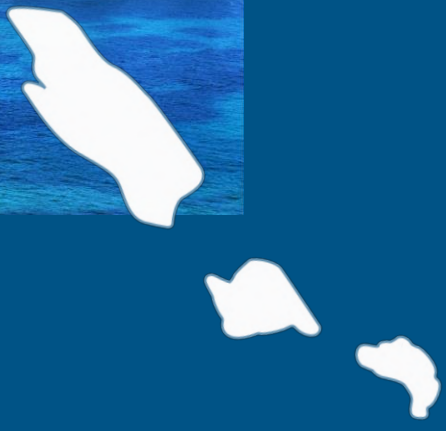
NESOI
EU ISLANDS FACILITY

Feasibility study for Electric Solar Boat Transportation to Elafiti

E-LAFITI



ELAFITI ISLANDS

“ Electric solar boats represent a social and mobility innovation, not only from an energy point of view but also to minimize sea and air pollution ”

This project is support 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

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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.

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ABOUT THE PROJECT

Project Promoter DURA Dubrovačka razvojna agencija / Dubrovnik Development Agency — **Dubrovnik Development Agency (DURA)**

Stakeholders City of Dubrovnik | Dubrovnik-Neretva county | Dubrovnik tourist board

Country Croatia | **Sector** Mobility | **PROJECT VALUE** 3,780,000 €

DESCRIPTION

The project consists in a feasibility study for electric boats and their charging infrastructure as a regular transportation system from Dubrovnik to Elafiiti islands.

AIM OF THE PROJECT

The study evaluates the economic, technical, legal, and environmental impacts of such transportation system, for different types and sizes of electric boats that could serve the needs of both islanders and tourists. The study also addresses the location of charging infrastructure both on mainland and on islands and their possible integration into multimodal transport nods.

FUTURE STEPS

After the completion of the NESOI project, the legislative and financial process will be tackled, and the construction of the ship will be approached.
The ship may be owned by the city of Dubrovnik and serve as a form of public transport, since the islands are part of the city in administrative terms.

PROJECT SUPPORT - How the EU Islands Facility NESOI supports it?

1. Assessment of the key project sizing drivers and Identification of suitable technological options given existing project sizing requirements
2. Definition of the required environmental permitting procedures and Cost Benefit analysis and socio economic and environmental impact evaluation
3. Definition of the technical, economic and financial, fiscal project inputs and Risk analysis and identification of available mitigation strategies
4. Assessment of existing procurement options and Financial modelling and identification of target scenario
5. Identification of financing/funding options and Action plan and identification of project monitoring procedures
6. Action plan and identification of project monitoring procedures
7. Identification and dimensioning of transports nodes and sizing of related infrastructure, based on expected traffic

New Energy Solutions Optimised for Islands
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INTERVIEW WITH

Nataša Mirić, Senior Advisor for Local Development and EU Funds at Dubrovnik Development Agency (DURA)

Q: How was the project initially designed? Why choosing this specific technology?

A: The e-LAFITI project should help solve the problem of the island's connection to the mainland, which has plagued the local population and visitors to the island for more than 15 years. The current service and ferry lines connecting the city of Dubrovnik with the islands do not meet today's technological standards and have a high carbon footprint. Furthermore, the ships' capacity is not sufficient, especially due to the post-pandemic rise of touristic activities. There is a need for a modern transportation system that will provide greater capacity for passenger transport, but also satisfactory technological and environmental standards.

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

A: The biggest challenge was to convince the islanders that the project is a practical one that can actually be implemented. The quality of life of the islands' inhabitants is at stake: in summer, islands are crowded, but in winter the population often migrates to the mainland because of inadequate access. We would like people to live on the islands 365 days a year, to have access to modern living conditions and quality infrastructure such as schools, kindergartens, and a convenient transportation system to the mainland. With NESOI's support, citizens have been involved in the project: one workshop was organized to present them the project, and another one will be organized to present the final results of the feasibility study.

Q: What will be done next to pursue this project? How far is it from concrete implementation?

