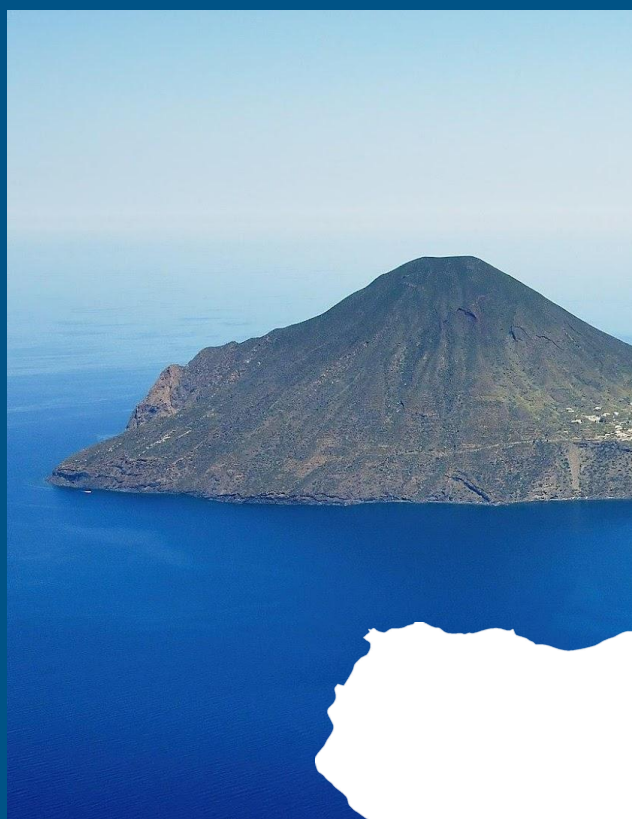


# T.W.E.E.T.S



**SALINA**



**“The implementation of the project will allow to make the island of Salina no longer dependent on the transport of water by tank ships, often linked to the conditions of the sea.”**



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.



## Solving the water emergency on the island of Salina

## ABOUT THE PROJECT

**Project  
Promoter**

Assemblea Territoriale Idrica di Messina (ATI)



## Stakeholders

ATI including the municipalities of Salina (Santa Marina Salina, Leni and Malfa)

University of Palermo  
Salina Isola Verde hoteliers association

ENEL Ltd



**Country** Italy



## Sector

Water  
management



**PROJECT VALUE** 7.9 M€

## DESCRIPTION

The project studies the realization of desalination plants on the island, replacing the current supply of drinking water by tank ships from the mainland. Main goal is to ensure water supply throughout the year. The energy need will be covered thanks to the installation of photovoltaic systems and a system of microturbines.

## AIM OF THE PROJECT

- Conducting a techno-economic feasibility study for the construction of three desalination plants compared with one desalination plant.
- Determining the renewable energy production system that would provide the annual energy need for desalination.

## FUTURE STEPS

Desalination plants are expected to significantly reduce water costs and improve living conditions on the island. The project ensures safe and continuous drinking water supply, eliminating noise from water tankers and providing work opportunities.

## HOW THE EU ISLANDS FACILITY NESOI SUPPORTS THE PROJECT

- 1 Survey of the existing water and electricity networks
- 2 Identification of desalination plants' areas
- 3 Bathymetry survey of brine discharge points
- 4 Feasibility study of the intervention in the selected areas
- 5 Analysis of the desalination water needs for each municipality
- 6 Study of electrical loads on the island
- 7 Study of the most suitable desalination system and of the energy recovery system using microturbines
- 8 Analysis of authorization procedures
- 9 Cost-benefit analysis and risk analysis of the chosen solution and the study of possible sources of financing and the most suitable financial models



