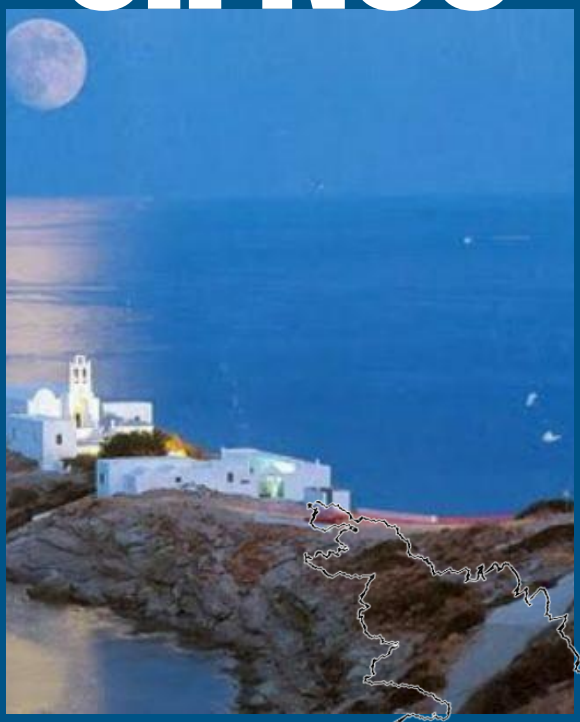
NESOI
EU ISLANDS FACILITY

Seeking Innovations For
eNergy Optimised Saving

SIFNOS



SIFNOS

"Sifnos has been declared as a pilot island of the Clean Energy for E.U. Islands initiative, thanks to the efforts of the Sifnos Energy Community (SEC)"

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

NESOI
EU ISLANDS FACILITY

SIFNOS

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.

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ABOUT
THE PROJECT

Project Promoter Sifnos Energy Community (SEC)

Stakeholders Municipality of Sifnos

Country Greece | **Sector** Energy Community | **PROJECT VALUE** 2.5 M€

DESCRIPTION

The SIFNOS project aims to save electricity in domestic hot water production and municipal potable water facilities by installing solar thermal collectors, heat tanks, and energy-saving measures in water pumping and hydraulic infrastructure. It also includes a photovoltaic plant to cover annual electricity demand.

AIM OF THE PROJECT

The project aims to reduce electricity consumption in domestic hot water production by utilizing solar thermal collectors and district heating networks, improving water supply system efficiency through pump replacement and variable speed motor drives installation, and eliminating electricity consumption through virtual net-metering.

FUTURE STEPS

After the SIFNOS project, the Municipality of Sifnos will investigate potential funding for energy saving on potable water production and distribution municipal facilities. The Municipality will also supply the land and the funds for the photovoltaic plant's installation. The solar-combi system development requires a district heating network, which can be funded by Greek or EU initiatives.

HOW THE EU ISLANDS FACILITY NESOI
SUPPORTS THE PROJECT

1. **Proposed active measures: new pumps, variable speed motor drives, solar thermal collectors, heat storage tanks, hydraulic network upgrade, photovoltaic plant for electricity compensation.**
2. **Essential economic assessment: set-up cost, operation and maintenance cost, annual economic benefit, economic indices, sensitivity analysis.**
3. **Definition: selection of specific equipment, configuration of technical specifications for all major parts (solar collectors, heat storage tanks, pipelines, automation etc).**
4. **Summary: calculation of major KPIs: annual electricity saving, payback period, RES penetration, CO2 emission drop etc.**

New Energy Solutions Optimised for Islands

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INTERVIEW WITH

Dimitrios Katsaprakakis

External Advisor to the SIFNOS project, on behalf of Aeolian Land S.A

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

The SIFNOS project addresses energy and water issues in Sifnos, a small Greek island. Over 90% of potable water demand is covered by desalination plants, resulting in significant electricity consumption. The project aims to propose solutions for more efficient energy consumption for potable water production and domestic hot water production, preserving traditional architecture.

Q: What were the challenges? How did NESOI help overcome them?

The NESOI, through the SIFNOS project, addresses technical expertise gaps in Sifnos' community by implementing energy-saving projects. These include designing a solar thermal collector field for domestic hot water production, proposing energy-saving measures for potable water production, and studying a municipal photovoltaic plant for electricity consumption.

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

The Municipality of Sifnos will receive 195 k€ annually from a reduction in potable water production and distribution costs, which can be used for network improvements or reduced procurement prices. Solar thermal collectors will cover domestic hot water production, resulting in a 50% drop in specific costs for final users. These projects will save 1.7 GWh of electricity and 650 kL of diesel oil annually, and reduce CO2 emissions by 2.7 ktn.

Q: Will you be launching new projects (after NESOI) to pursue your island's clean energy transition?

The Energy Community of Sifnos, established in 2013, aims to make Sifnos a 100% energy independent and democratic island. The community has designed a hybrid power plant, a wind park, and a pumped hydro storage plant to meet annual electricity demand. Additional projects include hydrogen production through electrolysis units. The energy transition agenda includes open loop geoexchange plants for indoor space cooling, decentralized photovoltaics, and e-mobility transition.