A: Once the feasibility study is completed, we will request the introduction of new lines to the competent institutions and licenses for line operations. In addition, the construction of the ship will need to be approached. The idea is for such a ship to be owned by the city and to serve as a form of public transport, since the islands are also part of our city in administrative terms. In this part, it will be necessary to examine which form of financing is the most favorable.

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

A: The City of Dubrovnik has been co-financing the energy renovation of public buildings and family houses for years and is working on the introduction of low-energy solutions in communal infrastructure. In addition, a project based on sea water energy was realized. Also, the construction of solar panels is encouraged as we have very good predispositions for such technologies. We would like to explore new, environmentally friendly solutions for transport, infrastructure, public lighting, solar panel installations and more.

THE IMPACT

ON LOCAL COMMUNITY

1. **Local Economy**
   The impact on the local economy will be comprehensible, since it will increase everyday travels to Elafiti but also make boat companies more competitive and consequently surge the level of service. It will also raise the accessibility to the island, which will result in more efficient exchange of goods and service. More than 160.000 EUR on fuel savings will stay within Dubrovnik region. Considering electric boat as a local energy backbone it can attract new projects, employment, investments.
2. **Social Acceptance**
   For many years, both visitors and residents of the Elafiti islands have looked for additional means of transportation, especially during summer months when demands goes high rapidly. Social acceptance could be increased if islanders are willing to become shareholders of new ship.

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FOCUS ON
SOLAR MOBILITY ON SEA

Solar mobility is an option to be considered for islands which are at short distance from one another or from the mainland. In summer periods, during which functional and sustainable mobility solutions are particularly required, the conventional daily ferry service is not adequate.

Two options co-exist: solar panels can be installed on the land, in order to charge the battery of electric boats; or solar panels can be embedded in the boat itself, so that the boat can produce its own electricity in an autonomous manner.

The second option is the one which actually realises the 'solar mobility' concept. Several such solar boats exist, some being non-commercial prototypes, but some being already available on the market.

The choice between the various options available on the market depends on the boats' type (passenger transport or vehicle transport), the boats' desired capacity, the required trip frequency, etc.

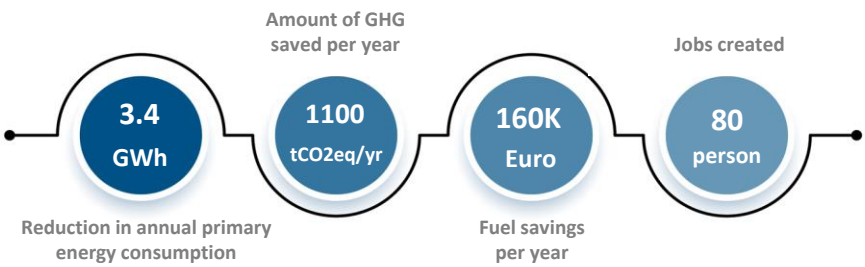
Regarding the Elafiti islands, the feasibility study supported by NESOI has demonstrated that the electrification of shipping lines was possible from a technical and financial viewpoint, and that it can be carried out in a very short time without complex infrastructure interventions.

Different solar (left) and electric (right) boat technologies under consideration in the project:
Planet Solar, Solar Sailor, SolarCat, Solar Passenger Ferry, Ika Rere, Future of the Fjords

EXPECTED
ENERGY SAVINGS

Based on the old ship Postira from 1963 that operates on the line to Elafiti islands, the estimated primary energy savings are 3.4 GWh as the new electric boats should consume around 1.17 GWh. This calculation has to be confirmed within the feasibility study.

KEY NUMBERS
OF THE PROJECT



REPLICABILITY
IN OTHER ISLANDS

The replicability potential is huge, and the proposed solution is easily replicable to the other islands. Not only in Dubrovnik area, but all along the coastline of Croatia for cities having islands in their administrative area (for instance Zadar and Šibenik).
More generally speaking, the concept is replicable in other areas with similar climate conditions (high sun irradiation) and geographical situation (mainland cities connected to islands at short distance, making it possible for electric boat to replace traditional ferries).

Wolf Theiss

NESOI contact:
Saša Jovičić, WOLF THEISS, sasa.jovicic@wolftheiss.com

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