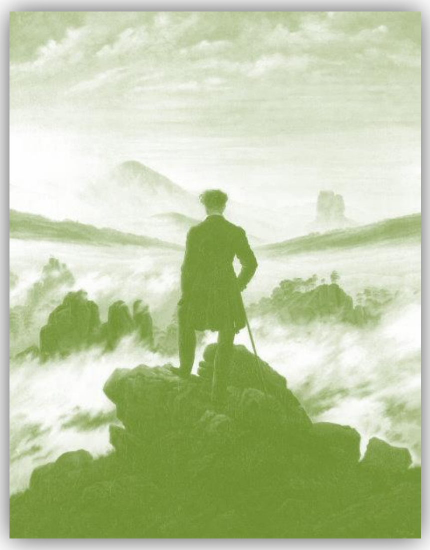
Report on Territorial context analysis

Partner No.6
Local Government of the island of Tenerife



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22/02/2019

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The template includes 8 suggested steps for executing the TCA.

1. General Description of your Region and its Demography

Tenerife is an island of the Atlantic Ocean belonging to the Autonomous Community of the Canary Islands (Spain). Together with La Palma, La Gomera and El Hierro, it forms the province of Santa Cruz de Tenerife.

The city of Santa Cruz de Tenerife is the capital of the island and the homonymous province, as well as its most populated municipality, with 204 856 inhabitants (INE 2018). The city is also the capital of the Autonomous Community of the Canary Islands, sharing that status with Las Palmas de Gran Canaria.

Despite this, between 1833 and 1927 Santa Cruz de Tenerife was officially the only capital of the Canary archipelago, until in 1927 a decree ordered that the capital of the Canary Islands be shared, which is how it currently stands.

The second municipality by number of inhabitants of the island, and third of the Canary Islands, with 155 549 inhabitants (INE 2018), is San Cristóbal de La Laguna, whose historic center is a World Heritage Site.15 The metropolitan area of Santa Cruz de Tenerife has a population of more than 400 000 inhabitants.

The orographic characteristics in Tenerife constitute a mountain territory with an abrupt and rugged relief. The Teide volcanic massif and the Dorsal mountain range occupy the central part of the Island and divide it into two slopes: the North and the South. In addition, three altitude levels are distinguished; Summit, Medianía and Costa.

This complicated and rugged orography of the terrain does not favor communications by land and has influenced and determined notably the current network of communications infrastructures.
The second factor that determines the configuration of the road network is the structure of the distribution of the population.

Thus, there is a strong imbalance between the densely populated north, with a growing weight of the capital area, facing the south of the island characterized by a certain population gap, although on the southwest slope, where tourist centers are located, present important indexes of growth.

On the other hand, the population is characterized by a high level of dispersion throughout the territory. In fact, there are 379 population centers on the Island, of which more than two thirds (267) have a population of less than 1,000 inhabitants and more than half (195) have fewer than 500 inhabitants.

The high degree of dispersion of the population contrasts with the concentration of employment in some areas (Metropolitan Area, South, Puerto de la Cruz), which causes a significant daily flow of population displacements from their places of residence to the main centers of work.

Although the two mentioned factors related to the morphology of the territory and the distribution of the population determine to a large extent the vertebration of the terrestrial communications of the Island, we can speak of a third factor, with an increasing importance, which is linked to the spectacular development economic, which, thanks to tourism, is registering the south of the island, and which also has and will have an enormous impact on the structuring of the current and future road network.

The strong economic development of the south has generated important flows of inhabitants who, coming from the north of the Island (more populated), move daily towards the south for work reasons.

Tab. 1 - Indicators

n.	Title	Unit of measure	Quantity	Source	To be provided by
1.1	land area by type: mountain a. forest b. hilly c. plain d. water-covered (by type: lake, river, …)		Total: 2,034.38 a. 690.95 b. 270.64 c. – d. –		PP
1.2	topographic diversity (geographic form and elevation variation)		3,718		PP
1.3	Population on 1 January by age group, sex and NUTS 3 region	n.	904,713	Eurostat	Lead Partner
1.4	Population: Structure indicators by NUTS 3 region	n.	ES702	Eurostat	Lead Partner
1.5	Demographic balance and crude rates at regional level	n.	15.02% (<14) 70.36% (>14<64) 14.62% (>64)	Eurostat	Lead Partner
1.6	Conventional dwellings by occupancy status, type of building and NUTS 3	n.	230,740	Eurostat	Lead Partner
1.7	Population density	n./sq. km	441.75		Lead Partner
1.8	Municipalities	n.	31		PP
1.9	Population in urban areas/total	%	45		PP
1.10	Rural centers	n.	4		PP
1.11	*pls add…*		-		

2. Economy and Labour Market

The economy of Tenerife, eminently agricultural and commercial until the 70s of the twentieth century, is based on the tertiary sector (74.6%), mainly tourism, which has led to the development of construction and services linked to tourism. The industry is scarce and represents around 7 or 8% of the national GDP, basically in agri-food processing, tobacco and oil refining sectors (oil refinery in Santa Cruz de Tenerife).

As regards the primary sector, only 10% of the area is cultivated, with the majority being dry (vine and potatoes), and a minority (mainly bananas and tomatoes) irrigated. Export agriculture is oriented towards trade with national markets and the European Union. The export of other tropical fruits (avocados, pineapples, mangoes and other greenhouse crops) and flowers has also begun. Livestock, mainly goats and cattle, is scarce, after having suffered a major setback in recent decades.

The data reflected below are mainly from the Economic Situation Bulletin of the third quarter of 2018, a publication by Cabildo de Tenerife and the Chamber of Commerce and Industry and Navigation of Santa Cruz de Tenerife; which has been prepared by the Business Analysis and Study Service of the Chamber of Commerce and Industry and Navigation of Santa Cruz de Tenerife.

According to the previous Bulletin, at the end of the third quarter of 2018, the island economy began to stabilize the results achieved during the recovery period started at the end of 2013, with a number of companies higher than those years and, most importantly, the most important , with the largest number of workers in its history. Something more than eleven years later, Tenerife has been able to recover all the lost employment reaching the 386,670 employed. However, despite these good data, there are still imbalances and reforms to face since the population growth so high that the island has registered in recent years has prevented to reduce the unemployment rate to an acceptable level, in addition to the existence of other structural problems and of adaptation to the new times that force us to continue working in a firm commitment to quality.

Consumption

Expenditure on consumption of Tenerife families during the third quarter of year 2018 remains stable, although with a deceleration trend with respect to the figures of a year ago. According to the available information, the consumption expenditure of families in Tenerife during the third quarter of the year would have remained stable compared to the second quarter and compared to a year ago favored by good employment data, although with a Deceleration trend in the growth rate.

Thus, during the three months of summer, the number of businesses fell slightly (-0.2%), reaching the figure of 7,155 companies to social security, with some worker under their care, 14 less than the existing at the end of the month of June. In annual terms, the data also point to a slight fall of 0.6%, lower than that registered for the Canary Islands as a whole (1.4%), with 43 stores less than a year earlier. A decrease in the number of companies that have not seen setbacks in the number of jobs since they continued to grow by 0.6% in the quarter, bringing the total figure to 68,119 workers at the *end of September, 391 more than in June and 1,127 over those existing a year earlier (1.7%). On the other hand, the number of unemployed accentuated its decline with a fall of 3.9% quarterly and 4.1% annually in the average of the third quarter of the year, placing the number of unemployed in commerce at the end of September in the 15,505 unemployed, the first value below the 16,000 since the first quarter of the year 2009.*

Investment

In September, there were a total of 27,729 registered social security companies with a worker in their charge, 51 more than in June of this year, 527 more than in September 2017. In line with the stability that denotes business growth, the confidence of the entrepreneurs who lead them also points to an era of stability with good short-term forecasts, marked by seasonal factors for many activities related to trade and hospitality, but with a tendency to decelerate in the growth rates with respect to previous years. Despite this, 77.52% of the companies on the island plan to maintain stable or improve their activity in the last quarter of the year.

Agriculture

With regard to the agricultural sector, the number of companies registered for security amounted to 1,029 businesses, 12 more than a year earlier.

Construction

On the other hand, the construction sector maintains a steady growth rate in its number of companies that during the summer months was 0.8% and 7.1% compared to a year earlier. In the month of September there were a total of 2,316 construction companies registered with social security with a worker in their charge, 18 more than those existing in June and 153 over those registered in September 2017.

Another activity indicator such as the sale of cement shows a quarterly decline of this time of year (-2.8%), but an important annual recovery with a growth compared to the third quarter of 2017 of 41%, much higher than the regional average increase for the same period was 27.1%. The volume of cement sales on the island of Tenerife during the third quarter of this year amounted to 72,135 tons, 20,976 more than in the same period of 2017.

Industry and energy

With regard to the industry sector, the number of industrial companies reached 1,358 at the end of the third quarter of the year. A figure that represents a slight decline of 14 companies compared to the existing at the end of the second quarter of the year (-1%), but 44 above the records of a year ago, in which they amounted to 1,314 businesses. A new increase that gives continuity to the growth trend started in the first quarter of 2014, consolidating the progressive recovery of the number of industries on the island (in January 2014, the number of industries was 1,176).

The gross production of energy, as is usual at this time of the year, increased significantly registering a variation of 4.3%, after the decline experienced in the three previous quarters. In interannual rate, the third consecutive decline occurred, with a variation of 4.1% compared to the gross production of the third quarter of 2017. On the other hand, the electric power available showed a rebound with respect to the second quarter of the year of 7.4 %, also as usual during the summer months, but decreases by 0.9% when compared to the energy available during the same period of the previous year.

Services

Regarding the number of companies registered to the social security of the services sector, it remained stable during the third quarter of the year, registering only a slight upward variation of 0.2% of companies with a dependent worker until the total figure in the 23,026 businesses, 53 more than at the end of June. Regarding the figures of a year ago, the sector recorded a growth in its number of companies with 318 over the existing in September 2017, which represents a rate of progress higher than the regional and slightly lower than the previous quarter (a 1.4% versus 2%), but maintaining the positive trend that began at the end of 2013, when the island and Canarian economy began to rebound after a period of 6 years of crisis.

Hostel and Tourism

In reference to the most important sector of the economy of our island, during the months of June to September the number of foreign tourists entered the island grew 3.4% in relation to the second quarter of the year, which did not prevent this growth was lower than the total number of tourists who visited the island last summer, experiencing a drop of 8.4% in its annual comparison with a total of 1,202,036 visitors, 110,086 less than a year earlier. The third consecutive decline in quarterly annual change rate. However, the total of tourists who visited Tenerife during the months of July, August and September was 1,453,966, 7% more than in the second quarter of the year, but 5.7% less than those entered in the summer of 2017.

The hospitality sector (accommodation and catering) experienced an increase in employment of 2% quarterly and 1.9% per year, a percentage that has been positive since the third quarter of 2010.

Transport

Likewise, the number of transport companies with a dependent worker experienced a moderate growth of 0.6% during the three summer months with 11 more activities, giving continuity to a new interannual variation, the fourth consecutive, also of 0, 6%, which places the total number of transport companies on the island with a worker under their care at 1,760.

Labour Market

Tenerife ends the third quarter of 2018 with a historical figure of occupation, not seen even in the best moments of the labour market of the island and that take us back to the second quarter of 2007, when the number of employed people that the Population Survey showed Active was 380,900 people. Eleven years later, marked by a long period of crisis with two major economic recessions, Tenerife has been able to recover all lost employment reaching 386,670 employed in the third quarter of 2018.

Specifically during the summer months employment grew at a rate of 2.10% quarterly with 7,940 more workers than in June of this year, also contributing to the annual rate grow by 3.9% which translated into 14,530 more employed than in September 2017.

The main responsibility that the figures of unemployed have not been reduced with the same speed and intensity has been the active population, that is, the one that can and wants to work, which has not stopped growing, being the advance in the latter quarter of 0.7%, with 3,120 more people than in the second quarter of the year and 3.1% in the last year with 14,510 more. A new growth that puts the total number of assets at the end of the third quarter of the year at 476,750, a figure much higher than the one recorded by the island in the second quarter of 2007, just before the crisis, when it reached 415,500 people.

Behaviors that have favored a positive evolution of the unemployment rate stood at 18.9%, after reducing by 1.15% during the summer months and 0.6% in the last year. A level lower than the regional average (19.64%) that recovers sensibly compared to the records reached 5 years ago, when in the third quarter of 2013 it reached 32.3%, but still has a way to go until it reaches Pre-crisis levels when it came to be lower than two digits in the second quarter of 2007 (8.3%).

Attending to other sources of information such as the number of registered jobs and unemployed also corroborates the improvement of the labour market. In fact, the number of registered jobs grew at a rate of 2% quarterly, managing to maintain the pace of annual progress, although with a certain deceleration, which stood at 3.4%, with the total figure at the end of the quarter of 360,759 registered jobs, 11,879 more than the ones a year earlier. On the other hand, the number of unemployed registered in the offices of the Public State Employment Service (SEPE) maintained its downward trend with a decrease of 2% in terms of quarterly variation rate and 4.8% year-on-year rate. At the end of September there were 87,942 registered unemployed on the island, 6,126 less than a year earlier.

Social Security affiliations also grow strongly, as reflected by the behavior of the quarterly (2%) and annual (3.6%) variation rates that place the number of affiliated workers at the end of the third quarter of the year in 334.802, 6.882 more of those existing in the second quarter of the year and 11.996 above those of September 2017. An improvement that has involved all sectors of the island economy, highlighting again in relative variation the construction sector with an annual increase of 9.3%, followed at a certain distance by the so-called "other services" sector whose annual progress was 4.4% and that of the industry whose membership growth is 3.4%. In absolute terms, the greatest *contributions to employment came from "other services" with 7,064 more members in the last year, followed by construction with 1,936 members and the hospitality industry with an annual increase of 1,208 people.*

Table 2 - Indicators

n.	Title	Unit of measure	Quantity	Source	To be provided by
2.1	Gross domestic product (GDP) at current market prices by NUTS 3 regions	National currency	-	Eurostat	Lead Partner
2.2	Gross value added at basic prices by NUTS 3 regions	National currency	-	Eurostat	Lead Partner
2.3	Employment (thousand persons) by NUTS 3 regions	n.	-	Eurostat	Lead Partner
2.4	Dispersion of regional employment rates of age group 15-64 by NUTS 3 regions	n. or %	-	Eurostat	Lead Partner
2.5	Dispersion of regional unemployment rates by NUTS 3 regions	n. or %	-	Eurostat	Lead Partner
2.6	Business demography and high growth enterprise by NACE Rev. 2 and NUTS 3 regions	n.	-	Eurostat	Lead Partner
2.7	Business demography by size class and NUTS 3 regions	n.	-	Eurostat	Lead Partner
2.8	Employer business demography by NACE Rev. 2 and NUTS 3 regions	n.	-	Eurostat	Lead Partner
2.9	Employer business demography by size class and NUTS 3 regions	n.	-	Eurostat	Lead Partner
2.10	Employer business demography by size class and NUTS 3 regions	n.	-	Eurostat	Lead Partner

3. Environment and Climate Change

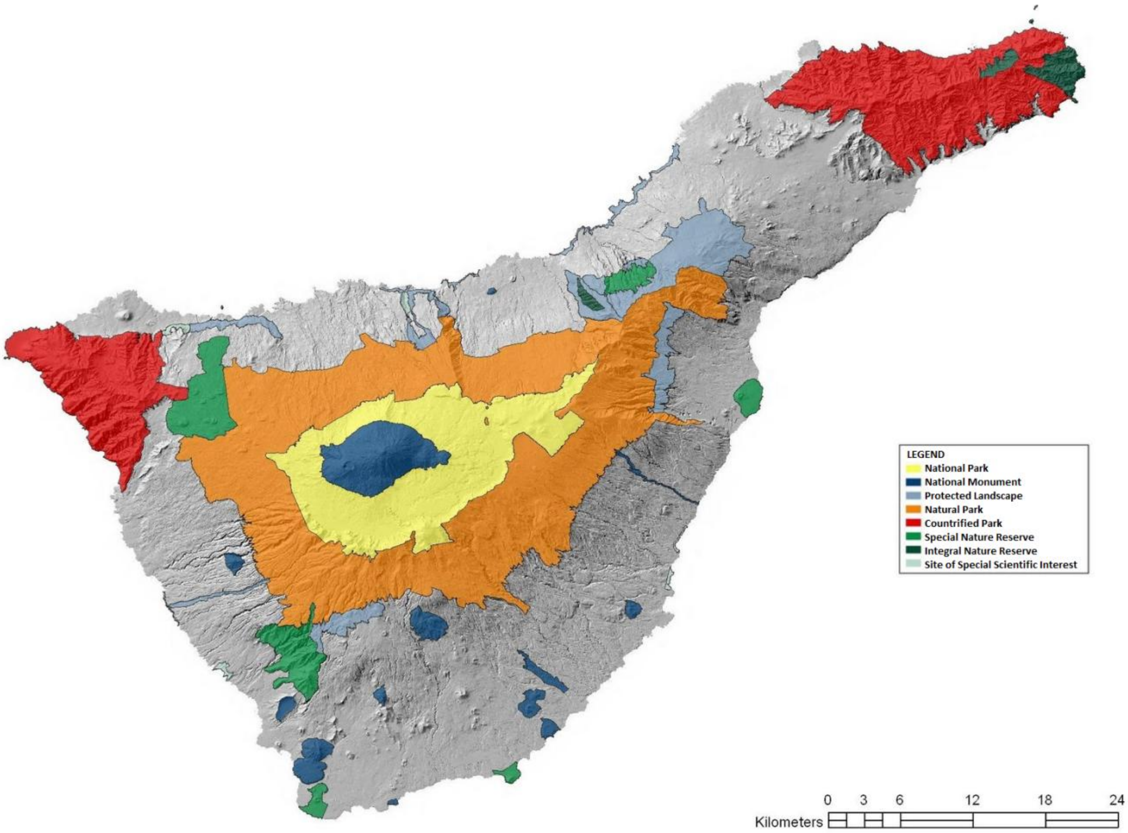
Environment

Tenerife is an island with 900,000 inhabitants that annually receives more than six million tourists.

