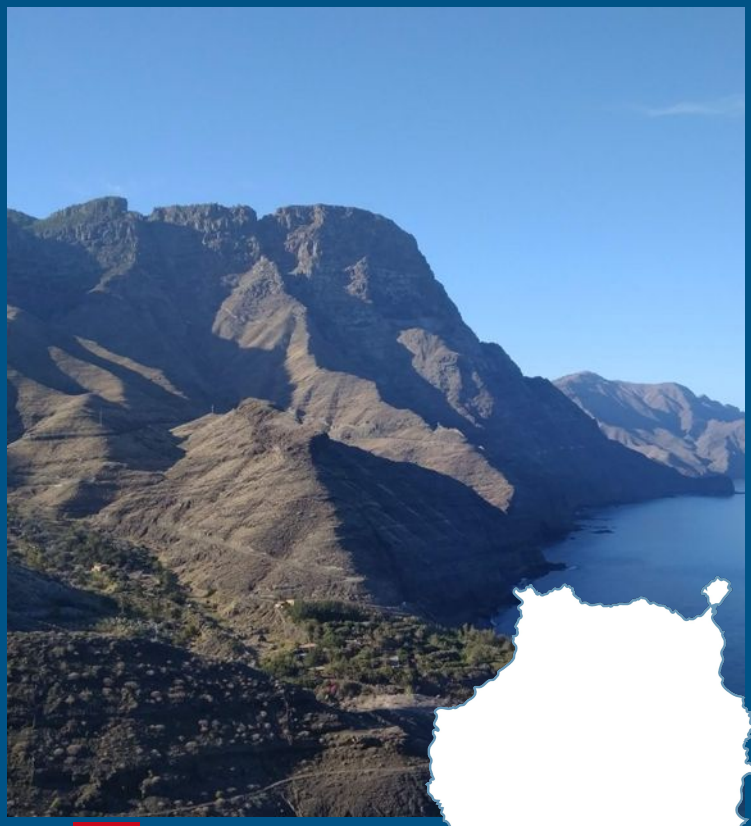
NESOI
EU ISLANDS FACILITY

REMOTE @ La Aldea 2.0

REAL2.0



GRAN CANARIA

“Autonomy in electricity supply and fuel transport is essential for islands but also for isolated areas on mainland as mountain areas.“

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

REAL2.0

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.

REMOTE @ La Aldea 2.0

ABOUT
THE PROJECT

Project Promoter Politecnico di Torino (POLITO)

Stakeholders Politecnico di Torino System Integrator (INYCOM), Instituto Tecnológico dé Canarias, Cummins, GRUPO CAPISA

Country Spain | **Sector** Hydrogen | **PROJECT VALUE** 1 M€

DESCRIPTION

REAL2.0 assesses the capability of local renewables together with hydrogen-based devices to cover both electrical loads and green fuel demand in Gran Canaria island. The demonstration site of the Horizon 2020 project REMOTE, a farm located in La Aldea, will be the starting point.

AIM OF THE PROJECT

- Technical analysis of the solution from background analysis to the techno-economical analysis.
- Market analysis from data collection to a business plan.
- Benchmarking with local authorities to consult and plan changes in energy and mobility.

FUTURE STEPS

A small fleet of fuel cell minibuses will connect La Aldea to the biggest city of the island, Las Palmas. The results of REAL2.0 will allow Politecnico to apply for grants for the development of the project as a large-scale demo, and to attract relevant companies that can provide and develop hydrogen mobility technologies.

HOW THE EU ISLANDS FACILITY NESOI
SUPPORTS THE PROJECT

1. Data collection and market analysis
2. Assessment of the key project sizing drivers taking also into consideration local characteristics
3. Evaluation of the primary technological solution in comparison with other possible solutions
4. Identification of potential financing options
5. Market testing with potential investors
6. Economic and financial planning and economic-financial feasibility assessment
7. Business Plan and preliminary Information Memorandum
8. Background analysis, business cases identification.
9. System design and techno-economic analysis, benchmarking with local authorities, consulting of local regulations and plans for energy and mobility

REAL2.0

***REMOTE @ La Aldea 2.0* - Interview**

INTERVIEW WITH

Domenico Ferrero, Politecnico di Torino

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

A: The origin of the project is related to another H2020 project developed by the Politecnico di Torino, REMOTE. This previous project focused on developing power-to-power solutions for small facilities in remote locations, based on hybrid renewable energy storage with batteries and hydrogen. In REAL2.0 we wanted to investigate hydrogen production for clean vehicles. The selected technology was electrolysis combined with renewable energy generation because there were already some solar PV plants available in the island. The problem to be solved was to analyze the feasibility of increasing the renewable energy production in this area. Besides, the feasibility of repowering an old wind turbine which was not used at that moment was considered.

