Rural Decarbonisation Observatory

Annual summary report 2022

2 November 2022

This document provides a summary of the main conclusions obtained by the Rural Decarbonisation Observatory in its research carried out during the course of 2022. A more detailed version of these works can be found on the website of the Rural Decarbonisation Observatory.

https://observatoriodescarbonizacionrural.com

What is CIDE?

CIDE is the **main Spanish association of small Electrical Energy distribution companies,** formed by around **200 firms** and serving **more than two million people** in around **half a million homes** in **rural Spain**.

CIDE mainly carries out its activity in **rural municipalities** with less than 5,000 inhabitants across virtually the entire national territory, enabling it to play an **active role in rural Spain, making a decisive contribution to the social and industrial development of this environment, creating employment and promoting territorial cohesion**.

What is the Rural Decarbonisation Observatory?

In light of the lack of specific public indicators with regard to the decarbonisation process in rural areas and its contribution to national objectives, **CIDE created the Rural Decarbonisation Observatory** under the slogan ***Observe to Communicate***, with the main aim being to carry out an **evaluation and monitoring of the decarbonisation process in rural areas,** compiling and analysing data in a systematic, recurring manner in order to generate relevant, useful information about the road to decarbonisation, **helping to ensure that what is known as *Empty Spain* does not fall behind in said process.**

Observe to Communicate

The Rural Decarbonisation Observatory seeks to:

- **Compile and order the information** required to identify how the rural environment contributes to decarbonisation nationwide.
- **Boost the rural environment as a focus for opportunities in the field of electricity**, as an essential pillar on which to base the decarbonisation and electrification of the economy.
- **Promote and measure the level of compliance with the targets** set by the Government on **energy decarbonisation and the demographic challenge in rural areas**.
- **Face the challenges and requirements of the Spanish rural environment** in terms of depopulation, the ageing of the population, the shortfall in infrastructures and public services and the lack of employment.
- **Identify the main initiatives promoted in rural areas for decarbonisation,** such as investments in networks, the move towards renewable sources, the inclusion of the electric vehicle, etc.

Contents

The Rural Decarbonisation Observatory: two years observing and communicating

For the second year running, CIDE is drawing up this report with a view to providing relevant information about the monitoring and evolution of the rural decarbonisation process, lending visibility to the gap which is opening up between Spanish rural areas and the rest of Spain.

Under the slogan ***Observe to Communicate***, the Observatory's aim is to carry out an evaluation and move ahead with the decarbonisation process in the rural area.

The Observatory seeks to **provide information to drive forward the key strategic lines to achieve climate objectives.**

With this in mind, with a view to measuring the contribution of the decarbonisation and electrification of rural areas, the Observatory **is once again making information available** which may be useful **to the agents involved**.

This report summarises the **main conclusions obtained during this second year of research of the Rural Decarbonisation Observatory**, based on the **monitoring of the indicators defined by the latter**, observing and studying any new possible trends.

Therefore, the aim is to **lend visibility to the need that has arisen in rural areas to have support and financing instruments adapted to the rural environment**, as well as **providing up-to-date, useful data to allow the main national strategic lines on decarbonisation to be driven forward.** With this in mind, **the aim is to further boost the main ecosystems which characterise the roadmap to decarbonisation in Spain**, where rural areas can play a relevant role, making a notable contribution to national objectives.

This analysis has identified **new opportunities and challenges for the rural area which need to be considered.** An appropriate response to these aspects will undoubtedly allow the sustainable growth of rural areas, with a green, sustainable economy that reduces the current gap to the rest of Spain.

Main ecosystems analysed in the Observatory:

- Raising awareness and citizen's cohesion
- Electric vehicle
- Self-consumption and Energy Communities
- Electricity storage
- Degree of electrification and efficiency with regard to energy uses
- Generation of electricity from renewable sources

A brief description has been provided below of the type of information and data obtained and processed for the main **six ecosystems** defined by the Observatory**:**

Raising awareness and citizen cohesion:

The participation and involvement of all relevant agents is key in a decarbonisation process. **The context in which they live and their perception is key when guiding specific actions to drive decarbonisation forward.**

This ecosystem **allows relevant conclusions to be drawn about the relationship between the current socioeconomic context in rural areas and the raising of awareness among citizens** about the importance of the decarbonisation and electrification of the economy.

Society as a whole has a vital role to play in this decarbonisation process.

Electric vehicle:

Rural areas encompass the majority of Spanish territory. **The success of the transport electrification process in Spain requires the active participation of rural areas, not only in the deployment of the corridors of the charging points which connect the different points of the national territory, but also based on the active participation of its population.**

With this ecosystem, the **evolution of the penetration of the electric vehicle** in rural areas, the **gap existing with non-rural areas,** the **perception of rural society** in light of the challenges and opportunities which derive from the electrification of transport and the **opportunities** that emerge around the consideration of rural areas in an appropriate transport electrification process, both at rural and national level.

A charging points implementation strategy to suit the usage needs of the population is vital for the success of the process. To this end, rural areas can play a vital role.

Self-consumption and Energy Communities:

With regard to last year, **this ecosystem has been expanded, bringing together data and trends with regard to the development of Energy Communities in rural territory**.

The current economic context in Europe, characterised by the increase in prices as a result of energy becoming more expensive, has increased the interest in self-consumption and the deployment of Energy Communities.

The specific characteristics of rural areas, such as the existing types of dwelling and buildings, produce a particularly advantageous scenario for the deployment of self-consumption and Energy Communities.

Electricity storage:

For yet another year, it has been observed how **the storage of electrical energy has very limited use in the rural area.**

Technologies such as electricity storage have great potential, combined with self-consumption installations and the use of the electric vehicle charging infrastructure, as it can allow the application of demand management mechanisms by consumers and boost the efficiency of this type of installation.

In the near future, **flexibility services will play a vital role in the decarbonisation process**. Technologies such as those processed in this ecosystem will be vital in the light of relevant growth in the demand for electricity, promoting the decongestion of electricity grids during demand peaks.

Technologies like electricity storage have great potential, but their use is still very limited.

Degree of electrification and efficiency with regard to energy uses:

However, there is still **major inequality between rural and non-rural areas with regard to polluting energy uses**. The efficient electrification of certain consumption in rural areas would not only actively contribute to the decarbonisation process, but it would also allow greater cohesion with the rest of Spanish territory.

As can be observed in the report, this aspect takes on greater relevance in certain Autonomous Communities where specific actions which help to reduce this inequality need to be accelerated.

There is significant scope for action to reduce polluting energy consumption in homes and in economic activities in rural areas.

Generation of electricity from renewable sources:

The rural area already plays a vital role in the decarbonisation process owing to its great potential in terms of renewable resources.

Nevertheless, **this process needs to be inclusive, allowing a return to rural society**.

Furthermore, the electricity system will require clear signs that incentivise an improvement in current electricity infrastructures, with a view to enabling the greater use of all the rural renewable potential. These measures involve the

implementation of suitable regulatory developments which incentivise said process.

Rural areas actively contribute to decarbonisation nationwide, though they do not receive a sufficient return from the rest of society.

The well-deserved role of rural Spain in the decarbonisation process

Over the next few years, with the **progress of decarbonisation, increasing electricity consumption is expected at State level**, in line with other neighbouring countries**,** brought about by the **expected increase in new uses of electricity** such as, for example, the electric vehicle and the growing electrification of other energy consumption, which would meet the ambitious decarbonisation objectives of the Integrated National Energy and Climate Plan (PNIEC)[1].

This increase in electricity consumption entails the need to **increase electricity generation capacity**[2], to which end it is vital to have sufficient appropriate spaces for the development and installation of renewable generation plants.

[1] Integrated National Energy and Climate Plan (PNIEC) 2021- 2030, 20 January 2020.

[2] The PNIEC has set a renewable electricity generation target of 74% of the total by 2030.

Rural areas are key in order to respond to the challenges required in this decarbonisation process where, thanks to their characteristics, boasting extensive areas with low population density, there is great potential for accommodating the production of a significant part of all electrical energy of renewable origin.

However, if **this decarbonisation and electrification process** is to take place, **it must be inclusive and sustainable relative to rural areas**. The benefits derived from electrification and decarbonisation must generate progress in rural areas which have traditionally been disregarded in favour of non-rural areas; otherwise **we will be facing the possible inaction of rural agents owing to the lack of incentives which may actually be put into place.**

The rural sector plays a vital role in the process to decarbonise the economy.

It is also worth pointing out that **an integration of the rural agents in this decarbonisation process would also involve greater investments in the development, modernisation and digitisation of electricity grids in rural areas**, which would allow the achievement of a dual objective, the greater evacuation of renewable energy to the rest of Spain and the achievement of more efficient integration of the rural agents into a more efficient electricity system and with greater supply quality, allowing rural companies and families to enjoy new, more sustainable energy consumption solutions (such as, for example, the electric vehicle) or its participation in the electricity market itself (through self-consumption, new demand management solutions, the Energy Communities, etc.).

Electricity systems in rural areas must adapt to the needs of the energy transition.

In this regard, it is worth highlighting some of the main **factors that will be key to the decarbonisation and electrification of rural areas**:

- **The evolution to more renewable electricity generation.** Rural areas are home to the majority of renewable installations in Spain. In addition, these areas make the most of the waste produced by activities like agriculture or livestock breeding. However, it is not only of interest to make the most of these optimum renewable installation conditions, but it must also be carried out in an inclusive manner with regard to rural citizens, to produce an improvement in the quality of life of the inhabitants of these regions.

The electrification of the energy demand of society. Inhabitants of the rural area represent around 16% of society[3], meaning that a significant part of energy consumption is carried out in these regions, including polluting consumption. The replacement of these types of consumption is essential for the electrification and decarbonisation process of society and, in turn, the digitalisation of consumption is vital to increase energy efficiencies without modifying the habits and customs of the older population. In this regard, **the digitalisation of networks** is vital in order to adapt to the new requirements both in terms of consumption and generation, optimising the costs of the electricity systems that connect generation to demand, taking the conditions of rural areas into account.

The energy efficiency drive. Against a backdrop of energy transition, with the assistance of digitalisation, energy efficiency is essential. The actions carried out in rural areas are necessary for the efficiency of supply and the optimisation of consumption in rural areas where electricity production is close to consumption. The adaptation of installations and the introduction of energy efficiency elements into rural companies and homes will be crucial.

The degree of socioeconomic cohesion. To reduce the inequality in social development facing rural areas, the electrification of their economy in a manner which is consistent with the rest of Spain is vital. Public and private investment and support in rural areas will be crucial in order to reduce the gap between the villages and small towns of Spain and major cities.

Energy transition seeks a common national target: to achieve decarbonisation in all its regions and communities in a balanced manner.

In view of the fact that the majority of greenhouse gas emissions derive from sectors like transport, industry, electricity generation, livestock breeding and agriculture, energy consumption in homes and businesses or waste[4], **it is crucial that society is wholly involved at all levels, from the public administrations and private companies to the citizens themselves.**

[3] According to an analysis by the Ministry of Agriculture, Food and Fisheries, December 2021.

[4] According to the national inventory of atmospheric emissions (MITECO, 2020).

Public institutions and the private sector are currently making a significant effort to achieve said decarbonisation, but this has not been sufficiently effective for the achievement of decarbonisation targets. For example, the Next Generation funds of the European Union are assigning major economic amounts to solutions that promote decarbonisation. Energy transition and electrification will not be achieved until the end consumers of energy can be mobilised and they become the main actors in this process.

To this end, more communication and dissemination are undoubtedly required.

With this in mind, in rural areas **the support received is limited.**

The great potential that rural areas have in terms of electricity decarbonisation is not being exploited.

"Sometimes people don't know what they want until you show it to them".

(quote from the co-founder of Apple, Steve Jobs)

Technological progress forces society to constantly adapt and update their knowledge. **It is in rural areas where it is more difficult to achieve this progress that significant attention should be focused**.

The Observatory created by CIDE seeks to lend visibility to rural areas with a view to highlighting the importance of such areas and endeavouring to ensure that they are taken into account, in light of its specifications, in State decarbonisation and electrification policies.

DESCARBONIZACIÓN RURAL
OBSERVATORIO - cide

Raising awareness and citizen's cohesion in the rural area: the vital role to be played by society

Owing to the expected **increase in electricity consumption** over the next few years along with **significant technological progress**, including technologies **that allow decarbonisation to be accelerated**, there has been a radical change in society in the last century. In this regard, **the electrification of society has become an essential element** in order to progress in the decarbonisation process in Spain.

However, **there are still relevant socioeconomic barriers** which make the energy transition process difficult.

With this in mind, rural areas are constantly fighting inequalities, either on the basis of gender, age or economic inequality.

Despite their undoubted capacities, **the rural population experiences major difficulties in developing its personal, professional and family projects** owing to the conditions of inequality caused by the socioeconomic dynamics of rural areas which are mainly affected by depopulation, the ageing of the population, the shortfall in infrastructures and the scarcity of employment, among others.

There is a great opportunity for rural areas to benefit from this decarbonisation process, not only from the perspective of ecological sustainability, but also in terms of economic and social development.

Ecological transition must **help to reduce these inequalities** of *Empty Spain*, **making the most of its strategic position** in the development of the various ecosystems that allow said transition.

At present, rural areas already make an active contribution to this process with the export of renewable electrical energy which is consumed in urban areas and their neighbouring regions.

Around 40%[5] of the energy produced in Spain is from renewable, rural origins. **In 2021, around 87%[6] of the installed power of renewable energy in Spain was located in rural areas**.

However, **the potential of rural areas is even greater** in terms of sustainable energy uses, self-consumption, Energy Communities, energy efficiency, charging infrastructure, etc.

This potential must, in turn, become a development opportunity for the rural area, promoting employment and sustainable, integrating growth in more disadvantaged areas.

In this regard, **an appropriate, inclusive strategy with rural areas**, which allows the most to be made of aspects like their strategic location throughout national territory, their access to unlimited natural resources such as the sun and wind or their physical conditions **would undoubtedly contribute a wide variety of options to the diversification and modernisation of the economy of more disadvantaged rural areas, as well as helping to speed up the national decarbonisation process**.

In this regard, **electrification may allow, to a great extent, the development of new business models, the drive to create new jobs, the greater provision and**

[5] Data pertaining to the renewable generation installed in areas classified as rural in Spain and the hydraulic and pumping generation installed in the national territory in 2021. The generation data included between June and December is provisional.

[6] Data pertaining to the renewable generation installed power in areas classified as rural in Spain and the hydraulic and pumping power installed in the national territory in 2021.

accessibility of infrastructures and services, something which may undoubtedly benefit the rural environment which is traditionally isolated and has demographic shortfalls.

With appropriate support adjusted to rural needs, their inhabitants and companies can obtain major benefits from the electrification and decarbonisation process.

The electrification of the economy seeks to **replace fossil fuels with electricity in those uses where this is economically feasible,** with a view to achieving national decarbonisation goals. **This requires the participation of all agents** throughout Spain.

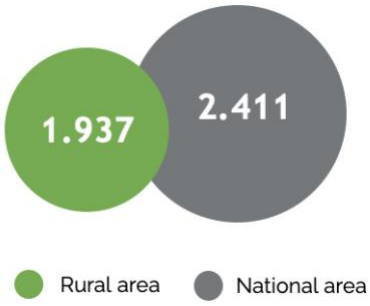
In this regard, rural areas do not have sufficient resources to electrify their economies and take advantage of the benefits of this and so they **still have an energy supply system which is very often dependent on fossil fuels**. This aspect, along with the issue of disinformation, may hinder this decarbonisation process to a large extent.

96% of rural homes do not intend to electrify other less sustainable energy consumption

For yet another year, electricity consumption in rural homes is still 20% lower than the Spanish average.

Electricity consumption of domestic users (kWh per year/meter)

Pertaining to the mean consumption of users with the 2.0TD tariff in 2021



It is crucial for all relevant agents in the rural area, and not only the institutions, but also the business fabric and the actual inhabitants of the rural area, **to be aware of the need for this transition and to have the means and the desire to suitably change their energy habits.**

"There is a driving force more powerful than steam, electricity and atomic energy: desire".

(quote from the German physicist Albert Einstein).

Accordingly, **resources and information play an essential role in order to take action in this regard**, requiring the greater involvement both of citizens and the rural business fabric, mainly made up of sole traders and small and medium-sized companies.

The resources, information and communication provided in rural areas are not sufficient nor appropriate.

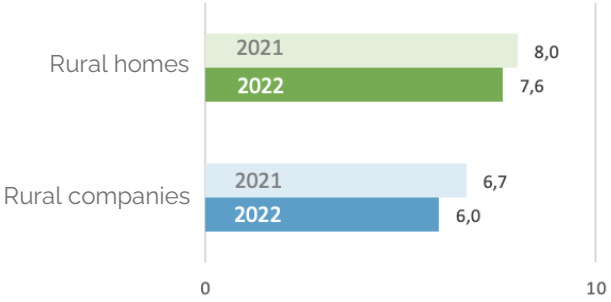
In this regard, **some data from the surveys** carried out both on rural companies and homes **demonstrate some worrying aspects with regard to raising awareness in rural areas about the decarbonisation process or the scant active participation observed in these areas.**

The surveys show worrying data as regards raising awareness or the participation of rural companies and families in the decarbonisation process.