For an area of 2,034 square kilometers, the population density is 438 inhabitants / km2, which implies significant pressure on the territory and natural resources.

This reality has motivated the Cabildo de Tenerife to bet on promoting as a future strategy the transition towards a more sustainable society and the shared commitment to sustainable development among public administrations, private institutions and the island society.

Precisely and based on key aspects such as the fight against climate change, the integral management of waste, sustainable mobility, the protection of natural resources, etc., "Tenerife More Sustainable" has been designed.



Picture 1. Protected natural areas of Tenerife.

Tenerife More Sustainable and its objectives

The overall objectives of Tenerife Más Sostenible (T + S) are those of Education for Sustainable Development (ESD) as defined by UNESCO within the Global Action Plan that was approved at the Nagoya International Conference in November of 2014.

Within Tenerife Más Sostenible, a series of awareness-raising programs for sustainability are included, aimed at all the island's citizens (including visitors and residents), aimed at informing and training about those aspects in which the population can be individually involved actively in that the Island is an example of sustainability.

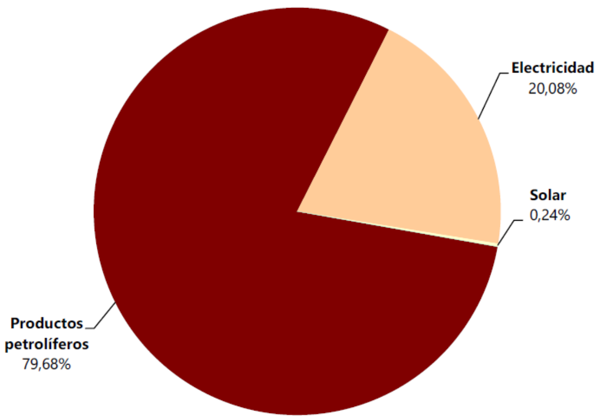
The Cabildo de Tenerife (The government of Tenerife) has developed the Strategic Framework for Island Development (MEDI 2016-2025) whose objectives are to improve the effectiveness of management to boost the economic and social development of the Island.

In this sense, Tenerife Más Sostenible aims to be a dynamic element of sustainability in the five axes on which this Strategic Framework is structured.

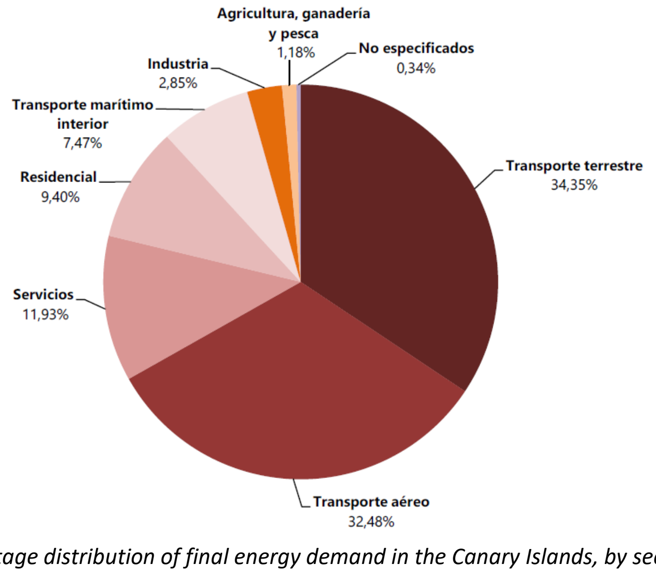
Energy & Renewable energy

Regarding final energy consumption by sector, note that most are recorded in transportation (in its three modes, land, air and sea), recipient of 74.30% of the final energy demand, with special relevance of land and air transport, absorbing 66.83% of final energy consumption.

The heading "unspecified" mainly includes diesel deliveries made by distributors, regardless of retail facilities (IVP) or service stations, whose final destination (transport fleets, heat generation in the domestic or industrial sector) , etc.) could not be determined.



Graph 1. Percentage distribution of the final energy demand in the Canary Islands, by type of energy. Year 2016.



Graph 2. Percentage distribution of final energy demand in the Canary Islands, by sector. Year 2016

Renewable Energies in the Canary Islands

The historical evolution of the Canarian energy system has been based, since the beginning of the s. XX was introduced into the archipelago, in oil, constituting until today the main and almost sole source of energy.

Thus, although the Islands show great potential, the evolution of renewable energies has not been as expected, since in the second half of the 80s a wind farm was installed in Tenerife, constituted as an experimental park to test the behavior of different models of wind turbines (including one with vertical axis). At that time, several machines were also installed in Gran Canaria, including one with a vertical axis. From the 90s, the first wind farms for the production of electricity in Tenerife and Gran Canaria start operating.

Next, the evolution of the powers as the one of the electrical productions of renewable origin as a whole are analyzed. Likewise, there are also two graphs (one of powers and the other of productions) that show the existing reality in each of the islands of the Archipelago with respect to renewables, in 2016.

However, in the rest of the sections of this chapter, each one of the types of renewable technologies used in the Archipelago is detailed.

Electric power from renewable sources installed in the Canary Islands

Overall, the progress of renewable energies has been marked with sustained growth, with the years 1998 and 2008 as major differentiators, to achieve growths much higher than those achieved in the study interval. Specifically, in the year 1998 there was an increase of 103.2% with respect to the previous year, mainly due to the inclusion of electric power of wind origin in Gran Canaria and Tenerife.

In 2008, the increase was 47.4%, in this case thanks to the large amount of photovoltaic power connected in the islands of Tenerife, and to a lesser extent, in Gran Canaria.

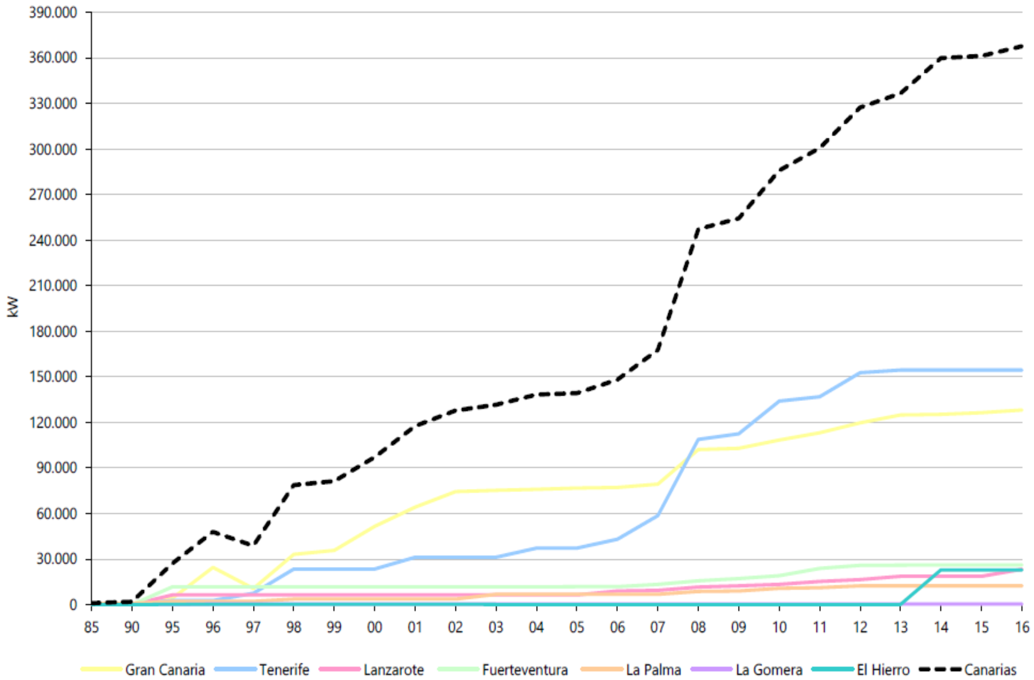
However, in recent years there has been a certain paralysis of the sector. Note, for example, the minimum growths that Gran Canaria, Tenerife, Fuerteventura or La Palma have had (since 2013, nothing renewable has been installed).

On the opposite side, it is worth noting the significant increase in the island of El Hierro in 2014 due to the installation of the "Gorona del Viento" hydroelectric plant, which allowed the island to go from 134 kW installed to 22,854 kW (corresponding to the sum of 11,500 kW of wind power and 11,320 kW of hydraulic turbine power).

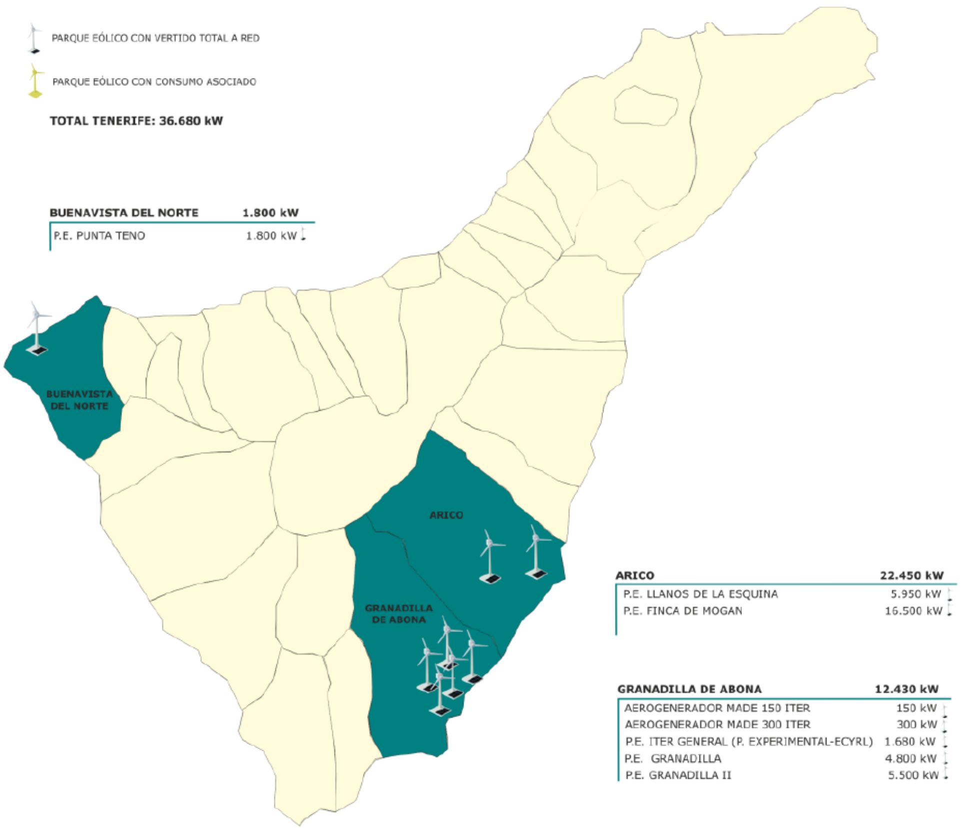
In general terms, the electrical power of renewable origin installed in the archipelago is concentrated mainly in the two capital islands, concentrating, since 2008, something more in Tenerife as a cause of the photovoltaic installations installed in that year in that island.

Total production of electricity from renewable sources in the Canary Islands

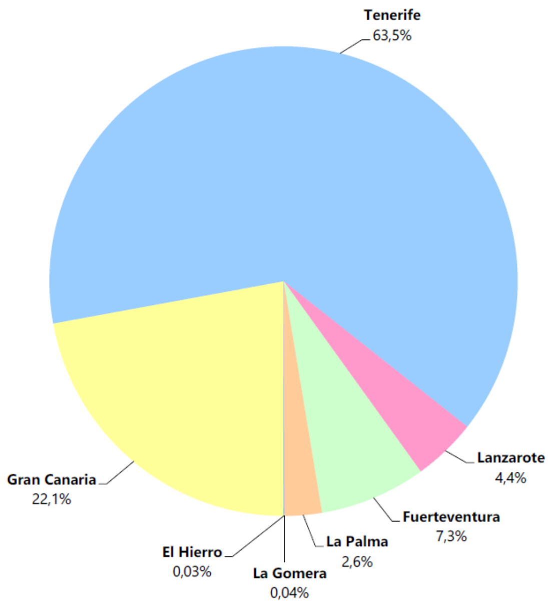
The electrical production from renewable sources in the Canary Islands has followed the same trend marked by electric power, with the condition that, although not all renewable energy sources have *the same problem, at least the most mature and globally available (wind and solar) are not constant sources of energy, but vary according to the weather conditions of each moment. Likewise, the technologies employed also influence the obtained performance.*



Evolution of the production of electrical energy from renewable sources in the Canary Islands.Year 2016.



Energetic Yearbook of the Canary Islands 2016. Department of Environment, Industry, Commerce and Knowledge



Percentage distribution of the photovoltaic power installed in the Canary Islands. Year 2016

Climate change

Overall, the progress of GHG emissions in the Canary Islands has been marked by a sustained growth in the inventoried period until 2005, with the years 1996 and 1999 as major differentiators, reaching growths much higher than those achieved in the study interval.

From the year 2006, the falls begin to be notorious, with some rebound like the one of the year 2008, but that later motivated an important decrease the following year.

This sharp decline that occurred in 2009 reaching 2015 with levels lower than the year 1999, is a reflection of the economic recession, which has led to a significant decline in sectors with a significant contribution to inventory emissions.

In numerical terms, the estimated GHG emissions in the Canary Islands in 2015 were 12,676.4 Gg CO2-eq, or what is the same, there was an increase of 45.7% compared to 1990, a growth higher than the of the whole of the Spanish territory and away from the increase granted to Spain under the Kyoto Protocol.

The relative variation with respect to the previous year was -3.0% and compared to the 2005-2015 reference period of -27.9%. Per capita emissions in the Canary Islands that year were 6.04 tons of CO2-eq / inhabitant

In relation to the relative weight and evolution of the different GHGs over the total emissions in the Canary Islands, the predominance of CO2 over the others is highlighted, with a contribution in 2015 of 85.4% of the total for the year (10,824 , 4 Gg CO2-eq).

With regard to fluorinated gases, the increase that occurs throughout the period is very significant, although it should be taken into account that the contribution in absolute value of these gases is marginal in relation to the total inventory (however, in the last year it has had an abrupt fall, decreasing -41.2% with respect to the previous year).

Going down to a sectoral analysis, it is easy to see the extraordinary importance it has had throughout the period in terms of GHG emissions, the "energy processing" sector, reaching values close to 90% of total emissions, covering both the production of electricity and oil refining such as transportation and others, according to the CRF (Common Reporting Form) classification.

Although it has been losing some relevance in recent years in favor of the sectors "industrial processes and product use" and "waste treatment and disposal", in 2015 it represented 85.62%.

The second sector in importance corresponds to the "treatment and elimination of waste" with a percentage of 9.30% of total emissions in 2015.

The rest of sectors have practically testimonial values. The sectors "industrial processes and use of products" and "agriculture" are in 2015 in relative shares of 3.74% and 1.34% respectively.

The analysis of the time series of the different sectors shows that the evolution of the energy sector has followed a discouraging behavior from the standpoint of decoupling emissions-economic growth, since it mimics the trend of the economic cycle, ie, higher growth economic, greater consumption of energy, and therefore, a greater increase in GHG emissions.

