

# The Gernika-San Fidel TEK, Spain, GAIA and Gernika City Council Pilot

Carlos Gangoiti Kalea, 11, 48300 Gernika-Lumo, Bizkaia, Spain

<https://www.prolight-project.eu/demo-case/gernika-lumo-spain/>



## Overall summary:

### General description

Energy community promoted by the San Fidel Teaching Center. According to the TEK-CEL model designed by Edinor (Energy Broker Entity)

### Participants

The promoting entity (Ikastola San Fidel) and citizens, businesses and SMEs, located within 500 meters of the facility and who join the association as members

### Energy model

Solar installation on the roof of a building owned by San Fidel for collective self-consumption. This roof is located in the Ikastola San Fidel sports center

### Operation model

Edinor supports the Ikastola San Fidel in the phase of constitution of the TEK-CEL (San Fidel TEK) and in the campaign for the adhesion of members. Subsequently, Edinor supports San



Fidel Tek in obtaining public aid, financing, selection of companies (preferably local) that will execute the facilities and their maintenance, and in the other procedures and actions that require the execution and legalization of the facilities.

### **Governance**

The highest decision-making body is the Assembly, made up of all members and governed by the principle of one member, one vote. Ordinary management is entrusted to a Board of Directors made up of 5 members who are elected annually by lottery among the members. The Board of Directors is supported by Edinor in the operational, administrative and energy management of TEK-CEL , during an initial period of three years.

### **Origin and participants (cont.)**

The impulse and promotion corresponds to the Entity that owns the roofs (Ikastola San Fidel). The participants in the San Fidel Tek are, in addition to the entity that owns the roofs, citizens, small businesses and, where appropriate, the Gernika Casa de Cultura-Kulturetxea whose homes, businesses or companies are located within 500 meters of the facility. Depending on the total installed power, this being the sum of all the PV installations of which San Fidel Tek is the owner, the number of partners will be defined. It can be from 30 to more than 1,000 members.

### **Innovation activities**

The San Fidel Tek APP allows partners to monitor consumption and use of the facility. R&D projects aimed at new aggregation solutions, demand management and flexibility.

### **Barriers and challenges identified**

The limit of 500 meters for shared self-consumption is considered a barrier to the development of local energy communities. In other countries, this limit is situated at 1 km or 2 km, which would make it possible to reach all homes and small businesses in many municipalities.



## ProLight Demo district – GENERAL DATA

### Pilot description and expected performance results:

The so-called Tokiko Energia Komunitateak (TEK) in Basque, which in English means Local Energy Community, will allow users who choose to 'hook up' to the installation, reduce their environmental footprint and save on electricity bills.

Gernika-TEK differentiates 4 types of public and private beneficiaries:

- Colegio San Fidel: Owner of the facility and direct beneficiary of energy savings.
- House of Culture (Kultur Etxea): Municipal building and direct beneficiary of energy savings
- Homes for private use
- Businesses for public and private use

The implementation of the project will specifically contribute to avoiding the emission of 885 tons of CO<sub>2</sub> per year, which is equivalent to planting 3,500 trees that absorb carbon dioxide emissions for 25 years.

Gernika TEK will have a “living” character. It will not be just a matter of placing some photovoltaic modules on the roof. It is a project with an evolution of 25 years, in which its environmental, cultural and economic benefits will be verified and analyzed.

### Climate area, Location urban/suburban

The climate of the municipality of Gernika-Lumo is classified within the temperate oceanic climate. The average temperature is 14.5°C and it is characterized by not suffering large oscillations during the year. The difference between the average temperatures of the months warmest and the coldest is only about 10°C, approximately. The average annual rainfall is close to 1200mm, and despite the fact that the maximums usually occur in the autumn and winter months, it rains throughout the year.