In this regard, **concern about decarbonisation has decreased in rural areas** compared to the previous year. **This aspect has become more apparent in the business area**, where the challenges of activities with low margins must essentially be focused on economic aspects.

Concern about Greenhouse Gas emissions

(Values from 0-10, where 10 denotes the most



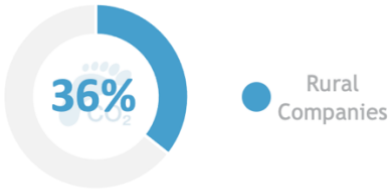
Only **1 out of every 3 rural homes**, according to the surveys, **take part in measures** to reduce their carbon footprint.

As regards **SMEs and rural sole traders**, according to the surveys, **only 36% are aware of their carbon footprint and only 3% take part in the Carbon Footprint Register, with only 2% taking measures to reduce their carbon footprint, with almost zero participation in projects related to the absorption of Carbon Dioxide.**

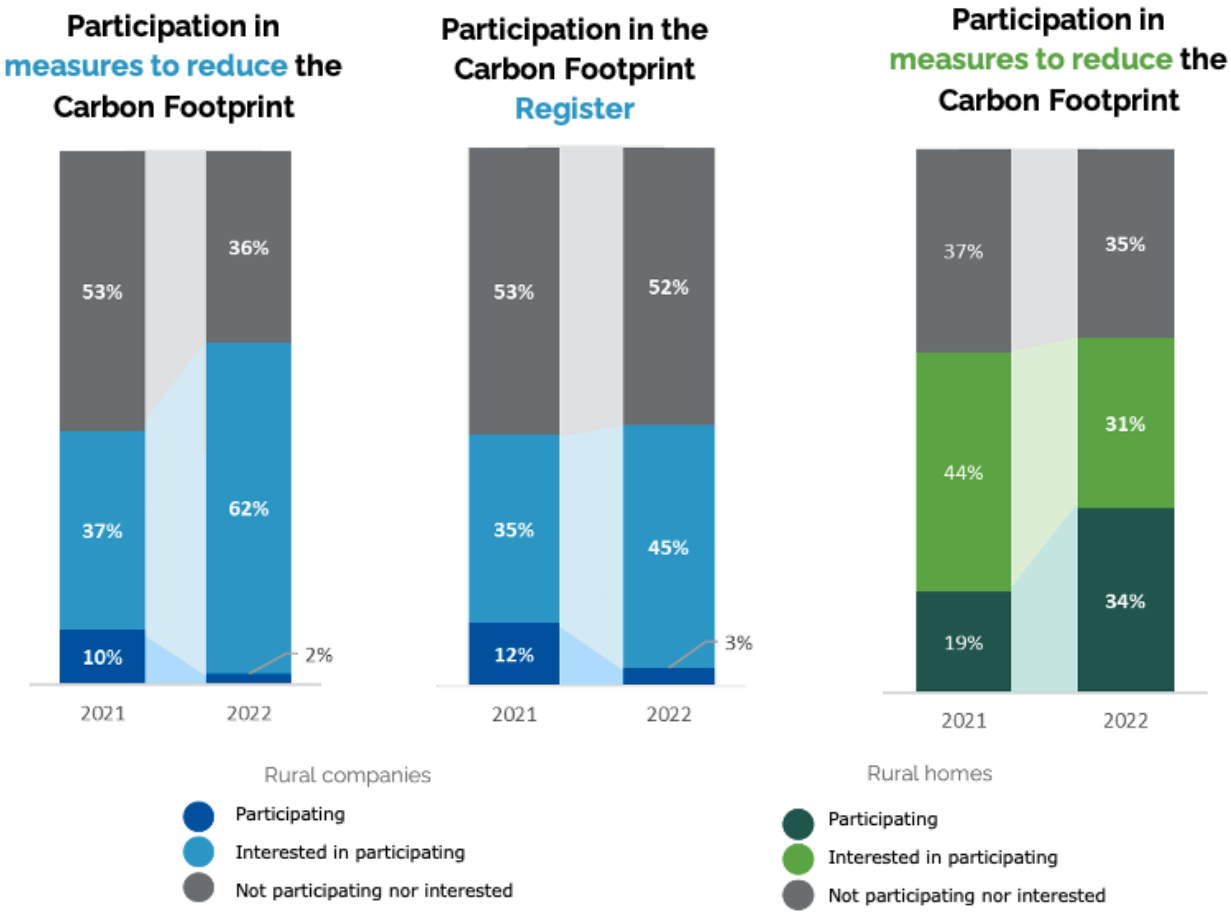
This data shows a very unfavourable evolution in the rural business area, with businesses which have low returns in an increasingly more complex economy which affords little space to invest in aspects from which no revenue is received.

This is why **the business fabric in rural areas clearly needs incentives, support and subsidies adjusted to its needs so that this transition can be undertaken.**

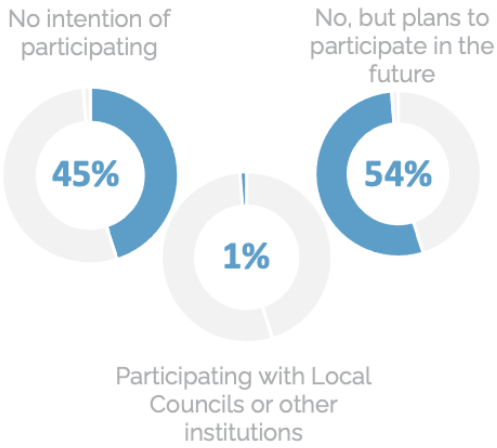
Knowledge of the carbon footprint in rural companies



2 out of every 3 rural homes do not play an active role in measures to reduce the carbon footprint, whilst rural companies which do not participate make up 98% of the total.



Participation of rural companies in other projects related to the absorption of Carbon Dioxide.



Despite the fact that rural areas represent a high degree of concern for decarbonisation, measures are not being implemented in which their inhabitants and companies have their own space to participate.

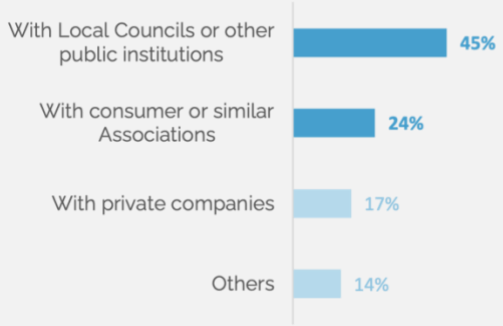
Despite the fact that there is a limited degree of participation, particularly in rural companies, there is increased interest in taking part in this type of initiative in rural areas.

Although local councils and public institutions represent the greatest source

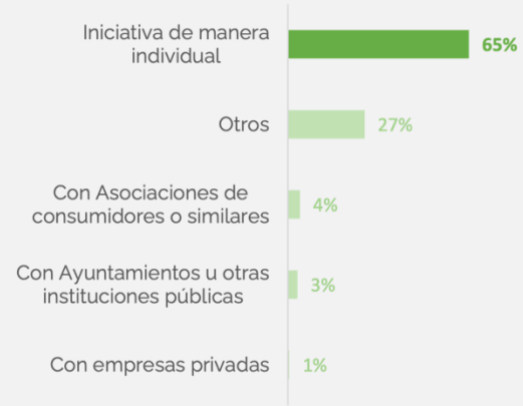
of support for rural SMEs and sole traders, it is still insufficient and does not reach the majority of rural inhabitants. In the case of **rural homes, it is the latter which, on their own initiative, have decided to take action and carry out measures which allow a reduction in their carbon footprint**.

Degree of support received by rural companies and rural homes from agents in initiatives which allow a reduction in Carbon Footprint

Almost 70% of the support received by rural companies comes from Local Councils and Consumer Associations



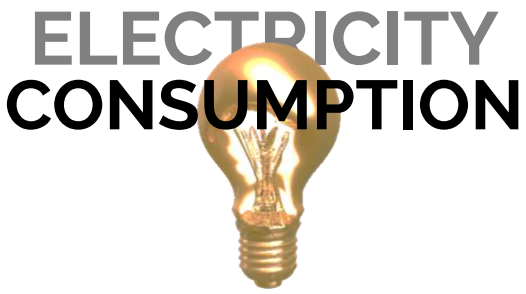
More than 60% of the support received by rural homes derives from their own initiative.



Making available public information, data and useful resources, accompanied by dissemination processes suitable **for all** rural agents who wish to play an active role in the decarbonisation process **is key**.

Making more useful information available to the rural area is key in the decarbonisation process. There's still a lot of work to do.

In this regard, **the rural area maintains a relevant degree of disinformation about its electricity consumption.**



More than half the rural homes interviewed are unaware of the value of their contracted power, and 65% are unable to clearly explain the increase in their electricity bill during the last year[7]. This, combined with the fact that these homes **have not been able to gain widespread access to specialised advice in this regard**, increases the problem. **Advice in this regard was only received last year by 3 out of every 10 rural homes**.

[7] According to information from OMIE (March, 2022), the electricity price hit an all-time high in Spain in 2022 with 575€/MWh. Data consulted on 23 October 2022.

The majority of the rural business fabric and population are still unaware of relevant information about their electricity bills.

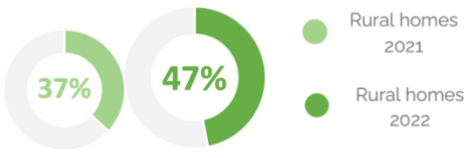
In the same vein, **more than half of rural sole traders and SMEs are misinformed about the increase in their electricity bills during the last year** and they have scarcely any access to specialist advice. Over **the last year, only 2 out of every 3 of these SMEs and sole traders received advice**

Despite the limitations in the knowledge about their electricity bills, there is some positive evolution, compared to the previous year, with there being greater knowledge by rural homes.

DEGREE OF KNOWLEDGE ABOUT ELECTRICITY

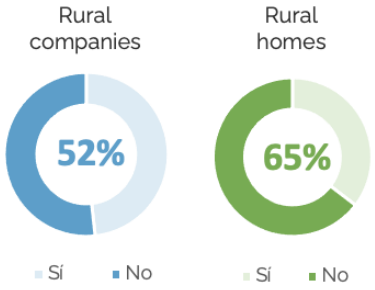
Rural homes who are aware of their contracted power

Compared to last year, 10% more homes are now aware of their electrical power



Knowledge of increase in amount of electricity bill

More than 50% of rural companies and more than 60% of rural homes don't really understand why their electricity bills have increased.



Rural homes advised about the cost of their electricity bill

Compared to last year, the homes advised about the cost of their electricity bill increased to a very limited extent.

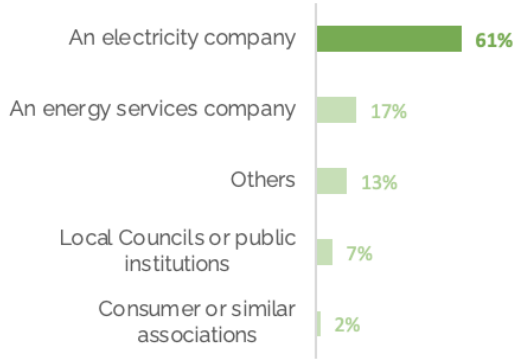
Rural companies advised about the cost of their electricity bill

Only 22% of the rural companies surveyed were advised about the cost of their electricity bill

ENERGY ADVICE

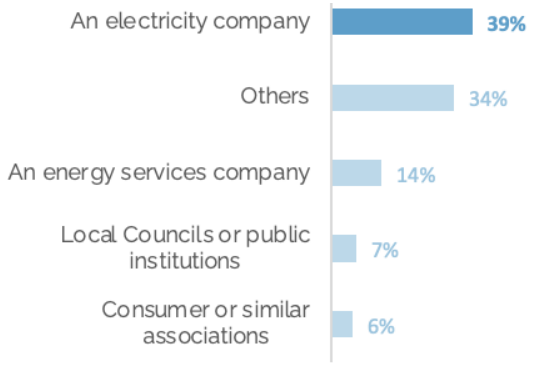
Agents who offered advice about energy to rural homes

The main agent who offered advice on energy to rural homes were the electricity distribution companies.



Agents who offered advice about energy to rural companies

The main agent who offered advice on energy to rural companies were the electricity distribution companies along with other types of advice received from private advisers and consultants, in the main.

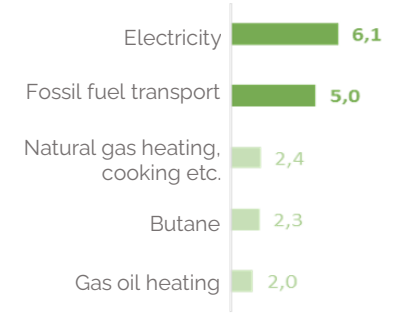


An inappropriate information strategy could be generating mistaken ideas among consumers.

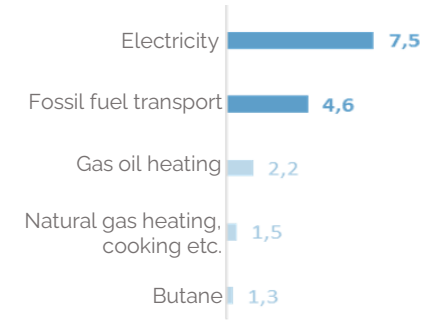
At present, electricity consumption in rural areas is perceived as one of the main energy costs, higher than the cost of fossil fuel for transport. The other fuels such as natural gas, butane or heating are secondary.

Relevance of energy consumption for the energy bill

Rural homes



Rural companies



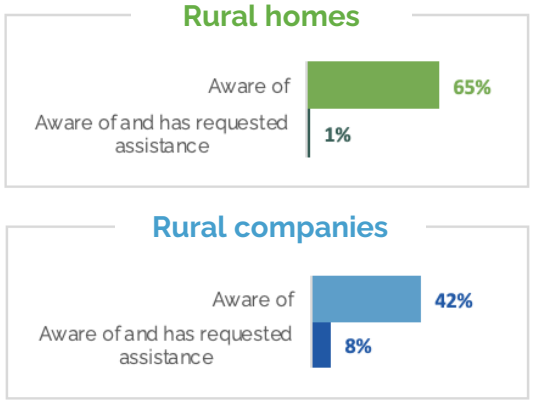
One of the aims of the Observatory is **to ensure the follow-up and evolution of the data analysed to highlight which measures need to be taken** and, furthermore, to properly convey this information to rural society, in such a way as to drastically reduce territorial inequality and to positively boost energy transition in rural areas. It seeks to provide useful information to the rural society which makes a positive, effective contribution and mobilises actions that allow the barriers which currently slow down the energy transition to be broken down.

It is a source of concern that, **as rural areas have great potential for the installation of technologies which promote rural decarbonisation and electrification**, along with the **large amount of subsidies available** to attain the climate objectives of decarbonisation, **they cannot be taken advantage of owing to the complexity involved in the application and concession process, as well as the limitations perceived by rural inhabitants with regard to the access to the information and advice offered by public institutions and administrations**.

The difficulties found in rural areas can be confirmed by the ***European Fund NextGenEU*** initiative and its transposition in Spain based on the *PRTR* [8], (Recovery, Transformation and Resilience Plan) because, although the majority of the population is aware of the existence of this fund, generally speaking, **the majority of the rural population does not access this type of subsidy owing to the complexity involved in its application process, in the main.**

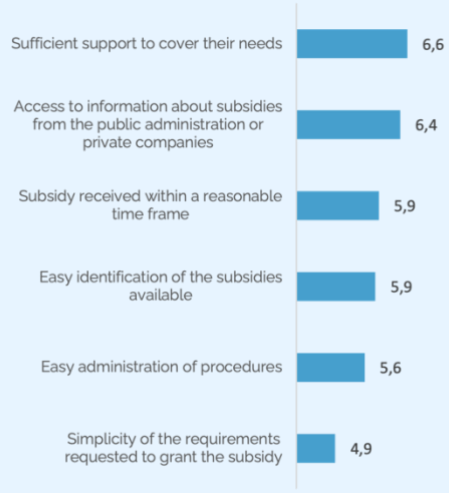
Knowledge of the *Next Generation European Funds*

8 out of every 100 rural companies requested a subsidy related to the *Next Generation European Fund*, with this being just 1 out of every 100 in the case of rural homes



Mean score of 5.9 in the subsidy application process by rural companies

(values from 1-10, where 1 is the least satisfied and 10 the most satisfied)

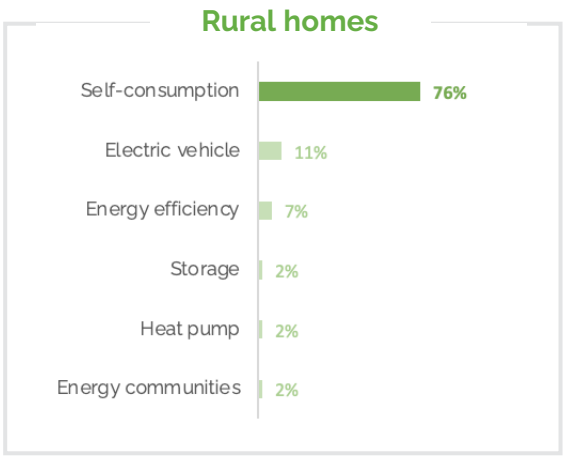


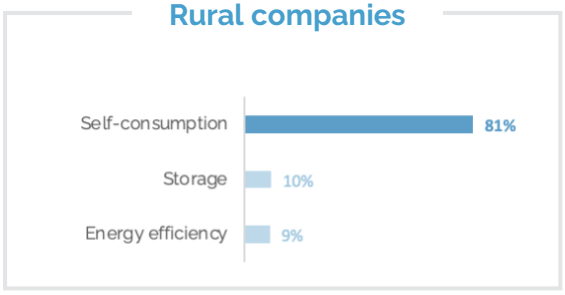
[8] Recovery, Transformation and Resilience Plan.