## Solving the water emergency on the island of Salina – Technical Data

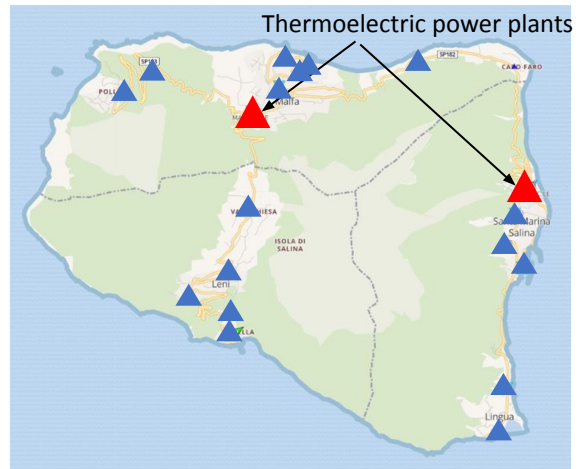
# FOCUS ON

## ACHIEVING WATER SUPPLY INDEPENDENCE WITH RE

Salina has a surface area of just over 26 km<sup>2</sup> and is characterized by two volcanic reliefs. Electricity is currently produced in two power plants, which are powered by diesel. The island of Salina was declared a 2019 Pilot Island by the secretariat of the European initiative Clean Energy for EU Islands and in relation to this, the Energy Transition Agenda was drawn up with the objective of energy self-sufficiency by 2050.

There is a lack of fresh water locally on the island, fresh water is brought to Salina by tank ships from the mainland. In 2022, approximately 510,000 m<sup>3</sup> of water was shipped to Salina, but a considerable part of it is wasted due to the outdated distribution network. The actual drinking water requirement for the entire island of Salina, after improving the efficiency of the distribution networks, is 365,000 m<sup>3</sup>/year.

The T.W.E.E.T.S. project is about the investigation of the optimal solution for the creation of desalination plants. In the coming years, 1,338 kWe of new photovoltaic systems are planned to be installed in Salina. The electricity demand of the desalination plants is estimated to 1,023 MWh, for which at least 711 kWe of PV electricity production is needed.

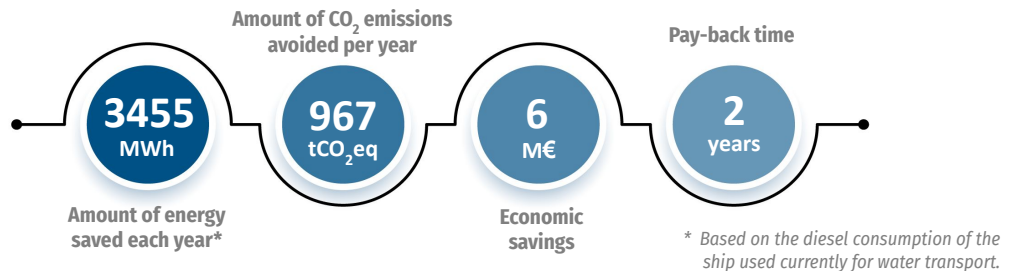


Location diagram of the electrical substations (blue triangles) in Salina, (Documents sent to NESOI)

## EXPECTED ENERGY AND ECONOMIC SAVINGS

The most important energy saving impact is represented by the energy and environmental advantages arising from the total reduction of naval fuel consumption and the consequent GHG emissions. The annual cost for the supply service of drinking water to the island of Salina amounts to around €7 million. The construction of the desalination plants will decrease the cost of water before distribution from the current 14 €/m<sup>3</sup> to approximately 1.5 €/m<sup>3</sup>.

## KEY NUMBERS OF THE PROJECT



## REPLICABILITY IN OTHER ISLANDS

The project is replicable on other islands with similar low or no water resources, to reduce emissions due to the maritime transport of drinking water. The biodiesel power plant and RE generation based on solar photovoltaics and microturbines is also replicable on other islands or in the mainland in the case of similar climate and geography.

Photo in the title and summary page: author: Carsten Steger, source: [https://commons.wikimedia.org/wiki/File:Aerial\\_image\\_of\\_Salina\\_\(view\\_from\\_the\\_southwest\).jpg](https://commons.wikimedia.org/wiki/File:Aerial_image_of_Salina_(view_from_the_southwest).jpg), license: CC-BY-SA-4.0, modifications: none