



**NESOI**  
EU ISLANDS FACILITY

Feasibility study for energy storage  
and solar energy in Lipari

# FESOL



 **LIPARI**



**“The project should have a spillover effect on the entire Aeolian archipelago, and other Mediterranean islands, inspiring and urging them to implement similar solutions”**



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.



**Feasibility study for energy storage and solar energy in Lipari**
**ABOUT**  
 THE PROJECT

 Project  
 Promoter


The Green Consulting Group S.r.l. (TGCG)


**Stakeholders**

Municipality of Lipari, Territorial and Environmental Department of Sicily, Energy and Public Utility Services Department of Sicily, Società Elettrica Liparese, and Messina Province


**Country Italy**

**Sector PV, Storage**

**PROJECT VALUE 9,500,000 €**
**DESCRIPTION**

FESOL is a feasibility study for the replacement of the existing PV plant present in Lipari, which is in a deteriorating state, by a new solar PV plant including storage, management and control modulation system. The aim is to achieve a high level of energy independence from fossil fuels for the entire island, thanks to the supply of clean energy for water desalination, public lighting and buildings power consumption.

**AIM OF THE PROJECT**

FESOL foresees the re-qualification of a degraded area with renewable energy production, together with energy storage implementation, as a key innovative aspect, drastically reducing the emissions of the existing thermoelectric power plant, supplying clean energy for water desalination and public lighting and buildings power consumption.

**FUTURE STEPS**

FESOL will have a significant impact on the whole Lipari island with economic savings, pollution reduction, decarbonization of the island, creation of qualified green jobs, improvement of the power grid. The implemented project will also have a spillover effect on the entire Aeolian archipelago and other Mediterranean islands, inspiring and urging them to implement similar solutions.

**HOW THE EU ISLANDS FACILITY NESOI SUPPORTS THE PROJECT**

- 1 Assessment of the key project sizing drivers
- 2 Identification of suitable technological options given existing project sizing requirements
- 3 Definition of the required environmental permitting procedures
- 4 Cost Benefit analysis and socio economic and environmental impact evaluation
- 5 Definition of the technical, economic and financial, fiscal project inputs
- 6 Risk analysis and identification of available mitigation strategies
- 7 Assessment of existing procurement options (e.g. tender, PPP, etc.)
- 8 Financial modelling and identification of target scenario
- 9 Identification of financing/funding options
- 10 Action plan and identification of project monitoring procedures
- 11 Preliminary legal and administrative due diligence





## INTERVIEW WITH

**Gianni Chianetta, Managing Director of The Green Consulting Group**

**Q: How was the project initially designed? Why choose this specific sector?**

A: Lipari was selected, among Greening the Islands members, since it had an area suitable for a photovoltaic system of interesting size (4 MW) compared to those available on other Italian islands. A smaller plant already existed on the site so the proposed works would be an expansion. The plant will be able to produce 30% of the island's energy needs.

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

A: The external advisor took care of the technical part and the NESOI partners took care of the financial part. The support received helped carry out the preparatory studies for the realization of the project and increased visibility opportunities.

**Q: What is the project's impact on citizens as well as on the the local economy and environment?**

A: Two workshops were organised, one at the start of the project and one at the end, in which local, regional and national stakeholders were invited. Furthermore, the local administration was supported in including part of the project (1 MW) in the request for funding through the PNRR (Italian implementation of the Next Generation EU) tender, which had a positive outcome. Further requests for financing are not excluded.

**Q: What are the next steps in this project and in the pursuit of your island's clean energy transition objectives?**

A: Financing has been obtained for 1 MW of photovoltaic from PNRR; the completion of the works is currently expected for 2026 in line with PNRR requirements. In Lipari we are thinking about creating an energy community by installing additional photovoltaic systems on building rooftops. Further projects in the photovoltaic sector will be promoted in other islands, also taking advantage of the « smaller islands » Italian decree.

## THE IMPACT

ON LOCAL COMMUNITY



### 1 Local Economy

The FESOL project will create work opportunities for the construction and the operation of the plant. Besides, the energy savings can be used by the municipality for other local needs.