In the short, medium and long-term future, however, these climatic variables may be altered because the effects of the climate change. In the long term, despite great uncertainty, models currently indicate that average maximum temperatures could rise by up to 3°C. The minimum temperature is expected to suffer a similar rise. Going from the historical 9.77°C, to 12.73°C indicated by the models for the period between 2071 and 2100.



Overview of site specific economic, energy & environmental related indicators of pilot districts.

Key Performance Indicators	Lighthouse district
Number of dwellings	200
Primary energy savings [MWh /year]	25% of energy consumption
Renewable energy production [kWh /year] -> KPI5 in the project	109.400kwh/year
GHG emission savings [TnCO <sub>2</sub> eq/year]	885 TnCO <sub>2</sub> eq/year
Number of TRL 6 to TRL 8 technologies	1
KPI7: Investment costs [Euro/m <sup>2</sup> ]	191,67€/m <sup>2</sup>

### ProLight figures for the New European Bauhaus

**GERNICA TEK, Spain**  
**1 educational centre, 150 homes & businesses**  
**App. 770 Occupants**

**Integrated Renovation Status:** Installation of 200 solar panels

**Liveability:** Gernika TEK will be a cooperative. Via solar panels 25% of the electricity consumption will be covered. An amount that is deducted from the bill w/o additional fees being fully autonomous.

**Technological advancement:** Gernika TEK installation will be monitored. In this way the students will be able to check how much energy is produced & consumed.

**Social Innovation/Business Models:** Basque Country is a very active member of this new initiative in which three Basque entities have been selected by the European Commission as an official partner of the New European Bauhaus. GAIA, is working very closely with them & coordinates the deployment of the BDCC (Basque District of Culture & Creativity).



**Which business model is used (e.g. ESCO, PPP, one-stop shop, others)?**

PPP

**Utilised financial supporting instruments:**

Edinor (Brokerage energy entity) supports the Ikastola San Fidel in the phase of constitution of the Energy Community (San Fidel TEK) and in the campaign for the adherence of members. Subsequently, Edinor supports San Fidel Tek in obtaining public aid, financing, selection of companies (preferably local) that will execute the facilities and their maintenance, and in the other procedures and actions that require the execution and legalization of the facilities.

**Main economic activities in your city/region:**

Automation spare parts; Tourism; Agriculture

**Envisaged local dissemination activities:**

Art and Culture related activities for sensitization are the ones envisaged.

## LEGISLATION

**How are energy communities regulated in your country/region?**

San Fidel Tek's model has been adopted by entities of various kinds (town halls, chambers of commerce, educational centers...) that have promoted the creation of Local Energy Communities in their respective areas. The CE Implementa 2022 call, published in January 2022, and the self-consumption aid programs (within the framework of Royal Decree 477/2021) that have been published in the different Autonomous Communities since November 2021 have provided a strong boost to this model.



## What else important, having impact?

There are currently 16 projects similar to San Fidel Tek constituted in 3 Autonomous Communities (Euskadi, Navarra and Cantabria) that group 43 municipalities. The projects executed and/or presented by these Communities to the IDAE call “CE IMPLEMENTA 2022” and to the aid programs for self-consumption RD477, add up to 108 photovoltaic installations with a total installed power of 7.3 MW, an investment of 8.3 million euros and a forecast that 9,200 families and small businesses and SMEs will join them throughout 2022:

There are a total of 13 projects in the Basque Country: 5 in Bizkaia (TEK Zierbena ; TEK Athletic; TEK San Fidel -Ikastola in Gernika-; TEK Somorrostro – Vocational Training Center in Muskiz -; and TEK Barakaldo) and 8 in Gipuzkoa ( TEK Zumárraga, TEK Larraul , TEK Berrobi, TEK Andoain, TEK Pasaia, TEK Lasarte, TEK Urnieta, TEK Berio - in Donostia -).

In Cantabria 2: CEL Santullán and CEL Torrelavega

In Navarra 1: TEK TODA Navarra, promoted by the Chamber of Commerce of Navarra, which encompasses 29 Navarre municipalities, 27 of which have a population of less than 5,000 inhabitants.

