

# GEO-LESVOS



LESVOS

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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.

 **Clean energy transition of West Lesvos through the exploitation of the rich geothermal potential of the island**

## ABOUT THE PROJECT

**Project  
Promoter**



Municipality of West Lesvos



### Stakeholders

Municipality of West Lesvos

Local businesses

Hellenic Authority for Geological and Mineral Exploration

National and Kapodistrian University of Athens



**Country** Greece



**Sector** Renewable energy



**PROJECT VALUE** 2,537,000 €

### DESCRIPTION

GEO-LESVOS plans to exploit the Polichnitos' low enthalpy geothermal field to develop a district heating network (DHN) to serve the settlement of Polichnitos. The possibility to launch an energy community and other projects (exploitation of other geothermal fields, solar panels) will also be studied.

### AIM OF THE PROJECT

- The preparation of definitive studies and tender documents for the initial phase of exploitation aiming to develop a DHN
- an energy community, target its actions and develop a business plan

### FUTURE STEPS

Besides heating energy, the project could potentially offer in the future cooling energy to its customers. The planned heating system can also be replicated on other areas with geothermal fields in Lesvos.

## HOW THE EU ISLANDS FACILITY NESOI SUPPORTS THE PROJECT

- 1 Analysis and critical review of the existing project documentation
- 2 Review or completion of energy audits and technical dimensioning of the project
- 3 Critical review of the Cost Benefit analysis and socio economic and environmental impact evaluation
- 4 Risk analysis and identification of available mitigation strategies (e.g. procedural, technical, contractual, etc.)
- 5 Definition of the targeted tendering procedure and guidelines for the works/service provision contracts
- 6 Action plan and identification of project/process monitoring procedures
- 7 Drafting of works/services tender documentation
- 8 Economic and Financial planning and economic-financial feasibility assessment
- 9 Identification of potential financing options and options on Energy Communities





## INTERVIEW WITH

**Dimitrios Mantzaris**

**Head of Planning Department, West Lesvos Municipality**

**Q: How was the project initially designed? Why did you choose this specific technology / sector?**

A: After an open tender in which the Municipality of West Lesvos participated, the geothermal field was re-allocated to the municipality. Therefore, new studies were needed on the exploitation of the geothermal field, which were financed by NESOI. The municipality's plan includes utilization of the geothermal field/fluid for heating greenhouses, drying agricultural products, district heating, but also for spa use. A part of these actions is a continuation of the "THERMOPOLIS" program for the district heating of public buildings.

**Q: What are the challenges of the project?**

A: The main challenge is to make the project a success and to overcome the problems that existed in the past with the municipal greenhouses and the THERMOPOLIS program.

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

A: We are in the stage of preparing application studies, which will determine the quantities of geothermal fluid that will be given for agricultural use, for district heating and in thermal baths. Afterwards, there will be a relevant open invitation to private individuals interested in using the geothermal fluid, for a fee to the Municipality. The Municipality of Dytiki Lesvos will implement the infrastructure projects (networks, drilling etc.). There are plans to produce pellets from biomass. The available biomass comes from the municipal pine forest and the pruning of the olive trees of the private olive farms. However, management studies need to be done. And in this area, the energy communities can have an active role.

**Q: Within your views, where could this project be replicated?**

A: The project could be replicated on islands with geothermal energy, as for example, in Ikaria, geothermal energy is used in thermal baths. Milos and Nisyros are two more islands, in which geothermal energy could be used mildly, in the agricultural economy and/or district heating.

## THE IMPACT

ON LOCAL COMMUNITY



1

### Local Economy

Geothermal heating helps the agri-food sector by lowering the cost of energy. According to the preliminary study, three people will be needed for the operation and management of the DHN. More direct and indirect new jobs are expected during the construction phase and due to EC.

2

### Social Acceptance and Impact

Social acceptance is secured through the improvement of conditions for users, the participatory character of the potential energy community, the energy poverty mitigation measures, and for the whole island through its promotion as green and sustainable destination.



