Navarra, a region supporting the sustainable energy

Sustainable investments

- Public buildings and facilities:
  Local and regional authorities
- Residential buildings:
  Tenants and homeowners
- Industry and services
- Renewable energy participative projects:
  Private and public stakeholders

Project data
sustaiNAVility
Navarra, a region that supports sustainable energy
Execution period: 1 Feb 2018 – 31 January 2021

Beneficiaries
Coordinator: Government of Navarra
Rest of consortium members: Navarra de Suelo y Vivienda S.A (NASUVINSA), Asociación de la Industria Navarra (AIN), Centro Nacional de Energías Renovables (CENER) and ZABALA Innovation Consulting S.A. (ZABALA)
Total Project Budget: 1,084,955.00 €
Elegible budget: 1,084,955.00 €
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www.sustainavility.eu/en/home/

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01 Navarra: Energy outlook

Navarra is a Spanish region with more than 272 municipalities, 640,000 inhabitants and it is member of the Euroregion Aquitaine- Basque Country - Navarra. Navarra has made a great effort to advance in the development of renewable energy in recent years: 20 percent of the energy currently consumed in Navarra comes from renewables. And now Navarra has developed a very ambitious energy plan for the region "Navarra for 2030" which integrates 4 objectives linked with the reduction of CO_2 emissions, the increase in percentage of renewables, maintaining security in energy supply and reducing energy poverty. Such objectives are to be achieved through technological innovation, management innovation and innovation in financial models.

Additionally, on the horizon of sustaiNAVility, Government of Navarra has worked on the development of a new Law on Climate Change and Energy Transition at the regional level aligned with the 2015 Paris Agreement, the 2030 Agenda for sustainable development and the commitments assumed by the European Union in the field of sustainability. The new law is expected to be approved in the first half of 2021.

sustaiNAVility project has worked as a promoter of this plan in the area of energy efficiency, in particular supporting the plan's goal of "Reducing 30% consumption of primary energy with respect to the figures projected by the EU for 2020 in energy efficiency".

Kick-off meeting (5th March 2018): Members of the consortium and the EASME. Project officer.

02 The sustaiNAVility project

This 3-year project (2018-2020) had the general objective of promoting, within the framework of the Navarra Energy Plan, the investment on energy efficiency and renewable energies in Navarra in 3 main target groups: Public & municipal entities, citizens and Industry.

	Investment	Energy savings	Emissions avoided	Renewable production	Employment created
Objectives	M 16.3 €	32.05 GWh /year	-	8.54 GWh /year	114
Results	**M 21.6 €**	**38.18 GWh /year**	**7,303 TCO_2e /year**	**3.00 GWh /year**	**158**

In relation to Public Bodies, the following sustainable projects have been promoted:

- Investments in the renovation of public lighting, implementation of renewables and electric mobility developed by Municipalities and Non-profit Entities. 165 implemented investments
- Investments in energy efficiency and renewable energies carried out by the regional administration, Government of Navarra, in its own buildings and infrastructures. 19 implemented investments
- Investments in energy efficiency and renewable energy in public housing buildings for social rent. 4 buildings / 68 dwellings
- Development of participative projects between public and private agents in order to create Citizen Communities of Renewable Energies. 3 pilot projects

In relation to private housing stock the renovation of private dwellings has been promoted in social housing neighbourhoods of 5 municipalities. The GIPs aim to harmonize the final design of each building at a neighbourhood scale and aim to identify other urban renovation opportunities, with the aim of contributing to a global urban regeneration. An aggregation of projects contributes to obtain an economy of scale. **17 buildings / 385 dwellings + 1 district heating**

In relation to Industry and services, different energy efficiency and renewable implementation projects have been developed **10 developed projects.**

Apart from the necessary investment mobilisation objectives, a series of cross-cutting actions have been developed in order to train and sensitize citizens with sustainability as well as technically train experts in the field. Finally, a replication methodology have been studied and developed in order to disseminate them and enable their application at all levels: regional, national or European level.

Intermediate presentation of the sustaiNAVility project.
Director of the Economic and Business Development Department (GNAV). March 5, 2020

PV Installation. ***Aranguren Valley town hall***.

03 Public buildings and facilities: Local and regional authorities

Public bodies, both locally and regionally, must play an exemplary role by directly promoting sustainable energy efficiency and renewable energy projects. In this way, citizenship perceives a real commitment to sustainability and the fight against climate change. Public administrations cannot demand that citizens support the energy transition without being promoters of it, they must lead by example.

sustaiNAVility *project has contributed to improve the call for aid, so that the municipalities are committed to develop a* ***sustainable medium-term strategy*** *in order to implement different energy efficiency measures and promote renewable energy in the upcoming years. Thanks to the aid, the municipalities can promote* ***more ambitious projects****, which otherwise, they could not carry out exclusively with their own funds.*

Council of Esparza. ***Ramón Lakuntza.***

"In Esparza we launched all the energy efficiency initiatives promoted by the Government of Navarra: renovation of lighting, electric mobility and renewables. The result: we generate more energy than we consume and an Energy Community has been created that involves some 40 families from the town".

The municipality of Esparza applied for the three Navarra Government's aids in terms of energy efficiency and incorporation of renewable energy sources, resulting beneficiary of all of them. In relation to public lighting, the municipality's public lighting was renewed to LED technology. Regarding renewable energies, a photovoltaic installation was implemented on the roof of the fronton. Because the energy generated was higher than the demanded within municipality, an Energy Community was established, of which 40 residents are part. Finally, in relation to mobility, an electric charging point was implemented and an electric bicycle was acquired for the use of the residents of the municipality.

In relation to the total financing of the measures, which amounts to € 125,501.95, one part, € 51,355.49, was financed thanks to the call for aid, and the rest, through own funds.

Ramón Lakuntza, the person in charge of Esparza Council, was invited to participate in 2020 communication activities of SusainNAVility project.

Street lighting renovation. ***Council Esparza de Galar.***

Methodology

Navarra's population is housed in small municipalities that are spread throughout the territory. A large part of these municipalities, by themselves, do not have the means or the economic capacity to implement sustainable measures. Therefore, calls energy efficiency and renewable energy grants have been designed for Municipalities in order to facilitate the implementation of these measures.

The methodology developed for the preparation, monitoring, improvement and dissemination of the calls as well as the implementation of its own measures by the regional administration is indicated below:

Calls for grants to Municipalities and non-profit entities in sustainable projects

These annual calls for grants to Municipalities and non-profit entities in Navarra are intended to contribute to the goals described in the "Navarra Horizonte 2030" Energy Plan, divided in three types of measures:

Step 01 Previously, a benchmarking studio of similar calls has been carried out.

Step 02 Preparation of regulatory specifications, prioritizing energy and environmental impacts.

Step 03 Broadly dissemination among interested entities local in order to achieve the highest participation throughout Navarra.

Step 04 Annual assessment of those calls together with the municipalities, in order to improve them.

Step 05 Planning of regional own investments for energy saving and the use of renewable energies, based on a preliminary energy assessment made by an energy management software.

Step 06 Cross-cutting awareness, training and education actions for users, consumers and experts.

Step 07 Dissemination of the Technical Guide for Municipalities. The guide has been prepared on the horizon of the sustaiNAVility project in order to help Municipalities in implementing sustainable measures.