The surveys carried out on rural companies denGeneration European Fund.

In this regard, **the type of subsidy applied for has been limited, despite the fact that there are numerous programmes associated with different technologies** and those associated with self-consumption are those requested most among those surveyed.

Types of these subsidies requested





The electric vehicle in rural areas: Is there an appropriate strategy?

The sector with the greatest relative proportion of GHG emissions[9] is transport (27%)[10].

In this regard, **the decarbonisation of transport involves the development of more sustainable mobility** throughout Spain which **incentivises**, among other aspects, the **electric vehicle**, just as the public institutions have begun to set in motion in recent years.

Taking into account rural areas in this transition will be essential, not only because it will be vital for **territorial structuring through the electric vehicle charging structure** which connects the main urban centres, but also because **failure to take them into account would exclude around 20% of all national**

[9] Greenhouse Gases

[10] According to the national inventory of atmospheric emissions (MITECO, 2020).

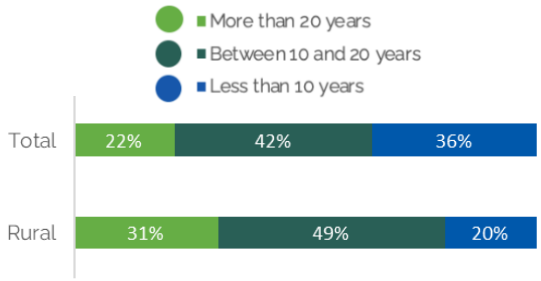
vehicles and 16% of Spanish people from this transition[11].

This requirement is further increased by the ageing of the vehicles held in rural areas where 80% of vehicles which could be electrified are more than 10 years old, with less efficient vehicles, increasing the level of emissions and particles emitted into the atmosphere.

An opportunity has emerged for the electrification of aged rural vehicles in light of their expected renewal in the next few years.

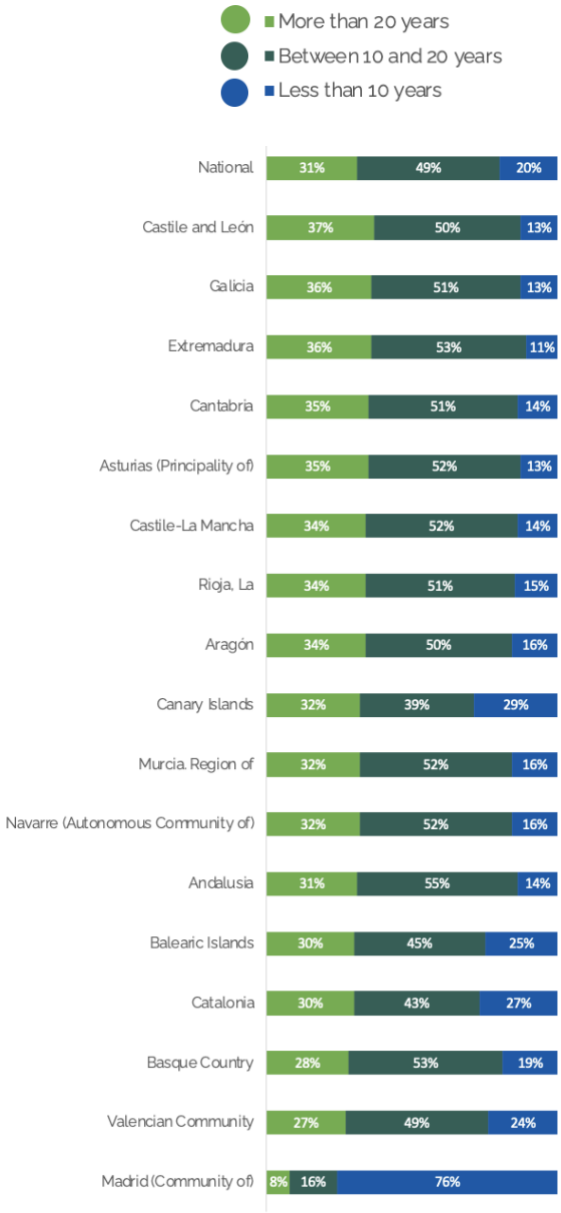
Age of the vehicle fleet which could be electrified

80% of rural vehicles are more than 10 years old compared to around 65%



In this regard, during 2021, nationwide there was an increase in the number of electric vehicles by around 37,000 units, reaching around 162,000 electric vehicle units[12].

Age of Spanish rural vehicles held

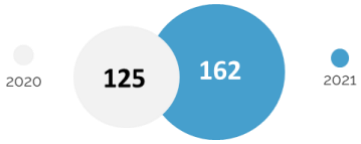


[11] Rural population data. Study by the Ministry of Agriculture, Food and Fisheries: Demographics of the rural population in 2020.

[12] According to the DGT as at 31 December 2021.

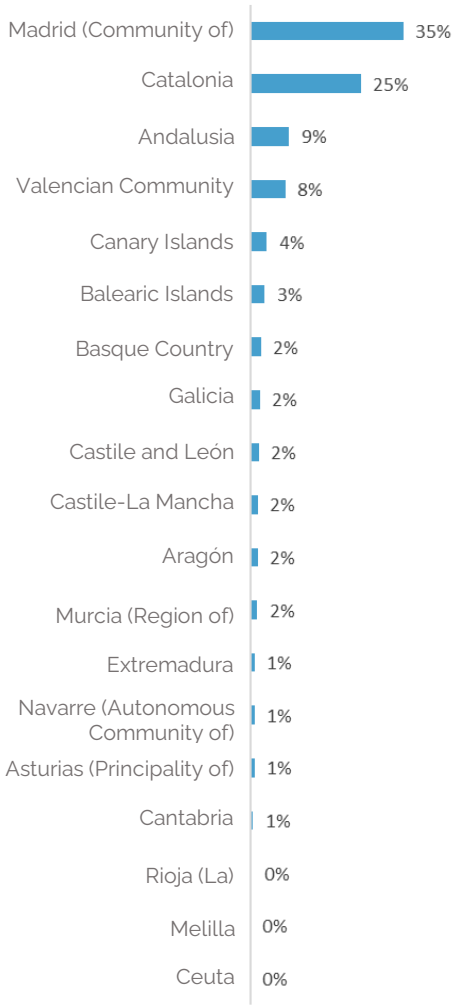
Number of electric vehicles in Spain

(units in thousands)



Distribution of total electric vehicles in Spain

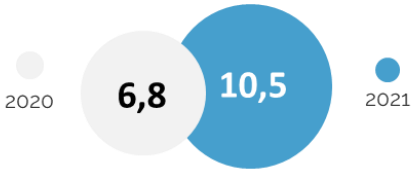
Distribution by Autonomous Community

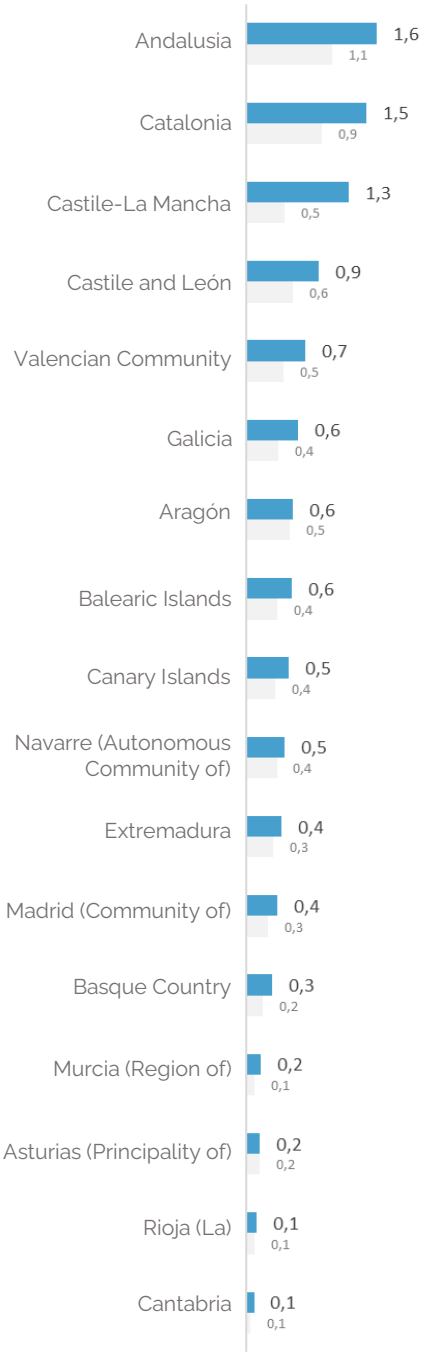


However, this evolution is unequal in rural areas which is lagging behind the rest of the country.

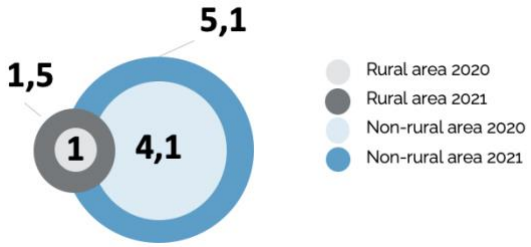
Number of electric vehicles in rural areas by Autonomous Community

(units in thousands)





Electric vehicles for every 1,000 vehicles



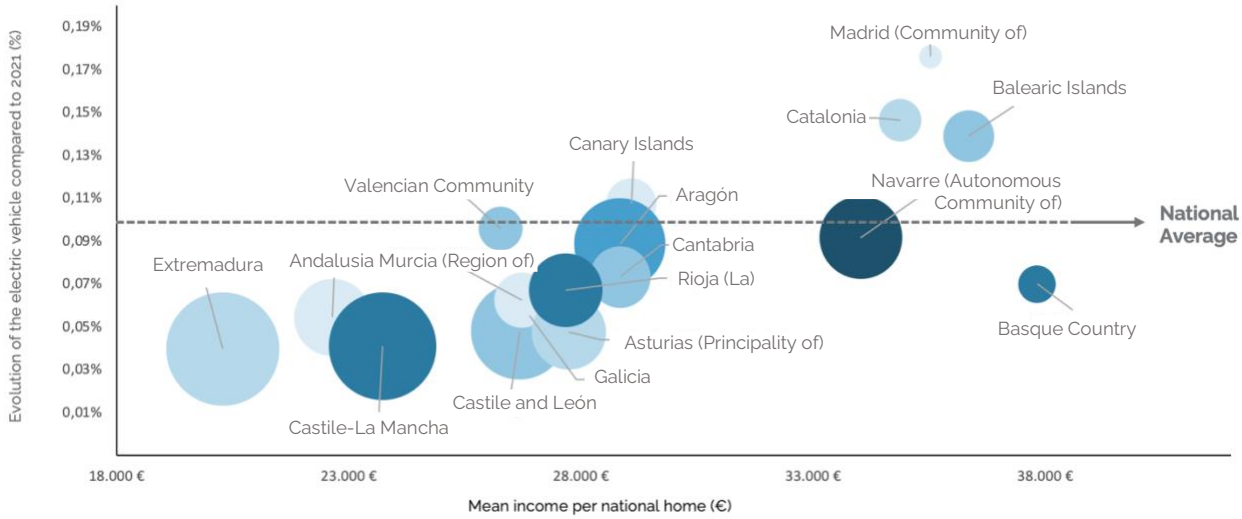
More than 90% of the growth in electric vehicles in Spain has occurred in non-rural areas, particularly in those areas with the greatest purchasing power.

Rural areas, where income generally tends to be lower, undoubtedly experience more difficulties in terms of access to the electric vehicle and its necessary infrastructure.

The graphic below also shows how the penetration of the electric vehicle in those Autonomous Communities with larger rural populations and with lower income is clearly below the national average.

Evolution of the electric vehicle (national data)

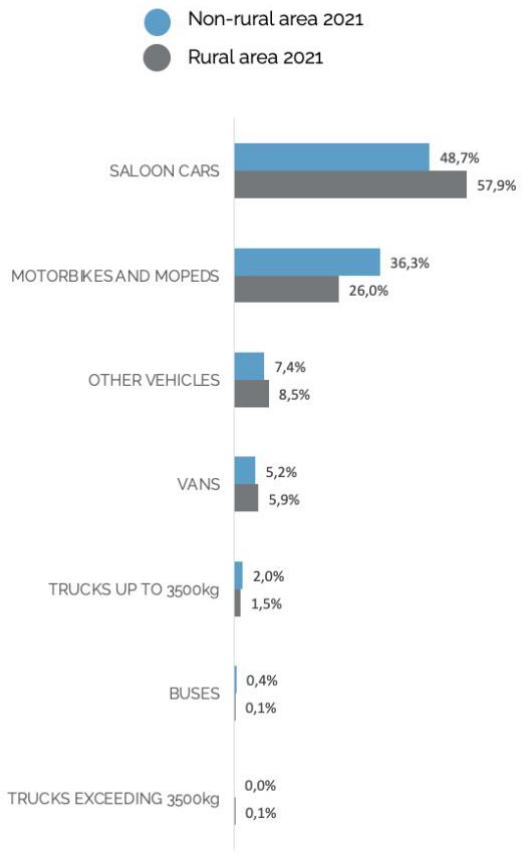
Threefold relationship between the *Evolution of the Electric Vehicle*, *Income per home* and the *Percentage of rural population* by Autonomous Community (the larger the bubbles, the higher percentage of rural population).



The penetration of the electric vehicle **is focused on saloon cars** and these are the type with the **largest relative proportion in the ecosystem of electric vehicles**, particularly in the rural area (58% in rural areas and 49% in non-rural areas), followed by motorbikes and mopeds, which account for around 26% of the total electric vehicles owned in rural areas, compared with 36% in non-rural areas.

Number of electric vehicles by vehicle type (2021)

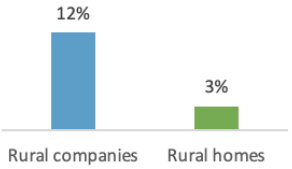
(in relative terms)



According to the surveys carried out, this **growth, in turn, is unequal between rural homes and rural companies,** with a greater economic capacity and access to financing.

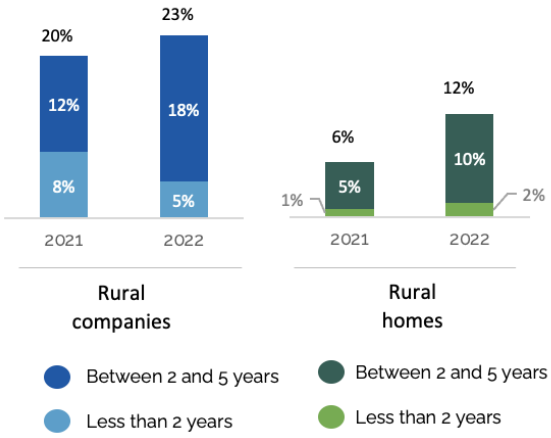
Availability of electric vehicles in rural areas

1 out of every 10 rural companies has at least one electric vehicle in its fleet, whilst only 3 out of every 100 rural homes has an electric vehicle



What's more, this situation is more of a concern when it is identified that **very few of those surveyed who do not have an electric vehicle state that they have no intention of acquiring one in the next few years** and of those who do, the majority will do so in the next 2-5 years.

Evolution of the intention to purchase an electric vehicle over the next few years in rural areas

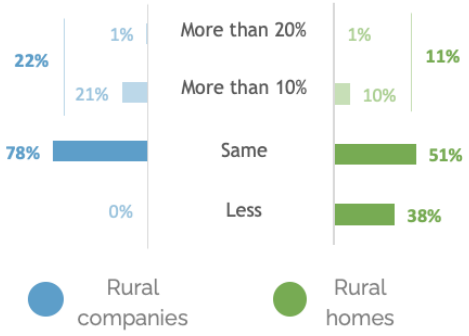


Around 1 out of every 10 domestic users would be proposing the acquisition of an electric vehicle, with this metric doubling in the case of SMEs and sole traders in the rural environment.

