



European
Commission

Electrifying boat engines

Spain

Collaboration among fishers, scientists, manufacturers and public authorities has resulted in the construction and piloting of an 8-metre electric boat. The uptake by fishing and leisure boats in three Natural Parks will cut CO₂ emissions, while improving water quality and working conditions on the boats.

The Albufera Natural Park, located on the Mediterranean coast of Spain, includes a shallow lagoon where the Palmar Fishing Association uses artisanal methods to catch species such as sea bass and mullet. Tourism is also an important activity on the Albufera lagoon which plays host to over 1 000 small-scale fishing and leisure boats. However, despite its Natural Park status, water quality continues to suffer from eutrophication and human-generated pollution. Boats contribute to these environmental concerns by discharging oil and unburnt fuel into the lagoon and generating noise pollution, which affects the many species of fish and birds that live in the Albufera.

The Safor FLAG supported a study and the construction of a prototype boat powered by electricity to establish the viability of moving away from fossil fuel combustion engines. Spearheaded by the fishing association, the project also required the involvement of Valencia City Council and the Polytechnic University of Valencia, which carried out the study and directed the design and construction of the pilot. The private sector was also mobilised to supply engine parts, batteries and to build a specially conceived boat.

The study analysed the ecological impact and economic viability linked to the transition from diesel to electric engines and looked for practical solutions to make it possible. This involved studying the traditional boats operational on the lagoon, identifying and contacting suppliers who could offer the necessary parts for electric engines, and proposing innovations to maximise the viability of electric boats, e.g. the use of lighter batteries.

Based on the results of the study, the Polytechnic University of Valencia oversaw the design and construction of a prototype boat and engine. The suppliers, contacted as part of the study, were involved to help develop the engine. The last local “*calafatador*” (builder of the traditional boats used in the Albufera) also participated, making the wooden pieces that were then assembled for the structure of the vessel. The vessel was formally launched in December 2022 and used to promote the electrification of other boats in the Albufera and two other Natural Parks.





Results:

- The construction and successful pilot of an 8-metre prototype boat powered by an electric engine of 10 kW (48v) with an autonomy of 6 hours. It runs at the usual sailing speed of the boats in the lagoon, just below 4 knots (7.4 km/h);
- The prototype drastically reduces noise pollution;
- Hydrocarbon discharges into the water are eliminated;
- CO₂ emissions are reduced 10 fold, equivalent to almost 2 tonnes per year;
- The maintenance cost of the electric engine is around 50% less than of the local combustion vessels, an estimated saving of €50 per year.
- A saving of €722 per year is made on fuel costs (charging at night (off-peak));
- The success of the pilot led to a [series of grants](#) (up to €30 000 per beneficiary) being launched by the Regional Government of Valencia for the electrification of other fishing and leisure boats in La Albufera and two other Natural Parks.

Transferability and Tips:

The study and piloting of this electric boat were closely linked to the fisheries tradition and economic circumstances of the Albufera Lagoon. However, the technology and findings are easily transferable to areas with similar characteristics, adapting them to other kind of vessels.

Do:

- Have a multi-sectoral perspective. The collaboration of different public and private sectors was instrumental to the project's success.
- Capitalise on similar project's results and transfer them to your project.
- Be proactive about encouraging fishers and facilitating financial. The initial investment cost of changing an engine can be dissuasive. The energy transition requires a public effort, as well as from the sector.

Don't:

- Forget that without the infrastructure linked to electric mobility, it will be difficult to make progress in the energy transition. Involve competent authorities from the start!
- Be frustrated if implementation is slow, major changes take time! Many benefits of this initiative have become visible after the formal completion of the project.
- Underestimate the resources needed to promote uptake locally and beyond! The energy transition will not become a reality if it is only implemented in one place.



Quote from project promoter/beneficiary

"The fishers and their relatives involved in fishing or nature tourism on the Albufera Lagoon have realised that this type of boat helps to provide a better service to users, as well as respecting the environment."

Jose Caballer Torrent, President of the El Palmar Fisheries Association

Project cost and funding

Total project costs:
€39 420 (€13 820 for the study;
€25 600 for the prototype boat).
FLAG grant:
€35 720 (91% of total project costs)
Palmar Fisheries Association:
€3 700 (9% of total project costs)

Implementation duration

December 2019 - November 2022

Beneficiary

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