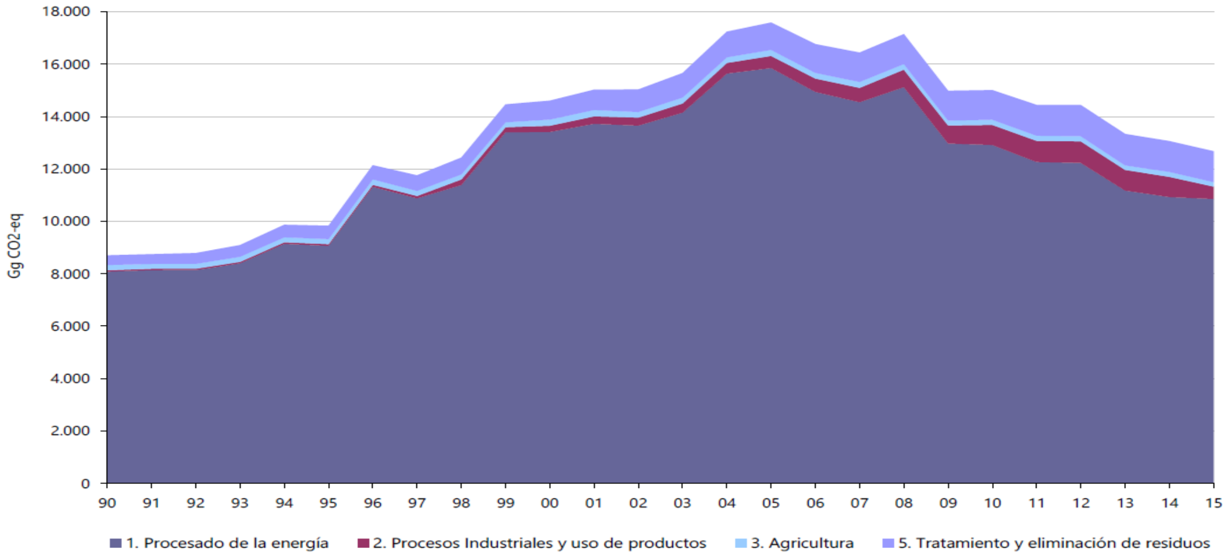
For its part, in the case of "industrial processes and the use of products" (non-energy products and the use of solvents, the use of GHG substitutes, ...), it grows dramatically due to the entry into service of fluorinated gases (which replaced the chlorofluorocarbons, CFCs, and hydrochlorofluorocarbons, HCFCs, prohibited by the Montreal Protocol for damaging the ozone layer), but since its introduction, in recent years its progression has stabilized, in part, based on the application of a more restrictive regulations on its use.

Similarly, it occurs in the "agriculture" sector, which does so by a more rational use of fertilizers and a better control of methane emissions from poultry and pig farms.

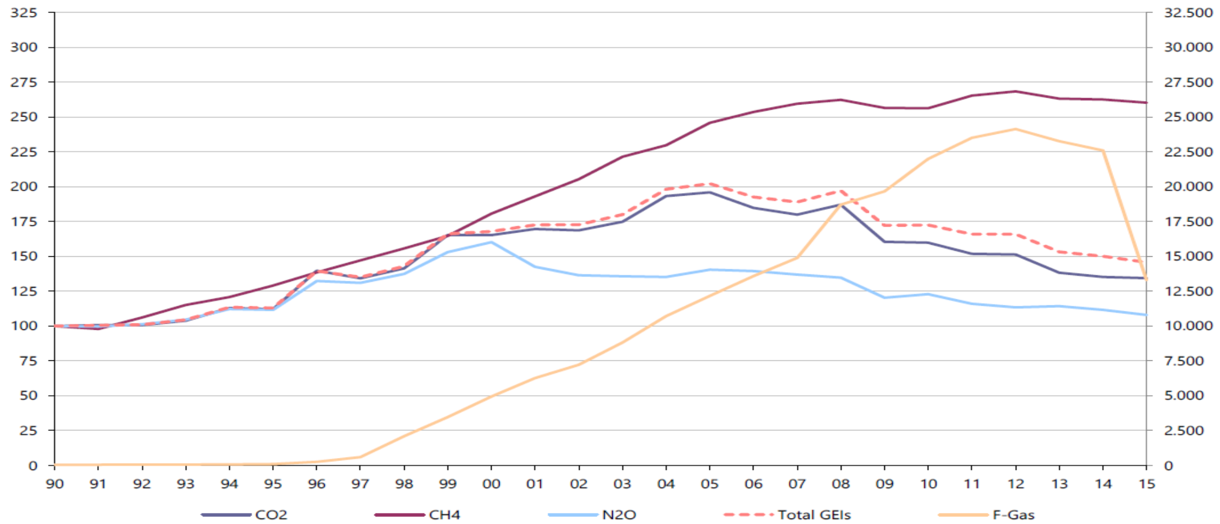
A special comment should be made in relation to the "waste" sector, since its emissions could be classified as resulting from an induced environmental impact, due to a greater waste management and, therefore, a lesser global impact on the environment, but which in turn implies greater localized methane emissions produced by the decomposition of buried organic waste.

Its strong growth has induced this sector to acquire a significant weight over the total emissions and that arouses great interest from the energy point of view in the face of the current lack or scarce energy use of recovered methane.

On the other hand, it must be borne in mind that the nature of absorption of emissions from the sector of "land use and reforestation" slightly alters the net values adjusted to 100%.



Evolution of greenhouse gases in the Canary Islands, by categories. Year 2016.



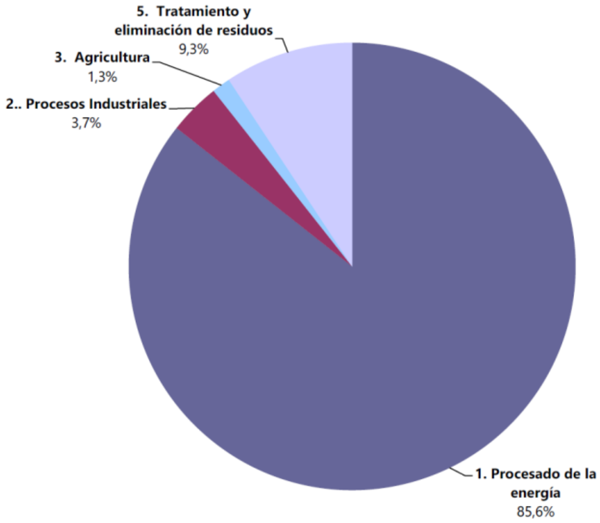
Nota: Las emisiones de CO_2, CH_4, N_2O y el sumatorio de GEIs están referenciadas al año 1990, mientras que las de F-gases (HFC, PFC y SF6) están en su conjunto referenciadas a 1995 y representadas en el eje secundario. Fuente: elaboración propia

Index of time evolution of greenhouse gas emissions in the Canary Islands, by gases.

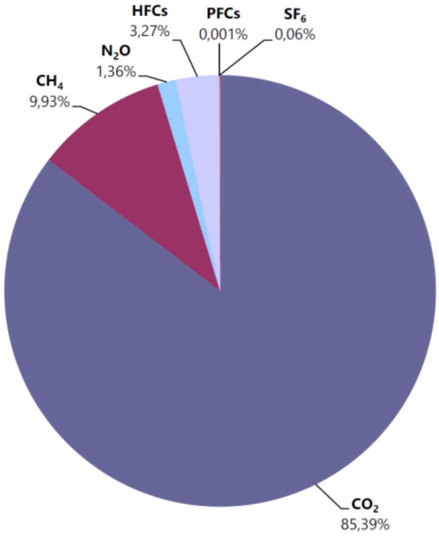
It is interesting to analyze the growth ratios for the year 1990, 2005 and the quinquennium 2008-2012, given that the National Allocation Plan reformulated the objective of the 2008-2012 five-year period for Spain to stabilize GHG emissions by 37% compared to the base year 1990.

This supposes 22 percentage points of difference with respect to + 15% of the Kyoto Protocol, of which 2% must be obtained through sinks and the rest (20%) through flexibility mechanisms (acquisition of carbon credits).

The following is a more detailed breakdown of GHG emissions in 2015 (last year of the inventory), these being by activity categories and, in turn, by gases.



Percentage distribution by categories of greenhouse gas emissions in the Canary Islands. Year 2015.



Percentage distribution by greenhouse gases in the Canary Islands. Year 2015

Table 1. Inventory of greenhouse gases in the Canary Islands. Year 2015

Regional specificities in environment and climate change

Climate change in Tenerife

The origin of climate change is in the emission of greenhouse gases (GHG) into the atmosphere by human beings. The main gases are six: these gases are CO2, methane or CH4, nitrous oxide or N2O, fluorocarbons (HFC), perfluorocarbons (PFC) and sulfur hexafluoride or SF6. Among these gases, the importance of carbon dioxide, CO2, mainly derived from the burning of fossil fuels such as oil, gas and coal, stands out.

Climate change causes alterations in global atmospheric pressure, with the consequent modification of the global rainfall regime, and an increase in the episodes of great droughts, torrential rains and natural catastrophes. The modification in the dynamics of marine currents, the melting of the polar ice caps and the rise in sea level, the disappearance of glaciers, and the advance of desertification are consequences of climatic modification and the increase of temperature.

In the Canary Islands, when assessing the impact of climate change, we must take into account the particular conditions that the Islands have and that make them particularly sensitive. The special location of the Islands, their geographical and climatic characteristics, their orography, their high biodiversity, the use of land, their economy and their population stand out as conditioning factors.

Analysis of climate change in Tenerife

The temperature of the globe is increasing, it is nothing new. Its apparent consequences are. Since 1885 (when the National Hurricane Center of the USA begins to register) until 2004, in the region that covers the Iberian Peninsula, the Azores and the Canary Islands, there had been no tropical storm.

As of 2005, Vince first appeared, which affected Andalusia and southern Portugal, then Delta in the Canary Islands, and the following year Gordon and Helene, who had their highest incidence in Galicia and the Azores respectively. To this we must add, the tornadoes that affected western Andalusia last November.

According to Emilio Cuevas, director of the Izaña Observatory of the National Institute of Meteorology, "there is no cause and effect relationship between adverse phenomena and climate change", although the islands have a series of characteristics that affect their repetition more frequently:
- Increase in ocean temperature,
- Ascent of the temperature of the atmosphere and humidity.

They are elements that favor the appearance of stronger storms. Caves says that although "we have seen in recent years an increase in the number of storms, also otherwise, heat waves." From 1974 until practically the end of the 1980s, none had been registered, and now we have had at least two years in recent years, "and increasingly stronger. In fact -says- the twelve most powerful have been registered in the last five years ".

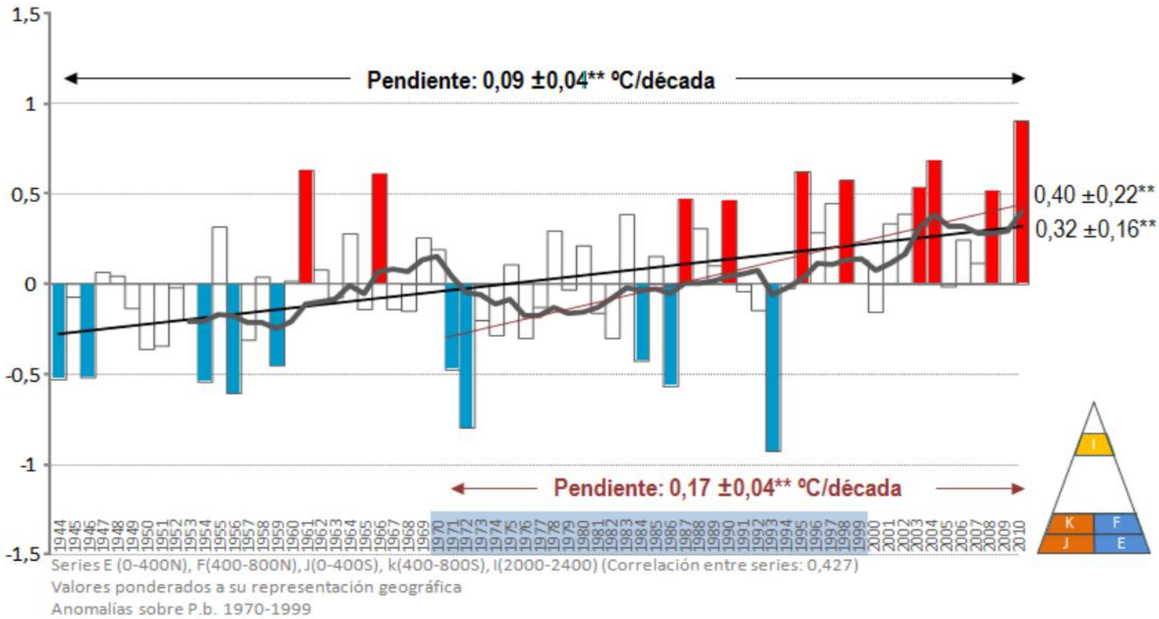
The simple rise in temperatures in the Atlantic means, for the Canary Islands, that "the chances of tropical storms, such as the Delta, increasing," explains Cuevas. This is because these types of storms "feed on hot climates with humidity". Until now, the ocean that bathes the coasts of the Archipelago made the Canary Islands be characterized by the opposite.

The evolution of anomalies with respect to the base period 1970-1999 of the average temperatures of the island's global reference series registered a positive growth trend between 1944 and 2010 of 0.09 ± 0.04 ºC per decade.

The average thermal anomaly for 2010 resulting from the linear correlation of these anomalies between 1944 and 2010 was 0.32 ± 0.16 ºC higher than the base period, but the average anomaly of the last ten years registered a value of 0.40 ± 0 , 16 ºC above the average temperature of the base period.

The trend showed an even more marked increase in the 1970-2010 period: 0.18 ± 0.09 ºC per decade.

If we compare the average temperature of the ten most recent 8 years (2001-2010) with the average temperature of the oldest 10 years (1944-1953), the increase was six tenths (0.60 ± 0.30ºC).



Average thermal anomalies

Table 3 – Indicators

n.	Title	Unit of measure	Quantity	Source	To be provided by
3.1	Land and marine protected areas (by category)	sq. km	Total: 976.32	ww.tenerife.es	PP
3.2	Wildlife (biodiversity)		- Land area: 16,518 - Sea:	www.biodiversidadcanarias.es	PP
3.3	Flora (biodiversity)		10,643	www.biodiversidadcanarias.es	PP
3.4	Maximum, minimum and mean temperature (by month)	C.	JAN: 22-13 FEB: 22-13 MAR: 23-14 APR: 24-14 MAY: 25-15 JUN: 27-17 JUL: 29-18 AUG: 30-19 SEP: 29-20 OCT: 27-19 NOV: 25-17 DEC: 23-15 YEAR:25-17.9	ww.tenerife.es	PP
3.4	Variation of exceptional climatic adverse events against previous year	% (or n.)	-	-	PP
3.4	Incidence of renewable energy on total energy production	%	20	www.cabildodetenerife.es	PP

4. Infrastructure and Mobility

Land transport on the island of Tenerife is articulated exclusively through road infrastructures that respond to the way of settlement and occupation of the territory, as well as its evolution.

It can be said that the road infrastructure network of the Island is conditioned by two main interrelated factors:

The orographic characteristics of the territory. Tenerife is a mountain territory with an abrupt and rugged relief.

The Teide volcanic massif and the Dorsal mountain range occupy the central part of the Island and divide it into two slopes: the North and the South. In addition, three altitude levels are distinguished; Summit, Medianía and Costa.

This complicated and rugged orography of the terrain does not favor communications by land and has influenced and determined notably the current network of communications infrastructures.

The second factor that determines the configuration of the road network is the structure of the distribution of the population.

Thus, there is a strong imbalance between the densely populated north, with a growing weight of the capital area, facing the south of the island characterized by a certain population gap, although on the southwest slope, where tourist centers are located, present important indexes of growth.

On the other hand, the population is characterized by a high level of dispersion throughout the territory. In fact, there are 379 population centers on the Island, of which more than two thirds (267) have a population of less than 1,000 inhabitants and more than half (195) have fewer than 500 inhabitants.