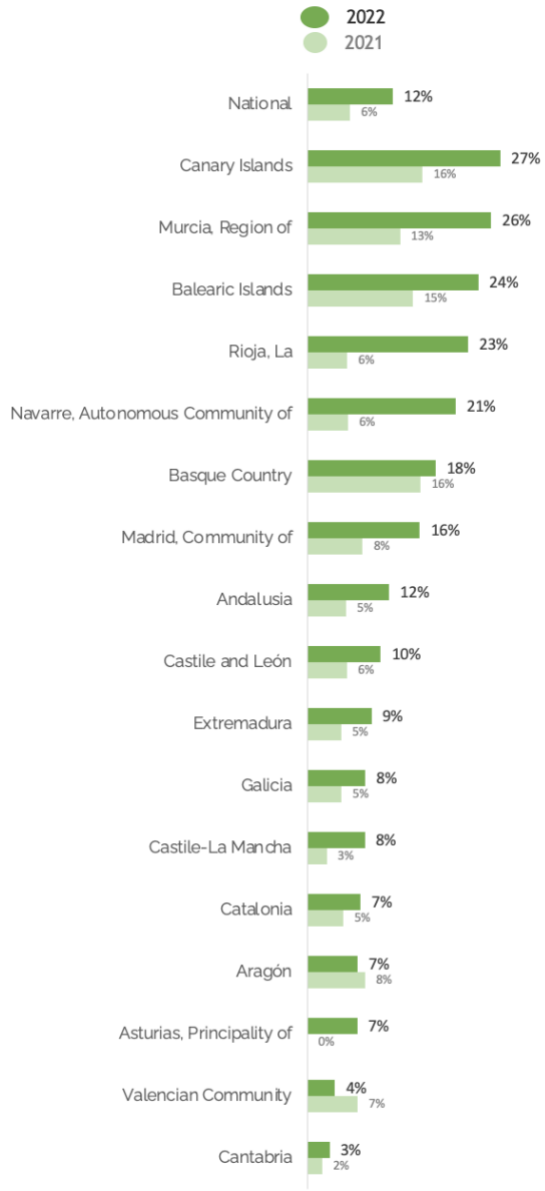
The perceived limitations in their use, the lack of an appropriate perception about the benefits deriving from their use and the higher initial cost compared with a conventional vehicle would seem to be **putting a brake on the deployment of the electric vehicle, limiting it even further in rural areas**.

The vast majority of rural users would not invest a single euro more in an electric vehicle compared with what they would pay for a conventional one.

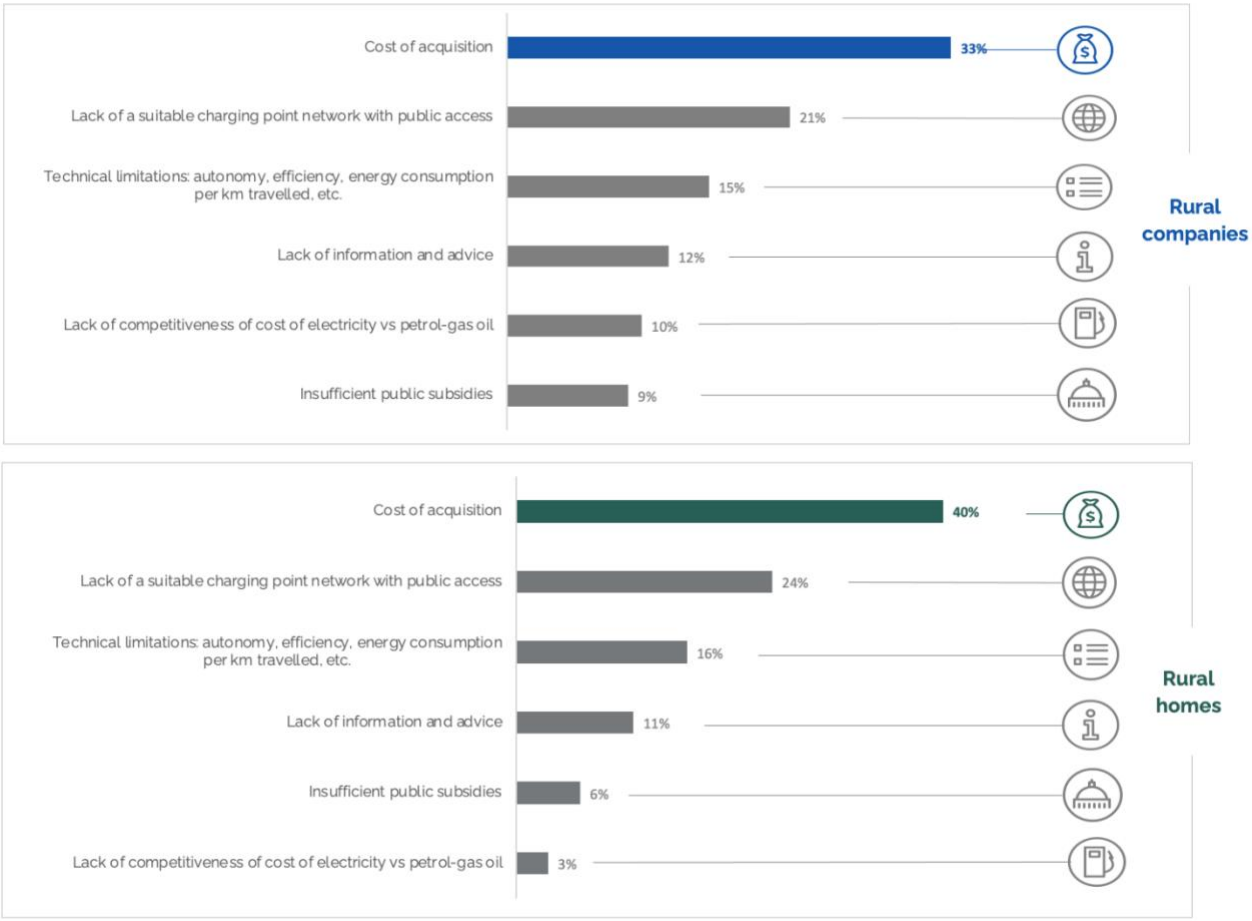
Extra initial investment to be made by rural companies and families on the purchase of an electric vehicle compared to a conventional vehicle.



Intention to acquire an electric vehicle in rural homes



Main obstacles identified in rural areas to making an investment in an electric vehicle



Although the growth in electric vehicles is expected to continue in 2022, the figure remains well below the target of 5 million electric vehicles set by the Government for 2030.

However, in view of the requirement that all vehicles registered in Europe must be carbon neutral by 2035, the growth prospects of the electric vehicle industry have improved in all areas and so, in view of this obligation, **the manufacture and use of mass quantities of electric vehicles** is expected in the near future.

Rural areas need to make the most of this opportunity and, with this in mind, they must have the resources and support of the public administration to boost and incentivise its development. In particular, **by finding a solution to the main obstacles faced by rural companies and the rural population.**

In rural areas, the main obstacle identified with regard to access to an electric vehicle is its cost, followed by the lack of public infrastructure.

Several elements have been identified below with regard to which measures need to be taken which will allow the rural area to join the modal change to electric mobility.

Charging points:

Implementation of deployment strategies which consider the potential of rural areas.

Spain has more than 12,000 charging points for public access[13] and more than 30,000 in total[14], **a figure well short of the 100,000 that the Government had set for 2023[15],** and what's more, of the 250,000 charging stations deemed necessary by multiple agents for 2030, in order to meet a demand for 5 million electric vehicles.

However, there is the risk that this deployment of charging infrastructure will not sufficiently meet the overall strategy and not take the needs of the rural population sufficiently into account.

CHARGING INFRAESTRUCTURE

The deployment of charging points must follow a strategy which not only considers the number, but also their location and expected use.

The use cases of the charging infrastructure will be vital, both to **determine the technology to be implemented and the location of this infrastructure**. It fails to make any sense to install rapid chargers in homes and slow ones at service stations.

The new charging technologies allow power to be managed more efficiently by users, optimising electric costs, from consumption to network planning.

Smart charging technology, which uses data connections between the electric vehicle, the charging operator and the distribution company regulates the charging power in accordance with the network capacity, allowing the management of the quantity of energy intended for each connected vehicle.

Furthermore, **bidirectional charging technology** places the users at the centre, allowing them to charge and discharge the electric vehicle, affording the option of

[13] According to ANFAC statistics, 2021.
[14] According to the Electromaps portal, 2022.
[15] According to Integrated National Energy and Climate Plan (PNIEC) 2021- 2030.

powering their homes or supply network using the electric vehicle battery.

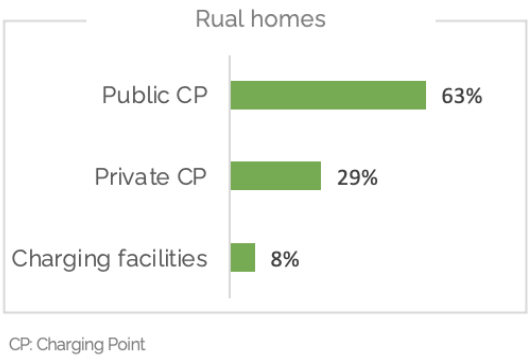
In this regard, the majority of those surveyed who have an electric vehicle in rural areas use public charging points and there is also limited use of private infrastructure, so **there is great potential for installing public charging infrastructure in rural areas.**

There is great potential for installing public charging infrastructure in rural areas

The trend with regard to the use of public charging and charging stations by rural citizens has remained relatively stable compared with the previous year, when 7 out of every 10 citizens with an electric vehicle used these infrastructures.

Around 7 out of every 10 rural citizens who have an electric vehicle use the public charging infrastructure and charging stations.

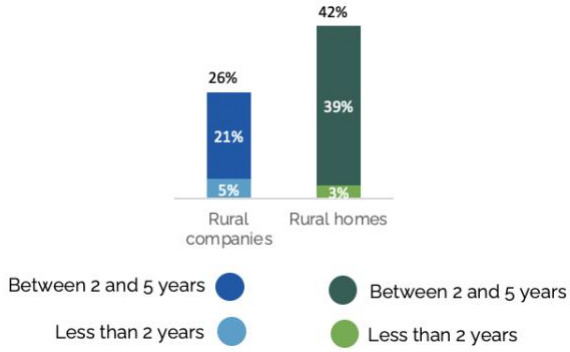
Electric vehicle charging points used most by rural families



CP: Charging Point

42% of electric vehicle users intend to install a private charging point over the next 5 years.

Intention to install private charging points



Another key factor to be borne in mind for the effective deployment of the charging infrastructure is the location of the chargers which **must be placed in strategic areas** so they can be adapted to the needs of users.

Availability of public charging infrastructure nearby

At present, only 29% of those surveyed in rural areas have public charging infrastructure near their homes.

In these cases, the mean distance to these service points is around 3 km, well above the mean distance from an urban public charging point, which is less than 1 km.

The closure of many service stations in rural areas after the pandemic is making it increasingly difficult to access fossil fuels.

This represents a **great opportunity for the deployment of electric chargers in rural areas,** as the necessary electric infrastructure is largely available and it will merely need to be installed.

The deployment of chargers in rural areas will not only benefit the inhabitants themselves, but also the rest of the population.

With the appropriate implementation of charging points in rural areas, all those citizens who wish to make long-distance journeys can do so with their electric vehicle. Managing not only to promote the transition to the electric vehicle, but also helping to increase the flow of tourism in rural settlements owing to stop-offs made by travellers. In this way, **a contribution may be made to improving the economy of rural areas** and reducing the existing inequality when compared with the rest of Spain.

In this regard, at **present, normative development is pending the possibility of the distribution companies being able to serve as the holders of the infrastructure for charging** electric vehicles in those cases in which there is no interest to private initiative. **Its development**, without a shadow of a doubt, **could unblock developments in rural areas which could be critical in the configuration of the charging infrastructure map of Spain**, but which, in all likelihood, in the current context, are of no interest to private initiative.

Price of electric vehicles derived from the high cost of batteries:

Provide specific subsidies which adapt to the needs of the rural area.

Mobility needs in rural areas are different from those of the rest of Spain, with a shortfall in resources, infrastructures and public transport services.

The latter means that, **in rural areas, it is more frequent to use private transport** for any type of distance, including short and medium distances.

At present, electric vehicle batteries have **ranges of between 200 and 350 km, which is sufficient for short and medium distance journeys**. Furthermore, on the market 600 km of range has actually been achieved in top range electric vehicles but at a price which is not currently affordable for the vast majority of the population.

Although the electric batteries currently on the electric vehicle market are, in general, more than sufficient to meet transport needs in rural areas, **their cost still constitutes a barrier for rural users.**

40% of rural homes and 33% of rural companies consider that the acquisition cost of the electric vehicle is an obstacle to the electrification of transport in rural areas.

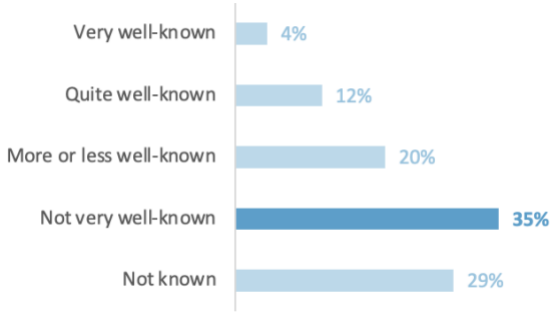
In this regard, although a reduction in the costs of electric batteries is foreseeable, and hence of electric vehicles in the future, **the deployment of greater subsidies to rural areas would undoubtedly speed up the transport electrification process in rural areas.**

Knowledge of electric mobility:

Boosting raising awareness campaigns and dissemination of the benefits of the electric vehicle.

Although the economic barriers or limitations to the availability of charging infrastructures are limiting factors when acquiring an electric vehicle, particularly in rural areas, if we add to the latter **the lack of more in-depth knowledge of this subject matter, their development becomes even more difficult.**

Knowledge of electric mobility among rural sole traders and companies



In this regard, the rural population generally suffers from major limitations with regard to access to specialist advice and information.

A greater presence of these support and dissemination elements in rural areas would allow, in turn, technical and economic uncertainties to be tackled with regard to the use of the electric vehicle, which the rural population also identifies as a barrier when thinking about buying an electric vehicle.

This is why **it is necessary to step up the dissemination, raising awareness and sensitisation campaigns with regard to the use and expected benefits of electric vehicles.**

To achieve this State objective of 5 million electric vehicles in 2030, the public campaigns need to be stepped up, with **specific investments and subsidies for rural areas.**

In this process, public-private alliances will be crucial, as well as greater coordination between administrations to promote and speed up a sustainable mobility strategy.

Self-consumption and Energy Communities in rural areas: a real opportunity for the development of rural areas

There is a process to decentralise the energy system through new initiatives such as, for example, **self-consumption and Energy Communities. These are key levers for driving forward the consumer's role in energy transition**.

As has already been mentioned, the PNIEC[16], approved by the Spanish

[16] Integrated National Energy and Climate Plan (PNIEC) 2021- 2030, 20 January 2020.

Government, set a national target of 42% of renewable penetration as regards the end use of energy by 2030, attaining 74% renewable in the electricity sector.

The Plan's targets include an increase in the role of citizens in energy transition, in line with the need to ensure that consumers have the right to produce, consume, store and sell their own renewable energy. In this regard, **self-consumption, as well as Energy Communities, stand out as tools for tackling several of the targets defined in the Plan**,

Furthermore, the Self-consumption Road Map[17], defined by the State, seeks to attain between 9 GW and 14 GW of installed power of self-consumption by 2030, with an intermediate target for 2025 of between 3.5 GW and 7.5 GW of installed power, as well as driving forward the concept of Energy Communities.

Rural Spain has very favourable conditions for the development of self-consumption and Energy Communities.

There are many possibilities offered by rural areas with regard to self-consumption and the Energy Communities. Rural Spain has very favourable conditions for the development of self-consumption and the Energy Communities, both thanks to its demographic characteristics with ample spaces and buildings to facilitate their installation and make use of the natural resource, and by dint of the actual needs of the rural area, associated with aspects like the distance that usually separates homes and the connection points to the network or the difficult accessibility of supply for some types of consumption.

What's more, the **introduction of self-consumption or the development of collaborative models** such as shared self-consumption or the Energy Communities, **would allow consumers to make greater savings in energy costs**, a particularly relevant aspect in *Empty Spain* where the economic conditions are traditionally unfavourable.

There is a positive trend in rural homes and companies which have self-consumption installations.

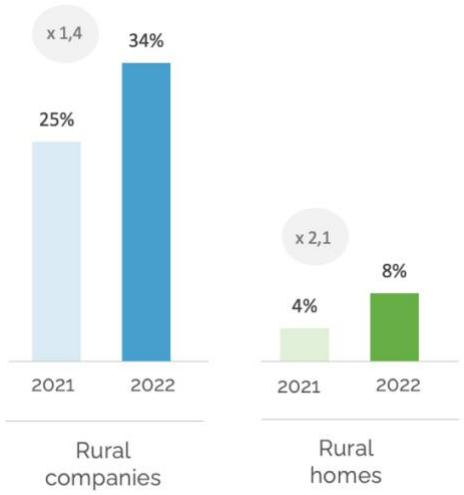
Compared with last year, **there has been a positive evolution in the development of self-consumption in rural areas**. In particular, 34% of companies and 8% of rural homes have opted to install self-consumption on their properties. While this is true, said intention is distributed unevenly around the various rural areas of Spain.

Nevertheless, said positive evolution is low and unequal in the various rural regions of Spain, still falling well short of State targets.

[17] December 2021.

