

# ARINDEC -GRAN CANARIA



**GRAN CANARIA**



**“ARINDEC-GRAN CANARIA can serve as a reference to determine the key aspects for the proper development of renewable energy communities in Spain “**



This project is supported 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

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.



## Industrial Energy Community powered by Renewable Energies in the Arinaga Industrial Area

### ABOUT THE PROJECT

**Project  
Promoter**



CONSEJO INSULAR  
ENERGÍA

Consejo Insular de la Energía de Gran Canaria (CIEGC)



### Stakeholders

Cabildo de Gran Canaria (Insular Energy Council)  
Instituto Tecnológico de Canarias

ECOAGA

Industrial Estates Companies  
Demand aggregator



**Country** Spain



**Sector** Energy Community



**PROJECT VALUE** 25,000,000 €

#### DESCRIPTION

The project's objective is to create a favorable environment for the implementation of an Industrial Energy Community in the Arinaga Industrial Park, in which energy is generated, stored and consumed locally (690 companies).

#### AIM OF THE PROJECT

One of the key points is the establishment of a local energy market. A model has to be identified in order to maximize the benefit of the community, while minimizing the risk of disagreements between members & encouraging the integration of new renewable systems.

#### FUTURE STEPS

This project, and others like it, may be considered strategic at European Union level, and become a driving force for other similar projects. The project is going to move forward, and more investment is going to be made, already having budgets awarded.

## HOW THE EU ISLANDS FACILITY NESOI SUPPORTS THE PROJECT

- 1 Definition of the required environmental permitting procedures.
- 2 Cost-Benefit analysis and socio economic and environmental impact evaluation.
- 3 Risk analysis, identification of available mitigation strategies and Assessment of existing procurement options (e.g., tender, PPP, etc.).
- 4 Basic Blockchain PoC from synthetic data for virtual markets.
- 5 Evaluation of key information for the deployment of renewable generation.
- 6 Action plan, identification of project monitoring procedures and Preparation of the project financing plan.
- 7 Load Flow and grid capacity studies, dynamic stability study with respect to contingencies.
- 8 Design of the technological architecture required for energy communities' management.
- 9 Basic Blockchain PoC (Proof of Concept) from synthetic data for virtual markets.





## ARINDEC-GRAN CANARIA

Industrial Energy Community powered by Renewable Energies in the Arinaga Industrial Area Interview



## INTERVIEW WITH

Alexis Lozano (Cabildo de Grand Canaria) &

Rayco Parra (Instituto Tecnológico de Canarias - ITC)

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

A: The origin of the project dates to before the NESOI project, when the Cabildo was studying the possibilities of implementing self-consumption in the industrial zone of Arinaga in collaboration with ITC. This area is the largest industrial estate in the Canary Islands, with a very high electricity demand. In addition, the solar and wind resources available within the area are excellent.

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

A: There are many challenges, which are not yet solved. For example, the problem of designing a proper regulation. A specific regulation on energy communities is needed to allow the implementation of all the functionalities that an energy Community should have according to the European Directives. The necessary technology, in particular hardware and software, is also unclear. NESOI has been of great help in defining this technology. NESOI has also helped sizing the energy demand to be met, determining the financial parameters of the project and assessing the needs and expectations from the local industrial companies.

**Q: What will be done next to pursue this project?**

A: A platform (software and hardware) to manage all energy communities on the island will be procured by the Cabildo. A series of investments will be made in generation and storage devices. The project will apply to the next government's call for regulatory sandbox to be allowed to launch the local energy market, a concept which is not compliant with the current regulations. We believe that this project can be strategic at national and European level, so that it can be a driving force for similar projects.

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

A: The Cabildo supports the creation of energy communities, both for companies and citizens. We are interested in developing a citizen support agency for the development of energy communities. On another note, we are developing a project which consists in grouping together renewable energy generators in the Canary Islands, to optimally manage their surpluses. In case of generation surplus, the renewable energy is curtailed and lost, as on non-interconnected islands there is no option to export it to the mainland. An option is to manage surpluses through shared storage systems and a flexibility market.