## Clean energy transition of West Lesvos through the exploitation of the rich geothermal potential of the island – Technical Data

### FOCUS ON GEOTHERMAL DISTRICT HEATING

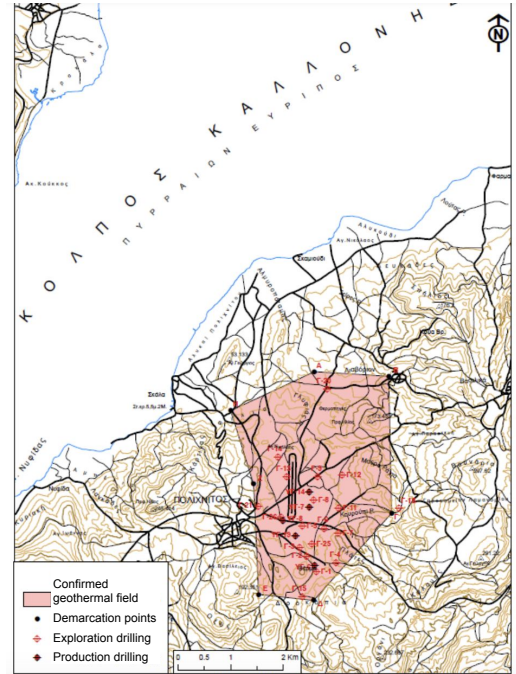
Lesvos is a volcanic island, and its hot springs are well known. Polichnitos in the western part of Lesvos has the hottest natural springs in all of Europe.

In the geothermal field of Polichnitos, there was a district heating network (DHN) that served the thermal needs of greenhouses in the area. GEO-LESVOS aims to create a new DHN that comprises of three parts.

- Extending the network about 3,600 meters to reach the settlement to heat private and public buildings.
- Extending the network about 3,700 meters to the plain to cover heating needs of agricultural and other facilities.
- Constructing a re-injection network with a length of about 1,500 m for the geothermal fluid.

The DHN will use geothermal fluid extracted from 1-4 boreholes, passed through plate heat exchangers to transfer its thermal energy to secondary closed circuits for distribution, before re-injecting the cooled fluid into the ground.

This will be the first operational DHN in Greece since many years that will be powered by low enthalpy geothermal fluid and will be serving residential consumers, businesses and public buildings.

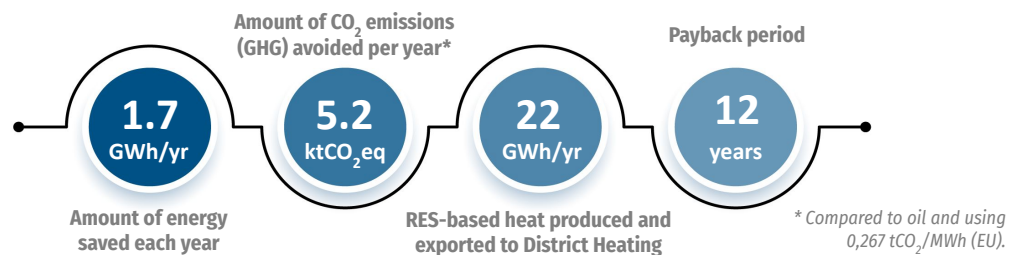


Utilization of Polichnitos geothermal field  
(Documents sent to NESOI)

### EXPECTED ENERGY SAVINGS AND RENEWABLES CONSUMPTION

The final overall project is estimated to facilitate annual primary energy savings of up to 1.7419 GWh/year and annually avoided GHG emissions of 5.1472 ktCO<sub>2</sub>eq/year. The RES-based heating installed power is 30.4 MW, with 21.784 GWh/year of annual RES-based heat produced and exported to District Heating which is expected to serve 575 buildings and 13 greenhouses for more than 50 years.

### KEY NUMBERS OF THE PROJECT



### REPLICABILITY IN OTHER ISLANDS

The project has the potential to be replicated in other areas of the Lesvos island where there is suitable geothermal potential that could be exploited. The same applies for other Greek and European islands with the same characteristics.

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