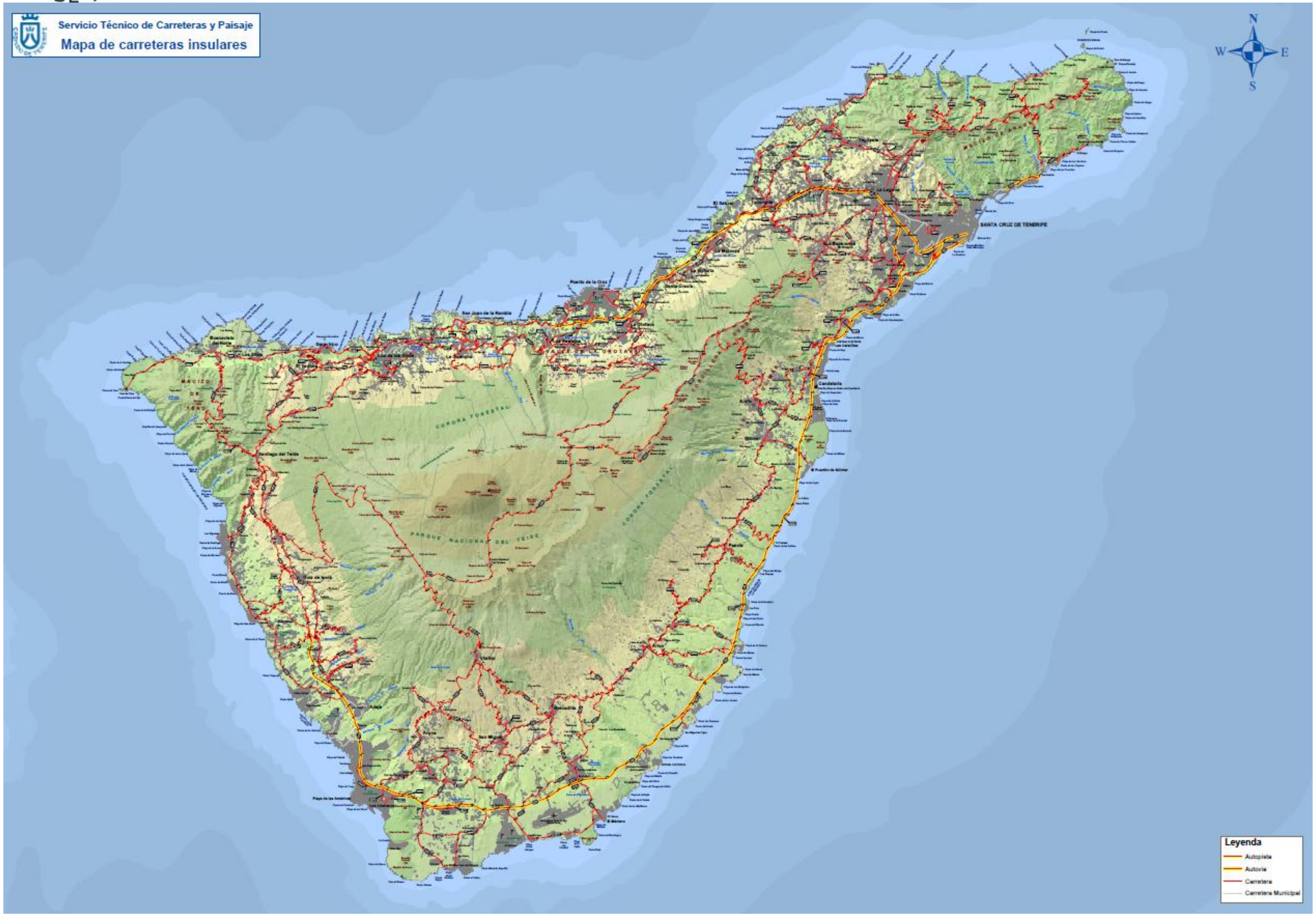
In addition, comparing the provision of roads of Tenerife with the national total, it is obtained that the Island has a greater density of roads with respect to the surface (it is a relatively small territory) and a smaller number of kilometers of road per inhabitant (it is a densely populated island).

Below is a comparison of the roads on the island of Tenerife, Canary Islands and Spain Total Territory km:

- Santa Cruz de Tenerife: 2,497km

- Canary Islands: 4,467km

- Spain: 166,011km


Servicio Técnico de Carreteras y Paisaje
Mapa de carreteras insulares
N
W
E
S
SANTA CRUZ DE TENERIFE
PARQUE NACIONAL DEL TEIDE
CORONA FORESTAL
Leyenda
Autopista
Autovía
Carretera
Carretera Municipal

Green Mobility

Hybrid vehicles

Currently, the main public transport company of the island of Tenerife is TITSA, which will incorporate three new hybrid buses into its fleet, for the line that connects the capital of the island with Las Teresitas beach.

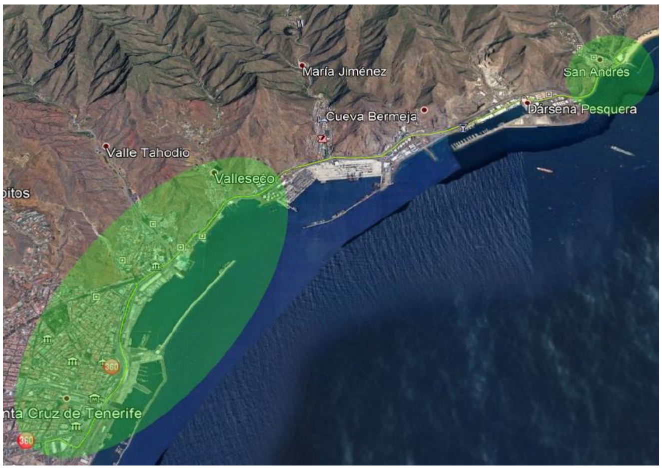


Figure. Hybrid vehicle performance area in Santa de Cruz de Tenerife.

Electric vehicles

The island of Tenerife has a network of electric recharging points, which in total are 105 points. The majority are located in the metropolitan area (Santa Cruz and La Laguna), where the first electrolinera of the island is located. In general, they are located in the most central streets, parkings, hotels, buildings of the public administrations. While by zones, they are distributed as follows:

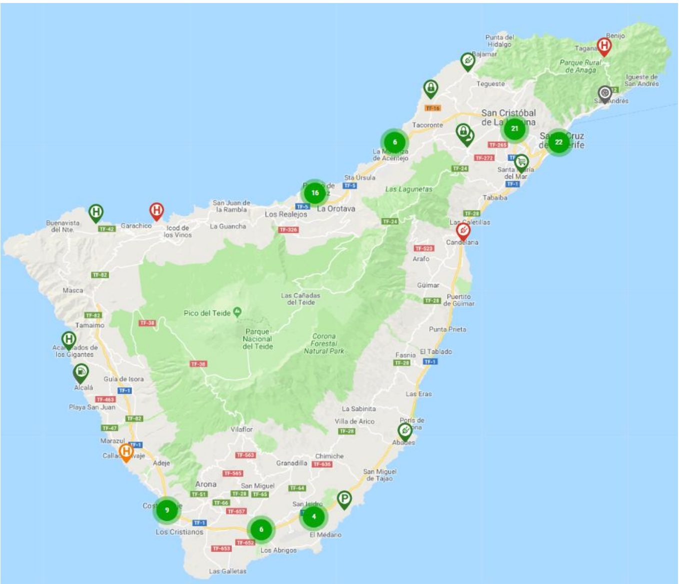


Figure. Map of charging points for electric vehicles on the island of Tenerife. January 2019.

Bicycles

Territorial, geographic and urban framework

Although the climatic characteristics make the Canary island an ideal place for the use of the bicycle in all its modalities throughout the year, the truth is that the opportunities and limitations to its use offered by the different settlements and nuclei vary considerably due to the diversity of reliefs.

Among the most important conclusions are that the number of bicycle lanes and car parks on the islands is considered insufficient.

Isla	A pie	Bicicleta	Transporte privado	Transporte Público
Gran Canaria	14%	2%	72%	12%
Tenerife	22,4%	0%	64,2%	13,4%
Fuerteventura	-	-	-	-
Lanzarote	22,1%		64,8%	13,1%
La Gomera	-	-	-	-
La Palma	35,3%	0%	60,6%	4,1%
El Hierro	14%	1%	83%	2%
MEDIA CANARIAS	22%	1%	69%	9%

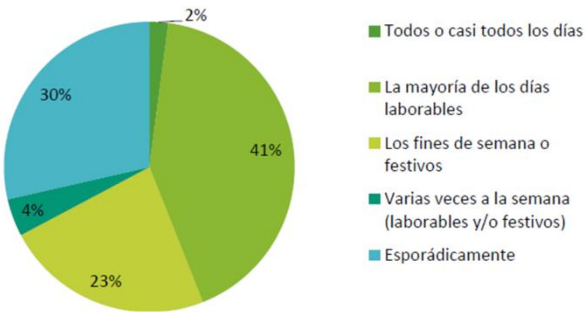
Table. Modal distribution of transport.

In relation to motorization, according to the data published by the Canary Institute of Statistics, in 2017 the vehicle index per 1,000 inhabitants amounted to 779.4 vehicles, well above the Spanish and European average, and which has been growing in the last years.

Frequency of bicycle use

Regarding the frequency of bicycle use, of the total number of respondents who use the bicycle, either habitually or only sometimes, the following conclusions have been drawn.

Practically half of the respondents (41.23%) use the bicycle on weekdays, followed by those who only use it sporadically (29.64%) and on weekends and holidays (23.01%).



Graphic 1. Frequency of bicycle use.

¿Por dónde circula con la bicicleta?	Tenerife
Carretera	80,68%
Carriles Bici	29,95%
Acera	34,78%
Espacios peatonales o zonas verdes	31,88%
Montaña y/o Pistas Forestales	8,70%
Otros	1,45%

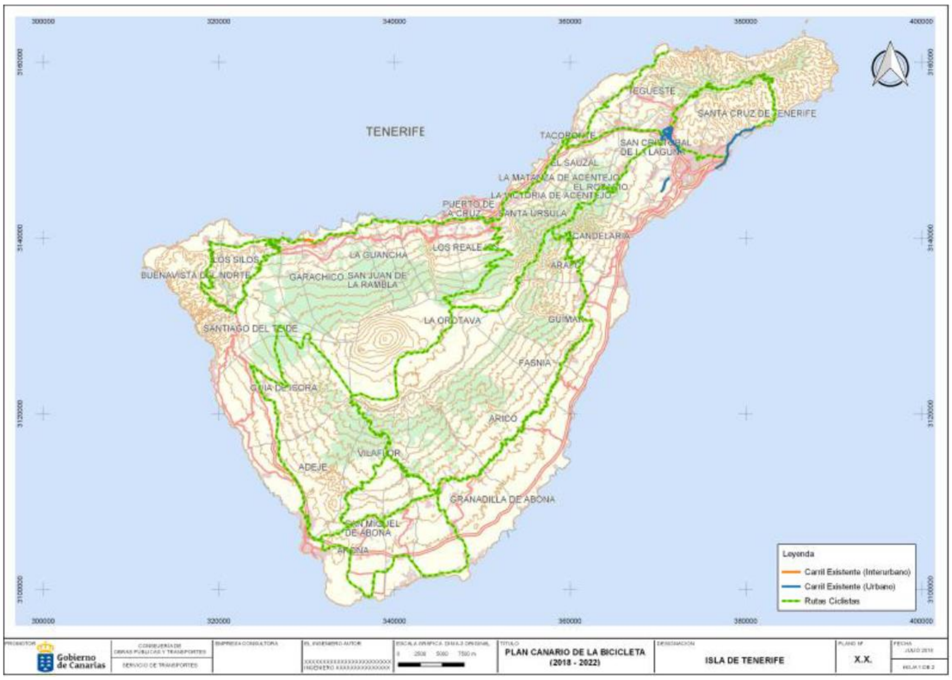
Table 1: Bicycle use areas.

Problems detected for bicycle use

The biggest problem lies in the insecurity caused by motorized traffic, a problem that is exacerbated by the second most important reason: the lack of bike lanes. In the same sense, users show their concern for the conflicts that arise with pedestrians and drivers.

Actions

Actions and measures in favor of mobility and especially of the bicycle that have been carried out:



Map of proposed cycling routes.

- ***Observatory of the Bicycle:***
  It is one of the most powerful recent projects of the Cabildo de Tenerife. It is a transversal project that includes the participation of the Sports, Environment, Tourism and Roads areas, as well as other related sectors, aimed at improving the conditions of cycling on the island.
  During the year 2017, the Cabildo de Tenerife, particularly, its Highway Area, designed a program of actions planned until the year 2021, aimed at improving the safety of users of the island's cycle routes, with an estimated investment of approximately 7.4 million euros.

- ***Bicycle parking:***
  With the aim of promoting sustainable mobility, the use of bicycles and, above all, the intermodality of this with public transport, the Cabildo de Tenerife enabled in 2014 a free parking with capacity for 36 bicycles, located at the stop of the Trinity Avenue tram.

- ***Environmental Sustainability Policy:***
  Last year, "Biciabril-18" took place, carried out by the City Council of La Laguna, the University of La Laguna and the "Tenerife por la Bici" collective, together with collaborators such as the Sustainable Mobility Table of Tenerife and the DGT, among others. Through this event, the aim was to make the use of bicycles visible, in order to place La Laguna on the map of urban cycling at the state level. For this, various activities were held, such as talks, debates, exhibitions, pedaling, samples, courses and road circuits.

- ***Cycling route in La Laguna:***
  During the year 2018 the works of the first cycle path of La Laguna (5.5 km), shared by vehicles and cyclists, linking its three university campuses with the historic center, have been completed. This route has been the result of collaboration between the university institution, the City of La Laguna and the collective "Tenerife por la Bici".

Human-Powered Mobility

Mobility of residents

Regarding the availability of vehicles for travel, 51% of the population has a vehicle as a driver, 9% have a passenger and 40% have no vehicle to travel.

According to the relation with the economic activity, and attending to the main groups, within the occupied population, 77% have a vehicle for their displacements (with respect to the 51% that presents the total population), 5% as a companion and 18% does not have (with respect to 40% in the total population). The students in 59% do not have a vehicle, neither as a companion nor as a driver.

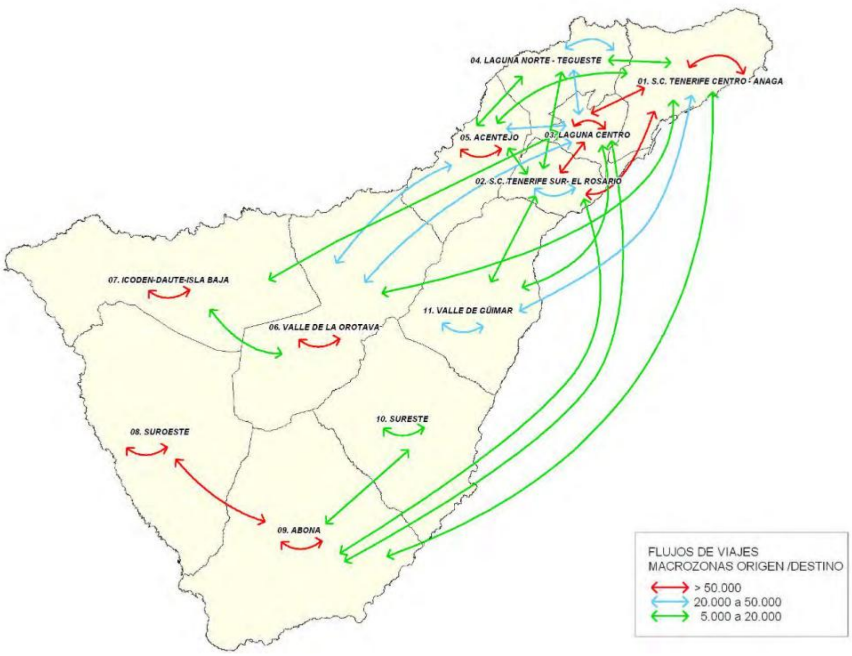
People mobility rates

The number of total trips per person is 2.4 trips / day. As shown in the following table, of the 2.4 trips per person per day made by residents on the island of Tenerife, 0.6 are trips on foot and 1.8 motorized.

Of the motorized, 1.5 correspond to travel in which the main mode has been the car (83% of motorized) and only 0.3 are produced in public transport (17% of motorized).

Travel by Main transport mode

The distribution of trips by modes shows the following distribution: only 22% is mobility on foot, with the rest being motorized. Within the motorized, 83% is mobility in a private vehicle.



Map of travel flows by origin / destination on the island of Tenerife.

Motivations in the modal election

As shown in the following table, users of public transport use this mode mainly because they do not have a vehicle for their journeys, that is, more than 75% of public transport users are captive in this way.

Then, the reason that most justifies its use is the lack of parking, so, even having a vehicle, prefer to take public transport because the parking of this is a problem in the trip.

Mobility of non-residents

Within the Non-Residents typology, the majority group is tourists, which constitutes a fundamental element in the activity of the Island and as it will be seen in the corresponding analysis, it shows a not insignificant participation in total mobility, although with guidelines, mainly those related to the modal split, clearly differentiated from those maintained by the Resident.

According to the nationality of origin and the municipality of accommodation, the distribution of tourists at the level is as follows:

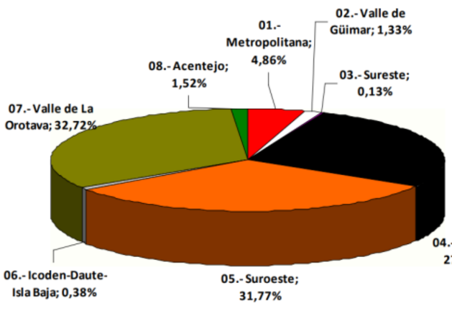


Gráfico nº 11: Distribución de los turistas nacionales por Macrozona.

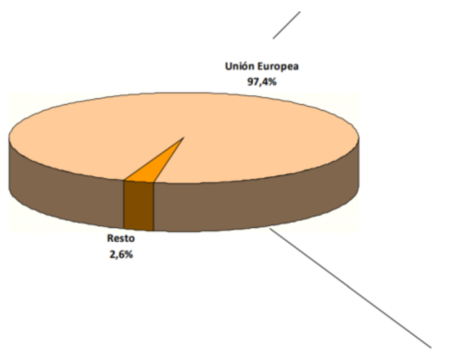


Gráfico nº 12: Distribución de la nacionalidad del turista procedente de la Unión Europea (%).