Q: What were the challenges and how did NESOI help to overcome them?

A: The main challenges faced were mostly giving a shape and understanding which the business could be for the possible stakeholders, and how to involve investors in the project. The carried-out analysis was basically a technical feasibility study, including an economic feasibility study. The NESOI support was fundamental to evaluate the institutions which could support the project: public local and national institutions, the European institutions, as well as private entities, and public Spanish funds. Besides, NESOI supported in identifying other financial instruments, such as crowdfunding, or other instruments offered by private entities. This support was fundamental. Additionally, NESOI helped in identifying the possible implementation of the project, after the evaluation done in REAL2.0 project.

Q: How does the project impact local citizens?

A: The main positive impact will be the creation of new jobs for the local citizens. Social acceptance will not be a problem in Gran Canaria. An event was celebrated in the Instituto Tecnológico de Canarias premises, where the local stakeholders and companies gathered, and the ITC presented the project as well as the technical design activities carried out within the scope of this project, and looked for financing opportunities. In this event, we met the local community, and presented the project, at different levels: energy companies, construction companies, international and local service providers. These contacts are essential to carry out the next step of the project construction and implementation.

Q: What is the status of the project and next planned actions?

A: The next actions which will be developed by Politecnico di Torino and Instituto Tecnológico de Canarias will be the exploitation and application of the results. The next step is to develop a larger project, with the support of private companies.

THE IMPACT

ON LOCAL COMMUNITY

1. **Local Economy**
   Local communities will benefit from reliable and green energy production and jobs are created locally for the operation and maintenance of systems.

2. **Social Acceptance and Impact**
   Local communities of remote areas will benefit of secure and clean energy supplies, with consequent increase of their energy independence. A relevant social support and acceptance is therefore expected towards systems that make the community more energy independent and that have very low environmental impact.

New Energy Solutions Optimised for Islands

NESOI

EUROPEAN ISLANDS FACILITY

REAL2.0

***REMOTE @ La Aldea 2.0* – Technical Data**

FOCUS ON
HYDROGEN SOLUTIONS FOR ISLANDS

Overall, in the Canary Islands there are around 2.1 million habitants and, as a very popular touristic destination, it receives, on average, 15 million of tourists per year. In 2020 about 18% of electrical energy in Gran Canaria was produced from renewable energy. Wind farm installations summed up to 194 MW and PV farms up to 37 MW.

In the Canary Islands multiple green hydrogen demonstration projects have been carried out. The most recent was the REMOTE demonstration project in Gran Canaria that aimed to satisfy the electrical needs of a cattle farm in La Aldea using locally produced renewable energy and a hybrid hydrogen-battery storage integrated in a micro-grid.

In REAL2.0, the expansion of the micro-grid developed in REMOTE is analysed with the aim to cover also the demand for green local transport. A hydrogen generation plant with a refueling station is envisaged to feed a small fleet of fuel cell buses to connect La Aldea with the capital city of the island, Las Palmas de Gran Canaria.

The solution in La Aldea to supply hydrogen for 3 fuel cell buses consists of

- renewable energy production combining 1 MW of wind power and 500 kW of PV,
- electrolyser of 400 kW,
- hydrogen storage optimized for 3 days (300 kg H_2 tank) and
- hydrogen dispenser (25 to 350 bar).

The H_2 produced should cost 2.36-10.69 €/kgH_2 in order to be affordable as a replacement of diesel fuel for interurban buses.

Overview of the RES2H2 project installation, owned by ITC, and developed before the REAL2.0 project
(Source: ITC, documents sent to NESOI)

Non-stop trip from La Aldea to Las Palmas
(Source: ITC, documents sent to NESOI)

12 m³ hydrogen tank used in the REMOTE demo site Agkistro, Greece (Source: Documents sent to NESOI)

KEY NUMBERS
OF THE PROJECT

2500 MWh — Amount of energy saved each year*

684 tCO_2eq — Amount of GHG emissions avoided per year*

3 — Fuel cell buses

** Considering diesel-based solutions as an alternative.*

REPLICABILITY
IN OTHER ISLANDS

Replicability is foreseen in EU, but also in countries outside EU characterized by remote island communities, where reaching energy independence by exploiting local RES is necessary if a reliable sustainable energy service is pursued. The development of a flexible software tool MILP model will support remote and isolated communities to promote their decarbonization plans.

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