



NESOI Zero Emissions Nisyros
EU ISLANDS FACILITY

ZEN



 **NISYROS**

"The development of the proposed renewable energy systems will make the villages of Mandraki, Paloi, Nikia and Emporio energy autonomous"



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.



Zero Emissions Nisyros

ABOUT THE PROJECT

**Project
Promoter**



Municipality of Nisyros



Stakeholders

Municipality of Nisyros
Inhabitants of Nisyros Association of School Teachers etc



Country Greece



Sector

Renewable
energy



PROJECT VALUE 3 M€

DESCRIPTION

The ZEN project includes all necessary studies, the detailed design and the developments for the Nisyros Island energy transition towards a ZERO Emissions energy model. The project includes renewable energy generation and integration to the grid, desalination needs and water management, design of the sustainable mobility system.

AIM OF THE PROJECT

- Detailed design of the energy systems (PV, small wind, electric chargers).
- Design of the control center for monitoring and control of the energy system.
- Analysis of the energy needs of the desalination plants.
- Feasibility study for Nisyros to become energy-autonomous.
- Analysis of water resources management.
- Detailed design of Sustainable Mobility Actions.

FUTURE STEPS

The proposed Energy Plan will create 4 permanent job positions for RES installations and maintenance. The plan will improve environmental conditions, eliminate air pollutants, and pave the way to more decarbonization actions such as electric boats.

HOW THE EU ISLANDS FACILITY NESOI SUPPORTS THE PROJECT

- 1 Assessment of the key project sizing drivers
- 2 Identification of suitable technological options
- 3 Definition of the required environmental permitting procedures
- 4 Social, Environmental and Financial Impact analysis
- 5 Definition of the technical, economic and financial, fiscal project inputs
- 6 Risk analysis and identification of available mitigation strategies
- 7 Financial modelling and identification of target scenario
- 8 Action plan and identification of project monitoring procedures
- 9 Preparatory Actions for Energy Community Creation



Zero Emissions Nisyros – Technical Data

FOCUS ON

THE COMBINATION OF SOLAR, WIND & EV CHARGING SYSTEMS

The proposed Nisyros Island energy system is based on renewable energy sources, more specifically on small-scale PV and wind turbines, combined with a well-designed energy storage system, a central control room, and telemetry for the distribution of energy.

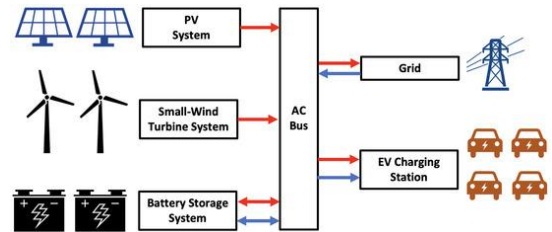
To satisfy the demand in the island, a number of PV panels are needed, estimated around 2.65MW. Therefore, the PV systems will be able to produce almost 4700 MWh annually.

In addition, two medium-size wind turbines will be installed with total nominal power in the range of 850 kW each. The wind turbines will be located in a distant and remote area completely out of the sight of the island's inhabited areas.

Moreover, around 15 electric double chargers will be developed and installed in the four island's villages and volcano area for the sustainable electromobility of the island. The chargers will cover the needs of almost 50 cars, an e-Bus and an electric garbage collection truck.

The Central Control Room will be designed and developed for the remote monitoring of the desalination plant and wastewater treatment plant loads as well as the monitoring and control of the e-chargers.

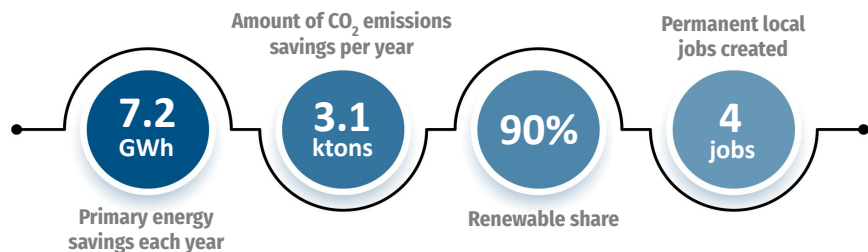
The above technical solution is integrated in order to satisfy the energy demand of the water supply and the wastewater treatment plants, the public buildings and lighting, as well as clean and emission-free electromobility.



Schematic representation of an example of PV-wind-EV systems

Salles-Mardones, J., Flores-Maradiaga, A., & Ahmed, M. A. (2022). Feasibility Assessment of Photovoltaic Systems to Save Energy Consumption in Residential Houses with Electric Vehicles in Chile. Sustainability, 14(9), 5377.

KEY NUMBERS OF THE PROJECT



REPLICABILITY IN OTHER ISLANDS

Similar islands in population and economic development profiles may use the same or a similar energy plan. A number of about 6-10 islands are in this category.

Picture on title page. Author Tomisti, source: https://en.m.wikipedia.org/wiki/File:Nikia,_Nisyros_1.jpg, licence: CC BY-SA 4.0 DEED, modifications: none
 Picture in Summary page. Author Власенко, source: https://commons.wikimedia.org/wiki/File:Street_in_Nikia,_Nisyros,_Greece.jpg, licence: CC-BY-SA-3.0, modifications: None