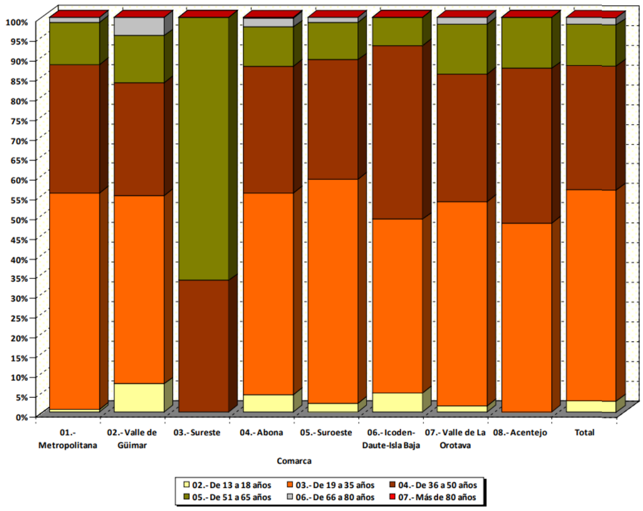
As for foreign tourists, the presence of tourists from the European Union in each of the Macrozones that make up the island is very remarkable.

The tourist with English nationality -64% - and German -13% - in the whole of the Island are foreigners who visit this area the most.

Tourist profile

The male tourist (53%), who travels to the Island, is more present than the woman (47%).

86% of tourists staying on the island belong to the age group between 19 and 50 years.



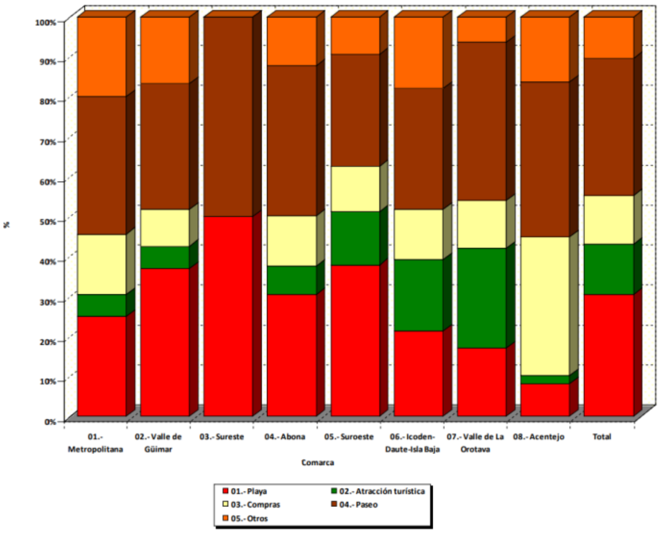


Gráfico nº 23: Distribución de los motivos de los desplazamientos (%).

Regional specificities in infrastructure and mobility

Accessibility by public transport

Metropolitano de tenerfife

The Tram of Tenerife has two lines in service in the metropolitan area of the island circulating between the cities of Santa Cruz and La Laguna. The main Line 1, has 12.5 km and 21 stops. In addition, it is connected to another transverse Line 2 of 3.6 km, with 6 stops, two of them transshipment between both lines.

Nowadays, since it was put into operation in 2007, the Tram of Tenerife counts more than 108 million passengers, people who with their option for the use of public transport have collaborated directly with sustainability and the defense of the environment.

TITSA (interurban transport of tenerife S.A)

TITSA is a company whose main activity is the public transport service. The interurban area is the segment to which the company devotes more resources and generates more activity, while covering the needs of urban transport is the other objective of the company.

Bus lines

Altogether the company has 176 bus lines that cover the entire island.

Facilities

TITSA has facilities in different types. The main ones, located in the attached map, can be classified in:

Figure. Map of TITSA facilities.

Taxis

In all the municipalities of the Island operate various taxi companies. The taxis of Tenerife are white. All have a taximeter, which must be started from the beginning of the trip, although it is possible to hire a tour, for any area of the island, at a price that is closed and determined in advance.There are vehicles adapted for the disabled (eurotaxis) that have an access ramp and allow the person to travel in their own wheelchair. Except for some taxis of greater capacity, the maximum number of people who can travel in a taxi is four, including children.

TRAILS ENABLED

On the one hand, in terms of the network of hikes on the island of Tenerife, we can highlight the following, taking into account the classification by networks, as indicated in the image below.

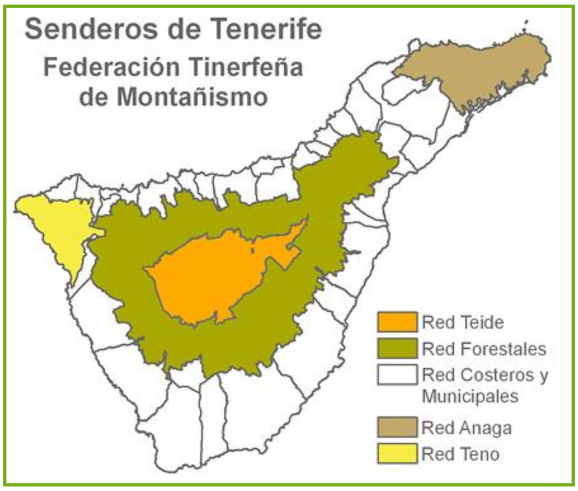


Figure 1. Map of Tenerife of the hikes network areas.

Anaga network

The Anaga Rural Park is located northeast of the island of Tenerife. This Massif of Anaga, offers visitors the opportunity to enjoy a unique landscape, the result of a long and harmonious coexistence of human beings with a rich and diverse natural environment.

The misty mountains of its mountains, the numerous rocks of its cliffs, the scattered farmhouses and especially the ancestral system of terraces sculpted on the slopes of its ravines, are some of the elements that give this landscape a true significance.

In figure 2, the network of hikes distributed throughout the Anaga massif, Biosphere Reserve, can be observed.

Figure 2. Map of the Anaga Rural Park.

In table 1, a classification of the different paths that converge through Anaga can be observed. In this table, there are detailed characteristics regarding the access through public transport that TITSA offers from the beginning and end of the hikes, such as:

- Lines: With a nearby stop.

- Municipality: To which the path belongs.

- Road: Through which the nearest line passes.

- Center: To which the vehicle of the line belongs.

- Zone: In which the route of the line passes.

Table 1.1. Hikes of the Anaga network massif

ANAGA NETWORK	START						FINISH				
	Hike	Bus line	Road	Town	Center	Area	Bus line	Road	Town	Center	Area
Las Mercedes- -Cruz del Carmen	PR-TF-1	076-077 270-271 273-274-275	TF-12	La Laguna	Intercambiador LL	Metropolitana	76,77 273,275	TF-12	La Laguna	Intercambiador LL	Metropolitana
Tarborno - Pico Inglés - Valle Seco	PR-TF-2	275	TF-138	La Laguna	Intercambiador LL	Metropolitana	917	TF-11	S/C	Intercambiador SC	Metropolitana
Derivación El Frontón	PR-TF-2.1	275	TF-138	La Laguna	Intercambiador LL	Metropolitana	917	TF-11	S/C	Intercambiador SC	Metropolitana
Casas de la Cumbre- -Valle Brosque - Casa Forestal	PR-TF-3	916	TF-12	S/C	Intercambiador SC	Metropolitana	77	TF-11	La Laguna	Intercambiador LL	Metropolitana
El Bailadero - Taganana	PR-TF-4	77-947	TF-123	S/C	Intercambiador SC	Metropolitana	946	TF-134	S/C	Intercambiador SC	Metropolitana
Mirador Amogoje - Almáciga	PR-TF-4.1	946	TF-134	S/C	Intercambiador SC	Metropolitana	946	TF-134	S/C	Intercambiador SC	Metropolitana
Chamorga - Igueste de San Andrés	PR-TF-5	947	TF-123	S/C	Intercambiador SC	Metropolitana	945	TF-121	S/C	Intercambiador SC	Metropolitana
Igueste de San Andrés - El Semáforo	PR-TF-5.1	945	TF-121	S/C	Intercambiador SC	Metropolitana	945	TF-121	S/C	Intercambiador SC	Metropolitana
Chamorga - Roque Bermejo- -El Draguillo - Chamorga	PR-TF-6	947	TF-123	S/C	Intercambiador SC	Metropolitana	947	TF-123	S/C	Intercambiador SC	Metropolitana

Table 1.2. Hikes of the Anaga network massif

ANAGA NETWORK	START						FINISH				
	Hike	Bus line	Road	Town	Center	Area	Bus line	Road	Town	Center	Area
Chamorga - Faro de Anaga	PR-TF-6.1	947	TF-123	S/C	Intercambiador SC	Metropolitana	947	TF-123	S/C	Intercambiador SC	Metropolitana
El Draguillo- -Benijo - Playa del Roque	PR-TF-6.2	946	TF-134	S/C	Intercambiador SC	Metropolitana	946	TF-134	S/C	Intercambiador SC	Metropolitana
Benijo - Cruz del Draguillo	PR-TF-6.3	946	TF-134	S/C	Intercambiador SC	Metropolitana	946	TF-134	S/C	Intercambiador SC	Metropolitana
Afur - Taganana - Afur	PR-TF-8	76	TF-136	La Laguna	Intercambiador LL	Metropolitana	76	TF-136	La Laguna	Intercambiador LL	Metropolitana
Afur - Las Carboneras	PR-TF-9	76	TF-136	La Laguna	Intercambiador LL	Metropolitana	275	TF-145	La Laguna	Intercambiador LL	Metropolitana
Cruz del Carmen - Punta del Hidalgo	PR-TF-10	76-77 273-275	TF-12	La Laguna	Intercambiador LL	Metropolitana	50-205 224	TF-13	La Laguna	Intercambiador LL	Metropolitana
Las Escaleras Las Carboneras	PR-TF-10.1	275	TF-145	La Laguna	Intercambiador LL	Metropolitana	275	TF-145	La Laguna	Intercambiador LL	Metropolitana
Cruz del Carmen- -El Batán - Punta del Hidalgo	PR-TF-11	76-77 273-275	TF-12	La Laguna	Intercambiador LL	Metropolitana	50-205 224	TF-13	La Laguna	Intercambiador LL	Metropolitana
Cruz del Carmen - Bajamar	PR-TF-12	76-77 273-275	TF-12	La Laguna	Intercambiador LL	Metropolitana	50-205 224	TF-13	La Laguna	Intercambiador LL	Metropolitana
Derivación a Tegueste	PR-TF-12.1	76-77 273-275	TF-12	La Laguna	Intercambiador LL	Metropolitana	52	TF-13	La Laguna	Intercambiador LL	Metropolitana
Derivación a Pedro Álvarez	PR-TF-12.2	76-77 273-275	TF-12	La Laguna	Intercambiador LL	Metropolitana	51	TF-141	La Laguna	Intercambiador LL	Metropolitana

Teide network

The Teide National Park has a wide network of hikes, among which are the 41 of the Main Network, with different lengths and difficulties. Information can be requested at the Visitor Centers.

In figure 3, you can see the map of the Teide National Park. In the description of the Connections, the paths that appear in parentheses do not have a direct connection with the path in question but they do have a relationship of possible continuity.

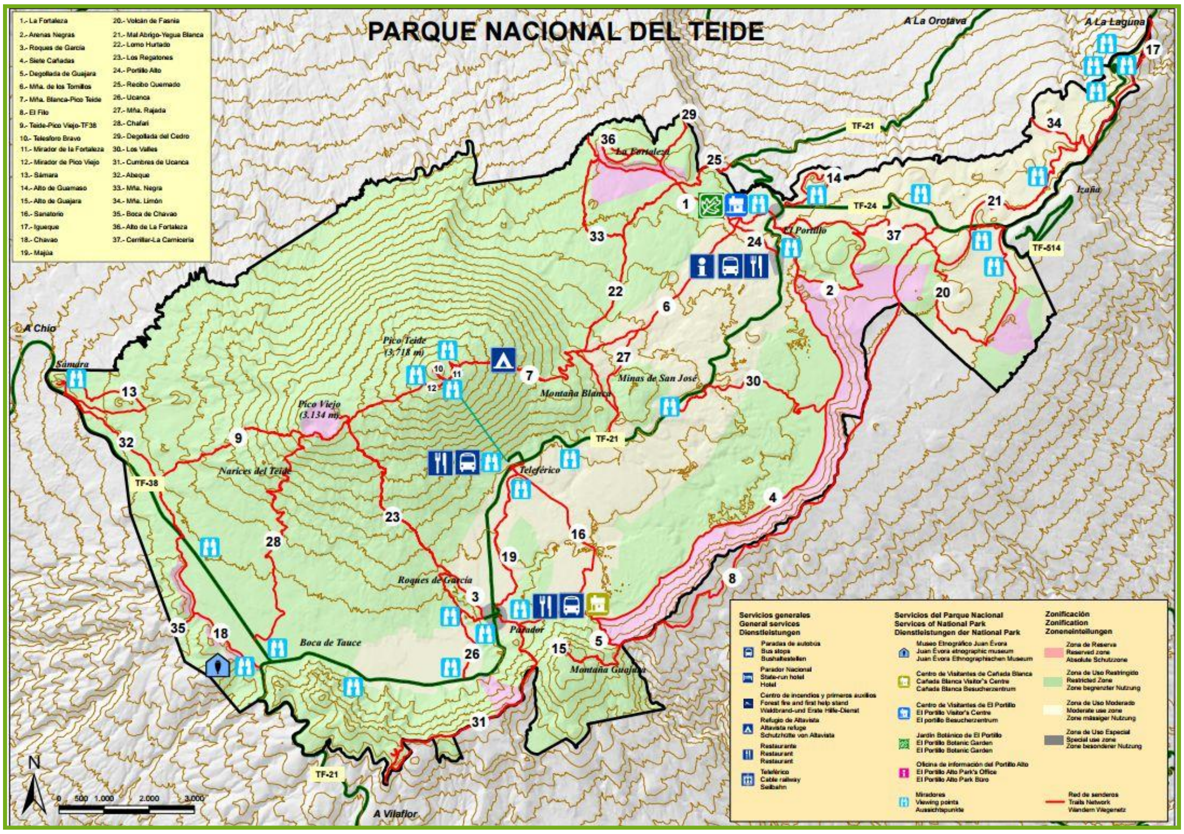


Figure 3. Map of the Teide National Park

In table 2, the different paths and their connections with public transport can be seen, in the same way as in table 1.

Table 2.1. Hikes network of the Teide National Park

TEIDE NETWORK	START						FINISH				
	Hike	Bus line	Road	Town	Center	Area	Bus line	Road	Town	Center	Area
El Portillo - La Fortaleza- - El Portillo	1	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
El Portillo - Arenas Negras- -El Portillo	2	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
Mirador La Ruleta-Roque García- - Mirador La Ruleta	3	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
EL Portillo - Cañada Blanca	4	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
Siete cañadas- -Degollada de Guajara	5	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
Montaña de los Tomillos	6	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
Montaña Blanca - Pico Teide	7	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
El Filo - Degollada de Guajara	8	342 - 348	TF-24	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur

Table 2.2. Hikes network of Teide National Park

TEIDE NETWORK	START						FINISH				
	Hike	Bus line	Road	Town	Center	Area	Bus line	Road	Town	Center	Area
Teide Pico Viejo - -Carretera TF-38	9	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	-	TF-38	Guía de Isora	-	Sur
Telesforo Bravo	10	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
La Rambleta- -Mirador La Fortaleza	11	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
La Rambleta- -Mirador Pico Viejo	12	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
Samara	13	-	TF-38	Guía de Isora	-	Sur	-	TF-38	Guía de Isora	-	Sur
Alto Guamaso- -El Portillo	14	342 - 348	TF-24	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-24	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
Sanatorio - Siete Cañadas	15	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
Igueque - La Cructia	16	342 - 348	TF-24	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-24	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
Chavao	17	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	-	TF-38	Guía de Isora	-	Sur
Corral del Niño - Volcán de Fasnia - Cruce Izaña	18	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur
Corral del Niño- -Yegua Blanca	19	342 - 348	TF-21	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur	342 - 348	TF-24	La Orotava	San Jerónimo - Parque La Reina	Norte - Sur

Teno network

The Rural Park of Teno is located in the extreme northwest of the Island of Tenerife, being configured basically by the massif of Teno and the areas that surround it. It includes part of the municipalities of Buenavista del Norte, Los Silos, El Tanque and Santiago del Teide.

Teno is an ancient volcanic massif in which the erosive processes modeled its current landscape, forming large coastal cliffs and revealing numerous dams and pythons. The last volcanic manifestations channeled their flows through ancient valleys and fossilized some cliffs, opening in the form of a fan when reaching the coast and giving rise to low islands such as Buenavista or Teno Bajo.

The current topography of Teno is characterized by its profiles, valleys such as El Palmar and Erjos and its deep ravines that, like that of Masca, often lead to small beaches.

However, the most representative of the coast of Teno are its impressive cliffs, such as the one of Los Gigantes, which reaches more than 500 meters high, as well as the low islands and slopes of accumulated rubbish on them. In the image below, you can see the network of hikes located in the massif of Teno.