Measure 1 (M1)
Renovation of existing lighting installations for public lighting and indoor public lighting in public buildings.
Measure 2 (M2)
Investments in renewable energy facilities.
Measure 3 (M3)
Investments in electric mobility.

Results

On the horizon of sustaiNAVility, the following economic and energy impacts have been achieved in local sustainable projects developed by local entities:

Number of granted municipalities

120

Number of granted no-profit entities

11

Renewable production

1.59 GWh/year

Nominal installed photovoltaic power

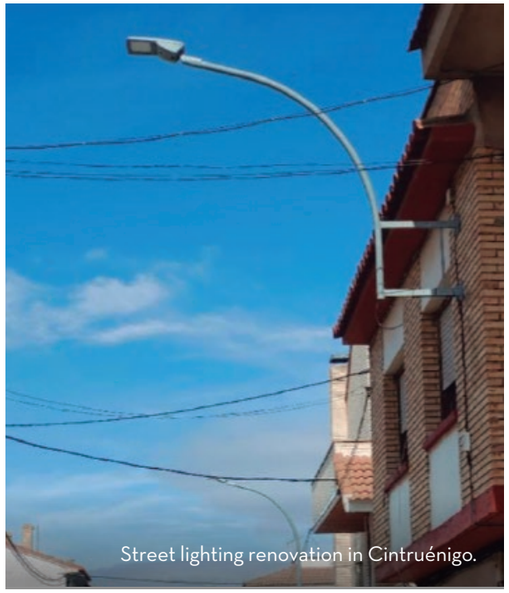
1,270.50 kW

Energy savings

9.30 GWh/year

Investment

M 2.4 €



Street lighting renovation in Cintruénigo.

Street lighting renovation in Olite.

Renovation of the lighting of the Corella football field.

Measure 1
Installations

A total of 70 renovation actions have been carried out on the existing lighting installations. Most of them correspond to actions in public road lighting, due to the fact the more hours of operation the quicker amortization. In addition, renovations have also been undertaken in outdoor and indoor public lighting facilities.

Number of facilities implemented	Investment	Energy savings	Avoided GHG emissions
70	M 2.4 €	8.95 GWh/year	1,279 tonCO_2/year

Inverter PV installation. ***Larraun Town hall.***


PV installation + charging point. ***Villatuerta Town Hall.***

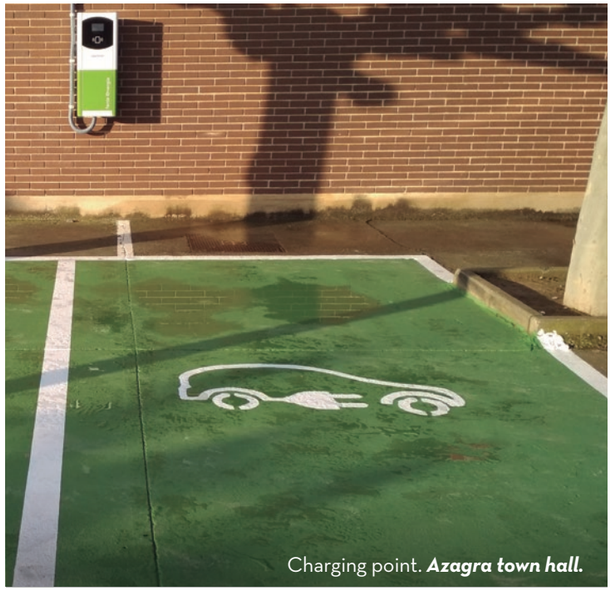

PV installation. ***Larraun Town Hall.***

Measure 2
Renewable energy facilities

In the case of renewable energies, it should be said that although investments have been made from various renewable sources (PV installation, biomass and aerothermal energy), photovoltaic technology has been the most demanded. Specifically, of the 56 investments carried out, 50 have been in PV installations.

Number of facilities implemented	Investment	Energy savings	Avoided GHG emissions	Renewable production
56	M 1.8 €	0.12 GWh/year	590 tCO_2/year	1.59 GWh/year

Charging point. ***Aranguren Valley town hall.***



Charging point. ***Azagra town hall.***

Electric vehicles. ***Aranguren Valley town hall.***

Measure 3
Electric mobility

Regarding electric mobility, 39 actions have been carried out, both in the renewal of the electric fleet and in the implementation of charging infrastructures on public roads.

Number of facilities implemented

39

Investment

M 0.9 €

Energy savings

0.22 GWh/year

Avoided GHG emissions

91 tonCO_2/year

Government of Navarra own investments in sustainable projects

Government of Navarra (GNAV), as a regional Administration, and in order to fullfil the objectives established in the Navarra Horizonte 2030 Energy Plan, has increased the regional budget items allocated to sustainable investments in its own buildings and infrastructures. To prioritize investments, an energy management platform has been used. It has worked on the development of a software that compiles an inventory of Navarra's Government buildings and infrastructures with their respective energy consumptions. This tool makes possible the identification of the most energy inefficient buildings and infrastructures and those with the highest energy consumption, so that investments in energy efficiency and renewable energies can be prioritized.

The following economic and energy impacts are achieved thanks to the sustainable projects implemented by Navarra's Government:

Number of facilities implemented	Investment	Energy savings	Renewable production	Nominal installed photovoltaic power
19	M 1.15 €	0.81 GWh/year	0.93 GWh/year	657.00 kW

Tunnel lighting renovation.
Government of Navarra.


Installation PV Camping Urbasa.
Government of Navarra.

Refurbishment in Barañain .

04 Residential buildings: Tenants and homeowners

4.1 Residential buildings: Tenants

In this case, the main target audience are low-income citizens living in large residential buildings. In particular, the Public Administration is pursuing a more sustainable and quality environment, by means of renovating public social housing buildings, and thus acting as a spearhead to promote energy refurbishment of the built park, whose ultimate goal is fighting against climate change and reducing energy poverty. In this way, it is possible to convey to the most vulnerable that they also count and are part of the change towards a more sustainable model.

*Thanks to **sustaiNAVility,** in order to achieve a greater energy and environmental impact in the renovation of public buildings, **criteria of nearly zero-energy buildings** (nZEB) has been followed. At the same time, dinamization and awareness within the tenants has been done, in order to better understanding in the use of their dwellings. Work has been done with the tenants in order to **make better use of the dwellings from the energy point of view.***

Methodology

The energy modernisation of a series of over 25 years-old rental social housing owned by the Public Administrations has been carried out with the aim of obtaining a significant reduction in energy consumption (certain criteria have been followed of buildings with almost zero energy consumption) while at the same time improving user comfort. When launching a building renovation projects, NASUVINSA has followed the following methodology:

Step 01	Identification of Intervention's scope
Step 02	Preliminary studies (including social diagnosis)
Step 03	Establish a technical model
Step 04	Establish an economic model
Step 05	Prepare a citizen communication plan
Step 06	Reference project. Execution project for each rental social housing
Step 07	Tracking the reference building
Step 08	Public tender procedure
Step 09	Signed contracts and financial loan
Step 10	Building permit and grants applications
Step 11	First official approval of Navarra's Government grants and obtaining the building permit
Step 12	Starting of renovation works

Investment

M 2.54 €

Energy savings

0,53 GWh/year

Number of refurbished residential buildings

4

Number of refurbished dwellings

68

In parallel, a Participation Plan has been drawn up with the main objective of involving the tenants within the project, so that they know the benefits inherent to the renovations, both from the individual point of view of the tenants, as well as addressing challenges at the community level.