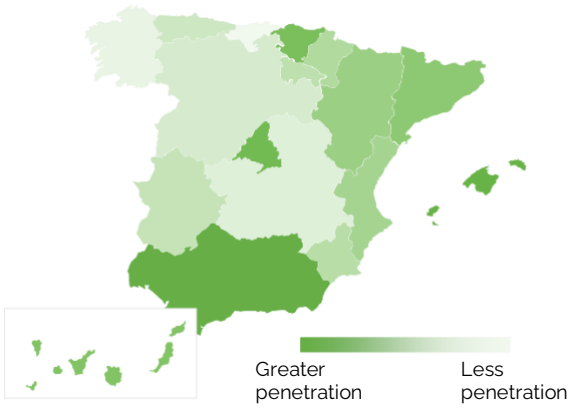
Rural homes and companies with self-consumption installations

Positive trend in rural homes and companies with self-consumption



There is a clear intention on the part of rural areas to invest in and drive forward self-consumption, although **the level of actual penetration in 2022 did not register the same growth in all regions of Spain**.

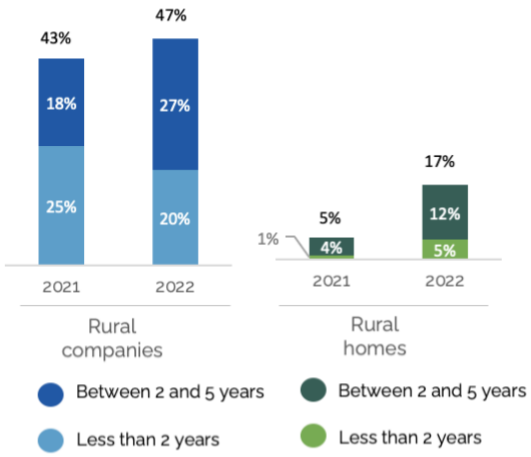
Penetration of self-consumption in rural homes by regions



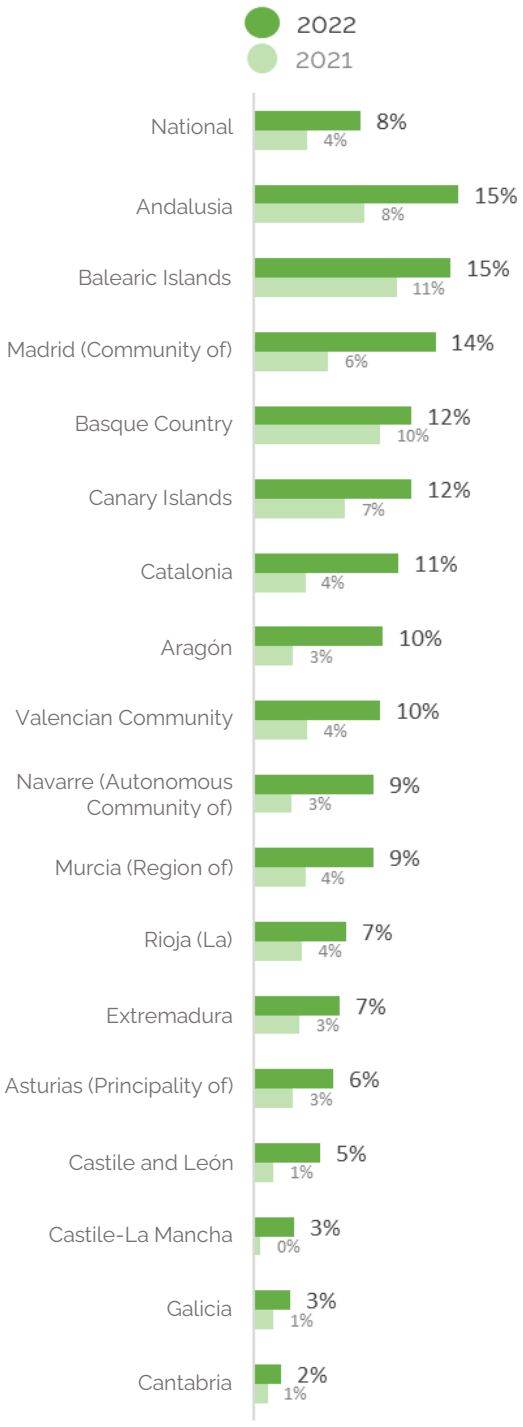
Although there is a favourable environment for the development of self-consumption in rural areas, promoted both by public and private institutions, as well as by the Government with the publication of the Self-Consumption Road Map, with favourable results compared to the previous year, the increase in self-consumption is still unequal among the rural population and the evolution could be accelerated if the main obstacles that prevent it are eliminated or reduced. With this in mind, **the characteristic factors need to be studied which are slowing down speedier evolution, providing a rapid and comprehensive response to them, which incentivises the deployment** of this key lever for the energy transition.

Rural homes and companies which intend to install self-consumption

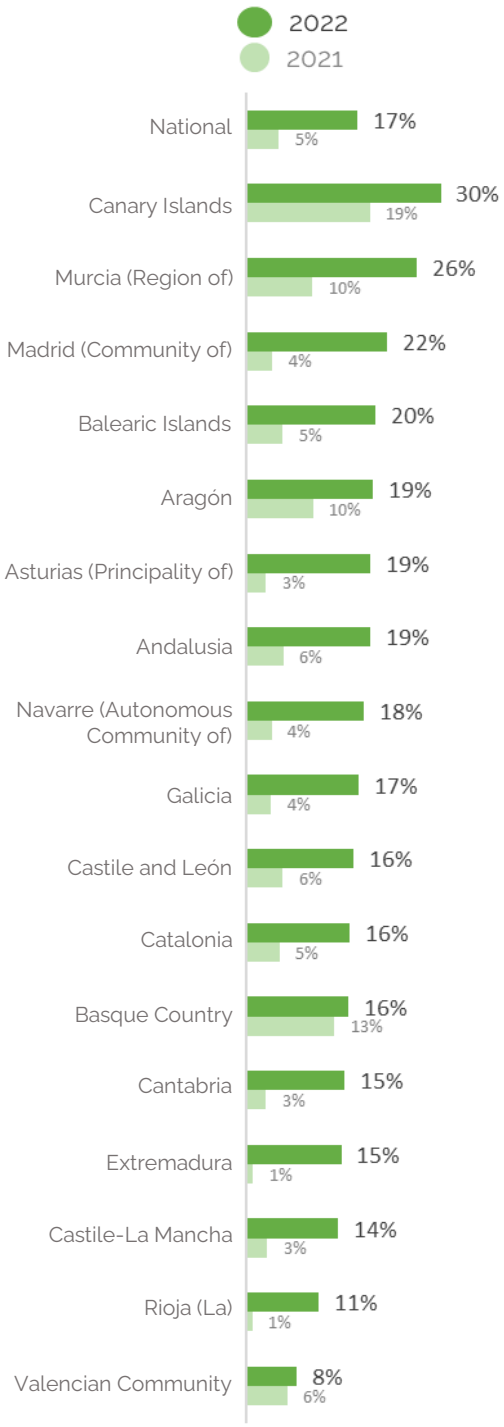
As regards those who don't have self-consumption, there is a positive trend of installing self-consumption in rural homes and companies.



Penetration of self-consumption in rural homes by Autonomous Communities



Distribution of rural homes which intend to install self-consumption by Autonomous Communities



In this regard, **this positive evolution may be slowed down in Autonomous Communities with great potential such as Andalusia or Catalonia**, where the trend could decelerate if we bear in mind the intention to install self-consumption installations by those families that have not implemented it yet. Furthermore, **Autonomous Communities such as Extremadura, Asturias, Castile and León, Castile la Mancha, Galicia or Cantabria have not stepped up their self-consumption installations in rural homes and their prospects for improvement are limited according to surveys.**

Although there are several factors which can explain this inequality, one of the main barriers identified is related to the **existence of communication which does not properly reach all levels of rural companies and families**, not appropriately conveying the benefits of self-consumption and the various economic mechanisms that can be used to facilitate installation in homes and companies.

Self-consumption has not yet taken off in rural areas of Autonomous Communities such as Extremadura or Galicia and in others where there is a good feeling like Andalusia, their development could be slowing down.

Rural inhabitants wish to form part of the energy transition, but many of them do not have suitable access to the mechanisms that the Government has provided.

Royal Decree 477 enacted on 29 June 2021, approved the **concession of 660 million euros**, extendible to 1,320 million, in subsidies for self-consumption installations (up to 900 million), storage behind the meter (up to 220 million) and air-conditioning with renewable energies (up to 200 million).

It is one of the first subsidies' programmes put into effect under the PRTR[18] and it is the first on a large scale specifically aimed at self-consumption and storage. And although it is true that, at present, the initial budgets are running out in the Autonomous Communities, with increases being requested, **in rural areas the mechanisms provided are not being used, achieving greater penetration in cities.**

Among the various factors that can explain the slower than expected penetration of self-consumption in rural areas, despite the provision of economic mechanisms by the Government, are **the administrative barriers which delay or hinder the installation of self-consumption** in rural homes and companies.

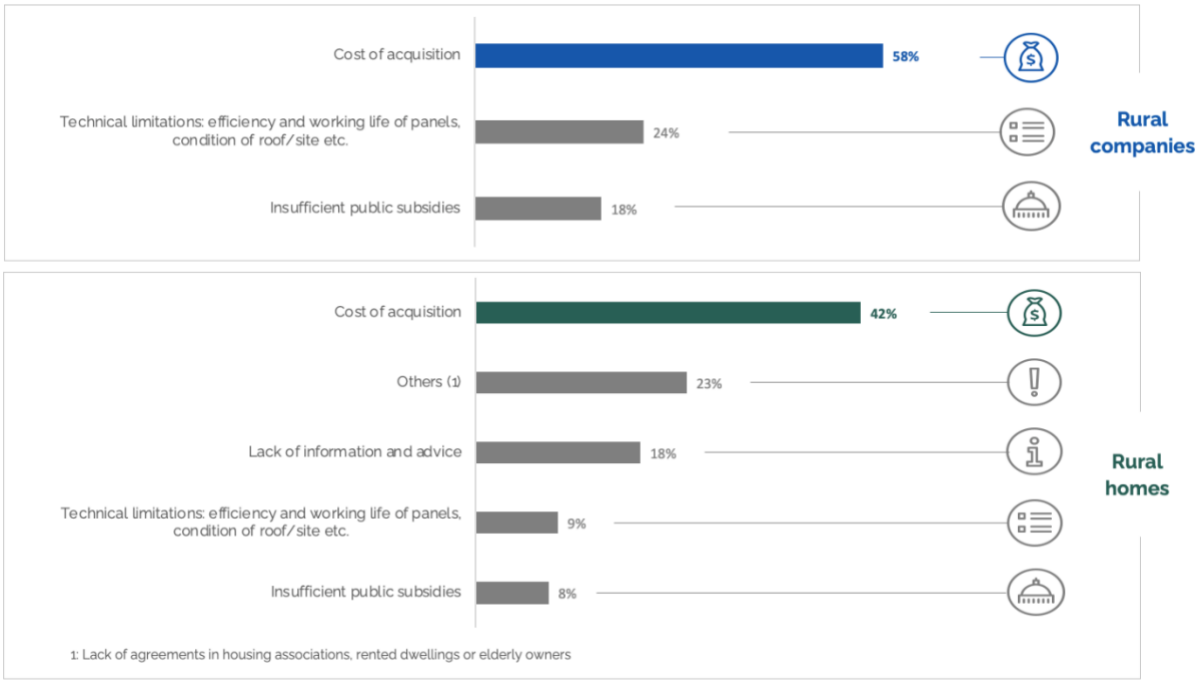
On numerous occasions, **the processing established for accessing the economic mechanisms provided is perceived, by rural companies and families, as a bottleneck**.

[18] Recovery, Transformation and Resilience Plan.

Other **obstacles to self-consumption in rural areas** pertain to the **economic barriers** faced by consumers in rural areas compared with those in urban or metropolitan areas. **Non-rural areas generally have higher income and greater accessibility to useful information** which enables them to gain **real access to the subsidies' mechanisms** approved by the Public Administration, as well as to **specialised financing mechanisms** which allow the initial outlay to be reduced or eliminated, something which is very often inaccessible to rural inhabitants.

Self-consumption is an increasingly popular reality in rural homes and companies, but a greater drive forward is needed to make it a reality in all rural regions of Spain.

Main obstacles identified in rural areas to investing in an electric vehicle



Setting up suitable communication channels and financial instruments that are accessible is vital in order to overcome these barriers and promote the investments which contribute to the deployment of self-consumption in rural areas.

Furthermore, self-consumption has become an increasingly competitive technology and it will continue to be so in the future with multiple advantages. For

consumers, self-consumption is an advantageous alternative, as **it directly reduces the variable unit electricity cost of the electricity bill, which depends on the electricity market.**

However, despite the fact that 44% of rural homes with self-consumption and 38% of rural companies receive savings in excess of 20% on their electricity bill, **there are still very few rural consumers who have been able to take advantage of this potential**.

The benefits afforded by self-consumption in economic terms are already widely known by rural users who have self-consumption installations.

Percentage saving on electricity bill associated with the installation of self-consumption by rural homes and companies

Around 40% of rural consumers of electricity with self-consumption receive savings of over 20% on their electricity bill.

SAVINGS ON THE ELECTRICITY BILL

With a view to achieving greater penetration of self-consumption in rural areas, it is highly **relevant to properly disseminate the benefits associated with self-consumption in all layers of the population, including the rural population.**

One of the least known benefits consists of **providing the consumer with greater control of their energy savings** as they are able to know their production and consumption at any time thanks to the monitoring of their installation, providing the consumer with greater manageability of their consumption, compared with the variability of the prices on the electricity market.

Self-consumption allows citizens to take part in the energy system, in line with the priorities set by the *Clean Energy Package for all Europeans*[19], and it allows the disclosure of the complementary benefits of self-consumption, helping to incentivise their development in the rural area.

[19] Clean energy for all Europeans: unlocking the growth potential of Europe, 30 November 2016.

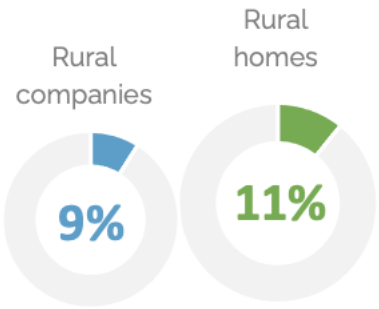
However, despite the growth in self-consumption installations in rural areas, in the surveys carried out, the **low penetration of collective self-consumption** has been identified both in companies and in rural homes, compared to the individual model.

Only 1 out of every 10 rural users with self-consumption would fall under the shared self-consumption mode, a relatively low figure if we consider the benefits afforded by this mode.

In view of the characteristics of rural areas with large areas of land, **the implementation of collaborative models would typically allow an extension to the socioeconomic benefits** of these self-consumption installations in the rural area. However, **the complementary complexity entailed by this mechanism** with regard to individual self-consumption, involving new administrative requirements, **is paralysing any surge in these collaborative models.**

Collective self-consumption in rural areas

Only 1 out of every 10 rural users with self-consumption gets the most out of the benefits of collective self-consumption.



Although citizens' rights to manage their energy and participate in renewable energies' projects are becoming increasingly recognised, **the collaborative schemes and business models arising from these schemes, already enjoyed by consumers in other countries, have not yet taken off in Spain.**

With this in mind, the Energy Communities constitute a model for the organisation of energy activities which can make a permanent contribution to the transformation of the energy system.

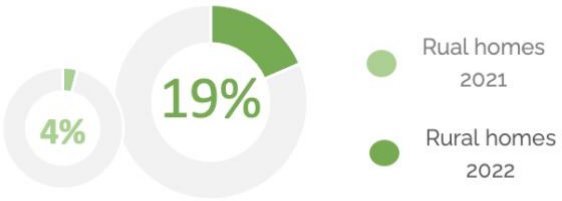
Particularly during the last year, the Public Administration, at its various levels, has sought to drive forward these models based on the Energy Communities. In this regard, through the CE-Implementa subsidies' programme[20], in the context of the Recovery, Transformation and Resilience Plan, 45 projects have been benefited in 14 Autonomous Communities.

However, although the surveys carried out on rural homes reflect **a higher degree of knowledge about Energy Communities compared to the previous year**, it is still insufficient.

[20] Incentives' programme for unique pilot schemes in Energy Communities.

Domestic rural consumers who are aware of the Energy Community concept.

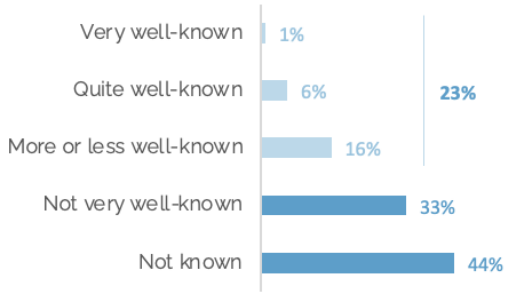
The Energy Communities concept registered a 15% year-on-year increase.



This figure has not improved greatly in rural companies, where 8 out of every 10 do not know or have little knowledge of the Energy Communities concept.

