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Canary Islands

Study on living conditions and access to selected basic needs in the EU outermost regions

REQUEST FOR SERVICES 005 Under Framework contract 2020CE160AT013

1.0 Key economic and social structure of the Canary Islands

Figure 1. Canary Islands' map. Source: DG REGIO

- **Specificities of the region**: The Canary Islands are an archipelago located in the Atlantic, close to the coast of West Africa, and the most remote of Spain's autonomous regions. The region is made up of eight islands (El Hierro, Fuerteventura, Gran Canaria, La Graciosa, La Gomera, Lanzarote, La Palma and Tenerife). Cabildos are the main government and administration institutions of each island – except for La Graciosa. Its economic base relies predominantly on tertiary economy sectors (mainly tourism -which represents 22.6% of regional GDP and 36.3% of employment-[1], as well as the construction industry). The strong dependence on tourism led to an acute socio-economic impact of the COVID-19 crisis in the Canary Islands (GDP fell by 18.1% in the first year of the pandemic, while the national average fell by 10.8%)[2]. Recovery is ongoing (GDP growth in the Canary Islands reached 10.7% in 2022, compared to 5.8% at the national level), and is forecasted to reach 2.8% and 3.3% in 2023 and 2024 respectively[3]. The region has a total population of 2,177,701 inhabitants and is currently facing increasing demographic pressure[4], particularly linked to the increased presence of non-residents, due to floating population throughout the year (around 12% population increase[5]). Key assets of the region such as the rich biodiversity and availability of renewable energy resources provide great opportunities for the green transition[6]. Opportunities have also been identified for digital transformation, using ICT as a lever to mitigate the challenges arising from the outermost location and geographical fragmentation of the territory[7].

- Access to **Electricity, cooling and heating and Connectivity (Internet and telephone)** have been defined as the two basic needs to be analysed in the Canary Islands. **Key facts and figures** are summarised below:

  - ***Key area 1 "Electricity cooling and heating":*** Access to electricity supply is practically universal in the Canary Islands' households[8]. Nonetheless, the region faces diverse challenges, which partially constrain the access to this basic need or are likely to constrain access in the future. These include the partially obsolete state of the infrastructure[9]; and the incidence of energy poverty[10] [11] [12]; among others.

  - ***Key area 2 "Connectivity (Internet and telephone)"*:** The telephone access levels are high, although below the national average. The share of households with broadband access in the region is very high (up to 96%), which is in line with the trend observed at national level[13] [14]. Despite this, there is still a gap between users and non-users (digital divide) that may be attributed to factors including socio-economic aspects and the prevalence of areas without current or planned broadband infrastructure, or with a single operating company (known as "white" and "grey" areas); as well as a lack of digital literacy and skills.

2.0 Electricity, cooling and heating

2.1 Access to electricity, cooling and heating in the Canary Islands

2.1.1 Conditions in place to meet the needs and main factors constraining access

Conditions in place

- Measuring the proportion of the population with **access to electricity** in the Canary Islands is currently not considered relevant by regional statistical instances because the percentage is close to 100%[15]. According to the World Bank (2023), access to electricity supply in Spain was universal from 2010 to 2020. Moreover, the National Statistics Institute "Households and Environment" survey concluded in 2009 that access to electricity is practically universal in Spanish households, including the Canary Islands[16]. Several factors contribute to this practically universal access and are detailed as follows.

- **Geographic and climatic conditions**, including the greater number of hours of sunshine and warmer average temperatures, lead to a lower electricity demand, particularly concerning dwellings' heating and cooling needs, and, therefore, to lower levels of energy expenditure in the region compared to the national average[17].