Financing

In relation to the financing of the rehabilitation of these projects, say that it has been carried out through own funds. In order to meet the objectives of the Navarra 2030 Energy Plan, Government of Navarra itself and its public companies have increased the budget items for improving the energy efficiency of their own buildings.

List of renovated buildings

On the horizon of the sustaiNAVility project, a total amount of 4 public residential buildings have been refurbished in the municipalities of Barañain, Estella-Lizarra and Pamplona-Iruña. Specifically, 68 homes have been refurbished.

Barañáin

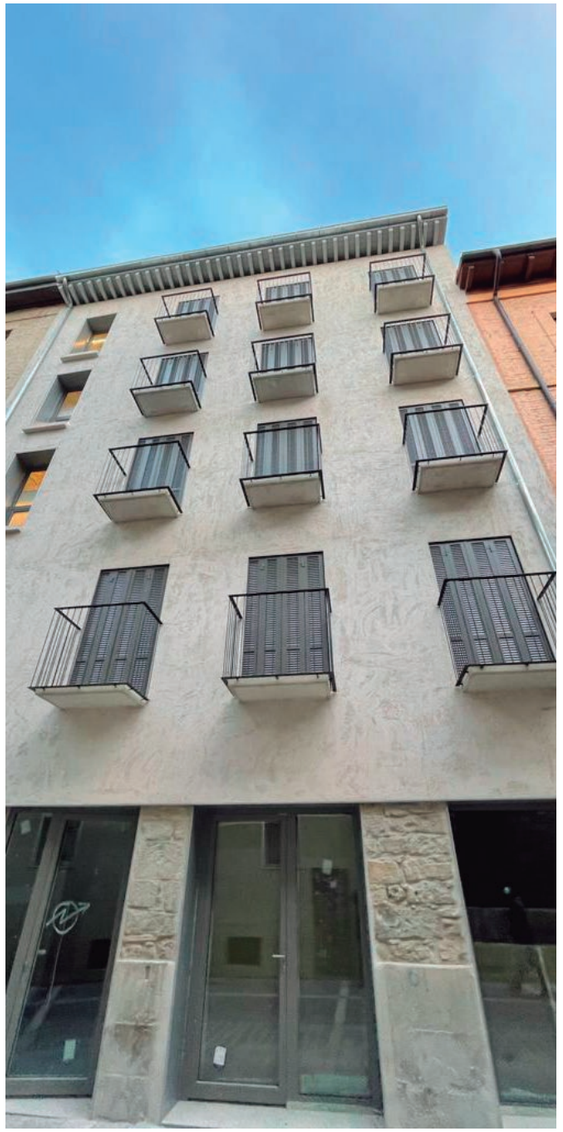
Energy retrofitting of thermal envelope.
Ventilation system with heat recovery.
Monitoring and installation management.

Río Arga Square, 14 – 15 – 16
29 dwellings

Pamplona

Energy retrofitting of thermal envelope.
Ventilation system with heat recovery.
Monitoring and installation management.
Heat boiler renovation.

Cruz de Barcacio Street, 6 – 8
20 dwellings



Pamplona

Energy retrofitting of thermal envelope.
Monitoring and installation management.
New aerothermal equipment.
Dwellings' renovation.

Compañía Street, 3
4 dwellings

Estella

Energy retrofitting of thermal envelope.
Monitoring and installation management.
New condensation boilers.
Dwellings' renovation.

Imprenta Street, 3 w
15 dwellings

4.2 Residential buildings: Homeowners' association

Citizenship plays a vital role in the fighting against climate change, since energy refurbishment of buildings represent one of the most relevant energy saving measure in order to achieve the ambitious objectives stablished by the European Commission to reduce the emission of the greenhouse gases, in the battle against global warming. Generally speaking, the citizens are interested in knowing about energy improvement measures that could be developed in their buildings. Therefore, it is very important to provide them with truthful and first-hand information, where the economic, social and environmental benefits of an energy rehabilitation are explained. In this way, citizens become an active part in reducing energy dependence on fossil fuels. Every grain of sand matters.

sustaiNAVility *enables to provide support in technical and financial aspects which has been carried out at the* ***neighbourhood level*** *in order to regenerate urban areas, not just buildings. The fact of* ***aggregating investments*** *offering* ***joint solutions*** *allows to* ***reduce the energy and environmental impacts*** *while* ***reducing the economic costs.***

Current state of the Kapanaburua 3 and Agustín García 12 buildings in Villava.

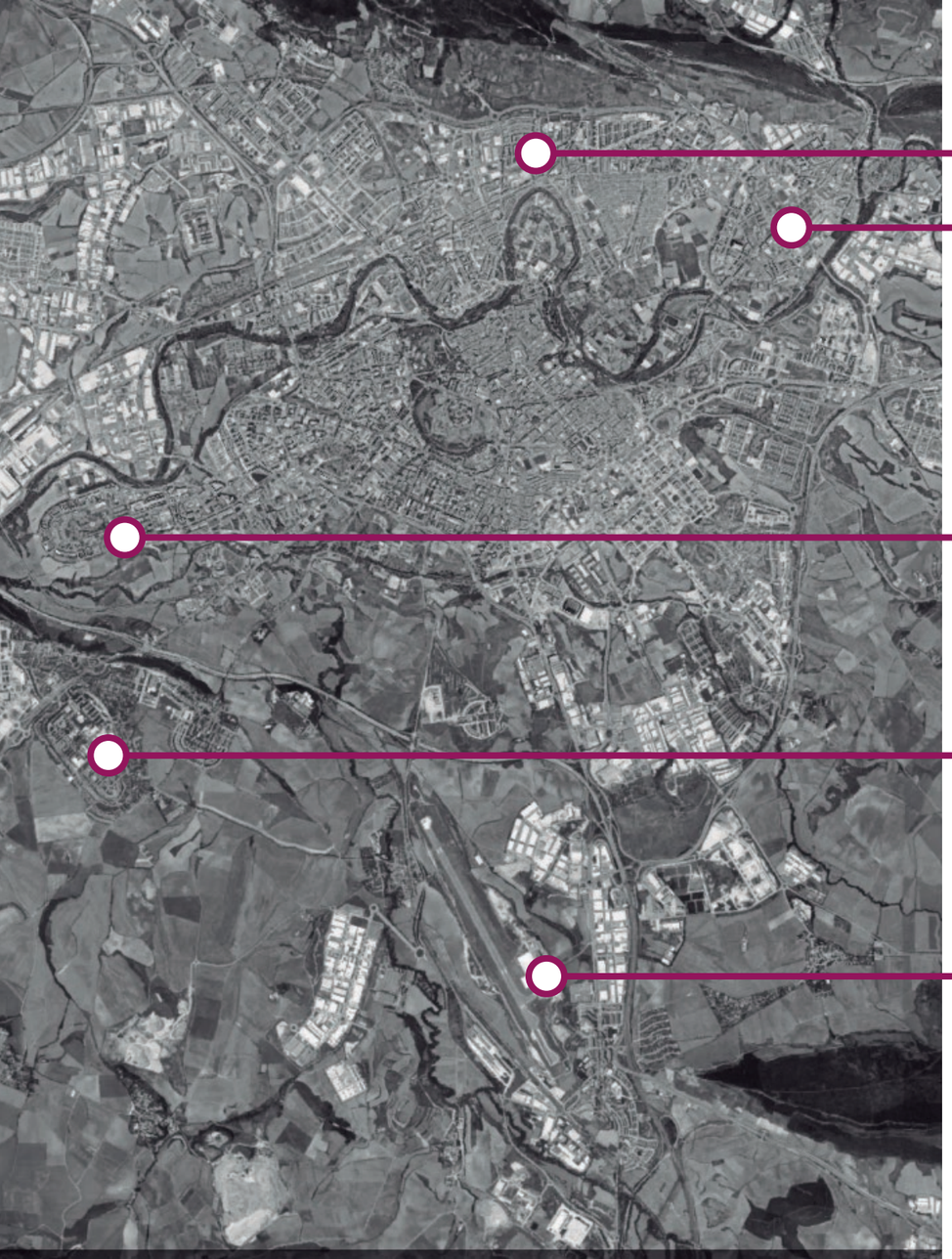
Infographic of the homeowners, associations, Kapanaburua, 3 and Agustín García, 12 in Villava's municipality.