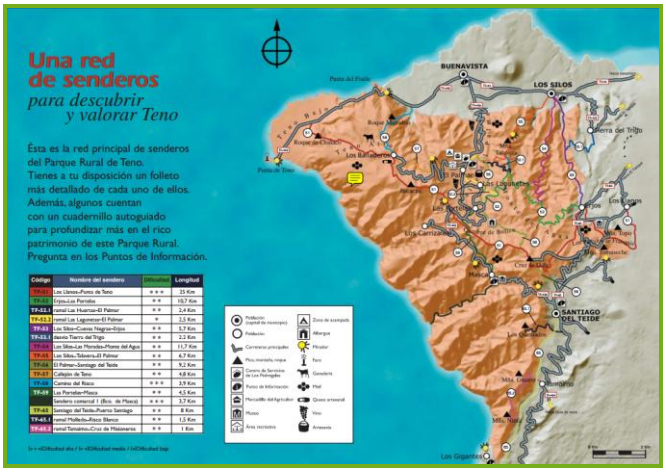


Figure 4. Map of the Teide National Park.

In table 3, we can find the following paths that run through Teno:

Table 3. Teno's hikes network

TENO NETWORK	START						FINISH				
	Hike	Bus line	Road	Town	Center	Area	Bus line	Road	Town	Center	Area
Los Silos - Cuevas Negras - Montes del Agua	PR-TF 53	107-360	TF-42	Los Silos	San Jerónimo	Norte	325-360 - 460	TF-82	Los Silos	San Jerónimo - Parque La Reina	Norte - Sur
Los Silos - Talavera - Montes del Agua	PR-TF 55	107-360	TF-42	Los Silos	San Jerónimo	Norte	355 - 365 366	TF-436	Los Silos	San Jerónimo	Norte
Los Silos - Las Moradas - Montes del Agua	PR-TF 57	107-360	TF-42	Los Silos	San Jerónimo	Norte	355 - 365 366	TF-436	Los Silos	San Jerónimo	Norte

Forest network

Finally, there are the hikes located in the so-called forest network. Framed in the project called Recovery and Rehabilitation of Hikes and Traditional Roads in the Forest Spaces of Tenerife, an initiative promoted by the Environment Area of the Island Council of Tenerife and aimed at improving the management of these Protected Natural Spaces, has been rehabilitated over the years of the last four years a series of small and long-distance hikes on the island.

Within the lines of this project is the dissemination and promotion of the different itineraries through their corresponding "Topoguías". A series of establishments have been arranged where they can be purchased. The Federation of Tenerife Mountaineering is included within this distribution network so that people interested in acquiring the information material of the hikes can do so at the headquarters of the federation.

In the lower image (figure 4), the different paths located in the forest spaces of Tenerife are reflected.

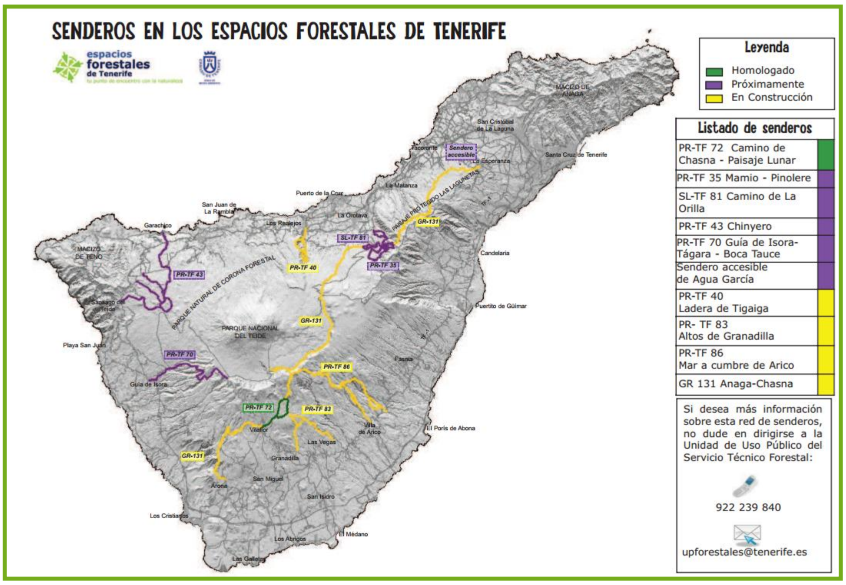


Figure 4. Map of the hikes in the Forest Network.

Likewise, in relation to the hikes in this area, we find in Table 4 the relevant information with the transportation offered by TITSA to access these:

Table 4. Hikes of the Forest Network

FORESTAL NETWORK	START						FINISH				
	Hike	Bus line	Road	Town	Center	Area	Bus line	Road	Town	Center	Area
Sendero accesible	PR-TF 25	54	TF-237	Tacoronte	Intercambiador LL	Norte	54	TF-237	Tacoronte	Intercambiador LL	Norte
Mamio - Pinolere	PR-TF 35	345-348	TF-21	La Orotava	San Jerónimo	Norte	345-348	TF-21	La Orotava	San Jerónimo	Norte
Ladera de Tigaiga	PR-TF 40	339-346-354	TF-326	Los Realejos	San Jerónimo	Norte	339-346-354	TF-326	Los Realejos	San Jerónimo	Norte
Chinyero	PR-TF 43	107-363	TF-42	Garachico	San Jerónimo	Norte	360	TF-373	Garachico	San Jerónimo	Norte
Guía de Isora - - Boca Tauce	PR-TF 70	417-460-462 490-493-494	TF-82	Guía de Isora	San Jerónimo - Parque La Reina	Norte - Sur	342	TF-21	La Orotava	Parque La Reina	Sur
Camino de Chasna - - Paisaje Lunar	PR-TF 72	342	TF-21	Vilaflor	Parque La Reina	Sur	342	TF-21	Vilaflor	Parque La Reina	Sur
Camino de La Orilla	SL-TF 81	342	TF-21	La Orotava	San Jerónimo	Norte	342	TF-21	La Orotava	San Jerónimo	Norte
Altos de Granadilla	PR-TF 83	34-35-36-39 430-463	TF-555	Granadilla	Parque La Reina	Sur	474	TF-21	Granadillla	Parque La Reina	Sur
Mar a cumbre de Arico	PR-TF 86	34-35-36 37-39-430	TF-28	Arico	Parque La Reina	Sur	34-35-36-37-39	TF-28	Arico	Parque La Reina	Sur
Anaga-Chasna	GR 131	-	TF-24	La Esperanza	-	Norte	342-374-482	TF-51	Arona	Parque La Reina	Sur

Inter-modality

Currently, the island of Tenerife has a varied transport offer. Being an island located in an archipelago, the connection between the different modes of transport, both internal and external, is very important.

That is why airports and ports have a high importance. However, work is constantly being done to improve intermodality within the island. Here are some examples:

Bicycle parking

This new parking is free for users of the bus and tram. With an area of 65 square meters and with capacity for 36 bicycles, it is situated on a wooden platform built with fir. It has 18 stainless steel supports in the form of an inverted U, in which two bicycles can be parked in each of them. The parking is fenced perimeter to isolate it from road traffic and has two entrances and an exclusive access from the tram stop.

La ubicación del aparcamiento para bicicletas está justo detrás de la plataforma tranviaria, tras la zona de estacionamiento de reservas de tranvías, de parada de La Trinidad, donde el tranvía prevé su paso en un futuro para llegar al Aeropuerto Tenerife Norte.

Figure. Bike parking La Trinidad.

Harbor

One of the best cities in the province of Santa Cruz de Tenerife is indisputable reference in its routes. At the end of the nineties the growth of arrivals has been progressive in the facilities dependent on Port of Tenerife, which closed 2017 with 964,336 cruise passengers, ten percent more than the previous year.Puerto de Santa Cruz de Tenerife, base del Atlántico.

For a port to be used as a base for cruise traffic, it requires efficient airport and tourist infrastructures, since passengers arrive by plane, are transferred to the ships to make the cruise and, later, return to the airport to return. to home.

Aerial view of the port of Santa Cruz de Tenerife.

The exception, that some prefer to combine the cruise with a stay of a week in a tourist accommodation before finalizing its vacations.

For this reason, the base ports have frequent direct flights and connections with different countries through hubs such as Barcelona or Madrid, as well as a variety of hotel and non-hotel accommodations, numerous transport companies with modern fleets and guides for transfer services.

Airports

Tenerife has two international airports that have direct connections with Germany, the United Kingdom, Italy, Finland, Russia, France, Poland, and of course with the main traffic distributing airports in Spain, Madrid and Barcelona. The island is connected to 157 airports, with 77 airlines operating on the island.

Pricing and ticketing

From the point of view of prices for transport on the island of Tenerife, there is a wide offer and a multitude of discount options for intermodal travel.

Bus – Tram

The main modes of transport are linked to the mode of payment. In this way, the intermodal trip between them is facilitated throughout the island.

In the following images, the different payment modes and the different types of transport cards are shown according to the needs of the travelers.

Types of subscriptions based on distance or monthly use

- *Purse title: € 5-100. All the islands and areas of the island.*
- *Young Pass: € 30 / month. Under 30 years. All bus and tram lines.*
- *University student: € 15. Under 26 years old. All lines and areas of the island.*
- *Canarian resident pass: € 47 / month. Resident in the Canary Islands. All bus and tram lines.*
- *Children's card: € 0. Children from 5 years to 9 years. All bus and tram lines.*
- *Monthly payment: Metropolitan area: € 40 / month. Urban lines*
- *Senior Pass: € 30 / month. Over 65 years old. All the bus and tram lines.*

Information/marketing and awareness raising activities

Regarding the investments planned for the development of the tourist product mainly linked to activities such as hiking, cycling, paragliding or water activities, the MEDI includes 11 million euros, of which nine correspond to actions planned this year compared to the 2.6 million invested in the previous year.

Here are some of the activities carried out:

Current Promotional Activity

- *Tenerife Walking Festival, zero footprint: international hiking event. In 2018 its fourth edition is celebrated.*
- *Trail cleaning activities in collaboration with environmental volunteer organizations.*
- *Support for ecotourism projects: Turnatur 2018, Boreal Festival, etc.*
- *Tourism channels of Tenerife Tourism: web, brochures, Infoten, etc.*

- *Actions included in the Tenerife No Limits promotional brand: assistance to fairs, press tripy fam trips and information addressed to federations and clubs of the main issuing markets.*

Business

To study the offer of hiking on the island, a survey of the offer has been carried out through the internet. After which have been detected more than forty companies and independent providers that make guided trek in Tenerife with some tourist orientation.

The potential of hiking and its expansion on the island is reflected in the increase in offerings of hiking services. The business offer is made up of micro-companies or autonomous suppliers. There is an association, Activa Tenerife, which includes some 27 active tourism companies. Different types of offers are detected, although multi-adventure companies or activities in nature predominate, with a wide range of activities.

It is common to find in the offer the combination of hiking with another or other activities, the most frequent combinations are usually with kayaking, stargazing and whale watching.

Table 4 - Indicators

n.	Title	Unit of measure	Quantity	Source	To be provided by
4.1	Transport infrastructure (by type and length)	km	3,931	OpenStreetMap	Lead Partner
4.2	Modal split of passenger transport	%	- Bus: 35,655,555 (71.58%) - TrolleyCar: 14,158,691 (28.42%) - Taxi: 897	ww.titsa.com	PP
4.3	Existing trails (type, length, conditions, …) *[each partner to insert]*	km	895.13	www.webtenerife.es	PP
4.4	Transport-related accidents (by mode of transport, other characteristics)	n. (per year)	2,216	www.gobiernodecanarias.org	PP
4.5	Percentage of population riding a bike	%	1	www.gobiernodecanarias.org	PP
4.5	*pls add…*	-	-	-	-

5. Tourism and Leisure

Through the Economic Coverage Bulletin of the third quarter of 2018, a publication of Cabildo de Tenerife and the Chamber of Commerce and Industry and Navigation of Santa Cruz de Tenerife; which has been prepared by the Business Analysis and Study Service of the Chamber of Commerce and Industry and Navigation of Santa Cruz de Tenerife; and on the other hand, the Survey on the Tourist that Visits Tenerife (2017), of the Cabildo de Tenerife and prepared by Turismo de Tenerife, has been able to make an approximate description about the current situation of tourism.

As a result of the above, we can affirm that tourism has generated a total of 4,474 million euros in Tenerife in 2018, which represents 169 million more than the previous year, which strengthens its hegemonic position as a key sector of the Island's economy .

The Spanish market has been the main promoter of the positive balance that Tenerife has had in 2018, balancing the weakening of foreign demand for much of the year, which, however, has risen in the last quarter of the year to close the year with a balance sheet positive (+ 0.2%). More than 1.3 million Spaniards stayed on the island during 2018, 7.4 percent more than the previous year.

Foreign tourism ends the year with a slight increase of 0.2 percent for a total of 4,498,573 lodged. The British market, with 2,027,429 tourists, lost 1.8 percent in the year, representing 37,000 fewer tourists, while the German market grew by 1.9 percent, reaching 641,603 tourists staying in tourist establishments in Tenerife. The French (+ 4.7%), the Dutch (+2.4%), the Belgian (+1.9%) and the Irish (+13.6%) also grow, while the Italians (-2%) are down; Nordic (-3.7%); Austrians (-2.4%); Swiss (-1.5%) and Russians (-6.7%).

The tourism hosted in Tenerife during 2018 generated a total of 41,979,299 overnight stays (-0.1%). The stay was reduced by 0.13 points to settle at 7.24 days on average and the occupancy rate reached 68.6% (-4.8%).

Accommodation offer and renovation

The increase in the accommodation offer has been a key factor in explaining the result of the year due to its repercussion on occupancy and profitability indicators. The growth of the lodging offer in the Island, which increases by 8.5% in the year, supposes 11,800 more seats compared to those offered by the island in 2017.

The growth of the last year has incorporated into the market a volume of places superior to the demand, which has generated a decrease in employment. This growth has been due to the construction of new hotel establishments, the rehabilitation of existing establishments and also due to the intense growth of the holiday home modality, which currently reaches a quota of almost 9 percent of the bed offer.

The growth of higher category hotels has also led to an important advance in the structure of the *offer, in which lodging in five-star hotels increasingly weighs, a segment that generates greater tourist spending on the Island - 79% more than of the total accommodative-.*

To this renewed offer are also added new constructions. 24 new higher-level establishments that, once completed, will contribute to the offer of the destination a total of 13,369 new places and that increase the top offer of the five-star segment by 6.8 percent.

Public funds for the improvement of the tourist space have also had a relevant role in the year. In the case of the Cabildo de Tenerife, the Insular Corporation has allocated 7.7 million euros in 2018 for improvement works and by 2019 there are another 11.7 million euros allocated for the regeneration of the tourist area. Programs such as Tenerife and the Sea, Improvement of the Tourism Product or Tourism Strategy Agreement have meant an investment of more than 28.2 million euros since 2016.

The profile of our tourists

Sixty percent of the tourists are repeaters and, although the climate continues to be the main attraction of the destination, it has lost some share in favor of nature, services and tourist services, gastronomy or leisure and sports activities.

In 2018 Tenerife receives a tourist somewhat younger than the previous year, with an average of 47 years, fewer families with children and tourists with lower average family income. 63 percent of visitors travel as a couple and 13 percent travel with their children.

Off-line contracting grows, both for flight and for accommodation, to the detriment of direct online contracting with airlines, operators' websites and other portals. In 2018, the hotel fee increases, especially five-star hotels. The personal security and the friendliness of the population are the aspects best valued by tourists.

Expense and income

The tourist spending of visitors to Tenerife in 2018 amounted to 1,111 euros per person, which means a growth of 2.4 percent over the previous year. The average daily expenditure per tourist (123 person / day) increases by 1.2 percent.

Retail spending grows and remains in restaurants, which are the main spending items of visitors with 21 percent of the total. It also increases spending on nightlife, sports and cultural activities and health treatments, as well as car rental. On the contrary, the expenses incurred within the lodgings decrease, which indicates that tourism is increasingly active. In addition, the expense for the practice of tourist activities has contributed to the Island about 243 million euros, 3.6 percent more than in 2017.

Accommodation area

In the zonal distribution, 76% of the tourism that visits Tenerife in 2017 stayed in the south of Tenerife, being the areas of Costa Adeje and Las Américas-Arona the main destinations. Two zones that, in recent years have lost market share in favor of other island destinations, in particular, Puerto de la Cruz and Valle de La Orotava (18.5%). No doubt favored by the over-occupancy in recent years of the South, as a result of the strong increase in demand motivated by the crisis in destinations in the Eastern Mediterranean and the more competitive lodging rates of Puerto de la Cruz, to which is added the incorporation of offer in renewal and the holiday offer.

Tourist activities

57% of tourists who visited the island in 2017 practiced some tourist activity during their stay, both sports and leisure.

Among the leisure activities, the one with the highest share is the visit to the Theme Parks, with 31.4% of visitors, being Loro Parque and Siam Park the most visited. With an influx also outstanding, although quotas that account for half of the theme parks, are the Observation of cetaceans (12.7%) and the rise to Teide by cable car (11.4%), two activities stars of the island .