- The **electricity generation and supply infrastructure** in place allows for reasonable levels of safety and quality similar to the Spanish average[18]. The electricity generation park in the Canary Islands is composed of **11 thermal power generation plants** (one in each island except for Gran Canaria, which has two, and Tenerife, with four). Additionally, the evolution of the **electricity grid distribution lines** has followed a positive trend with a total increase of 40.14% from 2010 to 2021[19]. This trend can also be applied to both the **number of substations[20] and the capacity of transformers**, which increased in the period 2017-2021 by 31.92% and by 38.08%, respectively. Moreover, the region has a total of 4 **energy storage** installations, with a total capacity of 16.8 Megawatts (MW)[21].
- In terms of **funding mechanisms and support schemes available** at **EU level**, the European Regional Development Fund (ERDF) Programme for the Canary Islands in 2021-2027 has a specific objective to boost the development of renewable energies (financed with close to 42 million euro)[22], and plans the strategic financing of the hydroelectric pump storage power plant in Chira-Soria (from a total envelope of 90 million euro)[23], to contribute to the decarbonisation of Gran Canaria's electricity system. The specific objective of the promotion of energy efficiency and reduction of greenhouse gas (GHG) emissions also prioritises investments in interventions involving in-depth renovations of residential buildings. This priority is mainly focused on the fight against energy poverty and aimed at subsidised social housing owned by the Administration.
- At the **national level**, the government temporarily suspended electricity, natural gas and water supply cuts for vulnerable consumers[24], as part of the package of measures in response to the economic and social consequences of the Russian invasion of Ukraine and in support of the reconstruction of the island of La Palma, following the eruption of the Cumbre Vieja volcano.

Constraining factors

The region faces diverse challenges which partially constrain access to this basic need or are likely to constrain access in the future:

- **Energy poverty** - although below the national average - is a growing issue in the Canary Islands[25]. In 2021, 16.7% of the region's population were not able to keep their dwelling at an **adequate temperature in winter**[26] and 16.1% experienced **delays in payment of utility bills** related to the main dwelling[27]. Moreover, the Canary Islands is one of the Spanish regions with a higher **hidden energy poverty** (HEP), 31.42% in 2021[28], which is defined as the percentage of households whose energy expenditure is less than half the national median. This indicator is commonly associated with households limiting their energy needs below what would be desirable to maintain a minimum level of comfort. Although slightly reduced since the pandemic, **disproportionate expenditure vis-à-vis level of income** also constitutes a key issue: 17.4% (19% in 2020) of households' share of energy expenditure from their income is more than twice the national median[29]. These high values related to energy poverty could be related to lower income levels than the national average; constraints in accessing a wider variety of (potentially cheaper and more efficient) energy sources[30], as well as expenditure on cooling during the summer period[31].
- **Energy prices**, as well as **income levels**, appear as key determinants of the incidence of energy poverty. Royal Decree 1747/2003 established a reduced rate of the Canary Islands General Indirect Tax (2%) and applies to the production, transport and distribution of electricity, gas, steam and hot water[32], plus Spain has a system of internal compensation of energy prices. This means that even though the price of electricity generation is substantially higher in the Canary Islands than on the mainland, the cost to the user is the same. However, inflation, and especially the **increase of electricity prices** triggered by the Russian invasion of Ukraine is eroding the regions' households purchasing power[33].
- Additionally, there is a correlation between the incidence of energy poverty (particularly the ability to keep an adequate temperature) and the **energy efficiency and insulation of residential buildings,** which is low in the Canary Islands. According to the population and housing census, the main problems detected in residential dwellings in the Canary Islands are related to weatherproofing and insulation (22.2%)[34]. These problems could be attributable to the fact that 96.2% of homes in the Canary Islands were built before the Technical Building Code (CTE) was approved in Spain in 2006, which puts in place measures to ensure energy efficiency in residential buildings[35].
- Relevant **subsidy mechanisms** related to energy poverty (i.e. the social electricity subsidy[36] and the social thermic subsidy[37]) have been implemented and, at present, 36,802 people in the Canary Islands are benefitting from the former, and 25,600 are receiving the latter[38]. As a complement to this, the Minimum Vital Supply (SMV), targeted to beneficiaries of the social bonus, grants a period of six months during which the supply cannot be interrupted by the supplier in the event of non-payment[39]. However, these subsidies have been claimed to be complex in terms of administrative procedures[40].