Methodology

The purpose of this line of action has been to carry out a comprehensive energy renovation of buildings in different social districts of Navarra, specifically, in 5 previously established municipalities (Ansoáin, Barañain, Noain, Villava and Zizur Mayor). Through sustaiNAVility, a group and a management methodology by municipality have been developed to allow the investment projects to be carried out and their subsequent execution. The experiences and methodologies developed in the previous European project, EFIDISTRICT, have been taken into account.

When launching the renovation projects for private housing stock, NASUVINSA has followed the following methodology:

Step 01	Identification of intervention's scope
Step 02	Collaboration agreement between Municipality selected and NASUVINSA
Step 03	Creation of One –Stop-Shop
Step 04	Preliminary studies (including social diagnosis)
Step 05	Establish a technical model
Step 06	Establish an economic model
Step 07	Citizen communication plan
Step 08	Reference project. Execution project by each homeowners' association
Step 09	Create Execution Project Management
Step 10	Monitoring the reference building
Step 11	Global intervention project
Step 12	Joint private tender and public tender procedure
Step 13	Signed contracts and financial loan, if necessary
Step 14	Building permit and application for grants
Step 15	First official certification of the Government of Navarra and building permit
Step 16	Start of renovation works



In sustaiNAVility, Global Intervention Projects have been considered in order to improve the aggregation of investments in energy efficiency in buildings. Global Intervention Projects consist of a group of various types of buildings in a neighbourhood that come together to define an unique design for a regeneration project. This project is agreed and executed by the homeowners' associations involved in a similar way. This aggregation requires an additional effort to add a commitment to obtain a greater number of citizens, that has been carried out by NASUVINSA, and that results in a more efficient and coordinated renovation works.

An exhausted participatory process has been developed among the 5 municipalities

Regional grants

The Government of Navarra has grants for the rehabilitation of dwellings aimed at homeowners' associations. In the particular case of the Global Intervention Projects, the energy efficiency investments carried out in these buildings have received an additional financing of 10%, with a maximum cap of € 7,500 / home. Additionally, in the case of renewable investments, homeowners can take advantage of existing tax deductions.

Agreements reached

On the horizon of the sustaiNAVility project, agreements have been reached for the retrofitting of 17 residential buildings and a district heating in 5 municipalities. Specifically, 385 dwellings will be retrofitted.

Investment

M 8.63 €

Energy savings

5,48 GWh/year

Number of refurbished buildings

17

Number of refurbished dwellings

385

Presidents of the homeowners, associations, Kapanaburua 3 and Agustín García 12, in Villava's municipality.

"We are very excited, it will be like a new home. We are very grateful to Nasuvinsa and the Villava City Council, without their help this would not have been possible"

Selection of municipalities

At the beginning of the project, a public call was made in order to select the municipalities involved in sustaiNAVility and the subsequent signing of an agreement between the selected municipalities and NASUVINSA. Among them, the Villava city council was selected.

Definition of a technical-financial model by type

In Villava, 4 preliminary project's tenders were held. The objective of these contests was to obtain various technical solutions with which in order to start a partipation process where the neighbours are the cornerstone.
At the same time, a financial scheme was modeled that would make the renovation actions viable. On the one hand, thanks to the collaboration agreements, the municipalities involved have approved extraordinary Municipal Aid for low incomes families. On the other hand, thanks to Nasuvinsa, a financial framework has been established with different banking entities to offer financing to the communities of owners that agree to carry out the energy efficiency works. These are loans in which the borrower is the homeowners' association itself, so that no guarantees or personal guarantees have to be presented, which enables in reaching the renovation works' agreement.

Adoption of agreements

Thanks to obtaining a technical-financial model by type, the long participation process began.
The first step carried out was the launch event with the Villava town hall. This is the point where the one-stop shop concept is truly put into practice, where the management team plays a key role in energy rehabilitation.

The team is in all stages, from the beginning with the first informative meetings, until the execution and achievement of the requested aid. Subsequently, informative meetings were held in all the residential buildings of the area, to publicize what are the benefits of thermal envelopes. After those first meetings, agreements were reached to carry out the energy efficiency works of three homeowners' associations: Kapanaburua 3, Agustín García 12 and Agustín García 4.

Follow-up commissions

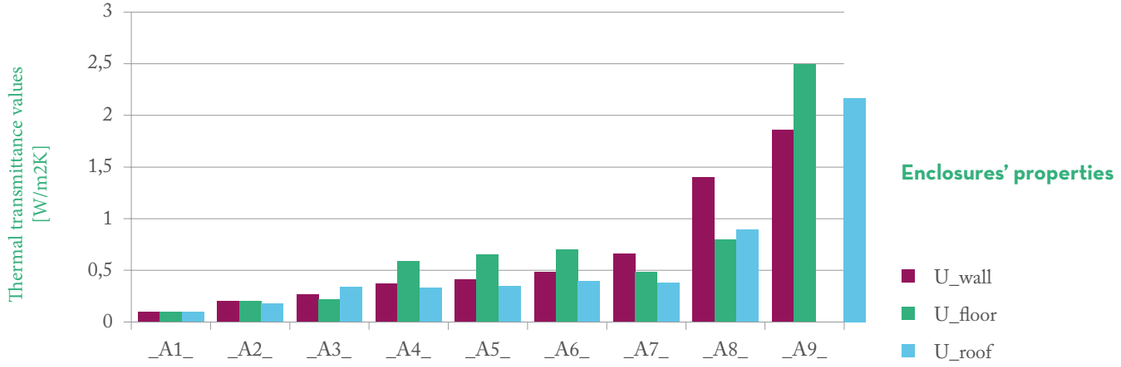
Thanks to the on-stop-shop office, numerous follow-up committee meetings have been held.
After the drafting of the execution projects for each building, the global intervention projects were drafted. It is a figure that tries to harmonize the final design of the buildings on a neighbourhood scale. Once the global intervention projects were obtained, the corresponding aid and building licenses were requested.

