



NESOI
EU ISLANDS FACILITY

Smart, clean and green
marinas in Naxos and Koufonisi

SCGM NAKOU



NAXOS KOUFONISSI

“The project will not only boost touristic activities but also serve the needs of local households facing energy poverty issues”



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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.



Smart, clean and green marinas in Naxos and Koufonissi

ABOUT THE PROJECT

Project
Promoter

Municipality of Naxos & Small Cyclades (MoNaSC)



Stakeholders

Municipal Port Fund



Country Greece



Sector Ports



PROJECT VALUE 1,730,000 €

DESCRIPTION

The project consists in the development of two smart, clean and green marinas by transforming port infrastructures in Naxos and Koufonissi islands.

AIM OF THE PROJECT

Small electric tourist boats for leisure activities, EVs and e-bikes for local transportation will be provided at each marina. Additional services at the marinas will include smart street lighting systems, modern green waste collection points, WC and shower facilities and fire-extinguishing network.

FUTURE STEPS

The marinas' infrastructures will be served by smart microgrids, properly orchestrated by a smart management platform.

HOW THE EU ISLANDS FACILITY NESOI SUPPORTS THE PROJECT

- 1 Assessment of the key project sizing drivers and Identification of suitable technological options given existing project sizing requirements
- 2 Risk analysis and identification of available mitigation strategies and Cost Benefit analysis and socioeconomic and environmental impact evaluation
- 3 Definition of the required environmental permitting procedures
- 4 Assessment of existing procurement options (e.g. tender, PPP, etc.)
- 5 Definition of the technical, economic and financial, fiscal project inputs
- 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 Aikaterini Margariti, Engineer, Naxos Municipality

Q: How was the project initially designed? Why choosing this specific approach?

A: The project was designed to strengthen the connection of Naxos (Kalando) with Ano Koufonissi, as the weather conditions and the peculiarity of the island of Naxos make the connection difficult. The Eastern part of Naxos has no port infrastructure and the creation of a marina in the natural port of Kalando is a solution for the connection with Ano Koufonissi and the further development of the two areas. The conversion of local ports into green marinas will attract tourist interest and increase economic activity in the areas.

Q: What are the challenges faced by the project? How does NESOI help overcome them?

A: The combination of interventions and sectors (energy, transport, waste and water management) with a broader development perspective makes the project quite challenging. NESOI contributes with appropriate technical support in setting up the idea and its implementation.

Q: How does the project impact citizens and companies locally?

A: The project is expected to contribute to the economic development of the local community and the region in general. The local community is going to be involved when the project study is completed. In addition, the project impacts stakeholders and local businesses through the increase in tourism and economic activity with the creation of marinas, the development of innovations both at the energy and business level, and the strengthening of the connection of the islands.

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

A: For this specific project which is a feasibility study, the next steps concern the identification of investors, the completion of the studies and the licensing maturation of the project. Regarding other projects, the next steps are the combination of individual projects: for instance, the combination of marinas with smart bicycles for the development of micro-mobility.

THE IMPACT ON LOCAL COMMUNITY



1 Local Economy

The expected increase in tourism activity will lead to a parallel increase in the economic activity of local restaurants, accommodations and retail and rental businesses, while it may lead to the creation of new workplaces to serve the increased demand. 4 permanent new jobs specific to the operation of the marinas are envisaged.

2 Social Acceptance

The expected increase in tourism, the green technologies that will be applied, and the provision for energy-poor households secures high levels of social acceptance.

Smart, clean and green marinas in Naxos and Koufonissi – Technical Data

FOCUS ON

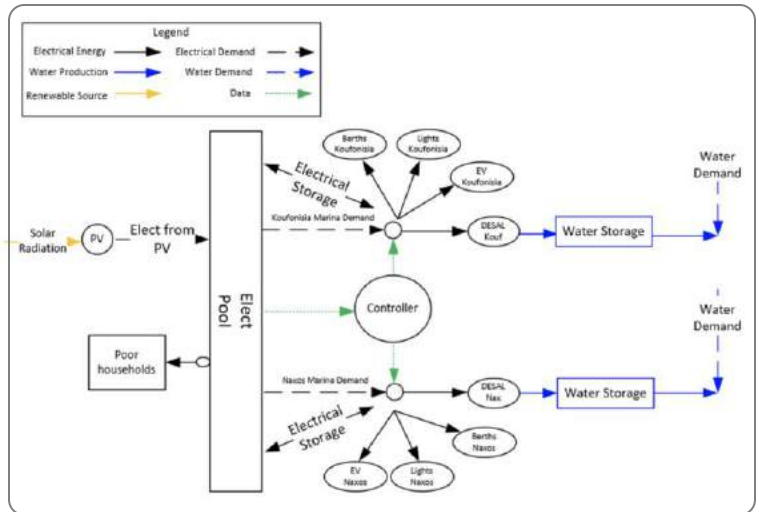
HOW TO COMBINE ENERGY AND WATER MANAGEMENT ON ISLANDS

Water management on islands (especially small Mediterranean islands) is unique as it is constrained by their size, isolation from the mainland, fragility, and limited human, natural and financial resources.*

Within the SCGM NAKOU project, small desalination plants are installed to supplement the water production from existing water drills during peak demand periods.

In addition, water systems are used as energy flexibility assets. Load controllers are installed at the plants and pumping stations of the water drills to allow their flexible operation based on forecasted energy and water demand; water storage tanks being optimally sized to provide additional energy buffer to the microgrid.

High simultaneity of energy consumption and production will be achieved, utilizing the batteries and taking desalination as a deferrable load by filling the water tanks during hours with more sunshine, using the electricity generated by PV panels.



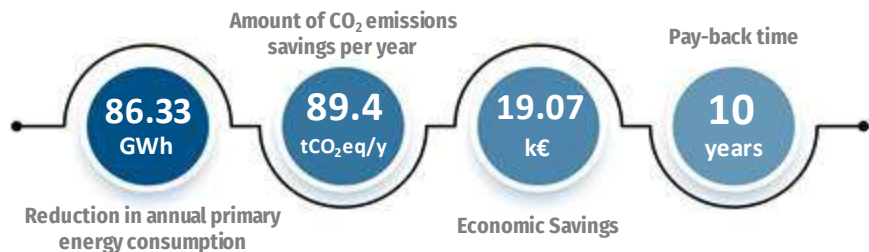
Schematic representation of the links between electricity consumption, generation and storage including also the water-electricity nexus.
 (Source: MoNaSC)

* See <https://core.ac.uk/download/pdf/31150757.pdf>

EXPECTED ENERGY SAVINGS

The Primary Energy Factor (PEF) connects primary and final energy. It indicates how much primary energy is used to generate a unit of electricity or a unit of useable thermal energy. For the grid, a PEF of 2.3 is selected, while for the PV station a PEF of 1. Hence, considering that the given total electricity consumption (105.94 MWh/year) was served by the photovoltaic station, and would otherwise be served by the grid, therefore the primary energy savings are around 37.5 toe/year.

KEY NUMBERS OF THE PROJECT



REPLICABILITY IN OTHER ISLANDS

The project can be easily replicated in every Greek island's port facility, especially in islands with water scarcity issues, since the technologies in question are easily replicable. Islands with available electrical space for new RES plants and high seasonality due to tourism are better suited. The other 3 islands of the Small Cyclades will form the first phase of Follower islands while the whole Cyclades Archipelago will form the second phase. Greece has 120 inhabited islands.