The model, in this way, adapts to municipalities of different sizes. From the 250 inhabitants of Larraul or the 177 of Ujue to those of more than 100,000 of Barakaldo or to capitals such as Bilbao (TEK Athletic) or Donostia-San Sebastián (TEK Berio).

## MAIN ACTORS/STAKEHOLDERS

### Local stakeholders and partners:

The highest decision-making body is the Assembly, made up of all members and governed by the principle of one member, one vote. Ordinary management is entrusted to a Board of Directors made up of 5 members who are elected annually by lottery among the members. The Board of Directors is supported by Edinor in the operational, administrative and energy management of TEK-CEL, during an initial period of three years.

The impulse and promotion corresponds to the Entity that owns the roofs (Ikastola San Fidel). The participants in the San Fidel Tek are, in addition to the entity that owns the roofs, citizens, small businesses and, where appropriate, the Gernika Casa de Cultura-Kulturetxea whose homes, businesses or companies are located within 500 meters of the facility. Depending on the total installed power, this being the sum of all the PV installations of which San Fidel Tek is the owner, the number of partners will be defined. It can be from 30 to more than 1,000 members.



## What are the advantages that the stakeholders may have when they contribute to or are involved in the project?

A characteristic of the model proposed, is accessibility, in the sense that participation in San Fidel Tek does not require investment, nor does it require a commitment to permanence.

As they are shared self-consumption projects (object of public aid programs under Royal Decree 477/2021), it allows San Fidel Tek partners to enjoy the energy produced by the plates without paying tolls or electricity charges, making it possible for a person is a member of San Fidel TEK paying a maximum of €150 entry fee and a monthly fee of €9. These amounts include the amortization of the credit requested to execute the installation, its maintenance and insurance, and the operational and energy management of San Fidel Tek, which covers all the aforementioned services provided by Edinor to San Fidel Tek.

## REQUIREMENTS

### Energy poverty (redistribution of benefits)

- How do you address energy poverty?
- How do you redistribute the benefits generated by the project to the tenants?
- How do you prevent gentrification after the renovation?

#### Response:

- Working together with the municipality government in subsidizing energy provision to poor families.
- No financial benefits are envisaged. It is a cooperative in the legal form. Non for profit.
- Through legislative decrees from the Government. Besides Once the public aid to the project has been confirmed, San Fidel Tek as the promoting Entity carries out the work of social revitalization so that the residents and small businesses of the town become members of San Fidel Tek.

### Circular economy and local value chains

- How do you include principles of circular economy in your project? (i.e. specific local value chains like for example timber wood construction etc.)
- Do you use or are you interested in using by-products from other value chains for your renovation? (i.e. alternative materials for insulation)

**Response:** The circular economy is applied since the MEMBER is member of UDALSAREA. As an active member of Udalsarea 21, the Basque Network of Municipalities for Sustainability, and an actor in the development of Agenda 21, is working towards its accession to the



Charter of Sustainable Tourism. This network is linked with the development of SDG<sup>1</sup> mainly in the following areas good health and well-being, affordable and clean energy and sustainable cities and communities. The network will be used for disseminate tested solutions, good practices and policy tools using state of the art conferencing; open-source repositories and open access publication to an audience of citizens and key stakeholders including policymakers, trans-European networks, local and regional municipalities and both public and private organisation.

### Industrialization and prefabrication

- How is your renovation process including or is compatible with industrialization, standardization and prefabrication? (i.e. modular cladding, prefabrication of modules with integrate BIPV BAPV, Lean process construction... etc.)

**Response:** Following the recommendations included energy diagnosis done, the City Council would be working in line with the Euskadi Climate Change Strategy 2050. The energy sector makes a significant contribution to the total emissions of the municipality of Gernika-Lumo, so it is advisable to continue devoting efforts to mitigation in this sector.