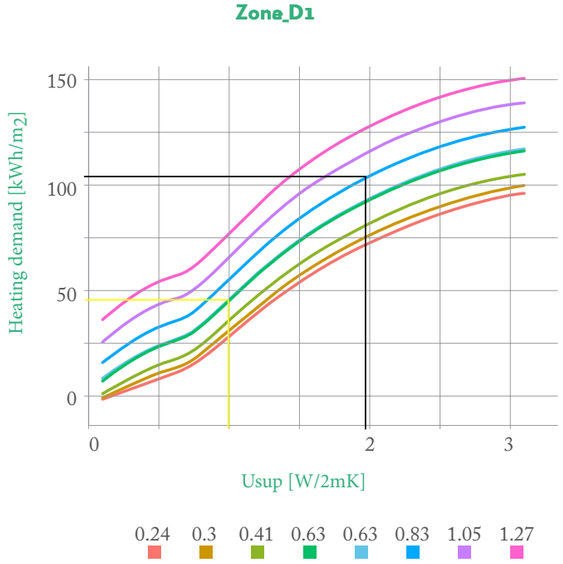
Joint tender for works

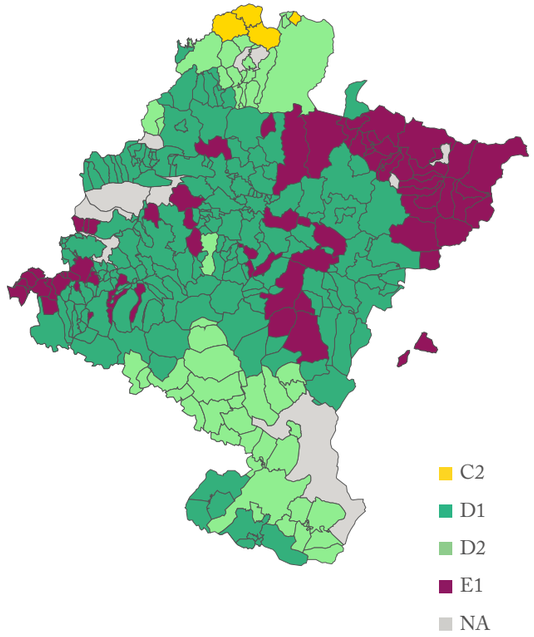
In order to obtain an economy of scale, portals were grouped to request offers to select the construction companies, through a private tender, since the final decision will be made by the neighbours. In this case, Nasuvinsa acts as an advisor, evaluating each of the offers received, and resolving any doubts that may arise for the neighbours.

Obtaining provisional aid and building permit

After the award of the works, they will not start until the corresponding building permits and provisional aid qualifications have been obtained.







05 Model for estimating energy demand in dwellings

A simplified methodology has been established to estimate energy demand in residential buildings, so that urban developers, housing companies and government technicians can use it both in the preparation of projects and in the contracting of renovation works.

The model developed allows to quickly and accurately calculate the heating demand of a residential building from a series of input data, specifically, the building's climatic zone, the envelope transmittance and the degree of air infiltration. Thanks to this model, it is possible to have an initial estimate of the impact of certain renewable energy and through an iterative process define the best option before carrying out any detailed calculation. In addition, the methodology will be very useful to define strategies and policies towards reducing energy consumption in the residential sector, and will help in making decisions about the destination of the limited economic resources available.

06
Industry and services

Industry and services, as sectors with a significant impact on energy consumption, have been among the most proactive in implementing actions to improve energy efficiency, through the incorporation of the best available technologies in equipment and processes and the implementation of energy management systems.

However, they are currently responsible for 36% of the total energy consumption in Spain and more than 40% of that of the Region of Navarra, so there is still a high potential for reducing final energy consumption and CO_2 emission. Therefore, they must continue to be a main actor in the development of actions to improve energy efficiency and the implementation of renewable energies. Not only the industries and services will be more competitive, but also they will improve their image abroad.

Thanks to the technical support provided in sustaiNAVility by AIN, the technical advisers of the companies are in a better predisposition to reach decisions regarding the implementation of sustainable investments. Actions are often not carried out due to lack of knowledge or lack of time. The fact of having the collaboration of expert personnel in the field, both for the preliminary study of the measures and for their implementation, delivers confidence to the industries.

"Our participation in sustaiNAVility project has meant the possibility of having specialized technical assistance in energy efficiency to support the implementation of the action and search for funding."

Maintenance and Facilities Engineering Manager (SKF ESPAÑOLA). ***Jorge Cerrada***

General data

Project title Replacement of the current central water cooling tower system with high-efficiency air-condensed water chillers.

Company SKF ESPAÑOLA, S.A. _ Factoría Tudela

Location Ctra. Corella, Km 3,5, 31500 Tudela (Navarra)

Background

The company is considering changing the machine cooling installation consisting of a line with cooling towers and another with chillers in order to optimize it and achieve significant savings in water and energy, as well as maintenance costs.

sustaiNAVility support

In this case, through the sustaiNAVility project, the company has been given the technical support required by the company in accordance with its needs, primarily:

- Technical assistance in the study of the economic feasibility from the point of view of the energy efficiency of the measure.
- Collaboration in the search for and access to energy efficiency aids by completing the technical documentation required in the application for mentioned aids.

Description of the improvement made

The action affects the Process Refrigeration Facility where the cold water necessary to cool the different process machines is generated.

The improvement has involved the replacement of the cooling towers and one of the chillers of the previous installation with two other high-efficiency air-cooled water chillers, including the necessary hydraulic modifications and integration of these and one of the existing ones in the new system.

Expected savings with the measure

Primary energy savings (kWh/year)	762,527
Energy savings (%)	20%
GHG emissions avoided (tCO_2-eq/year)	106.59

Financial aspects

Energy investment cost (€)	330,000.00
Aid (%)	19%

Replacing cooling installation. ***SKF Española.***

Methodology

Before sustaiNAVility, companies promoted investments in energy efficiency and renewable energies on their own. In this project, AIN has developed a methodology in order to support the industries of the region for the study and implementation of this type of measures.

Step 01 Preliminary analysis.

- Study of the historical energy sources used.
- Measurement of consumption in situ.
- Feasibility studies.

Step 02 Detailed analysis

- Energy audit.
- Project design.
- Baseline and savings.
- Objectives and guarantees.

Step 03 Project implementation

- Contract.
- Supply and installation.
- Implementation of savings measures.

Step 04 Operation and monitoring

- Operation and maintenance.
- Evaluation of energy consumption.
- Measurement and verification of savings.

Of all these sections of the implementation of a measure for saving and energy efficiency and renewable energies, those that make the greatest contribution to the project are regarding technical assistance in the following phases:

- Technical assistance through feasibility analysis of possible energy saving and efficiency measures and implementation of renewable energies as an initial step in getting to know the company to plan the different projects of the measures.
- Technical assistance in the development of an analysis of the economic feasibility of the investments necessary for the implementation of possible energy efficiency saving measures and the search for financing, including grants that improve the return on investment (technical reports, studies economic viability, etc.).
- Technical assistance in the project and execution phase.
- Technical assistance in monitoring the results obtained by defining protocols for measuring and verifying savings so that the company can verify compliance with and deviation from the project objectives.