Q: What are the key replication criteria (e.g., social acceptance, legal framework, financing, etc.)?

The SIFNOS project, aimed at raising social awareness and public opinion on renewable energy, is highly replicable across all Greek islands, particularly in insular settlements with exceptional traditional architecture.

THE IMPACT

ON LOCAL COMMUNITY

1 **Local Economy**

The proposed projects in Sifnos aim to save electricity for potable and hot water production and supply, reducing procurement prices and budgets for insular households and companies. The annual economic benefits for the final users, the Municipality and the electrical utility are €96,590, €719,147 and €195,913 respectively.

2 **Social Acceptance**

The Energy Community of Sifnos, with 155 members, has been promoting energy transition since 2013. In 2018 the Municipal Council approved SEC's energy transition agenda and the Municipality joined the Community as an official member.

New Energy Solutions Optimised for Islands

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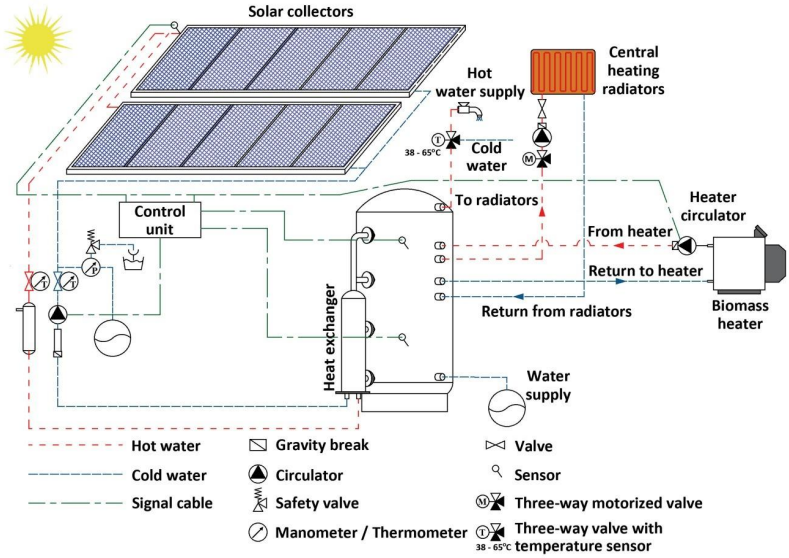
FOCUS ON
Solar-combi systems

The study proposes solar-combi systems for domestic hot water production in the settlements of Apollonia, Artemonas, Kato Petali and Kamares. The system consists of solar thermal collectors, heat storage tanks and a back-up heat production unit, formulating the so-called "solar-combi systems". The plant's operation is managed by control units, tailored to specific applications and demand requirements. In the SINFOS project, the solar-combi systems will be organized into independent hydraulic networks, maximizing their flexibility and efficiency.

Solar-combi systems are ideal for the Mediterranean region due to high solar radiation and a robust local industry. Greece holds the third position in Europe regarding solar collector installation area per capita. A solar-combi system in a popular tourist destination can act as a pilot project, stimulating more islands in Mediterranean to adopt similar projects.

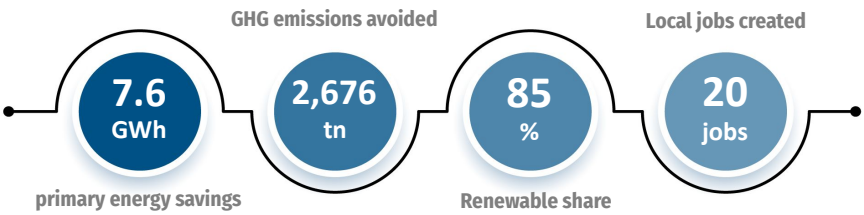


General layout of a solar-combi system
Source: Sinfos Energy Community

EXPECTED
ENERGY SAVINGS

The primary energy saving for the domestic hot water production arises from the corresponding saving of electricity and it was calculated at 4,840,776.2 kWh. The primary energy saving for the potable water production and supply also arises from the corresponding electricity saving, through the upgrade of the existing pumping and hydraulic facilities, plus the electricity production from the proposed photovoltaic plant and it in total was calculated at 3,005,233.8 kWh.

KEY NUMBERS
OF THE PROJECT



REPLICABILITY
IN OTHER ISLANDS

Centralized solar thermal plants for hot water production are scalable and replicable, suitable for islands with sensitive urban architecture, traditional settlements, and regions reliant on desalination, ensuring energy conservation and aesthetic appeal.

Picture on first page: provided by project beneficiary
Picture on second page: photographer: Georgios Liakopoulos; https://commons.wikimedia.org/wiki/File:View_Of_Platigialos_Sifnos_%282091643 97%29.jpeg, license: CC-BY-3.0, modifications: none

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