The recommended actions in this regard are:

- Continue applying energy efficiency measures in its own facilities, as an exemplary action: San Fidel Tek.
- Promote the implementation of energy efficiency measures in the municipality, through greater support and accompaniment for citizens in their implementation.
- Continue promoting the implementation of renewable energies in the municipality, by supporting and accompanying citizens in the process.
- Study the possibility of applying more ambitious economic incentive systems than the current ones, for the application of energy efficiency measures and renewable energies in the municipality. Environmental taxation is a tool to support this objective.
- Monitor the consumption of the municipal energy generation facilities and promote the incorporation of management and control systems for the facilities.
- Promote through planning the generation with renewable sources in public spaces (canopies with solar panels, cogeneration microstations, spaces for biomass storage, etc.)
- Awareness campaigns to promote the reduction of energy demand, promoting the development of durable materials, reduction and reuse, and not pushing items with planned obsolescence.

### Energy communities (ict and/or social driven)

- How your project promotes the activation of energy communities based on ICT and Social Innovation?

**Response:** Innovation activities. The Gernika-Lumo's council is committed to the field of new technologies as a vector for social cohesion and integration and developing

---

<sup>1</sup> Sustainable Development Goals





opportunities for advancement for all who have something to contribute to the culture, economy or coexistence.

On the other hand, an important part of Edinor's activity is dedicated to R&D. This has allowed the different Energy Communities initiatives to have energy management systems specifically designed to provide energy and demand management information and services to their members.

The system consists of a software platform that communicates in the field with communication, control and measurement hardware devices, as well as with different external sources of data (weather, prices) and third-party platforms, such as the systems of electricity resellers that supply grid power to members of the Community.

This system also monitors all the facilities owned by San Fidel Tek, both photovoltaic facilities, charging points or other types of assets that are gradually incorporated. This will allow progress in demand management and aggregation solutions.

In this sense, the Edinor network, by having a monitoring platform and systems that covers the set of facilities owned by each network, opens ways to advance in the figure of the independent aggregator of distributed energy resources, along the lines marked by the Self-Consumption Roadmap approved by MITECO.

### New European Bauhaus

How your city – or local context hosting the project – is promoting the New European Bauhaus concept?

1. **sustainability**, from climate goals, to circularity, zero pollution, and biodiversity
2. **aesthetics**, quality of experience and style, beyond functionality
3. **inclusion**, from valorising diversity, to securing accessibility and affordability:
  - a. reconnecting with nature:
  - b. regaining a sense of belonging:
  - c. prioritising the places and people that need it most:
  - d. fostering long term, life cycle and integrated thinking in the industrial ecosystem

### Response:

1. Looking to this uncertainty and because the climate change will drastically affect the Biosphere Reserve of Urdaibai, the City Council of Gernika-Lumo has developed an energy diagnosis and its corresponding GHO inventory that shows that there is still a great potential for action in the City Council itself because much of these emissions correspond to municipal buildings and public lighting. The City Council has begun to transform the latter, through an audit and the replacement of a significant number of luminaires.
2. With respect to the consumption of buildings at the moment, the City Council has included the culture house (kulturetxea) as part of the Energy Community in Gernika to implement smart and efficient technologies to towards a zero emission building, with an extra difficulty because many of these buildings are classified as historical buildings.
3. For the inclusion approach we are developing different activities. Our objective is to train and empower the citizens of our urban districts through culture so that they become active and responsible partners of the necessary European green transition", says Jokin Garatea, coordinator of the ProLight project at the Casa de Cultura del



Gernika-Lumo Town Hall. The districts of the participating cities are diverse, have different approaches and will develop digital applications or adapt other cultural participatory activities to improve the energy literacy of their inhabitants. The different places will share their experiences and inspire each other, so that also other districts and cities can learn and benefit from the results of this project.

On the 31st of March 2023, Gernika-Lumo will present to the European partners the case of good practices of the local energy community in the Ikastola San Fidel, which involves the creation of the first solar energy community in the Busturialdea and Lea Artibai area.