Projects studied / Projects developed

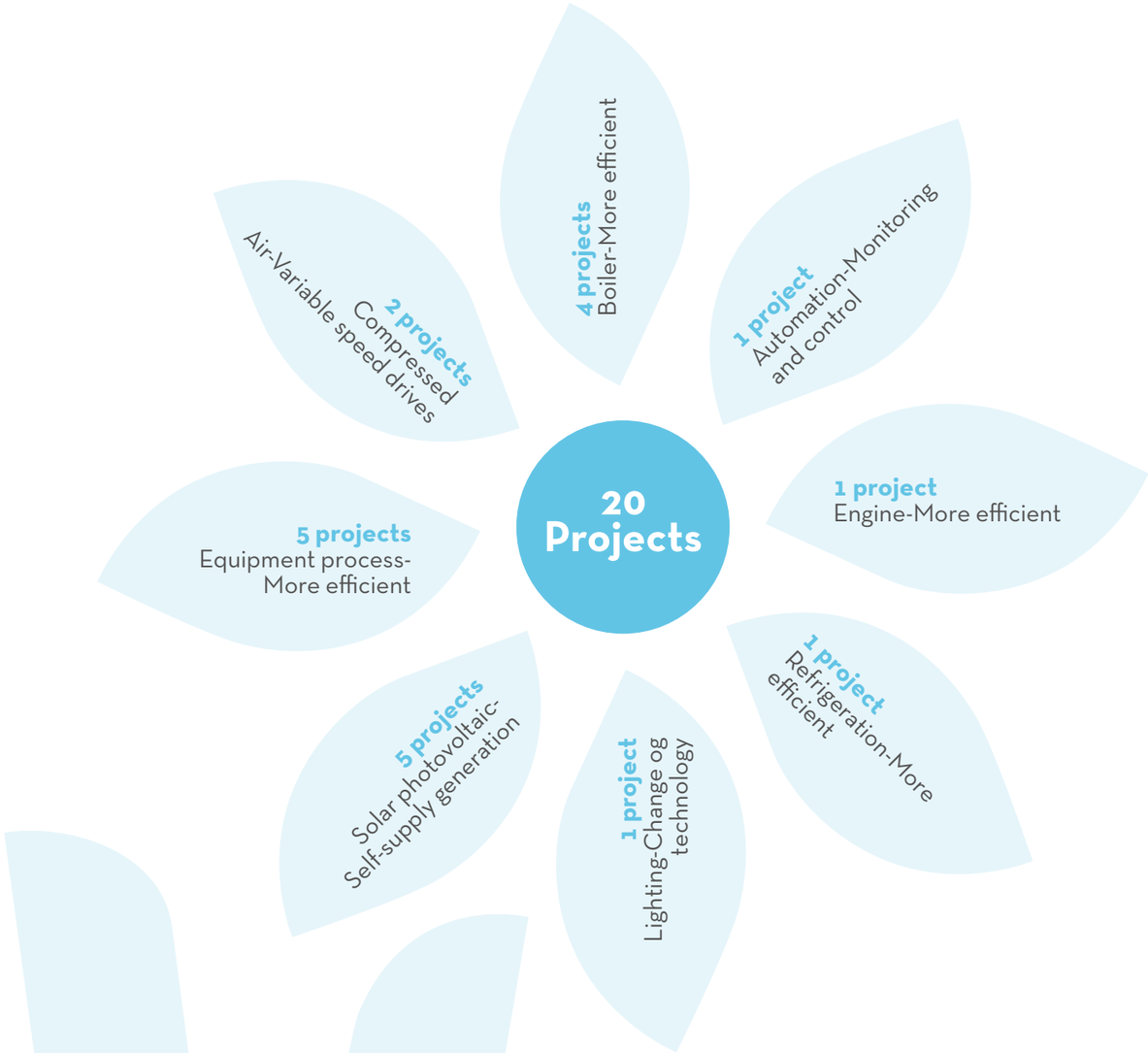
During sustaiNAVility project, 52 companies have been contacted, of which 20 technical assistance projects have been carried out. 15 of them correspond to energy efficiency and energy savings projects while the other 5 projects deal with the implementation of renewable energies, specifically, photovoltaic solar energy.

Regional incentives

Government of Navarra has announced a call for aid for energy efficiency actions for companies as well as tax deductions for the implementation of renewable energy in corporate tax.

Preliminary studies → Detailed analysis → Projects Implementation → Operation and monitoring

Number of assessments made	Number of companies contacted	Number of implemented or commited projects	Number of projects that will be developed in the future	Renewable production (GWh/year)	Energy savings (GWh/year)	Total investments (€)
20	50	10	7	0.42	22.06	**4,150,087.67**



1.1 Substitution of cogeneration engines for more efficient ones in the food industry. **Previous state.**

1.2 Substitution of cogeneration engines for more efficient ones in the food industry. **After implementation.**

3.1 Replacing steam boiler. **Previous state.**

3.2 Replacing steam boiler. **After implementation**

2.1 Substitution of a digester in batch by another in continuous in food Industry. **Previous state.**

2.2 Substitution of a digester in batch by another in continuous in food Industry. **After implementation**

Participatory process. ***Navarra Arena.***

07 Renewable energy participative projects: Public and private stakeholders

The region of Navarra is pioneer in the introduction of renewable energy installations. However, there is a lack of experience in models of public-private partnerships in the implementation and management of sustainable energy projects (distributed generation, microgrids, consumption, storage). For this very reason, a series of pioneering participative projects have been promoted in Navarra on the horizon of sustaiNAVility.

In the particular case of participative projects, they focus on all public (administrations and public companies) and private (citizens, businesses, services, industries,...) stakeholders. It is necessary to convey to them the message that everyone is important and cooperation is a must to develop new participative projects based on renewable energies and move towards a change of model based on distributed generation and collective self-consumption.

In addition, the key role of citizenship may be highlighted. To guarantee the success of participatory projects, the citizen must be an active part both in the development of the participatory process and in making derived decisions. The challenge is to promote the proactive role of citizens in the energy transition, developing social potential, starting from a model in which a part of the citizens actively participates in tasks for the benefit of the community in the energy sector. It is about empowering the citizen in energy decisions, enabling people to become a prosumer, reducing energy dependence on fossil fuels and the traditional energy distribution-transportation system.

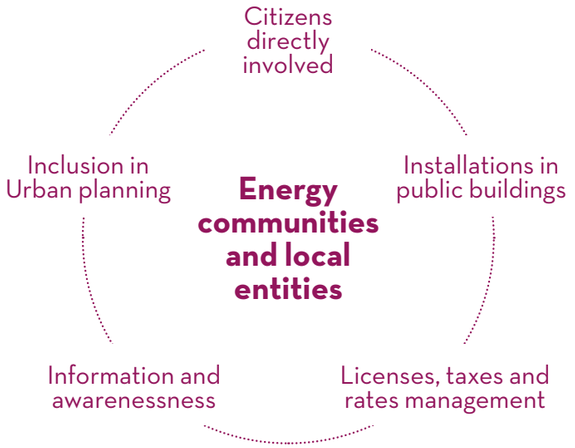
Starting a participative project is a complex process that requires time and financial effort. Thanks to sustaiNAVility, the public and private agents that will be part of the pilot participative projects have benefited from legal and technical support as well as the development of the participative cohesion process. An example of this is the hiring by the Government of Navarra of a multidisciplinary technical team in the pilot project of the "Navarra Arena" in order to provide this support.

