



NESOI
EU ISLANDS FACILITY

Just clean Energy transition
of Diapontia Islands

JEDI



OTHONOI, EREIKOUSSA & MATHRAKI



“The project envisages to fully serve the electricity demand of Othonoi and Ereikoussa, making them the first Greek islands powered by 100% renewables”



This project is supported by the EU Islands Facility NESOI. NESOI has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement N°864266

The European Islands Facility NESOI aims to unlock the potential of EU islands to become the locomotives of European Energy Transition. To do so, NESOI aims to mobilize more than €100 Million of investment in sustainable energy projects to give EU islands the opportunity to implement energy technologies and innovative approaches, in a cost-competitive way. NESOI has selected 56 such projects across the European Union and provide them with financial resources and technical support.



 **Just clean Energy transition of Diapontia Islands**

ABOUT
THE PROJECT

Project Promoter

Municipality of Central Corfu and Diapontia Islands



Stakeholders

PPC
HEDNO

Municipal Port Fund
Municipal Water Supply Company

Ionian island regional authority



Country Greece



Sector

RES, Ports,
Energy community



PROJECT VALUE 3,340,000 €

DESCRIPTION

The project foresees the full decarbonization of Ereikoussa and Othonoi islands' power systems, which are not interconnected with the mainland, and the construction of a green marina in Mathraki.

AIM OF THE PROJECT

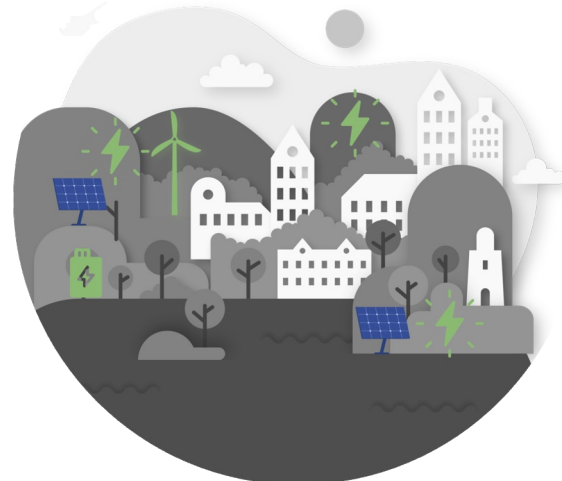
The existing diesel-based power stations will be replaced by hybrid power stations (HPS) combining a wind turbine, a photovoltaic station and a battery system. It also includes the transformation of the port of Mathraki island into a smart marina, including the creation of an Energy Community.

FUTURE STEPS

The next step is the completion of studies, finding suitable financing solutions and the implementation of the project. NESOI can assist with implementation studies and final studies leading to implementation.

HOW THE EU ISLANDS FACILITY NESOI SUPPORTS THE PROJECT

- 1 Identification of suitable technological options given existing project sizing requirements
- 2 Definition of the required environmental permitting procedures
- 3 Cost-Benefit, socioeconomic and environmental analysis
- 4 Identification of the preferred option and corresponding definition of project inputs
- 5 Risk analysis and identification of available mitigation strategies and Assessment of existing procurement options
- 6 Financial modelling and identification of target scenario and Identification of financing/funding options
- 7 Action plan and identification of project monitoring procedures





INTERVIEW WITH

Panagiota Tzanne, Deputy Mayor, Municipality of Central Corfu and Diapontia Islands

Q: How was the project initially designed?

A: The project was motivated by the will to move away from oil-based power generation, as currently there are two thermal plants in Ereikoussa and Othonoi. There is a clear political will to move away from fossil fuels in order to decrease pollution and increase energy independence. Due to the location of the islands, the creation of a green marina in Mathraki is also proposed to increase the attractiveness and accessibility of the islands. These islands are remote, with few inhabitants, and the creation of sustainable energy infrastructure is expected to attract not only tourist interest but also additional permanent residents. The creation of an energy community is being considered to manage all the proposed interventions and infrastructure.

Q: What were the challenges? How did NESOI help overcome them?

A: The limited area of municipal land, which is fragmented, is one of the challenges (mainly in Ereikoussa). The operation and maintenance of the proposed systems and the existence of suitable technical personnel, who will need to be trained, are also a challenge. Finally, finding appropriate financing solutions for individual interventions is a challenge. NESOI helps regarding both technical and financial aspects.

Q: How will the project affect local stakeholders and businesses?