Rural companies aware of the Energy Community concept

The *Energy Community* concept is not very well known by rural companies.



In this regard, from the surveys carried out, it was identified that **around 20% of rural cooperatives plan to promote Energy Communities among their cooperative members**, **a figure which is consistent with those who have obtained at least an average level of knowledge**.

The administrative complexity, the difficulty in developing sustainable business models by private agents, the lack of knowledge rooted in the population, the lack of legal definition and the difficulty in achieving the subsidies granted, **are factors**, among others, which **greatly delimit the development of collaborative models such as the Energy Communities**.

In view of the fact that the development of Energy Communities in the rural environment would have impacts which go beyond the energy sector, as they combat climate change, reduce energy poverty and promote social improvements in the community**, it is essential to continue and step up communication, sensitisation, raising awareness and financial support campaigns, with greater clarity and administrative simplicity**, essentially in rural areas, with greater development capacity, but with lower available income compared with urban areas.

To achieve the greater development of the Energy Communities, it is essential to continue and step up the communication, sensitisation, raising awareness and financial support campaigns, with greater clarity and administrative simplicity.

In particular, **the Energy Communities constitute a relevant concept in the rural environment** thanks to their capacity to take on the demographic challenge: they not only boost local activity and generate employment, but they also reduce the high price of the energy bill and promote renewable generation, helping to generate clean, competitive environments.

History has taught us that the development of certain collaboration schemes is very often driven by private companies which, with their knowledge, specialisation and technology, are capable of generating new business models which are beneficial to all the parties involved. **The rural population needs the support of the specialised agents if the emergence of Energy Communities in its territory is desired**.

Private agents are asked to play a very relevant role as part of a set-up which is balanced and advantageous for the members of the future Energy Communities, but they must receive incentives from the Public Administration if their participation is desired.

Electricity storage in the rural area: no evolution for yet another year

During 2021 and 2022 **the first lines of subsidies were set in motion under the Recovery, Transformation and Resilience Plan to support and drive forward electricity storage solutions** based on "*front-of-the-meter*" (FTM) and "*behind-the-meter*" (BTM) schemes.

These support programmes will undoubtedly allow the various agents to start driving forward the development and installation of electricity storage technologies in their homes and companies.

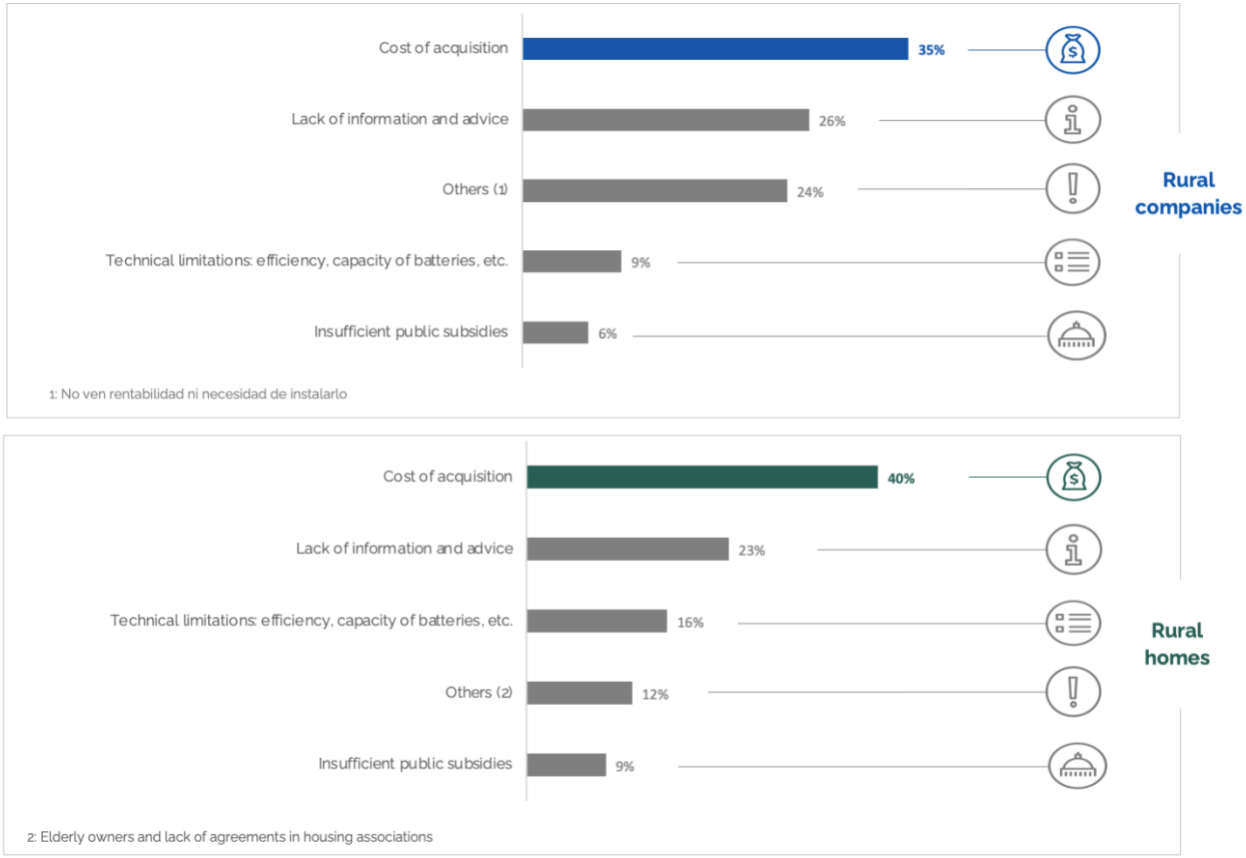
These lines of subsidies could undoubtedly **catalyse investments associated with the deployment and innovation** of energy storage technologies. In this regard, the real impact of these programmes will become more relevant and quantifiable in 2023, and so **we will have to wait at least one year to assess the effectiveness of these measures, particularly in rural areas.**

Therefore, during 2022, **no significant increase has been detected in the implementation and use of electricity storage technology solutions**.

Rural domestic consumers who have electricity storage installed

Electricity storage still hasn't taken off

Main obstacles identified in rural areas to making an investment in storage



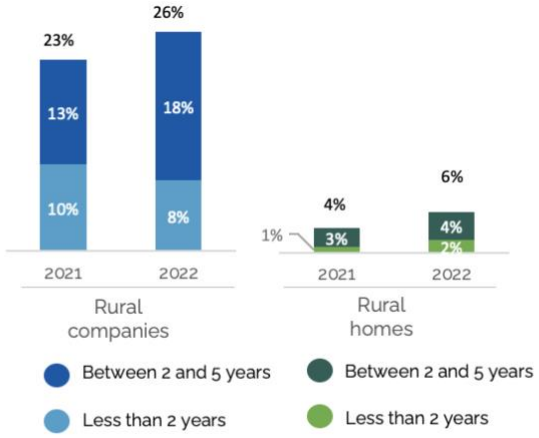
The degree of penetration of electricity storage in rural homes during 2022 has remained constant compared with 2021. The implementation of this technology has not yet taken off in rural areas.

This aspect can mainly be put down to the fact that **the greatest obstacle facing the various rural agents is the cost of**

acquisition of the equipment, as well as the lack of information and advice with regard to electricity storage technologies. Hence, **the reduction in the production costs of the equipment** as well as **the subsidies' mechanisms,** are **key aspects** for **removing the obstacles** that prevent the development of this technology in rural areas.

Rural homes and companies intending to install electricity storage

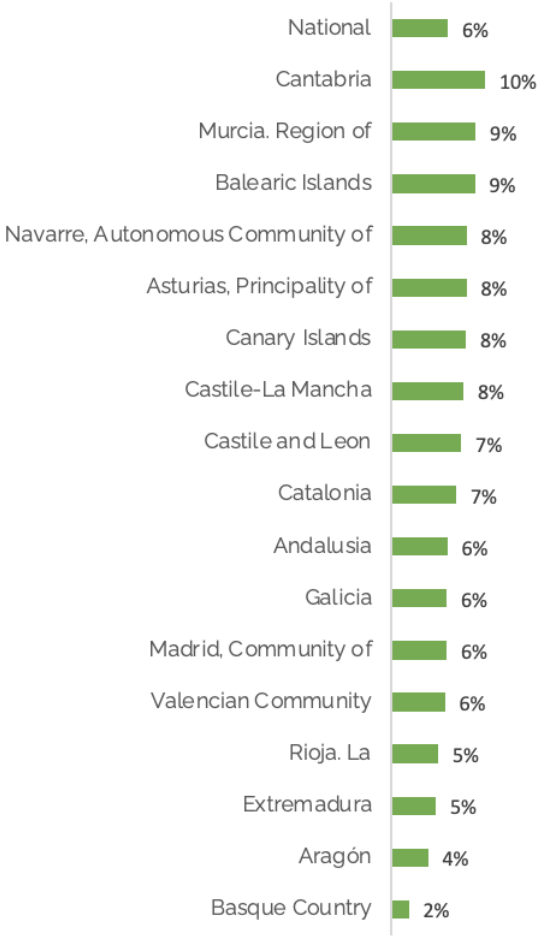
Slight positive trend towards installing electricity storage in rural homes and companies



According to the surveys, **there has been an increase in interest in 2022 among** domestic and industrial **users in the installation and use** of **electricity storage technologies** in rural areas.

A third of interested users wish to install electricity storage within 2 years

Distribution of rural homes intending to install storage by Autonomous Communities



This interest demonstrates **the intention of the rural homes and companies surveyed to carry out actions in the short and medium-term** for the implementation of electricity storage solutions.

Electricity storage could increase its presence in the short and medium-term owing to the energy potential presented by BTM operating schemes and their synergies

with self-consumption solutions and the charging of electric vehicles.

The development of technological solutions based on the BTM electricity storage scheme **would allow rural areas to increase their self-supply and resilience,** enabling rural homes and companies to carry out smarter, more flexible and efficient use of renewable energy, as well as contributing to the decongestion of electricity systems in rural areas.

Nevertheless, the results of the surveys show **a degree of penetration of electricity storage among rural domestic users and companies which is still undergoing consolidation** as this technology is still maintaining the same usage levels as those identified last year.

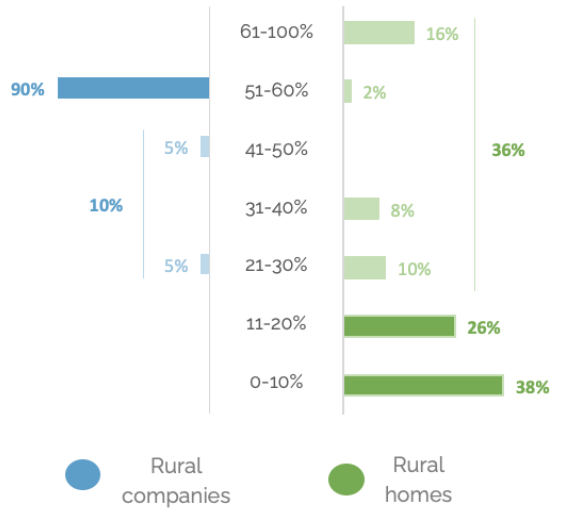
It is still necessary to send positive signs that catalyse the use of electricity storage in rural areas, continuing those introduced in 2022 by **the PERTE (*Strategic Projects for Economic Transformation and Recovery*)**[21] **for renewable energies, renewable hydrogen and storage (PERTE ERHA),** as well as by the convening of incentives for self-consumption and storage, with renewable sources, published in the context of the PRTR[22].

The low number of rural homes and companies that have already implemented electricity storage solutions benefit, to varying extents, from savings in their energy costs.

[21] Strategic Project for Economic Transformation and Recovery.

[22] Strategic Project for Economic Transformation and Recovery.

Percentage saving on the electricity bill associated with the installation of storage received by rural homes and companies



Rural companies see a greater saving on their energy costs by using energy storage combined with self-consumption installations and the use of electric vehicle charging infrastructure. The majority of companies located in rural areas perceive that the use of this technology combined with other technologies enables them to obtain a **reduction in their energy costs of at least 50%-60%**.

In addition, the surveys carried out demonstrate that homes in rural areas which have installed electricity storage also receive different volumes of saving on their energy costs. In this respect, **some of the homes in rural areas receive savings on their energy costs of more than 60%**, essentially deriving from the combination of storage with other technologies, such as self-consumption or the use of electric vehicle charging infrastructure. Nevertheless, **the majority of rural homes only achieve savings of less than 20%.**

It is worth pointing out that the saving level that a rural home can achieve thanks to the deployment of electricity storage technologies would be **directly related to its daily consumption patterns** and, at the same time, to the possibility of this storage equipment operating in a complementary manner **with self-consumption installations, electric vehicle charging services** or with other types of installations, among others.

Rural users who have electricity storage installations basically connected to self-consumption installations obtain clear savings on their energy bills.

In this respect, **electricity storage in rural areas is connected**, more extensively, **to renewable generation self-consumption installations**.

Therefore, the **storage technologies are able to maximise the saving on energy costs** achieved by rural users thanks to the use of solutions based on renewable self-consumption.

The use of electricity storage in rural areas **maximises the saving on energy costs that different agents achieve by using renewable self-consumption installations**, whilst simultaneously minimising the costs associated with electric vehicle charging.

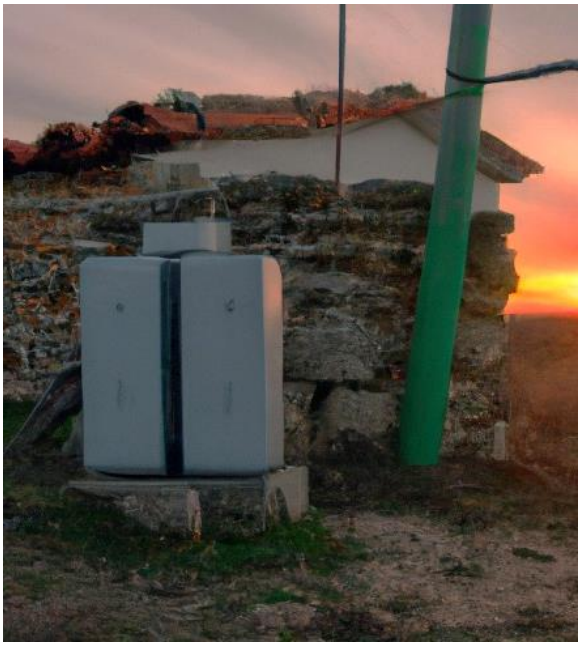
In this respect**, electricity distribution networks in rural environments will play a vital role** in order to contribute to the development and deployment of

electricity storage technologies in these environments.

The digitalisation of rural electricity systems will drive forward the penetration of electricity storage technologies in these areas.

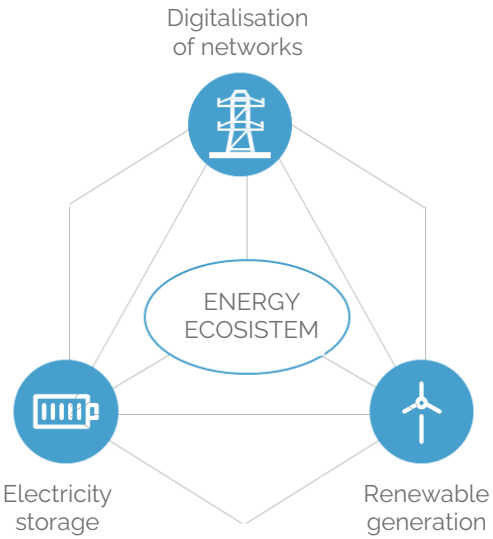
2022 has witnessed the start of the largest digitalisation process of electricity distribution networks. During this year, in the context of the Recovery, Transformation and Resilience Plan and the Next Generation EU Recovery Plan, **a line of subsidies for making investments in the digitalisation of electrical energy distribution networks** and electric vehicle charging infrastructures was considered, entailing great potential for the development of electricity storage in the rural environment.

The consultations carried out among electrical energy distribution companies in rural areas conclude that these agents will undertake a great investment drive in order to digitalise their networks.



These strategies will allow the necessary adaptations to be made to the distribution networks in order to foster the installation and competitiveness of electricity storage technologies based on FTM schemes.

Rural areas have a great opportunity to **create a competitive energy ecosystem** which allows the integration of the existing synergies between renewable generation, the digital functionalities of electricity distribution networks and electricity storage technologies.



In addition, during 2022 different strategy policies were published, **highlighting the +Energy Security Plan (+SE)**. This plan sets out various measures such as the acceleration of the implementation of PERTE ERHA[23], the increase in the budgetary allocations aimed at subsidies for self-consumption and electricity storage, as well as the development of standards that regulate new technological solutions which are key to energy transition.

These operating measures **will promote the creation of the right environment so that the storage technologies keep consolidating in the energy value chain**. Nevertheless, the interest of the various agents is based on the fact that these measures allow rural environments to achieve equal opportunities compared with other areas.

Favourable conditions must be ensured in rural areas, establishing a stable normative framework which allows investments in electricity storage technologies to be accelerated, particularly those related to self-consumption.