"We combine our knowledge in legal, energy and social matters to accompany participatory training and cohesion processes that promote the creation of Citizen Communities of Renewable Energies governed by people."

Navarra Arena multicisciplinary technical team.

Methodology

The approval in Spain of the Royal Decree on electricity self-consumption in 2019, allows the development of collective self-consumption projects but restricted to compliance with a series of conditions, which implies that these projects are on a local scale. Therefore, the municipalities are the ones who are thought to lead the Citizen Communities of Renewable Energies. In the first place, municipalities inform and sensitize citizens, businesses, services and industries in order to involve in participatory processes. In addition, as part of the municipal urban planning, municipalities are asked to provide places, such as public buildings' roof, where photovoltaic installations for collective self-consumption could be set up. Professionals in these areas must take into account and facilitate the management of the different technical, regulatory and financial aspects in order to launch this type of project.



In relation to the participatory process, it must be taken into account that it is a complex process in which different legal, technical and cohesion aspects of the agents involved in the process must be resolved. Therefore, it is advisable to have the collaboration of a multidisciplinary technical team that supports in all these aspects.

Regional Incentives

Government of Navarra has made the following regional incentives available to support participative projects:

- Call for aid to municipalities:
  There is an award criterion that scores participative projects and collective self-consumption facilities. In this way, municipalities are encouraged to get involved in this type of projects.
- Tax deductions for renewable energies:
  Currently, tax incentives are available for the implementation of renewable energies, both for citizens and companies. For the specific case of participative projects, there is an additional 5% tax deduction, making it possible to reach a total tax deduction of 30%.

Pilot projects

Esparza Energy Community

The Esparza de Galar City Council is a municipality in Navarra that has promoted the Esparza Energy Community. In the first place, it has been implemented a photovoltaic installation financed partly by GNAV grants and partly by its own funds. To maximize the self-consumption of the photovoltaic installation, the City Council decided that the installation would be shared for self-consumption by its neighbours. Currently, the installation of the city council carries out shared self-consumption for 3 public buildings and 40 neighbours.

The Esparza City Council has carried out the installation with the main objective of offering energy, environmental or social benefits, instead of generating economic profitability for its own benefit. In a nutshell, it is about implementing and promoting a model of electricity generation and consumption of renewable, sustainable, environmentally friendly, shared and solidarity-based energy.

Puente la Reina- Garés Energía Community

It is a long-term project, in which in its first phase (2018-2020) the electrical energy generated by renewable facilities will be used only for municipal supply. In 2019, a photovoltaic installation was executed in the local sports center with financial assistance from the Government of Navarra. In the second phase of the project, the objective is to advance towards energy self-sufficiency in the municipality of Puente la Reina-Garés by increasing the generation of renewable and endogenous energies from the public administration itself and from the private sector of the municipality (citizens, homes, businesses, industries...).

In this way, the project described has become the spearhead of a much more ambitious project of the Municipal Energy Strategy with the aim of promoting tourism, the economic development of the municipality, the generation of local employment and the consolidation of the inhabitants, thanks to what the integral energy cycle can contribute (consumption, control, management and sustainability in energy generation). In this future project, there are two lines that characterize its development: social innovation and technological innovation.

Citizen Community of Renewable Energies Navarra Arena

Due to the lack of participative projects in the Navarra region, the Government of Navarra is directly promoting the creation of a Citizen Energy Community in an emblematic place in our region, the "Navarra Arena" pavilion, a multipurpose building that can host events cultural, sports, recreational and corporate at a regional, national and international level. The idea is that public bodies make available spaces that serve for the implementation of renewable energy facilities, as the origin of the future constitution of the Citizen Community of Renewable Energies of public-private collaboration.

For the creation of the Citizen Community of Renewable Energies, in 2020 the following participative process has been developed, thanks to a multidisciplinary technical team hired:

Step 01 Awareness and limits of the process

Step 02 Dissemination on social networks and recruitment engagement of community members

Step 03 Participatory process

Step 04 Return and dissemination of the process

Finally, a commitment has been reached between the following public and private stakeholders for the constitution of the community once the installation of collective self-consumption has been executed:

8 owners.

2 municipalities.

1 university.

1 regional administration.

1 privately managed public assistance center.

1 restaurant establishment.

The following link shows a video of the development of the participatory process of the Navarra Arena project:

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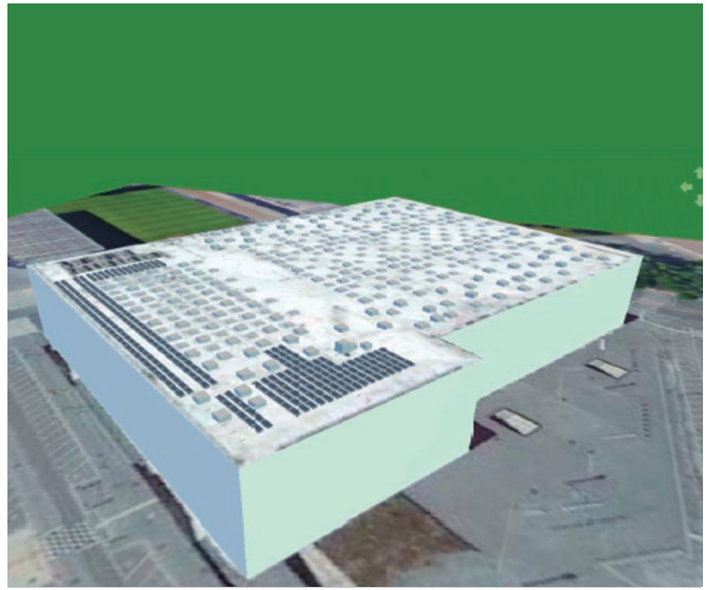
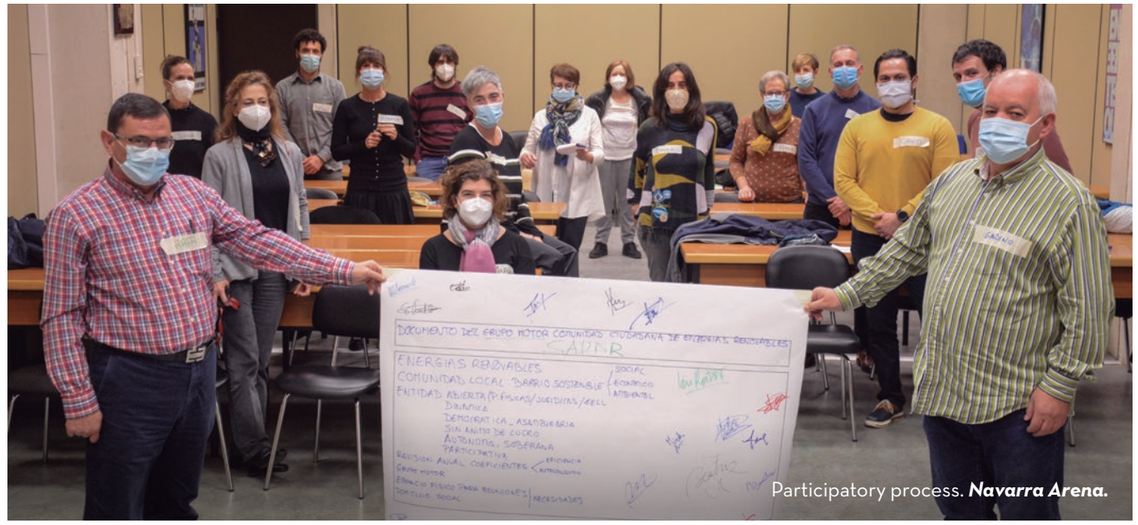
https://youtu.be/rFcK002JITY