- **Household cooling appliances** are not adapted to the increasing challenges posed by climate change (only 6.3% of households in the Canary Islands have air-conditioning[41]). Data in 2021 shows that the percentage of primary dwellings with insulation problems in the Canary Islands was 16.12%, whereas at the national level this percentage was 18.79%[42]. On the other hand, the percentage of primary dwellings with a cooling system in the Canary Islands was 19.28% less than half the national average of 49.57%[43].

- In terms of **electricity generation and supply infrastructure,** the Canary Islands are the only Spanish region which is **not connected to continental energy networks.** Its electricity system is made up of six insular sub-systems, with only one electricity submarine interconnection between the islands of Lanzarote and Fuerteventura (a new interconnection is currently under construction between the islands of Tenerife and La Gomera)[44]. The development of additional electricity interconnections between islands presents difficulties due to the great depths of the sea, which hinders the ability to lay submarine cables[45]. These conditions make the system **less stable and secure** than large interconnected systems (such as in mainland Spain), in which it is possible to guarantee supply in the event of demand peaks or certain situations of insufficient generation.

- Almost half (49.4%) of the electricity generation units of the thermal power plants in the Canary Islands **exceeded their service life** before 2020, a scenario that will increase to 62.4% in 2030. By 2040, the entire group of thermal power plants will become obsolete[46]. Additionally, the generation park capacity is not adequately adapted to feed the increasing electricity demand correlated with demographic pressure[47]. These plants also have a significantly **high environmental impact**, particularly in terms of Greenhouse Gas Emissions[48].

- Due to the systemic instability and the increasing obsolescence of facilities, **service interruptions (outages)** are on average more frequent in the Canary Islands than in mainland Spain, even though they were reduced by 77.78% from 2010 (18 interruptions) to 2021 (4 interruptions)[49]. Despite recent improvements in the overall capacity and extension of the grid in the Canary Islands, events such as the blackout in La Gomera on 29 July 2023, highlight the persisting shortcomings in the region's infrastructure. According to the regional government, around 100 service interruptions took place in 2023[50]. The potential for enhancement in the electrical grid of the Canary Islands has been held back by the complex legal and regulatory issues surrounding it, which have affected the maintenance planning for the archipelago's network[51].

- The **volcanic eruption of Cumbre Vieja**, affecting the island of La Palma between September and December 2021, had severe effects on access to electricity. The natural disaster left a part of the population without housing and therefore without energy supply. Many households took in household members, friends or people affected in general, which increased the number of members per household and hence energy consumption, impacting energy bills[52].

3.0 Connectivity (internet and telephone networks)

3.1 Access to internet and telephone networks

3.1.1 Conditions in place to meet the needs and main factors constraining access

Conditions in place

- Connectivity –access to internet and telephone– is of special relevance for the Canary Islands, as a remote and geographically distant region from mainland Spain and Europe. The **share of households with broadband connection** is very high and slightly above the national average (96.9% in 2022)[53]. **Speed coverage** at peak demand conditions is also very high in the Canary Islands (98.4% at ≥ 30 Mbps download; 93.6% at ≥ 100 Mbps download and 91.9% ≥ 1 Gbps download)[54]. Moreover, 92% of the population of the Canary Islands between 16 and 74 years of **age regularly accesses the Internet** (at least once a week during the last three months), which represents 1.64 million people.

- In terms of **telephone access,** the Canary Islands are above the national average, with 69.9% of households with landline telephone connections (62.5% at the national level)[55]. The percentage of households with mobile connections is the same at the national and regional level (99.5%)[56].