It will be vital **for Public Administrations to keep generating policies, strategies, support lines and regulations** which allow companies and homes to commit to electricity storage in rural areas as the fundamental technology for carrying out a transition to a safe, resilient and decarbonised energy system.

[23] Strategic Project for Economic Transformation and Recovery for renewable energies, renewable hydrogen and storage.

Degree of electrification and efficiency as regards energy uses in rural areas: unbalanced development

Effective communication through incentivising measures and the **support of citizens in rural areas** is essential and critical for the electrification of the economy and its contribution to Spanish society as a whole.

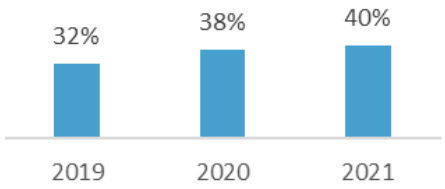
Because of this disinformation, there seems to be some **inconsistency in terms of the role of the rural area in decarbonisation**. It is essential to be aware of this situation and to disseminate information correctly to achieve the progress of society.

Availability of renewable installations and resources on a large scale in rural Spain:

Rural areas provide the majority of the installed power of renewable electrical energy which is subsequently consumed, in the main, in urban areas and their neighbouring regions. Following the trend of previous years, the installed power of renewable energy located in rural areas has remained at 87%[24] with regard to the renewable installed power in the rest of the country.

Furthermore, in terms of energy, **the production of renewable energy of rural origin in Spain in 2021 accounted for 40%[25] of the energy produced,** registering growth of 2% compared with 2020 and 8% compared with 2019.

Percentage of energy produced of renewable and rural origin in Spain



The availability of renewable resources in rural environments serves as the lever for decarbonisation.

More than 44 million tonnes of CO_2 equivalent avoided in rural Spain

The renewable generation installations in rural areas have managed to **avoid 44 million tonnes of CO_2 equivalent during 2021.**

In this regard, the contribution to the **reduction in the carbon footprint in Spain by rural areas has increased by** around **7% compared with the previous year**, which is equivalent to 16% of total annual emissions of greenhouse gases in Spain during the same year[26].

Nevertheless, the decarbonisation objectives in terms of electricity generation are ambitious[27] and so **greater penetration of renewables will be required throughout the Spanish geographic area if national objectives are to be met.**

[24] Data pertaining to the renewable generation installed power in areas classified as rural in Spain and the hydraulic and pumping power installed in the national territory in 2021.

[25] Data pertaining to the renewable generation installed in areas classified as rural in Spain and the hydraulic and pumping generation installed in the national territory in 2021. The generation data included between June and December is provisional.

[26] To estimate the Greenhouse Gas emissions avoided, the figure for 2020 was used as the 2021 figure was not available in the information provided in the National Inventory of Greenhouse Gases (June 2022).

[27] The Integrated National Energy and Climate Plan (PNIEC) 2021- 2030 sets as a target that renewable electricity generation will reach 74% of the total in 2030.

In this respect, for the production of electrical energy on a large scale through renewable technologies (such as wind energy or PV solar energy), **large areas of land are needed and access to certain natural resources whose availability is basically in rural territory**.

84% of the Spanish surface area is regarded as rural territory[28], and so the Spanish rural areas are essential in this decarbonisation process.

Furthermore, rural Spain boasts **the ideal conditions for exploiting the potential of biomass and the circular economy of biowaste**.

The integration of agricultural farms in this process would allow **the greater use of biomass for thermal and electrical purposes, with an undoubtedly positive impact in environmental terms, but rural areas are not only vital in terms of the contribution of renewable energy** to major cities and metropolitan zones, but also owing to their **great potential in new sustainable developments which allow the decarbonisation of these areas**.

Despite the major contribution that rural areas already make to the energy transition, there is significant room for improvement and achieving this will depend on measures that allow sustainable, inclusive development with rural areas.

Delayed implementation of new sustainable electric uses in rural areas:

The **benefits deriving from making the most of the large surface areas available in rural areas must contribute tangible revenue to rural areas**. However, it is precisely **the rural population, in general terms, which is not benefiting** from this electrification process with renewable energy **and this is the perception which, in turn, is taking root among the rural population.**

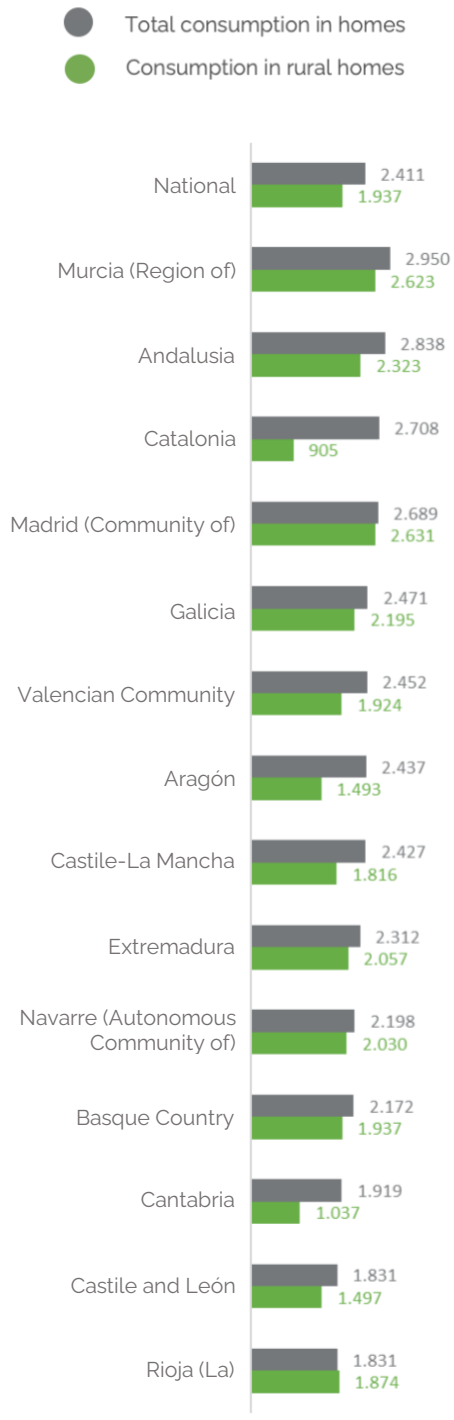
As can be observed in the surveys and public information available, **the degree of sustainable energy uses in rural areas by families is much more limited than in the rest of Spain**.

Electricity consumption in rural homes is around 20% lower than the Spanish average.

[28] According to an analysis by the Ministry of Agriculture, Food and Fisheries, December 2021.

Electricity consumption (kWh annual/contract) of homes in Spain

Pertaining to the mean consumption of users with the 2.0TD tariff in 2021



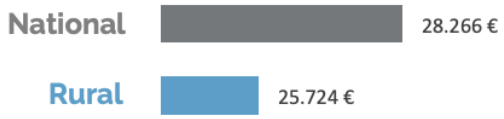
Note: the Observatory does not have rural electrification data for the Principality of Asturias, the Balearic Islands and the Canary Islands.

In addition, this electric use **is very often not carried out with technologies that optimise consumption, having a negative impact on the bills of these families and their well-being**.

The energy gap between the rural and non-rural population entails higher costs and less well-being in rural families.

However, **this energy gap between the rural and non-rural world is not by chance** and its origin, as borne out by multiple indicators, can be put down to the existence of **a main barrier** which prevents rural citizens from making an initial investment in certain technologies and which makes this sustainable rural electrification even more difficult: **economic inequality at rural level.**

Difference between average income per home (national vs. rural)



Note: latest information available for 2019.

Generally speaking, **rural citizens have lower income than the national average,** requiring them to watch their spending and to refrain from investing in technologies with a high initial cost despite the fact that the latter could generate sufficient future savings to offset said initial outlay.

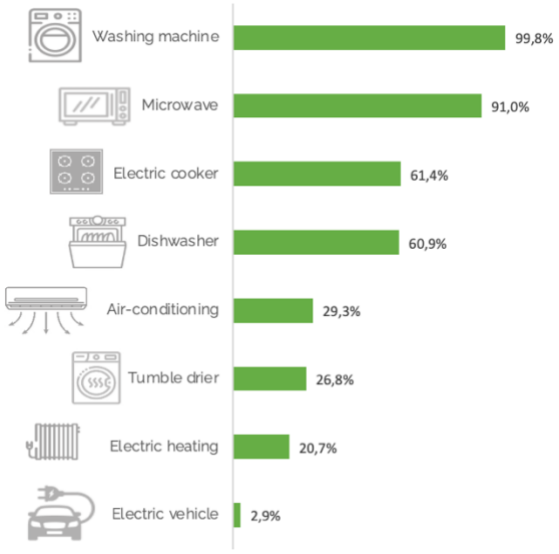
Lower income in a home means a lower degree of electrification of more efficient, sustainable energy uses.

As they have less purchasing power, **the main expenses of rural homes are very often essentials** such as housing, food, health, education or transport, with these people generally refraining from making investments in electrification or in energy efficiency measures where, on many occasions**, the benefits they can obtain are not properly perceived**.

The higher the initial cost involved in implementing sustainable, efficient electrical technology, the greater the barrier faced by rural users to electrify their consumption.

This is why **a significant portion of those surveyed do not have technologies which require a high initial investment** and they are not essential for their day-to-day lives, as can be observed in the illustration below. Among rural homes, the most common measures are those associated with the installation of heat pumps, induction hobs or smart plugs in homes. In the case of rural companies, the use of solar panels or LED lights is highlighted.

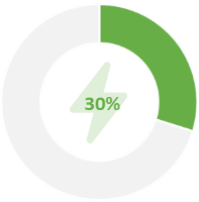
Most common uses of electricity in rural homes



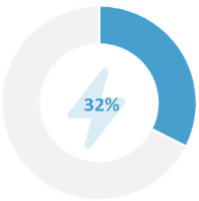
In this respect, **only 30% of rural homes and 32% of rural companies surveyed have implemented any energy efficiency measure.**

Energy efficiency measures implemented in rural areas

Only 30% of rural homes have implemented any energy efficiency measure



32% of rural companies have implemented an energy efficiency measure

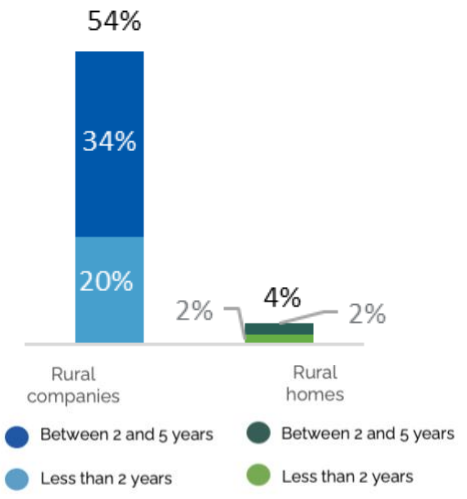


Only 3 out of every 10 rural companies and homes have implemented any energy efficiency measure.

However, this data will apparently not improve significantly in rural homes during the next few years. **Only 4% of rural inhabitants intend to make any investment in energy efficiency measures** over the next five years.

Among rural companies, a more favourable future is expected, but this is not sufficient in light of the energy challenges facing society, as **almost half rural companies are not expected to do anything in this regard over the next five years.**

Intention to apply energy efficiency measures



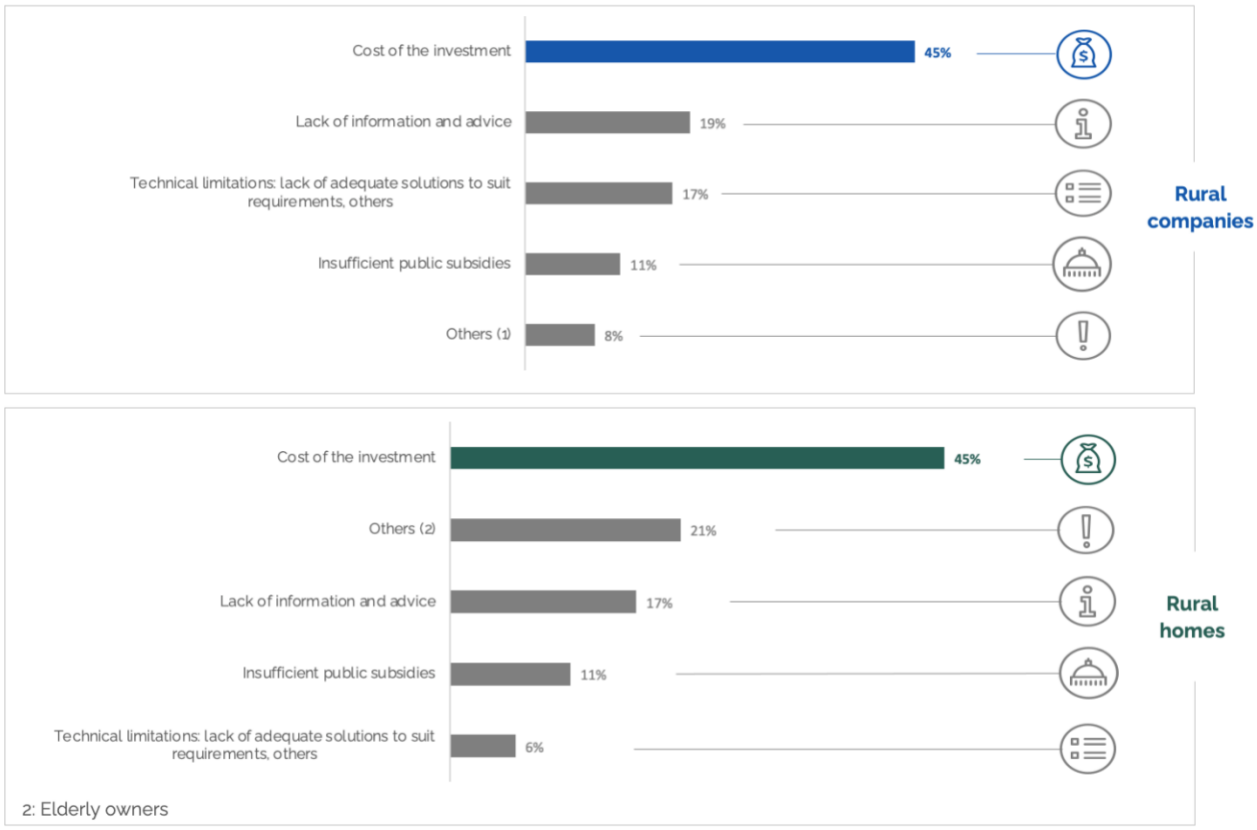
The cost of the initial outlay is identified by those surveyed as the main obstacle to making an investment in energy efficiency.

As occurs with other technologies, **the initial investment cost makes it hard, to a great extent,** to implement this type of solution in rural areas. This, **combined with the lack of advice or information** received about the benefits of these solutions, greatly limits their implementation in rural companies and homes.

ENERGY EFFICIENCY

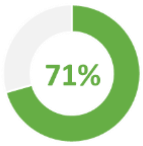
There is significant room for improvement in rural areas with regard to the replacement of less sustainable energy uses and the implementation of energy efficiency measures, but economic support, advice and specialist information is required

Main obstacles identified in rural areas in order to make an investment in energy efficiency



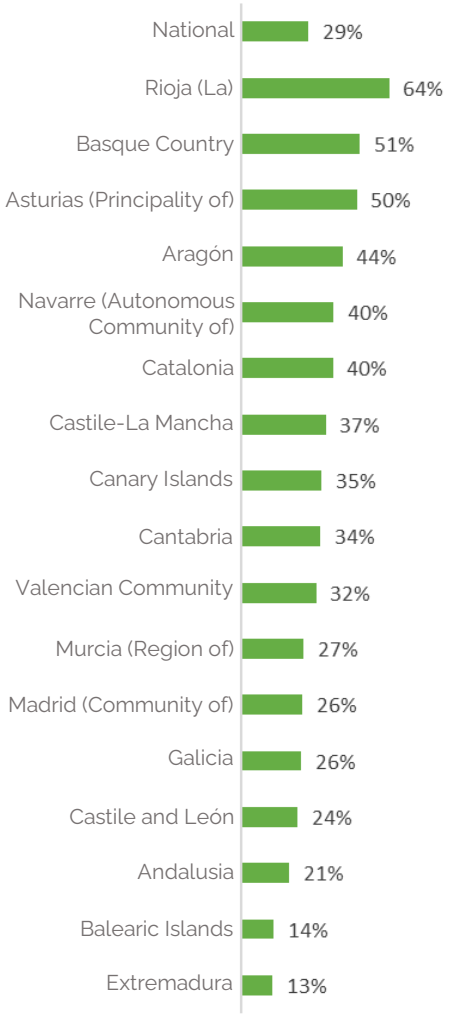
According to the surveys carried out, **in rural areas there is still widespread use of more polluting, less efficient consumption**. In this regard, elements which could be regarded as usual in the current remodelling of urban homes, such as an induction hob in kitchens or radiant flooring as a residential air-conditioning system, are very infrequent in the homes of the rural users surveyed.

If we add to the latter the fact that **rural areas are traditionally lacking in piped gas infrastructures** which facilitate the implementation of other less polluting energy vectors, **this positions the electricity vector as one of the main alternatives to be considered in the decarbonisation process**.