## THE IMPACT ON LOCAL COMMUNITY



1

### Local Economy

Energy saving and competitiveness increase of industrial companies (which suffer limitations regarding access prices).

2

### Social Acceptance

The project will involve significant economic savings and reduction in CO<sub>2</sub> emissions. A communication campaign is needed to inform citizens about it and about self-consumption projects and energy communities in general. These concepts are not well understood by the public yet, even though they can be very profitable.

## FOCUS ON INDUSTRIAL ENERGY COMMUNITIES

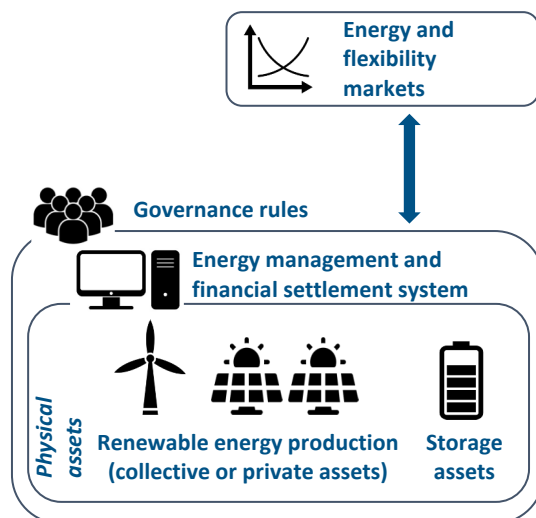
Energy Communities are nowadays a major instrument for the promotion of the use of renewable energy sources through the empowerment of consumers. Regulations are still being adapted to this new concept.

The energy community project of the Arinaga industrial park is very ambitious as not less than 650 companies are located in this park and represent an energy demand of 32 GWh / year.

Several scenarios are studied to set up the energy community according to the number of participants and to the extent to which they wish to be energy-autonomous.

In all scenarios, the building blocks of the energy community are:

- **Renewable energy generation**, mainly from rooftop PV panels, possibly supplemented by wind turbines
- **An energy storage system** in the form of lithium-ion batteries
- **A virtual system** to manage financial flows according to the energy flows between the members of the community
- **Governance rules** in line with national regulations
- Optionally, the participation of the community's generation, consumption and storage assets into energy or flexibility markets.



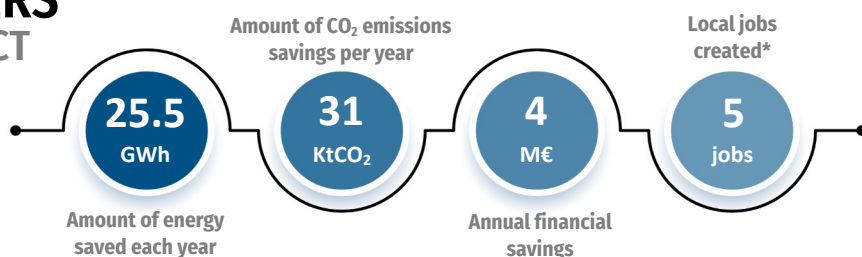
**Schematic representation of the industrial energy community**  
(Icons by FREEPIX, design by NESOI)

## EXPECTED ENERGY SAVINGS

Primary Energy Savings: 25,500 MWh/year  
GHG Emissions avoided : 31 ktCO<sub>2</sub>/year.

*Calculations according to the conversion factors established by the Regional Government of the demand coverage by renewable energies*

## KEY NUMBERS OF THE PROJECT



*\* In addition to the jobs created during the operational phase of the energy community (5 full-time equivalent jobs), 2216 person-months of local resources will be used during the implementation phase.*

## REPLICABILITY IN OTHER ISLANDS

The project can be replicated in any industrial estate, or any energy community, regardless of its size and functionalities. In terms of location, it can be replicated on islands or continents and systems very well connected to the electricity grid. The project is interesting for any community that seeks to go beyond shared self-consumption, and which wants to include other functionalities: frequency control, voltage control, etc.