- The **quality of internet connectivity infrastructure** in the Canary Islands is similar to mainland Spain. With **686,081 broadband lines,** the Canary Islands make up for 4.7% of all lines in Spain**.** The coverage of Fiber To The Home – FttH- (understood as the proportion of houses or businesses that can be connected to one or more FttH networks) reached 92% in 2022, which represents a positive trend (this percentage was 35% in 2015). Moreover, a complex network of **14 interconnected submarine cables** prevents each island (except El Hierro) from being disconnected as a result of damage or breakdown of one of the cables. The region is making progress in enhancing its connectivity infrastructure, as exemplified

by a recent programme modification that plans to allocate funding to a project for fostering interconnection with El Hierro. Additionally, three submarine cables connect Tenerife with mainland Spain (Cádiz)[57].

- When it comes to **mobile coverage and quality**, the situation is similar to the national average. For mobile networks, **4G** coverage in the region increased at a similar rate as at the national level, reaching full coverage of residential areas in 2018. For **5G** coverage, the deployment in the Canary Islands is below the national average but still high, having increased from 44% in 2021 to 75% in 2022, compared to the respective national averages of 59% and 82%.
- In terms of **devices available** to households, 100% of households in the Canary Islands have some type of telephone device (99.9% at the national level)[58]. The **mobile phone** is the most widespread device, present in 99.5% of households, as is the case at the national level[59]. **Landline telephones** remain more popular, with a rate of 69.9% (62.5% at national level). Finally, 83.3% of households in the Canary Islands have a **computer**, slightly above the national average (82.9%) in 2022.
- In terms of relevant **funding mechanisms and support schemes available**, at the **EU level,** the ERDF Programme for the Canary Islands 2021-2027 includes a specific objective aimed at improving digital connectivity. Under this objective, a specific programme is planned to support the extension of ultra-fast high-speed broadband in rural, isolated and less economically developed areas[60].
- The EU Connecting Europe Facility (CEF) for digital has awarded funding to investments worth 38 million euros to improve connectivity and digital infrastructures in the Canary Islands in 2022[61]. One of the projects will connect the Canary Islands to the Ellalink cable in the forthcoming years, ensuring a secure connection to the European continent and Latin America. In addition, in late 2023, CEF awarded 13 million euros to a project for the deployment of a new submarine cable between the Islands of El Hierro and Tenerife[62].
- The European Social Fund Plus (ESF+) includes provisions aimed at facilitating connectivity at home for pupils in digital poverty[63]. At the **national level**, the Spanish Recovery and Resilience Plan (RRP) includes a specific lever on the modernisation and digitisation of the industrial sector, specifically under the component on digital connectivity, boosting cybersecurity and 5G deployment. A specific line of aid on 'digital subsidies" has been launched[64], aimed at funding the acquisition of suitable broadband connection packages by vulnerable groups. This subsidy aims to reach at least 6,528 people in the region.

Constraining factors

While the use of information and communication technologies (ICTs) in households has grown in recent years, there is still a gap between users and non-users (the digital divide) that can be attributed to several factors:

- **Socioeconomic factors**: data observed across income segments shows a difference of up to 22.5 percentage points. While 98% of high-income households (more than 3,000 euros per month) access the internet on a daily basis, only 75.5% of low-income households (less than 900 euros per month) do[65]. According to a study carried out by the Canarias Federation of Municipalities (FECAM), 64% of Canarian local councils claim to suffer from the digital divide in their territories, which prevents them from having access to high-quality internet[66].
- **Lack of infrastructure** constitutes a key issue, particularly in rural and isolated areas. The areas with no current or planned broadband infrastructure coverage in the coming years (**white areas**) identified in the Canary Islands represent a total of 5,633 households, whilst the areas with single-operator coverage (**grey areas**) cover 231 households[67]. Additionally, internet infrastructure is showing signs of saturation[68].
- Despite the deployment of fibre optics in the main metropolitan areas, the archipelago is lagging slightly behind the rest of Spain's autonomous communities in terms of coverage of new generation and very high-speed networks.