Another important activity is health treatments (7.5%), mainly carried out in the accommodation facilities. The events and cultural visits, with 6.2% of visitors, are also relevant for the tourist being the most named places the Museum of Nature and Man and the shows offered by the Pyramids of Arona and the Auditorium of Tenerife.

Star Observation, an activity on the rise in Tenerife, was carried out by 2.1% of tourism that visited Tenerife in 2017, being the most frequented place for it, the Teide National Park. 1.9% of visitors enjoy festivals and popular events in the different municipalities of the island. Lastly, 0.8% have made Birdwatching, without defining the place.

In general, accommodation is one of the main points of purchase of these activities, along with direct acquisition with the companies offering the activity, either online or at the box office. In the same way, tour operators and travel agencies are also used in the contracting of activities.
Among the sports activities, hiking is the activity with the highest penetration in Tenerife, with 10.1% of tourists mentioning having practiced it during their stay on the Island. El Teide, Masca and Anaga, the most outstanding enclaves for this activity, for which the internet is usually used or through accommodation.

Of the remaining sports activities, whose fees barely reach 2%, stand out among the largest number of practitioners bike-cycling, golf, diving and sports diving.

In general, the main place of purchase of sports activities is usually accommodation, although the *direct purchase of the bidding companies are remarkable in activities such as surfing / body boarding, kayak / standup or cycling and mountain biking.*

To obtain information on the offer of activities on the island, both sports and not, the visitor consults on the Internet. Accommodation is also usually a priority information point as well as travel agents or tour operators, acquaintances or relatives.

On the other hand, there are differences between the markets in relation to their level of activity as well as in the activities they practice.

More than 70% of Russians, Swiss-Austrians, Germans, Spaniards and French practice activities during their stay. Their user fees in all tourist leisure activities and excursions are higher than the average number of visitors, although not in sports, which have a more specialized nature.

The direct economic impact of the practice of activities is estimated at 240.2 million euros.

If one takes into account the relative weight of the practice of each activity, as well as the direct contribution to income, almost all sports activities can be considered very profitable for the destination, generating tourism revenues that exceed the quota of the weight of tourism that practice them. Among them, golf and scuba diving stand out, activities in which the differential is very relevant, since these are activities whose practice entails a high expenditure.

With hiking the reverse situation occurs, since its contribution to income is lower than its share of practitioners, since it is an activity that barely supports direct costs for its realization.
With regard to leisure activities, the theme parks offer the highest profitability for the destination, generating 79.8 million euros, with a share of income contribution higher than the tourists who frequent them.

Also the health treatments and the observation of stars offer relevant levels on the income of the destination superior to the tourists who make them.

Tourist visits

With respect to the places visited by tourism, 56% visited some of the places of interest on the island, with El Teide at the head of the list, which receives 37.6% of tourists, although only one 11.4% rise to the peak in the Cable Car.

The other two places that attract a significant percentage of visitors are Santa Cruz and Puerto de la Cruz.

In the same way, historical cities with an important heritage value such as La Laguna, La Orotava, Garachico, Icod de los Vinos or Candelaria also generate an important flow of tourist visits.

The same happens with some of the Natural Spaces of Tenerife, such as Masca, the Anaga and Taganana area or the Teno and Buenavista areas, spaces that are visited by between 8% and 13% of the visitors, with the Barranca de Masca being the largest influx. Also, the Cliff of the Giants or the beach of Las Teresitas, also occupy an important place as island tourist attractions.

On the other hand, although 16% make a return tour to the island that includes several points, the trips to make most of the visits to these points are made in particular by car (35.2%) and also in public transport such as taxis or buses (10.2%).

The 17% use the organized excursion to travel and visit the island. The main point to visit of the organized excursions is El Teide, although the visit to the Barranco de Masca is also frequent; mode also used for other places such as Puerto de la Cruz, Garachico, Icod de los Vinos, Santa Cruz, La Laguna or the visit to another Canary Island.

It should be noted that the most visited tourist spot in public transport is Santa Cruz (5.3% of tourists), followed by La Laguna and Puerto de la Cruz, using this means 2.3% of tourists.

Spanish tourism is the main visitor of the places of interest of the island, places that also receive a high percentage of French, Russians, Italians and Germans or of the Swiss-Austrian market; markets where your motivation to choose Tenerife as your holiday destination is closely linked to the attractions of the destination and its places of interest.

British and Irish tourism, as well as Nordic Swedish and Norwegian, are positioned among the markets with the lowest number of visitors to the places of interest in Tenerife. Markets that have a fairly high level of repetition on the island, and that could justify this behavior.

As you might expect, tourist visits are more frequent among tourists who visit the island for the first time. Thus 74% of the new visitors make visits while only 44% of the repeaters do so.

Table 5 - Indicators

n.	Title	Unit of measure	Quantity	Source	To be provided by
5.1	Number of establishments, bedrooms and bed-places by NUTS 3 regions	n.	151,213	Eurostat	Lead Partner
5.2	Nights spent in tourist accommodation	n.	Total: 41,979,299 (7,24 nights/tourist) (2018)	www.webtenerife.com	PP
5.3	Endowment of cultural and natural heritage of tourist interest (pls list and specify by category)	n.	44	www.gobiernodecanarias.org	PP
5.4	Area of regenerated open spaces and regenerated public buildings	sq. m.	-	-	PP

5.5	Tourist visits (year) and other information of tourist value	n.	5,801,954 (2018)	www.gobiernodecanarias.org	PP
5.6	Duration of the period favorable to green mobility	n. of months / year	12	www.gobiernodecanarias.org	PP
5.7	Tourist who go hiking	n/year	775,000 (15.76%) (2017)	www.webtenerife.es	PP
5.8	Other activities tourists carry out while staying in the region (by type and %)	%	- Weather: (60%) - Cetacean sightings: (12.5%) - Gastronomy: (5.3%) - Cultural: (4-5%) - Golf: (1.72%) - Sailing: (2.7%) - Cycling: (2.5%) - Diving: (2.2%) - Astronomical: (2-2.6%) - Surf /Bodyboard: (1.2%) - Paragliding: (1%) - Birdwatching: (1%) - Windsurf/Kitesurf: (0.6%) - Luxury travel: (10%) - Wedding/Honeymoon, congress: (1.68%)	www.webtenerife.es	PP
5.9	Availability of a visitor card (if yes, number of cards issued per year)	n.	-	-	PP

6. Existing policies related to Threet project features. Projects

To introduce the existing policies regarding transport and its relationship with the natural heritage and culture, an introduction should be made to the MEDI (Strategic Framework for Island Development) 2016 - 2025.

Cabildo de Tenerife, as a government, administration and representation body of the Island, making use of the competencies and functions attributed to it, has designed the 2016-2025 Insular Development Strategic Framework (MEDI), with the objective of promoting the economic and social development of the island of Tenerife.

Configured as a programming and management tool, it includes the set of plans and programs that group investments, both strategic and from other areas, that the Insular Corporation has prepared to develop and implement its Strategy based on the Code of Good Governance. Its design allows the setting of short, medium and long-term objectives, identifying the most appropriate actions to achieve them and assigning the human and financial resources available based on the established prioritization.

It includes all those actions that are financed by spending on investment and those of current expenditure with the capacity to improve human capital and the island's innovation system, with special attention to the current expenditure linked to the generation of employment.

MEDI faces the challenges of budget stability for the next 10 years, including all the investments of the Island Council of Tenerife, plus the contributions of the Canary Islands Development Fund (FDCAN) of the Government of the Canary Islands and the contributions of the municipalities.

The MEDI is channeled through 5 axes and 36 action programs:
AXIS 1. Tenerife 2030: Education, innovation, culture, technology and sports as keys for the development and social and economic sustainability of the island.

AXIS 2. Social Action: People as the main protagonists of the actions carried out in the Insular Development Strategic Framework.

AXIS 3. Infrastructure: Infrastructures as a basic requirement of economic activity and means to achieve territorial balance and structuring.

AXIS 4. Employment and Productive Sectors: The improvement of citizenship training and employability, and the creation of stable and quality employment, as the main goals of the Insular Development Strategic Framework.

AXIS 5. Sustainability and Environment: The natural wealth of the territory as the main resource of the island, and its rational and sustainable use as an obligation.

In view of the above, to identify policies related to the concepts mentioned in the first instance we would have to look at Axis 3, infrastructures and Axis 5, Sustainability and Environment.

The axis of Infrastructures has as objectives the development and maintenance of infrastructure networks of insular competition destined to cover the needs of the economic sectors, supporting with this the generation of employment while ensuring the quality of life of the citizenship any that is the point of the territory in which it resides and the protection of the environment.

Great attention is paid to improving accessibility through a powerful investment in the road network, accompanied by a strategy to improve mobility; it includes strategic operations such as the closure of the insular ring or actions in the ports of Puerto de la Cruz and Fonsalía; the extension of Line 2 of the Tranvía and the beginning of the works of the Tren del Sur; and important investments are made in hydraulic infrastructure, among which must be noted for its impact on the quality of urban life and the environment, which are made in terms of sanitation and urban wastewater treatment. Within this axis, the following programs would be:

Program 3.2 Roads

The road program is planned with a time horizon of 6 years, corresponding to the 2016-2021 period and is composed of a total of 3 subprograms. They are broken down into different lines of action that aim to address the situation and maintenance of the insular road heritage. That is, actions on insular, regional and conservation roads.

For this purpose, an approximate budget of € 363M is allocated, with a large part allocated to the treatment of island roads (subprogram 3.2.1).

There are objectives at two levels (general and specific objectives), which allow guiding the strategy to be proposed and they are developed as follows:

Overall objective

- *Contribute to the maintenance of the insular road heritage in a state of security and utility guarantee to the citizens of Tenerife*

Specific objectives

- *Improve the coexistence of traffic of different nature in urban environments.*
- *Improve the connectivity and readability of the insular road network.*
- *Recover an adequate level of service in the insular road infrastructure.*
- *Increase the capacity of the roads in cases where their current saturation i identified.*
- *Maintain a continuous growth and control of the state of the insular network.*

The actions contemplated in the program affect the entire road infrastructure competition of the Cabildo Insular de Tenerife. All the municipalities of the island and all the resident and tourist population benefit from their actions.

Program 3.3 Cyclist Tours Improvements

This program is proposed with a time horizon of 6 years, corresponding to the period 2016 - 2021.

It is broken down into a subprogram, mainly aimed at the implementation of investments for the preparation of projects and execution of works, technical assistance and other more minority actions, including the provision of equipment and supplies. For the period 2016 - 2021 it is endowed with an approximate budget of € 1.9M, where a large part is allocated to the development of bicycle lanes and cycle routes.

There are objectives at two levels (general and specific objectives), which allow guiding the strategy to be proposed and they are developed as follows:

Overall objective
Promote and facilitate the use of bicycles on the island

Specific objectives

- *Improve connectivity between the different means of transport, favoring intermodality.*
- *Guarantee sufficient road safety conditions to avoid situations of conflict in insular traffic.*
- *Improve the comfort in circulation for the most vulnerable users of the island traffic network.*

The planning affects the entire road infrastructure of the island of Tenerife. All the island municipalities have been taken into account when designing the programming of road actions, the needs of the insular road network have been analyzed.

Thus, the covered population includes all citizens who, directly or indirectly, use and take advantage of the actions carried out (users of the insular road network by bicycle, for example).

Program 3.4 Landscape Improvement

This landscape improvement program is proposed through the Road and Landscape Area of the Island Council of Tenerife. It is articulated in a subprogram, of the same name as the program and broken down into 4 lines of action, aimed at improving the landscape associated with roads, landscape improvement of tourist public spaces, conservation and improvement of green areas and improvement of the urban environment, peri-urban , rural and natural. This typology of actions determines the name of each one of the action lines that comprise it.

It is developed on an annual basis, covering the whole period corresponding to 2016-2021. For this planned time horizon, it is planned to allocate an approximate budget of € 18.8M.

There are objectives at two levels (general and specific objectives), which allow guiding the strategy to be proposed and they are developed as follows:

Overall objective

- *Conserve and improve the quality of the landscape environment of the roads of the island of Tenerife*

Specific objectives

- *Rehabilitate and value strategic points of high visibility in the natural, rural and urban environment of the island.*
- *Promote the conservation of biodiversity and the restoration of potential vegetation. Improve the visual quality of the landscape in urban, peri-urban, rural and natural environments.*
- *Landscape restoration of old stretches of roads.*
- *Improve the conservation, maintenance and situation of the green areas of the island.*

The geographical area covered extends to the entire island of Tenerife. As the Cabildo is the manager of approximately 1,328 kilometers of roads throughout the island, which offer access to a wide variety of natural, semi-natural, cultural and urban landscapes and habitats, the approach to an enormous wealth of protected areas is facilitated. It houses the island.

It includes actions to improve the landscape in all the regions in which the island of Tenerife is divided, so that practically all the resident population can benefit from the actions taken. Likewise, it is also intended for the tourist population that, although it does not reside on the island, benefits from the improvements in the visual quality of access roads to widely visited areas, as well as the conservation of green areas located around the busiest roads.

Program 3.6 Improvement of Mobility

The Mobility Improvement program consists of a subprogram, broken down into 4 lines of action that aim to improve and modernize mobility on the island of Tenerife.

For the period 2016 - 2021, more than € 72 million is made available to the program, of which the largest proportion is allocated to the expansion of the island's tram network, as well as the execution of infrastructure actions that favor modal interchange and the evolution towards intelligent transport systems and distinguish objectives at two levels (general and specific objectives), which allow guiding the strategy to be proposed and they are developed as follows:

Overall objective

- *Improve mobility on the island of Tenerife by putting all modes of transport into play to make it more efficient and sustainable*

Specific objectives

- *To promote the modal interchange in the whole island territory between the private vehicle and public transport*
- *Contribute to the achievement of an advanced, intelligent and sustainable public transport and mobility model*
- *Promotion of shared car use on the island of Tenerife*
- *Promote the use of public transport on the island of Tenerife*
- *Improve the competitiveness of insular public transport*
- *Guarantee road safety, accessibility and comfort in bus stops*

The area of action of the program covers the 31 municipalities of the island of Tenerife.

All the resident or tourist population of the island of Tenerife is benefited by the actions of the program. However, there are a number of groups that are particularly affected:

- *Any person using public transport in the entire island territory.*
- *People with need to dispose or share a vehicle in their day to day.*

Program 3.8 Insular Heritage Infrastructures

The Insular Patrimonial Infrastructures Program is composed of a subprogram, through which it is intended to execute actions in heritage infrastructures of the Insular Corporation, actions in strategic heritage infrastructures, actions of accessibility and acquisition of equipment for the operation of facilities.

An approximate budget is destined for the 2016-2021 period of more than € 85M.

There are objectives at two levels (general and specific objectives), which allow guiding the strategy to be proposed and they are developed as follows:

Overall objective

- *Optimize the state and use of public infrastructures with high tourism potential or ownership of the Cabildo Insular de Tenerife*

Specific objectives

- *Condition and improve the infrastructures owned by the Island Council of Tenerife for its use.*
- *Promote spaces of high social or tourist interest, achieving the optimization of their infrastructures.*
- *Promote the accessibility of public infrastructures.*

The area of action of the program covers the whole island, covering both the resident population and the tourist population visiting the island of Tenerife.

As you can see, there are several axes and programs that in one way or another will affect the core of the ThreeT project, which includes transportation, trails, culture and nature. Of course, it is expected that this type of actions together with the Interreg Europe project action in which Cabildo de Tenerife participates will help to exponentially improve the conditions of all the sectors that are interrelated in it.

As key stakheholders, Interurban Transports of Tenerife, SAU will be identified; SPET, Tenerife Tourism Corporation, S.A and Ashotel. This is because, on the one hand, Interurban Transports of Tenerife, SAU is a public bus and coach company founded in 1978 to improve internal communication on the island of Tenerife, an environmental protection zone in which public transport offered by TITSA contributes to progress and environmental sustainability.

Today, TITSA has more than 1,500 employees, a fleet of approximately 600 buses and coaches of different types to adapt to the different geographical conditions of the island that are also 100% accessible for people with disabilities. The company manages the transport of 5 bases and also operates 174 routes throughout the island, of which 121 are interurban and 53 urban, with a total of 3,746 stops. As an example in 2016, TITSA covered 31,262,130 kilometers, took 32,648,104 passengers with a net turnover of 57 million Euros in the total of its urban and interurban services. Given that it is the main public transport agent on the island and that it connects all its main tourist points, we identify it as a key partner for this project.

On the other hand, SPET, Tenerife Tourism Corporation, S.A a public entity dependent on the Cabildo de Tenerife created with the aim of promoting and enhancing the values of the Island as a leading tourist destination that receives five million passengers a year.

During this time it has assumed new competencies such as the regeneration of the destination, with the aim of consolidating Tenerife as a holiday destination that responds to the needs of 21st century travelers and maintains its leadership with guarantees against the thrust of competing destinations. emerging In view of the above, it is positioned as a key stakeholder for the development and implementation of the ThreeT project.

Finally Ashotel, is the Hotel and Hotel Association of Tenerife, La Palma, La Gomera and El Hierro. Founded in 1977, it currently has more than 240 associated establishments that represent more than 93,000 tourist beds. As a business association, Ashotel works for the future of the tourism sector as the main economic engine of the Canary islands.

