

# FOSSILFREESAMSØ



**SAMSØ**

***"In 2007 Samsø had achieved net-zero emissions.  
Samsø's new goal is that fossil fuels are not used on the  
island, nor are they part of the electricity mix."***



This project is supported by the EU Islands Facility NESOI.  
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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.



## Support to the 'fossil-free island' process in Samsø, Denmark

### ABOUT THE PROJECT

Project  
Promoter



Samsø Energy Academy



**Stakeholders**

Samsø Energy Academy

Samsø municipality



**Country** Denmark



**Sector** Energy Plan



**PROJECT VALUE** 47,373,767 €

#### DESCRIPTION

By 2007 Samsø had achieved net-zero emissions, thanks to renewable electricity from wind turbines, a local biomass-run district heating system and the highest number of electric vehicles per capita in Denmark. Samsø's now engaging the island community around the 'fossil-free' island goal, that is to eliminate the use of fossil fuels by 2030.

#### AIM OF THE PROJECT

The main aims are to carry out community engagement processes and study what an investment mix can put Samsø in the path to achieve its fossil-free goal in a cost-effective way. Focus is on 6 thematic areas: transportation, heating, resources, efficiency, sustainability and farming.

#### FUTURE STEPS

The project provided input for the revision of Samsø's municipality Climate Action Plan and contributed to taking Samsø to the next step, becoming a decentralized 100% renewable energy system with high social acceptance and a strengthened local economy.

## 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 High level analysis on selected technologies/projects + regulatory framework
- 4 High level analysis of expected impacts
- 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





## INTERVIEW WITH

### Alexis Chatzimpiros, Samsø Energy Academy

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

Samsø is already carbon neutral and has a existing clean energy transition agenda (CETA) masterplan. Therefore, the pre-feasibility studies carried out during this project (e.g. hydrogen for storage to replace conventional transport, electrifying district heating, electric vehicle charging, biogas, etc.) will support the island's goal to become fossil free by 2030. These studies were submitted to the municipality and then formally adopted into the CETA masterplan, providing a first step to achieve the targets set forth in the islands fossil free by 2030 objective.

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

Samsø Energy Academy along with the project's external advisors organised various working groups with specific themes, concluding with suggestions for how the external advisors should be carrying out the work funded by NESOI. It also worked both ways, the external advisors presented possible solutions with calculations so that the local stakeholders can choose which they preferred based on which was most realistic, most beneficial, etc.

#### Q: What is the dissemination and replication potential of the project?

There is indeed great replication potential of this project, because Samsø is already famous for its energy transition and the Samsø Energy Academy has thousands of visitors who want to hear about how the island came to become carbon neutral by 2017 and the success story of how NESOI funding helped carry forward the existing CETA masterplan. This can demonstrate the longer lifespan of a CETA roadmap, ultimately helping islands towards their own fossil freedom.

## THE IMPACT

### ON LOCAL COMMUNITY



#### 1 Local Economy

Ending fossil fuel imports and switching to locally produced renewable energy creates jobs in installation, operation and maintenance. The new ferry will create 10 local jobs and the biogas plant 13, and will also pour 3 €Mi/year into the local economy. Farmers will sell straw for energy use, citizens that invest will get additional income. Local capacity and skills will be strengthened, and Samsø's brand will bring more visitors and further support jobs in the hospitality sector.

#### 2 Social Acceptance

Working with feasibility calculations and in parallel engaging people in discussions about the different options presenting the results of the calculations has been key as an action impact the general social acceptance towards the vision of becoming a fossil free island by 2030.

## FOCUS ON SOLUTIONS FOR FOSSIL-FREE ISLAND

In Northern Europe, the island of Samsø is a pioneer community already covering the 100% of its electricity demand with renewable energy. Also, after achieving net-zero emission goal in 2007, the island of Samsø now targets to become a 100% fossil-free island.

To do so, the electrification and/or hybridization of a few inland systems is required:

- The heating systems will be electrified.
- The ferries connecting Samsø to the mainland will likely run on local biogas and/or electricity.
- e-mobility will be further promoted.

The counterpart is the need to increase the local renewable electricity production.

The cost-effectiveness and best financial schemes to support the next projects needed to reach the ambitious goal are being evaluated by the Samsø Energy Academy.



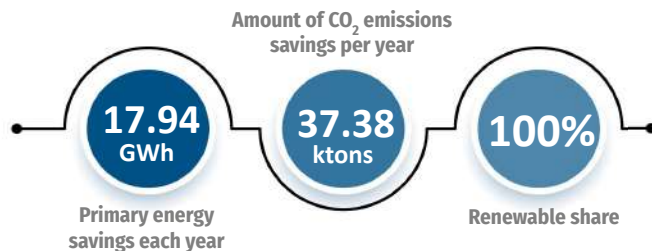
2015 Samsø's installations

(Source: 'The amazing island of Samsø', article by Steve Brodner)

## EXPECTED ENERGY AND GHG SAVINGS

Switching from biomass to electricity and current tax incentives will deliver 5% heat savings in households. Replacement the last oil boilers by renewable electricity heat pumps in households saves 2/3 of energy used. Replacement of 30% of cars with electric results to 42.5% higher efficiency and replacing buses and garbage trucks with electric results to 40% higher efficiency. The remaining energy related GHG emissions on Samsø are due to individual oil boilers of households, a small share of district heating, conventional vehicles (private cars, buses, heavy vehicles) and the ferries.

## KEY NUMBERS OF THE PROJECT



## REPLICABILITY IN OTHER ISLANDS

Samsø's decentralized model is based on local resources, community engagement and ownership, key for social acceptance, and technologies available in the market, and is applicable to any island. They already share their best practices with 6 islands in Denmark and also with 30 more EU islands through cooperation projects and networks, such as the Clean Energy for EU Islands Secretariat in France, Greece, Ireland, Denmark, Sweden, Estonia, Finland and several others.

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