Participatory process. ***Navarra Arena.***



Participatory process. ***Navarra Arena.***

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Replication in other regions

Any European region can apply the methodology developed in the sustaiNAVility project adapted to the characteristics of its territory. From the sustaiNAVility project we are open to collaborate and support any initiative in this regard. The methodology taken into account is set out below:

- Commitment of public administrations through the approval of plans and/or laws that support sustainable projects. In the specific case of Navarra, the regional energy plan, Navarra Horizon 2030, has been approved and work is being done on the approval of the regional law on climate change and energy transition.
- Information, benchmarking and networks within other regions.
- Discussion with regional actors.
- Identification and establishment of measures:
- Non-financial: agencies, instruments, etc.
- Financial: traditional and / or innovative
- Monitoring plan

By developing this methodology, energy and environmental sustainability will be promoted while obtaining social benefits such as the fight against energy poverty or the increase in comfort conditions.

II Navarra Self-consumption Congress (2020)

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Cross-cutting actions

During the project, different cross cutting actions have been developed in relation to training and technical training, public awareness, and regarding the future replication of the project. Therefore, it is a question of maximizing the impact of investment actions by improving the skills of each of the target groups in the field of energy efficiency and renewable energies, which has been framed in coherence with the Energy Plan of Navarra 2030.

Training and capacity building actions

In the first place, awareness days have been developed for users and consumers with the aim of educating them in the use and management of energy efficiency technologies. Particularly, these actions have been aimed at city councils, companies, social entities, user cooperatives, neighbourhood communities and the general public. The idea is to increase dissemination and citizen involvement in order to achieve a greater number of Sustainable Investments. It is noteworthy that a total of 24 actions have been carried out compared to the 4 initially planned, in which a total of 544 people who have participated.

Secondly, different training actions have been designed for both at the best technical execution of the projects and at the agents who have taken part in them. These actions have been designed for different agents and suppliers involved in sustainable energy projects, from auditors and designers of technical projects until building managers and real estate agents. Specifically, 15 training actions have been carried out compared to the 5 initially planned, with the participation of 685 participants.

The training activities have dealt with the following topics:

- Self-consumption
- Passivhaus
- District heating
- Thermography workshop
- Nearly zero energy buildings (NZEB)
- Domestic aerothermal equipments
- Energy plans for municipalities
- Blower door workshop

Thirdly, technical guides for users, consumers and experts, as well as for business models of local Energy Services Companies, have been prepared and disseminated. The objective of these guides is training and awareness in energy sustainability focused on the target audience.

All guides are available on the sustaiNAVility website through the following link:

https://www.sustainavility.eu/en/publications/

Finally, a group of local financial entities has been contacted in order to find out if their products and services are adapted to the needs of sustainable projects.

Replication and scaling-up actions

Firstly, the analysis of innovative financial plans has been carried out in order to acquire knowledge about the existing financing alternatives and innovative technologies exposed. It should be noted that these innovative financial plans analyse how investments are financed, what is the cost structure, what type of technological innovation has been chosen, the degree of user involvement, the joint work capacity of the different regional actors as well as the degree of acceptance of innovations.

Secondly, the analysis of innovative energy solutions focuses on the implementation of energy efficiency and renewable energy measures in buildings, cities and industry. The challenge of reducing energy consumption by integrating renewable energy or high-efficiency technologies is an effective way to reduce the emission of greenhouse gases. Since certain energy efficiency solutions are already on the market, after years of commercial effort, there is a growing need to explore innovative energy solutions that bring new light to reduce energy consumption. These guidelines will show how to implement energy efficiency solutions in industry, buildings and the urban environment, constituting a reference guide for technicians such as municipal civil servants, energy specialists in industries and engineering companies.

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Conclusions and future challenges

Generally speaking, it can be said that sustaiNAVility project has met the expectations initially set, mobilising sustainable investments for a value of € 21.6 million compared to the initial € 16.3 million. But the most remarkable thing is the development of a methodology to promote energy efficiency and renewable energies in very different types of sustainable projects with different promoters: regional / local public investments, investments in public housing, investments in private housing in social neighbourhoods, investments in companies. On the one hand, this methodology can be applied in Navarra in order to help achieve the objectives set in the Navarra 2030 Energy Plan. On the other hand, this methodology can be replicated in other territories at different levels (local, regional and European).

In relation to regional / local public investments, public Authorities must lead the change of model by directly implementing sustainable investments and promoting participative projects of public-private collaboration, promoting shared self-consumption by renewable sources as well as distributing generation. In the specific case of Energy Communities, citizens empowerment is a key factor regarding citizens' engagement with the aim of energy transition.

Regarding investments in public housing, work will continue on the renovation of the public housing stock in accordance with the methodology developed. Not only is it necessary to implement sustainable projects, but also to train tenants in the correct use of homes to reduce energy consumption. Social benefits have been reached combating energy poverty and improving the comfort conditions of users. Finally, it would be highly recommended to use the model for estimating energy demand in homes developed by CENER in future public housing renovations' tenders.

In relation to private housing investments in social neighbourhoods, the challenge is to continue applying the methodology developed not only in the 5 municipalities of the sustaiNAVility project, but also in other similar ones within the Navarra region. It must be highlighted the figure of Global Intervention Projects that define a unique and consensual design for the regeneration project of the same neighbourhood. In this way, an aggregation of investments in energy efficiency in buildings is achieved, which results in a more efficient and coordinated renovation process

Regarding investments in industry and services, there is still much to do, given that they are responsible for 40% of Navarra's energy consumption. Many times, due to ignorance or lack of time, companies do not promote sustainable investments. It is about establishing a relationship of trust between the companies and AIN, to give them support in the different stages, from the preliminary studies to their implementation and follow-up activities. As a result of the implementation of the investments, the companies will increase their competitiveness as well as their image of corporate social responsibility, with the benefits that this entails.

Government of Navarra will continue to provide regional incentives through subsidies or tax deductions to promote the development of different types of sustainable projects. Regional incentives must be designed so that public funds have a greater energy, economic, environmental and social impact. Therefore, they must be subjected to a continuous assessment of the results obtained.

Finally, one of the challenges of the sustaiNAVility project is to ensure that both energy solution innovations and financial plan innovations are used in the development of new sustainable projects. It is about publicising and making available the most advanced technologies as well as financial instruments. They are designed specifically for this kind of investments. Therefore, the technology and financing instrument can be chosen based on the needs.

To sum up, the challenge of sustaiNAVility project is to replicate the methodology elaborated and show the good practices acquired along the whole region and in other territories, involving all the stakeholders, achieving countless economic, energy, environmental and social benefits.

“sustaiNAVility is not the end, but the beginning of other similar projects and activities in Navarra”

sustaiNAVility Team

Acknowledgement

To municipalities, non-profit entities, homeowners, tenants and industries that have been actively involved in mobilising sustainable investments under sustaiNAVility.
To all those who have participated in the cross-cutting actions of the project.
In addition to the rest of the agents involved.

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