A: Local technicians could be involved to maintain the project as long as there are suitably trained. The project will have a positive impact on businesses at the local level as it is expected to increase the visitation of the islands and thus their tourism and economic activity, taking into account the number of visitors in the summer from both Greece and Italy. With this project, incentives are given for the islands to be inhabited by more people and to increase the itineraries to the islands so that they can be visited all year round. The green identity of the islands can work with multiple benefits for the local community. It will make them more attractive destinations and expand the tourist season through, for instance, the organization of conferences.

Q: What are your next steps towards clean energy transition?

A: With this project, RES penetration will reach fairly high levels (>80%) in the power generation sector of Ereikoussa and Othoni. Therefore, the goal of the clean energy transition will have been satisfactorily achieved. Then it could be combined with electrification and energy saving actions on all three islands. The actions will be able to be promoted by the Energy Community to be established at the initiative of the municipality.

THE IMPACT ON LOCAL COMMUNITY



1 Local Economy

Jobs related to the operation of the thermal station will be preserved and even more will be created for the needs of the HPS and the marina. 5 direct and 10 indirect new jobs are expected. The project can become part of the islands' branding strategy as sustainable touristic destinations leading to increased local economic activity. Many permanent new jobs specific to the operation of the overall system are envisaged.

2 Social Acceptance

Social acceptance is secured through the just character of the islands' clean energy transition, the promotion of the islands as sustainable destinations, the participatory character of the energy community, the energy poverty mitigation measures and the involvement of the municipality.

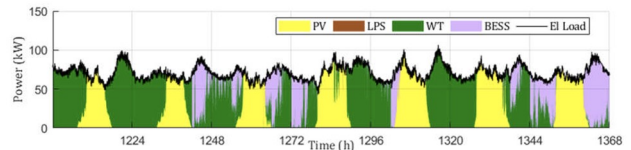
Just clean Energy transition of Diapontia Islands – Technical Data

FOCUS ON HYBRID POWER STATIONS COMBINING WIND, SOLAR & BATTERY STORAGE

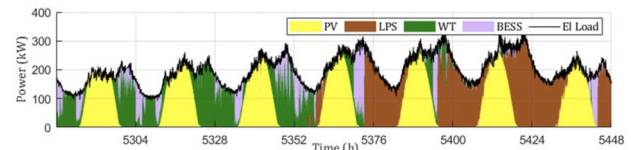
Ensuring clean energy transition on non interconnected islands can be done by the installation of hybrid power stations (HPS) combining complementary sources of renewable energy (wind and solar) and a battery energy storage system (BESS) to help smoothing the generation and adapting it to the load.

To size such a station with the aim to reach high renewable penetration levels (higher than 80-90%), a technical study has to be conducted, taking account of the specificities of very small island systems, the targeted renewable energy levels and the regulatory framework.

In the case of Ereikoussa, the HPS under consideration comprises of a 700 kWp PV power plant and a 2 MWh BESS. With this configuration, the HPS can cover on average 81% of the island’s electrical energy demand. In the case of Othonoi, the HPS under consideration comprises of a 550 kWp PV power plant and a 1.75 MWh BESS. With this configuration, the HPS can cover on average 83% of the island’s electrical energy. Only during periods combining high electricity consumption and low wind production, the diesel-based local power station (LPS) will be running.



During low-demand, high-wind periods (typically, one week in February), the HPS can cover 100% of the island’s electricity consumption.



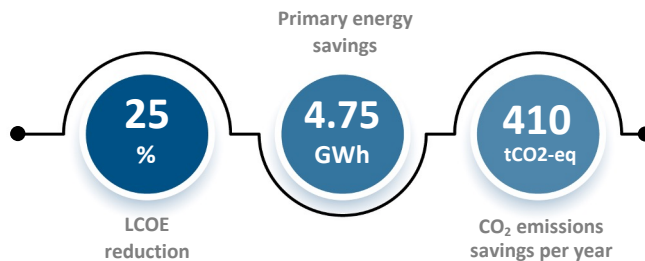
During high-demand, low-wind periods (typically, one week in August), the existing diesel-based facility is needed to complement the HPS’ production.

(Source: Othonoi System - HPS sizing analysis, report delivered for NESOI)

EXPECTED ENERGY SAVINGS

The primary energy savings in the HPS are 4750MWh/year due to the reduction in oil consumption, as in total, the total oil consumption is reduced by more than 400tn per annum. The respective emission reductions are estimated around 410 tnCO₂eq.

KEY NUMBERS OF THE PROJECT



REPLICABILITY IN OTHER ISLANDS

The project can be easily replicated in all small non-interconnected islands with high energy costs and in every Greek island’s local port. Similar islands like Antikythera and Gavdos will be invited as follower islands.