71% of rural homes do not have a piped gas connection

Rural homes with a piped gas connection by Autonomous Community, according to surveys



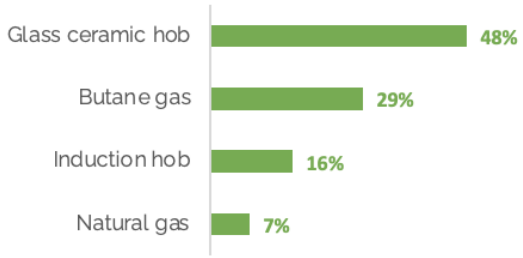
In this respect, some results have been shown below which were obtained from the surveys carried out which demonstrate the development of the rural areas regarding the introduction of more sustainable, efficient energy uses.

Castile and León

Rioja (La)

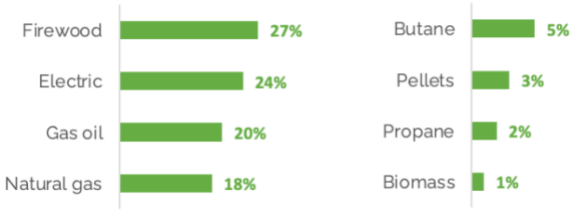
Most common types of cookers in rural homes

1 out of every 3 rural homes uses butane gas in their dwellings for cooking



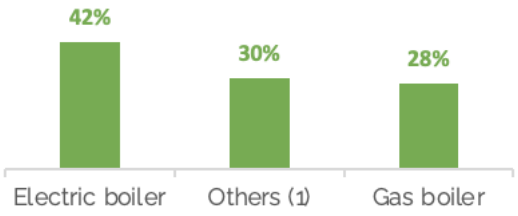
Most common heating systems in rural homes

Half of rural homes base their heating systems on firewood, gas oil and butane



Most common ways of obtaining sanitary hot water (SHW) in rural homes

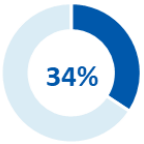
1 out of every 3 rural homes uses a butane or propane cylinder, gas oil or fire wood as the energy vector to obtain SHW



1: Butane or propane cannister, gas oil tank or wood boiler

In the case of rural companies, **only 1 out of every 3 SMEs and sole traders would be willing to replace their most polluting energy consumptions with electricity consumption.**

34% of rural companies would be willing to replace their most polluting energy consumption processes with electricity consumption



In the same way, **diesel or similar engines not connected to the electricity grid are still used quite frequently by SMEs and sole traders in rural areas**. This usage is very often associated with farming activities as their users do not perceive solutions like self-consumption as being economically viable.

15% of rural companies have some consumption not connected to the electricity grid (*Diesel or similar engine*)

At present, no clear actions have been identified which allow a reduction in the existing gap between the traditionally disadvantaged rural area and the rest of Spain.

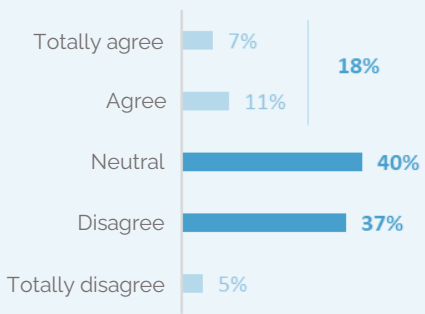
The DISTRIBUTORS' viewpoint:

In order to be able to offer a broader vision of the needs of rural Spain in terms of electrification, it is necessary to understand and know the **viewpoint of the distributors that operate in rural areas.**

The vast majority of the distributors surveyed believe that **electricity systems and their distribution play a vital role in the ecological transition and decarbonisation process**.

However, a high percentage of the rural distributors surveyed believes that the current regulatory and normative framework allows an appropriate development of the networks in accordance with the needs of the ecological transition.

Perception of the existence of a regulatory framework pursuant to the investment needs in electricity systems which contribute to the ecological transition



Although the normative framework could be insufficient for the development of networks adequate for energy transition**, the trend is changing with more investments by distributors, focused on meeting the new needs of the distributors**, despite the fact that these investments are sometimes delimited by the maximum volumes of profitable investment that the distributors can make.

The distributors wish to make an active contribution to the ecological transition, and the investments they have made and planned reflect this.

Nevertheless, **rural distributors are requesting improvements to the regulatory model which will allow them to deal with this ecological transition more efficiently**. Among other improvements, rural distributors identify aspects such as having greater clarity about the return as regards investments intended for the necessary digitalisation and modernisation of rural electricity systems or the necessary updating of the standard costs applied compared with those currently being incurred in the sector, in an inflationary environment with scarce raw and other material, very often having a greater impact on rural areas with more limited access and more complex orography.

Aspects requested by rural distributors to facilitate the adaptation of rural networks to the needs of the ecological transition

- **Greater clarity in terms of the type of the profitable investments** to be made by distributors, particularly in the context of new technologies (investments in digitalisation, software, etc.).
- **Updating of standard** investment costs considered in the remuneration of activity to alleviate the escalation of prices on the markets.
- **Simplification of administrative procedures** with the public administration.
- **Greater economic support** for the distribution activity with subsidies and assistance.

Conclusions: Are we doing enough?

As from the second edition of the **Rural Decarbonisation Observatory** report, citizens are provided with a **snapshot of the contribution and the potential of *Empty Spain* for a decarbonised future**.

The information provided in this report stresses the importance of rural areas. The data obtained and the analyses carried out by the Observatory demonstrate how **rural areas are an exception within the national territory**, not only in terms of the energy transition, but also in demographic and socioeconomic terms, **with a widespread shortfall in infrastructure, public services and employment**. **This shortfall in rural areas is being transferred to its decarbonisation process.**

The majority of State strategic plans and subsidies are focused on improving cities.

The **urban area** has become, generally speaking, **the nerve centre for economic development, accounting for most opportunities** and, **the energy transition is no exception**, **not adapting sufficiently to the needs of rural areas in this country**.

Rural municipalities account for 16% of the population of Spain, representing

84% of the surface area of the territory, and despite this representative data, **rural Spain is pushed into the background by urban areas.**

Nevertheless, the rural sector has a vital role to play in the process to decarbonise the economy.

The transformation experienced in rural areas and its potential are key to the accomplishment of national decarbonisation targets. In fact, 87% of renewable installed power, and around 40% of the renewable energy produced in Spain, derives from rural areas.

However, rural citizens do not perceive any benefit from this transformation, as there is still a deep divide in society.

The first report by the Observatory included a call for action with regard to the development of certain lines of action which could be key in this process to decarbonise the rural area and **one year later, in light of data which has not yet improved in terms of certain aspects which are crucial for rural companies and citizens, we wonder whether we are doing enough.**

If rural companies and citizens do not perceive the benefits of the energy transition, there is a risk with regard to the implementation of certain measures.

It is necessary to achieve a balance in all strata of society and regions of Spain which does not hinder the desired global decarbonisation process.

As a country, we have a responsibility to **bring rural areas on board with regard to all aspects of the ecological transition**, so that their citizens and business fabric also **benefit from the opportunities arising in this transition.**

With this in mind, rural Spain needs specific financing and support schemes which will allow it to eliminate the current energy gap with the rest of Spain.

Below we have set out some possible **lines of action which could be implemented** to strengthen this process:

Raising awareness and citizen cohesion:

After the results observed in 2021, it is asked whether, one year later, the dissemination and support carried out in rural areas by the agents involved in the decarbonisation process were enough.

Main lines of action:

- To set up **specific information channels for rural areas, with the capacity to reach all levels of rural companies and citizens**. The appearance of mistaken beliefs by the rural population with regard to certain energy aspects is being identified.
- **To promote access to public and private economic subsidies** for the transformation of dwellings and the strengthening of the rural economy **in rural areas with greater potential**, with specific mechanisms and announcements for rural areas. The economic gap, between rural areas and the rest of Spain, makes the implementation of measures which contribute to decarbonisation in rural areas even more difficult.
- To strengthen the **dissemination campaigns in aspects that promote the cohesion** of the rural area with the rest of Spain. Both the rural and non-rural society need to know and understand the relevance of rural areas in the decarbonisation process.

Electric vehicle:

An appropriate strategy for the development of the charging infrastructure in rural areas will allow the promotion of the electric vehicle both in rural and urban areas.

Main lines of action:

- **The structuring of Spain with electric vehicle charging infrastructure implies their development in rural areas**. This development **must take into account the needs of its inhabitants and companies with a twofold objective**, the drive towards having an electric vehicle which covers medium and long distances from urban areas and boosting it in rural areas.
- **To promote the deployment of public charging infrastructure if there is a desire to reduce the uncertainty with regard to electromobility performance in rural areas.** The public charging infrastructure is regarded as very important by rural drivers.
- **Normative development with regard to the charging infrastructure as the last resort by electricity distributors** in those rural areas without any commercial interest, which would allow a new boost to its development in rural areas.
- **To determine specific subsidies for the acquisition of electric vehicles in rural areas and offer a plausible alternative regarding the renewal of its vehicle stock which is older** than the Spanish average. This opportunity cannot be wasted in a population for whom the cost of acquisition of these vehicles is still a relevant barrier.

Self-consumption and Energy Communities:

Self-consumption is being deployed unevenly in rural areas.

Main lines of action:

- **Keep strengthening the channels for access to subsidy mechanisms for self-consumption provided by the various public administrations.** In certain rural regions, self-consumption is not developing in line with the rest of the country. The same occurs with different strata of the rural population and business fabric where the initial outlay still constitutes a barrier despite the public subsidies available**. Coordination between the public administrations**, promoting equal opportunities throughout the national territory, **is vital.**
- **Maintain the intensity of the dissemination schemes implemented and strengthen them in those regions where the behaviour of self-consumption is not as expected.** The

perception of the rural population with regard to the self-consumption installed is positive, and this message may be very powerful for that part of the population that has yet to implement it. The communication strategies defined must do away with the barriers that prevent the more extensive deployment of self-consumption in those areas with greater potential.

- **Boost new business models based on self-consumption in rural areas**, which is a crucial factor for promoting the development of this technology in rural areas, **in particular with the collaborative models such as shared self-consumption and the Energy Communities**, which are gaining less acceptance in rural areas in view of the technical and legal difficulties involved in their implementation. **Public-private coordination will be vital.**

Electricity storage:

> This is yet to take off and we must wait for another year to see if the measures reach the rural areas.

Main lines of action:

- **Maintain those public subsidies intended for electricity storage, taking into account rural areas and strengthening them in those cases where its use has greater strategic potential.** Electricity storage has great potential, although its high costs are still a barrier to its deployment. In this regard, storage solutions in rural companies and homes are not common and the public subsidies intended for electricity storage could still be insufficient to overcome this barrier.
- **Disseminate the potential of storage combined with self-consumption in rural areas.** In this regard, the drive towards self-consumption is also essential for the introduction of storage into rural homes, but combined solutions with greater potential should be fostered.
- **Keep taking measures which promote the development of new flexibility services and the incorporation of technologies like storage among electricity consumers**, allowing a more active consumer with greater capacity to capture savings and energy benefits.

- P**romote the role of the electricity systems in the implementation of measures which drive forward the development** of storage technologies in those cases where their use is appropriate.

Degree of electrification and efficiency with regard to energy uses:

No clear actions have been identified which allow a reduction in the energy gap between rural areas and the rest of Spain.

Main lines of action:

- There is significant room for improvement as regards the substitution of less sustainable energy consumption in rural areas. The **subsidy programmes which help to substitute these more polluting technologies in rural areas** have become essential, but adequate dissemination and greater ease of access need to be ensured.
- **Accompany the decarbonisation of rural areas with energy efficiency solutions** which allow a reduction in consumption and the energy bill. Once again, the structuring of specific mechanisms and announcements for rural areas would allow greater development in these areas. Very often, the subsidy programmes exist, but they are not known to the rural population.
- **Promote the development of business models based around flexibility services** which allow homes to access the active management of their demand and optimise their energy costs,
- **Stepping up by the public administration and the private sector of the dissemination, training, support and advice campaigns in rural areas**, with a view to rural users being able to optimise their energy consumption, making them more sustainable and adapting their tariffs to their actual needs.

Generation of electricity from renewable sources:

The new renewable generation developments in rural areas will be

subject to the adaptation of the electricity systems.

Main lines of action:

- **Speed up the development and digitalisation of electricity systems,** particularly in rural areas, to allow the greater integration of renewables and optimise the integration of self-consumption and the electric vehicle in rural areas.
- **M the process of determining the maximum volumes of profitable investment that distributors can make more flexible**, particularly in those rural areas where it will be critical to adapt the electricity systems to enable the evacuation of new renewable generation developments and also to adapt them to the future mass integration of distributed resources such as self-consumption, electric vehicles, storage, etc.
- **Develop new regulatory models which provide greater flexibility in light of the new challenges and needs in terms of electricity systems**, which allows the acceleration of the integration of new technologies and investments which are required for their adaptation of these networks, particularly in the rural area, to ecological transition.
- **Incentivise new renewable generation developments which are inclusive and sustainable with rural areas**, with greater consumptions locally.

Annex I. Methodology and data sources

The Rural Decarbonisation Observatory was drawn up by CIDE. To draw up the study, multiple, diverse sources of information were used.

The information on which this document is based essentially derives from the analysis of data obtained from two types of sources:

Main public databases used:

DGT Dirección General de Tráfico

INE Instituto Nacional de Estadística

datadis

PRETOR

red eléctrica

Main private databases used:

cide

Surveys of rural homes

Surveys of rural companies

Surveys of rural electricity distributors

A short description has been provided below of each database used, both of databases from public and private sources.

It is worth highlighting that a "**rural area**" has been taken to mean those municipalities that meet the restrictions determined in Act 45 enacted on 13 December 2007 regarding the sustainable development of rural areas.

Public databases:

Directorate-General of Traffic (DGT)

The DGT has a statistics portal which has statistical information related to the activity carried out by the Directorate-General of Traffic. It has statistical data on both vehicles and drivers.

To draft this report, data reports were obtained for the total vehicle stock in Spain, both in terms of the type of vehicle and the type of fuel and registration year of the vehicles in circulation in each Spanish municipality.

National Institute of Statistics (INE)

The National Institute of Statistics produces freely accessible, very high quality statistical information about numerous areas such as the economy, society and the environment, among others. To draft this report, data was downloaded about the population, average income per capita and the average income per home and municipality.

DATADIS

DATADIS is an electricity consumption data platform. It allows access to energy reports and the number of contracts on request in line with different time, geographic and supply parameters.

Energy reports and contracts were downloaded and processed by province and type of measuring point, tariff and hourly itemisation and reports on the type of self-consumption, surplus energy, installed generation power and contracts by province.

PRETOR

PRETOR is an Electronic Office of the Ministry of Industry, Energy and Tourism which is based on the administrative registration of electricity production installations. To draw up this report, registration data was downloaded on the production of electrical energy from renewable energy sources, cogeneration and waste by municipality.

Red Eléctrica (*Electricity Grid*)

REData is the website of Red Eléctrica which allows information to be obtained about the electricity system regarding demand, generation, exchanges, transport and electricity markets, among others.

To undertake this project, data was downloaded on the installed power in accordance with technology at national level, as well as national electricity generation data, among others.

Private databases:

CIDE

Statistical information was used from small distribution companies associated with CIDE, operating in rural areas. This information essentially pertains to statistical data on self-consumption, energy consumption and supplies in rural areas from different regions of Spain.

Surveys of rural homes

Surveys carried out on 3,234 domestic users in the rural area, covering around 300 municipalities, on different aspects such as the electric vehicle, electricity storage, self-consumption, Energy Communities, raising awareness about different aspects related with energy

transition and the electrification of their consumption. The population analysed has allowed a statistically representative sample to be obtained at national and Autonomous Community level.

Surveys of rural companies

Surveys carried out on 330 first and second degree cooperatives, covering different economic activities from around 540 municipalities. The questions asked to those surveyed are based on different aspects such as the electric vehicle, electricity storage, self-consumption, Energy Communities, raising awareness about different aspects related with energy transition and the electrification of their consumption. The population analysed has allowed a statistically representative sample to be obtained at national level.

Surveys of rural electricity distributors

Surveys carried out on 87 electricity distributors which carry out at least part of their activity in rural areas. The questions asked in the surveys are based on aspects related to the role of rural networks in the ecological transition and the barriers that these distributors face with regard to the performance of their activity in rural areas.

As regards the surveys and other data obtained from public information

The surveys were carried out during the third quarter of 2022.

Both the surveys carried out on rural homes and those carried out on rural companies were organised into a first block of questions which allowed the categorisation of the type of party surveyed, followed by several blocks of questions geared towards obtaining useful information about the different key ecosystems of the energy transition identified by the Observatory.

After an initial stage obtaining answers, the information compiled was duly integrated with that obtained from other information sources, with a view to evaluating the situation of rural areas compared with the rest of Spain.

In a complementary manner, the data obtained from the surveys and the other information sources with statistical techniques was processed, with a view to extracting the most relevant observations.

It is worth pointing out that all the data was compiled and processed in accordance with current policies and regulations on data protection and disclosure.