



**NESOI**  
EU ISLANDS FACILITY

Sustainable Island Ferries to Sejerø  
and Nexelø

# SIF



**SEJERØ AND NEXELØ**

***“With the new battery-powered electric ferries,  
both islanders and tourists will experience  
better service than today: more stable  
operation, less noise, and less pollution.”***



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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.



## Sustainable Island Ferries to Sejerø and Nexelø

### ABOUT THE PROJECT

**Project Promoter** Kalundborg Municipality



**Stakeholders** Kalundborg Municipality Danish Joint Ferry Secretariat Sejerø Ferry Service



**Country** Denmark



**Sector** Mobility



**PROJECT VALUE** 27 M€

#### DESCRIPTION

The existing ferry routes from the Danish mainland to the islands of Sejerø and Nexelø are currently being serviced by a diesel fleet emitting carbon emissions.

#### AIM OF THE PROJECT

The existing three large diesel-propelled ferries will be exchanged with two smaller battery-powered electric ferries, to reduce emissions and therefore improve sustainability.

#### FUTURE STEPS

Following the NESOI funding, these two islands will continue to carry out their energy transition plans with many diverse projects in the pipeline.

## HOW THE EU ISLANDS FACILITY NESOI SUPPORTS THE PROJECT

- 1 Analysis of existing documentation
- 2 Assessment of the compliance with current regulations and market practices
- 3 Identification of suitable technological options given existing project sizing requirements
- 4 Definition of the required permitting procedures
- 5 Analysis of the technical, economic and financial, fiscal project inputs
- 6 Analysis of both technical and socio-economic impacts
- 7 Risk analysis and identification of mitigation strategies
- 8 Identification of condition precedents for successive project implementation
- 9 Action plan and identification of project monitoring procedures







## INTERVIEW WITH

Søren Stensgaard

Sustainable Development Team leader, Kalundborg Municipality

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

A: We currently have two diesel ferries running between the two small islands in the Bay of Sejerø and Nexelø. The SIF project enables progress toward the green transition by transforming these two ferries into battery-powered electric ferries, focusing mainly on reducing emissions and increasing the sustainability of the islands, and at the same time improving the appearance of both the ferries and the harbors. It was important to carry out a due diligence based on determining the key technical aspects to be watched over with respect to design aspects of the ferries and the harbors. This was the primary goal of the SIF project.

**Q: What is the main challenge of the project?**

A: At the beginning of the project, the main challenge was surrounding various technical aspects of procuring the new fleet. However, the focus quickly shifted from these technical aspects to a financing issue. We have received a state-granted subsidy, but the Danish legislation currently has limitations on how much municipalities are allowed to invest in general. This is the subject of debates between the Danish national municipal association and the state government, and this is the largest challenge that we're facing.

**Q: What is the project's impact on the local citizens and administration?**

A: A large part of the SIF project involves the investigation into the social desirability and acceptance of the proposed battery-powered electric ferries. The administration initially opposed the idea of changing their ferry fleet to smaller vessels, especially because they were already accustomed to the working conditions of the diesel ferries and in fact many of the islanders are employed on the diesel ferries. To educate them on the benefits of new vessels and technologies, a field trip was conducted to another pilot in Denmark, where they could see the prototype technology in action, and become educated on the benefits of the new electric fleet. This pilot therefore demonstrated the effectiveness of the new prototype technology, and subsequently the administration and citizens became convinced about the potential services that the new vessels would offer.

## THE IMPACT

ON LOCAL COMMUNITY



### 1 Local Environment Conditions

Substituting diesel ferries with electric ferries will eliminate the particulate pollution that is currently caused by the exhaust of the ferries. Operating noise of the ferries will also be reduced significantly.

### 2 Social Acceptance

Improved environmental conditions in the harbors will provide social acceptance of the project. As will new and improved ferries in general, and the fact that the ferries will add to fighting climate change.



# **FOCUS ON** **PLANNING FOR BATTERY ELECTRIC FERRIES**

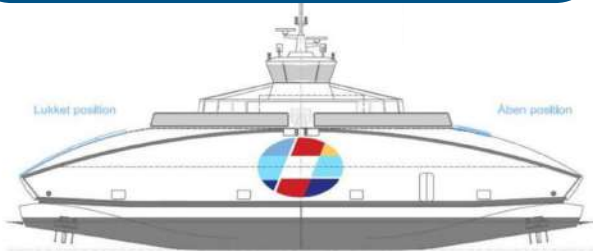
There are a total of 66 ferries in domestic operation in Denmark, serving 50 different routes and emitting a total of approx. 220,000 tonnes of CO<sub>2</sub>. Both electricity, HVO and bio-methanol can lead to significant reductions in CO<sub>2</sub> emissions for the ferries that are converted. In addition, reductions in emissions of NO<sub>x</sub>, SO<sub>2</sub> and the particles are achieved for all three types of propellants.

SIF project is to set up a preliminary plan for the acquiring two new battery-powered electric ferries to ensure the routes from the mainland to Sejerø and Nexelø. The ferry crossing to Nexelø from the port in mainland Havnsø takes 20 min and the ferry crossing from Havnsø to Sejerø takes 1 hours and 5 minutes.

The 3 existing diesel propelled ferries will be exchanged with two identical electrical battery powered ferries. The solution with two identical ferries ensures that equipment can be better substituted between the two routes in case of e.g. planned maintenance, docking and operational breakdowns, and at the same time there will be a better opportunity to adapt the capacity of the two routes in the event of a change in need.



The existing ferries of Sejerø and Nexelø (Documents sent to NESOI)



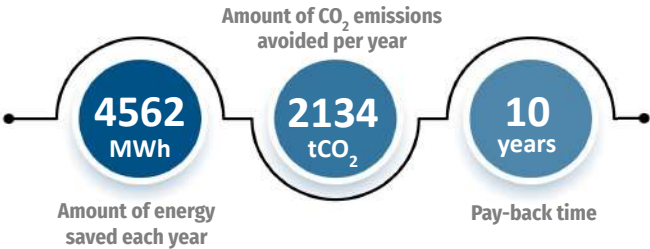
The proposed electric battery ferry (Documents sent to NESOI)



Proposed ferry berths Sejerø Harbour (Documents sent to NESOI)

During SIF project the overall scope of the conversion is determined, and a rough construction estimate is drawn up. Also, the conversion of a total of four existing ferry berths in Havnsø Harbor (Sejerø and Nexelø bearings) and Sejerø Harbor (Main and reserve bearings), as well as the establishment of a new ferry bearing in Nexelø Harbour is investigated.

## **KEY NUMBERS** **OF THE PROJECT**



## **REPLICABILITY** **IN OTHER ISLANDS**

The knowledge and experience in implementing and operating electrical ferries to smaller island will be applicable to other islands across the EU. The project will likely be able to work as a practical showcase for other island seeking to change their ferry infrastructure to carbon neutral. The project will collaborate with the Danish Joint Ferry Secretariat to disseminate the results.

Photo in the summary page: author: Arnoldius, source: [https://no.wikipedia.org/wiki/Sejer%C3%B8#/media/Fil:Sejer%C3%B8\\_lighthouse.jpg](https://no.wikipedia.org/wiki/Sejer%C3%B8#/media/Fil:Sejer%C3%B8_lighthouse.jpg), license: CC-BY-SA-3.0, modifications: none