planned – Tentatively the first solutions will be installed in September
- Assets transport to the island is being coordinated – Partners must get their equipment to the port of Rouen in France by mid-July
- A project extension is being considered – Having additional time would allow to carry out the implementation more thoroughly and also translate into greater support for replicants to develop their implementation projects

Key lessons learned

ADAPTABILITY

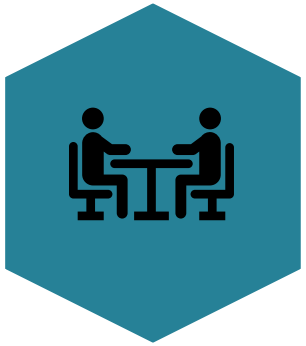
Even though projects are carefully planned, islands have specific characteristics that hamper standardised solutions' deployment.

Being able to take these specificities into account and consequently adapt the project is key to achieving the desired impact.

LOCAL PARTNERS

Islands tend to have specific cultural and social backgrounds that define their characteristics, as well as the way to interact with the natives.

Having a experienced and respected local partner that understands these dynamics and knows how to navigate them is of the utmost importance for fulfilling the expected timeline with an adequate level of success



ON-SITE MANAGEMENT

When action are being implemented in remote territories, it is common for partners to lack the necessary connections to push the project.

The capacity to deploy resources on-site, that are able to develop these relationships and help the project to be supported locally and thrive is also crucial

Juan Varo López
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