To do this, the educational center has installed a total of 200 solar panels on its roof, which will allow it to supply renewable energy, not only to the ikastola, but also to the infrastructures around the ikastola: 150 homes, shops, as well as to public buildings such as the Kulturetxea.

The kulturetxea and the Ikastola San Fidel will present the Energy Community project to the European partners through cultural and technological projects, such as the projects awarded in the Lego-League Contest of the Ikastola San-Fidel and a storyteller in the Library

## AMBITIONS

### What are the demos' visions?

After this first project, San Fidel Tek will progressively address new projects.

### Do you have a statement, which?

Once the public aid to the project has been confirmed, San Fidel Tek as the promoting Entity carries out the work of social revitalization so that the residents and small businesses of the town become members of San Fidel Tek.



## ESTABLISHING AN ENERGY COMMUNITY

### How was it to establish an energy community?

The model is characterized by the fact that, from the initial shared self-consumption project that has been executed and put into operation, it seeks to progressively incorporate initiatives related to the generation of renewable energy through sources other than photovoltaic energy, sustainable mobility, renewable thermal energy, energy efficiency and demand management.

#### Operation model

The development of each of the Energy communities (called San fidel TEK) follows the following phases.

#### **1. Constitution of the community**

In this phase, San Fidel Tek is constituted with the founding partners (a minimum of three individuals or legal entities) including the owner of the roofs. In this phase, in addition, San Fidel Tek requests aid for the project with the support of Edinor.

#### **2. Social revitalization**

Once the public aid to the project has been confirmed, San Fidel Tek as the promoting Entity carries out the work of social revitalization so that the residents and small businesses of the town become members of San Fidel Tek. Edinor supports the promoting entity in this task.

#### **3. Execution of the project**

Once the interest of citizens and small businesses in the initiative has been confirmed, San Fidel Tek approaches the financing of the project and its execution. Edinor supports San Fidel Tek in the financing and tenders on behalf of San Fidel the execution of the project, giving input to local installers, so that it is San Fidel, who finally decides the company awarded the project.

#### **4. Commissioning**

Commissioning supposes, on the one hand, that San Fidel Tek legalizes the installation and that it begins to supply energy to the partners (approximately 25% of their consumption). On the other hand, it supposes that, at the same time, it carries out a joint negotiation so that the partners receive the rest of the energy (approximately 75%) with a guarantee of renewable origin. Edinor supports San Fidel Tek in the legalization process and annually negotiates with market vendors to present San Fidel Tek partners with those that it has considered most advantageous so that they can choose the one that each one considers optimal for their case.



## What is the feasibility of an energy community?

A characteristic of the model proposed by Edinor is accessibility, in the sense that participation in San Fidel Tek does not require investment, nor does it require a commitment to permanence.

As they are shared self-consumption projects (object of public aid programs under Royal Decree 477/2021), it allows San Fidel Tek partners to enjoy the energy produced by the plates without paying tolls or electricity charges, making it possible for a person is a member of San Fidel TEK paying a maximum of €150 entry fee and a monthly fee of €9. These amounts include the amortization of the credit requested to execute the installation, its maintenance and insurance, and the operational and energy management of San Fidel Tek, which covers all the aforementioned services provided by Edinor to San Fidel Tek .





**ProLight** – Better quality of life and affordable housing: Our smart neighbourhood approach will be demonstrated in 6 European Lighthouse and pocket districts, and the results will provide blueprints for replication.

Analysed districts include:

- Building and renovating in an energy and resource efficient way in [Austria](#), [Finland](#) & [Greece](#).
- Energy communities in [Spain](#), [Italy](#) & [Portugal](#) combined in so-called Innovation clusters

## Follow us



[/prolight\\_EU](#)



[/prolight-project](#)



[www.prolight-project.eu](http://www.prolight-project.eu)



Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