### 2 Social Acceptance

The FESOL project should be well accepted by the community first of all for its environmental impacts (renewable energy production, reducing risk related to oil, reducing pollution) as well for its social impacts (reducing energy cost, creating local green jobs, requalification of a degraded area). Various authorities/stakeholders will be involved as well as local people in the process.

## REPLICABILITY IN OTHER ISLANDS

FESOL can be replicated on the mainland as well as on other islands and archipelagos. In particular, the technical characteristics can be applied to any island provided with a user that can absorb the excess energy in order for the energy load to be modulated accordingly. The financing scheme could be used as an example to be adopted by any other small island. Plants of the size of the one studied in Lipari may not be feasible for reasons of space availability in many of the smaller Italian islands. The use of photovoltaic systems to power desalination plants can be replicated in many islands, given that generally 30% of water costs on the islands relate to the supply of electricity to the desalination plant. The stakeholder involvement approach is also replicable with excellent collaboration in the working group with local, regional and national actors.

# Feasibility study for energy storage and solar energy in Lipari – Technical Data

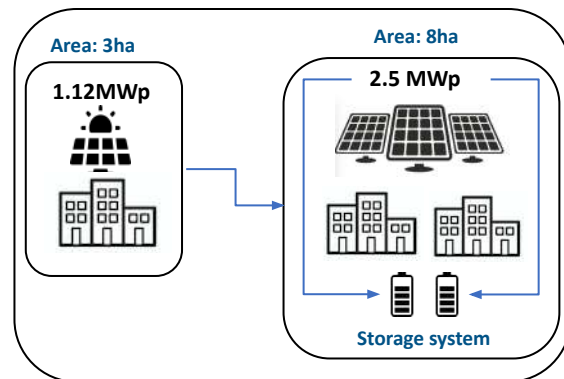
## FOCUS ON UPGRADING AN OLD SOLAR PLANT

Lipari has one of the largest PV power plant currently present in the Mediterranean smaller islands. However, this PV power plant has never been connected to the grid and it is in a deteriorating state. It has been built on about 3ha area property of the Municipality of Lipari while the surrounding area available for the installation of additional solar panels is of about 8 ha.

One of the purposes of the project is to put an end to the degradation of the area, evaluating the technical and financial feasibility in order to re-use this space for clean energy purposes. The main objective of the project is to achieve a high level of energy independence from fossil fuels for the entire island.

The project consists in the realization of a new solar PV plant of about 6 MWp together with an energy storage system and a management and control modulation system, in order to balance the production of energy with island's demand, to cover with renewable energy a good share of the energy consumption of the island.

The project evaluates the reconversion of the existing 1.12 MWp PV plant covering 3 ha, in deterioration and not providing any energy, into one of about 2.5 MWp plant. This 2.5 MWp plant could supply 40% of the energy need of the island's desalination plant and lead to a total renewable share for the island of about 29%.



**Schematic representation of the refurbishment of the existing solar plant**

(Icons by SHUTTERSTOCK, design by NESOI)

## EXPECTED LOCAL GRID BENEFITS

The use of photovoltaic power coupled with an energy storage system will allow to reduce the peak power production from the thermal power plant. The excess energy can be diverted to the storage system to be used to enhance the grid's flexibility, efficiency and stability, overall making it more reliable and resistant to disruption.

## KEY NUMBERS OF THE PROJECT

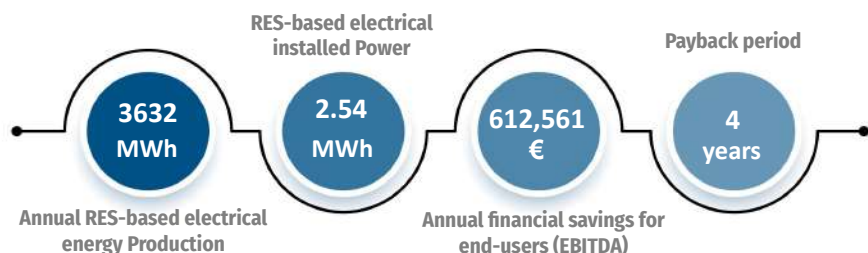


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