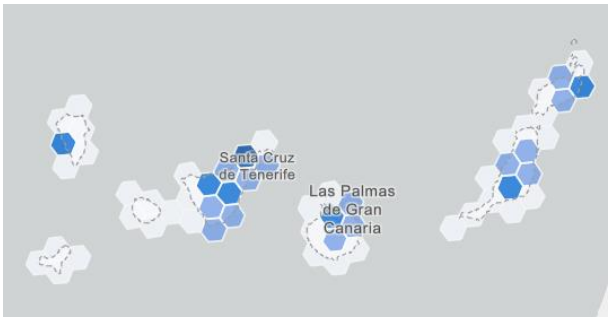

Figure 2. Concentration of white and grey areas in the Canary Islands.
Source: Ministerio de Transición Ecológica, Gobierno de España.

- Notably, in the Canary Islands the **digital divide** has had a particularly prominent impact on **education inequality**, as more than a third of households (35%) with children aged 6-15 and/or young people aged 16 or over, who remain in the education system, do not have any IT tools (computer, laptop, tablet) and/or internet connection to monitor school activities online[69]. Since the outbreak of the COVID-19 crisis, such digital divide in households has become more visible. For all students,

learning has been severely affected by the closure of education centres and lock-down. It has been estimated that up to 30% of students in Spain have not been able to follow the online education model[70].

Other relevant factors affecting overall accessibility to internet connectivity include the level of **digital skills and literacy** of the Canary Islands' population. Polarisation is observed both in the Canary Islands and at the national level, as the majority of the population in the Canary Islands has either advanced (40.7%) or low skills (33.8%)[71].

4.0 Mitigating actions and recommendations

Needs identified in Key Area 1: Access to electricity, cooling and heating

CONTINUE MEASURES AIMED AT PROTECTING HOUSEHOLDS AFFECTED BY ENERGY POVERTY

- Strengthen **consumers' awareness and knowledge** about the social electricity subsidy and social thermic subsidy, i.e., by organising **capacity-building and awareness raising workshops** at local level (in cooperation with local authorities), to provide information and guidance on access to subsidies.
- Develop solutions for the **simplification of procedures** to apply for the social electricity and social thermic subsidies.

PROMOTE ENERGY EFFICIENCY MEASURES AND IMPROVE INSULATION AND WEATHERPROOFING OF DWELLINGS

- Organise awareness raising activities to promote **energy efficient practices and behaviours** of consumers.
- Develop specific programmes targeted at the **integral rehabilitation of buildings**, particularly in rural areas with residents in situation of vulnerability or risk of social exclusion.
- Promote the replacement of existing housing equipment with more **energy efficient equipment**, including heating and electric appliances, while addressing better insulation.

CONTINUE POLICIES AND INVESTMENTS TO ENHANCE ELECTRICITY GENERATION's STABILITY CONDITIONS

- Organise **peer learning workshops to support information sharing and good practices exchange** on successful renewable energy storage measures with other Spanish and EU regions.
- Encourage the introduction of **energy storage systems**, exploring constraints in the regulatory framework.
- Explore technical (while environmental) solutions for the creation of **additional interconnections** between islands.

Needs identified in Key Area 2: Access to connectivity (internet and telephone)

ENSURE UNIVERSAL ACCESS TO BROADBAND INTERNET CONNECTION

- Continue to implement specific programmes aimed at bridging the existing rural-urban divide, particularly by reducing the current number of areas with no current or planned **broadband infrastructure coverage**.
- Encourage investments and support for the implementation of **next generation and/or very high-speed** broadband infrastructure deployment projects.

EXTEND ACCESS TO COMPUTER EQUIPMENT TO LOW-INCOME HOUSEHOLDS

- Develop **aid programmes** to support access to electronic **devices** (e.g. tablets/ laptops) for vulnerable and/or underserved communities.
- Explore **partnerships** with computer manufacturers or retailers to offer devices at discount prices to eligible households.
- Consider establishing additional **computer centres** in underserved neighbourhoods, libraries, community centres and schools.

PROMOTE DIGITAL LITERACY PROGRAMMES

- Further develop training programmes on **digital skills** particularly targeting school-age population and support equal opportunities in the information society.
- Encourage the acquisition, training and use of **equipment and tools** specific to this area of knowledge.

Annexes

Annex 1 - References

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