Through the professional and organizational structure of Ashotel and collaborations with institutions and public and private entities, it participates in multiple initiatives and projects, which makes them interlocutors for the tourism sector of the province of Santa Cruz de Tenerife.

The Cabildo of Tenerife intends to improve the policy instrument selected for this project through the direct implementation of specific actions, supporting the implementation of actions by other public and private organizations, as well as through improvements in governance and structural changes.

With the Threet project we intend to better adapt the actions and the changes, addressing them more specifically to the following problems:

- *Improve communication with other competent entities in the activity of hiking.*
- *Improve and increase the frequency and route of public transportation to facilitate the integration of the mode of intermodality and mobility.*
- *Design and execute procedures to improve and increase the relationship of hiking with other activities on the island.*
- *Improve the maintenance of the trail, conservation and signalling of the natural space; Access, parking and signalling trails; meet the demand for improved information and personalized transportation support.*

For this purpose, the partner will present the topics for discussions with stakeholders during the project execution period in Phase 1 to seek contributions and sectoral suggestions.

Useful indications are also expected from the analysis of the territorial context and the review of the policy planned in the initial phase of Phase 1, by strategically focusing the analysis on smooth mobility, intermodality, visibility (through communication / information) as the key driver of the hiking route development through the ThreeT project.

From the interest already expressed during project preparation, to the indicated stakeholders are expected to actively participate in the project activities, as they anticipate to be positively affected by the formulation and implementation of new ideas for trail management in the island where hiking is well recognized as a sustainable development lever of mountain tourism and related services.

The stakeholders will attend all interregional events in other regions with at least 2 representatives. They will attend the Cabildo in organizing interregional events scheduled in Tenerife island and will also attend and contribute to the local activities such as the scheduled workshops and seminar.

Participation of councils, professional and non-governmental organisations will provide positive contents to the Action Plan, since the project that is oriented towards setting new policies or management forms (and not the installation, construction or creation of large infrastructures) positively affecting sparsely populated areas with improved sustainable links to residential areas. On the other hand, stakeholders will also assure its attendance of events organised as part of the Policy Implementation programme (Action 1.2.5.2 of Su. Program 1.2.5). SG will also participate to international festivals held annually in the Canary regarding hiking and disseminate Threet interim and final outcome there.

Table 6 – Indicators

n.	Title	Unit of measure	Quantity	Source	To be provided by
6.1	Increased tourist visitors linked to hiking	%	10	Threet Application Form	PP

	Policies	Self-defined performance indicators	Target
1. IT	Policy 1	Increased number of visits to natural and cultural areas and other areas of attraction receiving SF support (n.)	4,200
2. FI	Policy 2	Visits/year (n.)	10,000
3. MT	Policy 3	Rehabilitated / Preserved Land (% of Total target amount in OPI)	3
4. PL	Policy 4	Visitors using the new created/renovated trails (n.)	2,400
5. ES	Policy 5	Increased tourist visitors linked to hiking (%)	10
6. RO	Policy 6	Area of intervention (sq.km)	5,363
7. HU	Policy 7	Thematic packages/trails developed (n.)	3
8. DE	Policy 8	Enterprises in the sustainable tourism sector receiving financial supports (n.)	17

7. Stakeholders

Stakeholders list

1. *City Councils (31)*
2. *Interurban Transports of Tenerife S.A.U. (TITSA), the island only public bus transport company*
3. *SPET, Tenerife Tourism Corporation, S.A. subsidiary entity of Cabildo: experience in various MAC projects – INTERREG promoting tourism and the exchange of knowledge*
4. *ASHOTEL, partner of FIT (Innovation Tourism Factory)*
5. *SINPROMI S.L.: Public Company for the Promotion of Persons with Disabilities*
6. *FECAM, the Canary Federation of Municipalities, grouping all municipalities of the Canary Islands (Spain)*
7. *Metropolitan of Tenerife: deployed a powerful Corporate Social Responsibility plan channelling multiple solidarity actions in various fields*
8. *Servitaxi, Regional Federation of Autonomous Workers Auto Taxi Auto*
9. *Mountaineering Federation of Tenerife*
10. *Sustainable Santa Cruz Foundation: valorization of local sustainability and products*
11. *Canary Cluster of Transport and Logistics: The purpose of the Association is the development of the logistics and transport sector and all the companies and institutions involved in its value chain in order to increase the excellence, productivity and competitiveness of the Canary Islands economy and the Strengthening connectivity and mobility of goods and people.*

As key stakheholders, Interurbanos de Tenerife, SAU will be identified; SPET, Tenerife Tourism Corporation, S.A and Ashotel. This is because, on the one hand, Transportes Interurbanos de Tenerife, SAU is a public bus and coach company founded in 1978 to improve internal communication on the island of Tenerife, an environmental protection zone in which public transport offered by TITSA contributes to progress and environmental sustainability.

Today, TITSA has more than 1,500 employees, a fleet of approximately 600 buses and coaches of different types to adapt to the different geographical conditions of the island that are also 100% accessible for people with disabilities. The company manages the transport of 5 bases and also operates 174 routes throughout the island, of which 121 are interurban and 53 urban, with a total of 3,746 stops. As an example in 2016, TITSA covered 31,262,130 kilometers, took 32,648,104 passengers with a net turnover of 57 million Euros in the total of its urban and interurban services. Given that it is the main public transport agent on the island and that it connects all its main tourist points, we identify it as a key partner for this project.

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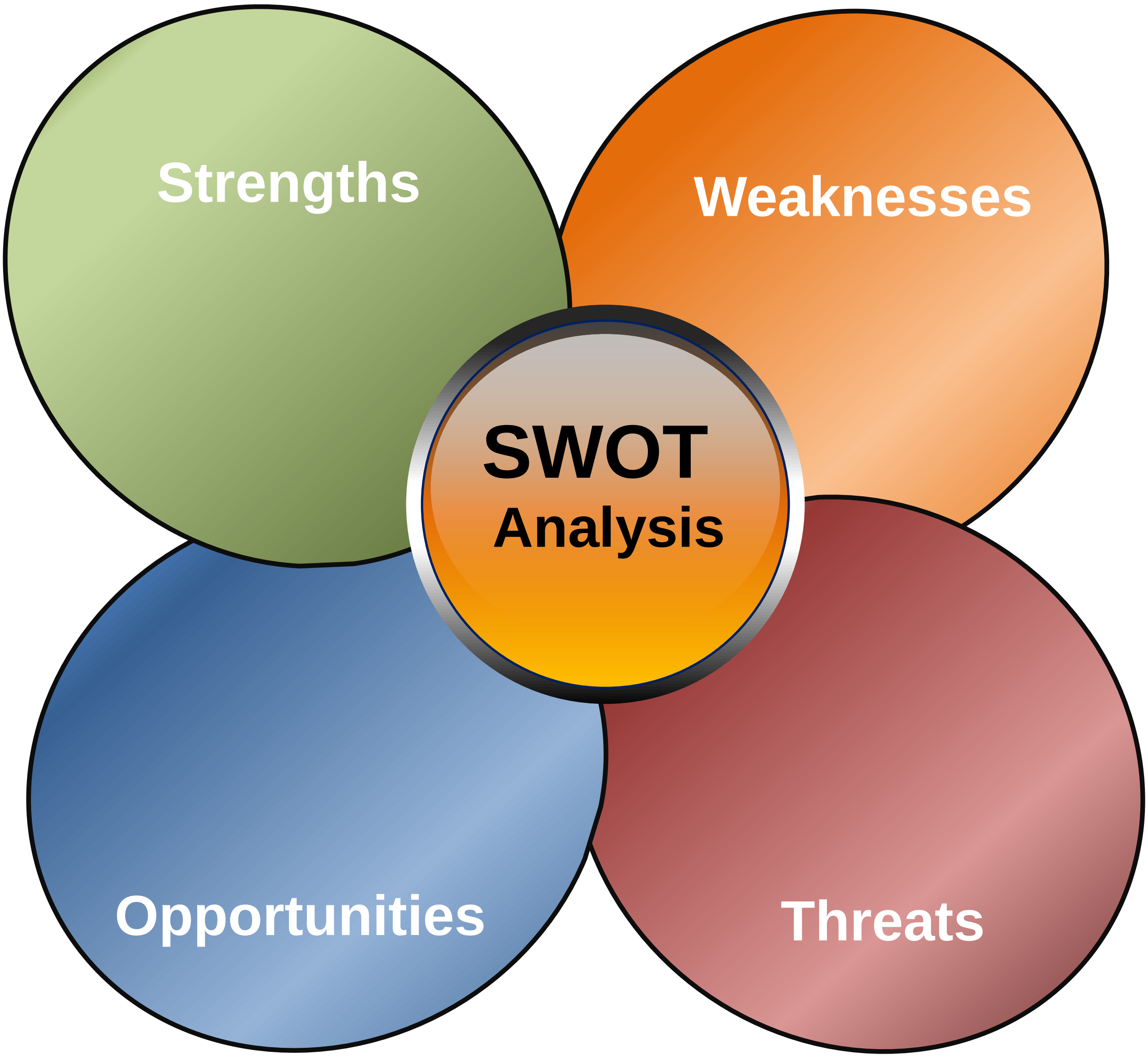
From the interest already expressed during project preparation, all the indicated stakeholders are expected to actively participate in the project activities, as they anticipate to be positively affected by the formulation and implementation of new ideas for trail management in the island where hiking is well recognized as a sustainable development lever of mountain tourism and related services.

The stakeholders will attend all interregional events in other regions with at least 2 representatives. They will assist the Cabildo in organising interregional events scheduled in Tenerife island and will also attend and contribute to the local activities such as the scheduled workshops and seminar.

Some stakeholders can effectively contribute to the territorial context analysis and GP documentation.

Participation of councils, professional and non-governmental organisations will provide positive contents to the Action Plan, since the project that is oriented towards setting new policies or management forms (and not the installation, construction or creation of large infrastructures) positively affecting sparsely populated areas with improved sustainable links to residential areas. On the other hand, stakeholders will also assure its attendance of events organised as part of the Policy Implementation programme (Action 1.2.5.2 of Su.Program 1.2.5). SG will also participate to international festivals held annually in the Canarie regarding hiking and disseminate Threet interim and final outcome there.

8. S.W.O.T. Analysis



S ***Strengths***

- *Entrepreneurs with a lot of experience in the tourism sector (40 years on average)*
- *Great enthusiasm on the part of entrepreneurs in view of sustainable tourism*
- *Availability of basic factors such as: climate, geography and heritage*
- *Due to the winter weather, it has no rival in the Winter season*
- *Proximity of the markets of origin*
- *Many air connections with the markets of origin*
- *Very safe destination in relation to other competing destinations*
- *Great social stability*
- *Consolidated destination image*
- *Diversification of clients (age, family, etc.)*
- *Good general impression of the tourist*
- *Great customer loyalty*
- *Great trail network*
- *Teide National Park, a World Heritage Site by UNESCO*
- *Accessible natural areas for tourist activities*

W ***Weaknesses***

- *Destination with dependence on air and sea transport*
- *Public transport by road that suffers many traffic jams*
- *Insufficient transport infrastructures to absorb vehicle traffic*
- *No lanes bus or VAO*
- *Lack of information in vehicles about tourist activities or nearby trails*
- *Need for more professionalization in some activities (languages, mainly)*
- *Problems in reinvestment (obsolescence of establishments)*
- *Local tourism traditionally undemanding with this type of establishments*
- *Peninsular tourism and other markets of origin identify the islands as an economic destination*
- *Unfair competition from establishments located or operated irregularly (AirBnB vacation rentals, for example), which means that the communication and information that reaches tourists is not as good*
- *Marketing of products of the "all-inclusive" type, harming the associated services and normally the quality of the product / service*
- *Lack of control over the quality of services, since it has not been a determining factor for the demand*
- *Lack of leadership in specialized segments (sports tourism, health tourism)*
- *Low sport and leisure offer*

O ***Opportunities***

- Greater influx of peninsular tourism
- Boom in sports tourism and health
- Increase in the trend towards short trips (in distance and time)
- Highest available personal income
- Greater knowledge of travel possibilities
- Possibility of developing other tourism segments
- Possibility of exploitation of new market niches
- Access to information and possibility of self-design of vacations by clients (accommodation reservations, transport, etc.), diminishing the role of agencies as simple intermediaries
- Scheduled projects for higher quality transport infrastructure (southern train, BUS-HOV rail, etc.)
- Growth of active tourism
- Remodeling of hotels and new openings
- Growth in the offer of active tourism activities
- Creation of platforms that facilitate the practice of sports and active tourism (Strava, Wikiloc, Endomondo, etc.)

T ***Threats***

- BREXIT
- Most specialized tourist destinations in the offer of active tourism
- Increasingly demanding pressure from tour operators
- Great competition from attractive and economical Mediterranean countries (Croatia ...)
- Prices higher than the rest of destinations
- Infrastructures becoming less attractive and more obsolete
- Massification of areas with the consequent loss of quality and competitiveness
- Advertising and promotional campaigns aimed at sun and beach tourism, and not so much the more active tourism
- Continuous deterioration of establishments, especially those that have independent accommodation units
- Low qualification in general of the tourist profession
- Increasingly intense competition
- Market governed by technologies
Summary table to be filled

Strengths Great experience in the tourism sector, climate and perfect situation.	**Weaknesses** Languages of employess and dependence on air and sea transport
Opportunities Increase in demand for active tourism and unique natural spaces	**Threats** BREXIT and competition from other destinations with more experience in the offer of active tourism

Appendix 1 Open StreetMap Data

This annex lists geo-referenced data that will be obtained from OpenStreetMap related to entities of project interest as located in the partner territories. All those data, together with the other identifiers, will be accessible via the "webGIS" interface to be made available shortly for use by the partners.

OBJECT ID	CATEGORY	DESCRIPTION
1	Administrative boundaries	Torun_Poland
2	Administrative boundaries	Tenerife_Spain
3	Administrative boundaries	Livorno_Italy
4	Administrative boundaries	Jyväskylä_Finland
5	Administrative boundaries	Giessen_Germany
6	Administrative boundaries	Floriana_Malta
7	Administrative boundaries	Dunàntul_Hungary
8	Administrative boundaries	Brasov_Romania
9	Administration	public_building
10	Administration	town_hall
11	Administration	toponyms
12	Infrastructure	metro_station
13	Infrastructure	rail
14	Infrastructure	tram
15	Infrastructure	funicular
16	Infrastructure	light_rail
17	Infrastructure	routes
18	Infrastructure	footway
19	Infrastructure	farming_road
20	Infrastructure	lighthouse
21	Infrastructure	ice_rink
22	Tourism	travel_agent
23	Tourism	picnic_site
24	Tourism	attraction
25	Tourism	car_rental
26	Tourism	bed_and_breakfast
27	Tourism	outdoor_shop
28	Tourism	toilet
29	Tourism	alpine_hut
30	Tourism	cafe
31	Tourism	viewpoint
32	Tourism	artwork
33	Tourism	library
34	Tourism	bicycle_rental
35	Tourism	camp_site
36	Tourism	battlefield
37	Tourism	golf_course
38	Tourism	car_sharing

39	Tourism	waterfall
40	Tourism	castle
41	Tourism	mall
42	Tourism	arts_centre
43	Tourism	sports_centre
44	Tourism	chalet
45	Tourism	kiosk
46	Tourism	cinema
47	Tourism	track
48	Tourism	Christian workship place
49	Tourism	Jewish workship place
50	Tourism	Muslim workship place
51	Tourism	oriental workship place
52	Tourism	wayside_shrine
53	Tourism	cliff
54	Tourism	bus_stop
55	Tourism	fountain
56	Tourism	drinking_water
57	Tourism	fort
58	Tourism	cave_entrance
59	Tourism	hotel
60	Tourism	memorial_monument
61	Tourism	motel
62	Tourism	windmill
63	Tourism	museum
64	Tourism	hostel
65	Tourism	bench
66	Tourism	parking
67	Tourism	parking_bicycle
68	Tourism	park
69	Tourism	theme_park
70	Tourism	swimming_pool
71	Tourism	guesthouse
72	Tourism	marina
73	Tourism	shelter
74	Tourism	restaurant
75	Tourism	ruins
76	Tourism	slipway
77	Tourism	archaeological site
78	Tourism	caravan_site
79	Tourism	beach
80	Tourism	bus_station
81	Tourism	fuel station
82	Tourism	taxi
83	Tourism	theatre
84	Tourism	ferry_terminal
85	Tourism	tower
86	Tourism	tower_observation

87	*Tourism*	*tourist_infopoint*
88	*Tourism*	*trail, path*
89	*Others*	*sports_shop*
90	*Others*	*bicycle_shop*
91	*Others*	*wayside_cross*
92	*Others*	*ford*
93	*Others*	*water_mill*
94	*Others*	*weir*
95	*Others*	*spring*
96	*Others*	*peak*
97	*Others*	*volcano*
98	*Others*	*zoo*
99	*Others*	*river*