CLEAN ENERGY FOR EU ISLANDS

CLEAN ENERGY TRANSITION AGENDA

Version IX-2020

A ILLA de AROUSA

CLEAN ENERGY FOR EU ISLANDS

Secretariat • Rue d'Arlon 63, BE-1000 Brussels

Phone: +32 2 400 10 67 • E-mail: info@euislands.eu • Website: euislands.eu

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PREFACE:

The Clean Energy for EU Islands project was created by the European Commission to facilitate the transition of European islands to renewable energy. It is a vertical, bottom-up process that ensures an optimal environment for changing and benefit to the entire island community through balanced collaboration between public and private stakeholders.

At the begining of 2019, the Island of Arousa was selected as one of the 26 European islands participating in this initiative with the aim of drafting its 2030 Agenda and prepare the technical and financial energy efficiency projects at different levels and sectors.

After one year of work, the Arousa Transition Team presents this strategic document, which defines the roadmap of this process of change towards clean energy. Designed by and for the local community and based on a current dynamic analysis, it provides a comparative view of the different actors involved in the island community.

This document is the first version of the Transition Agenda towards Clean Energy on the Island of Arousa. A living document with the initial strategies to start working to engage different parts of the community.

Projects and actions proposed are structured in six pillars, which will be essential in the process of energy transition for decarbonization and mitigation of climate change effects.

PARTE I DYNAMICS OF THE ILLA DE AROUSA

INDEX

1 XEOGRAPHY, ECONOMY AND POPULATION

1.1 XEOGRAPHIC SITUATION.

The Illa de Arousa is located in the middle of the Estuary de Arousa (Pontevedra) in front of the municipalities de Vilanova de Arousa e Vilagarcía de Arousa. It occupies a territory of 6.91 km² is connected to the continent by a 2 km long bridge. The geography of the island is very soft, with a maximum height of 68 meters above sea level. In its coast has been cut by various erosive and sedimentary forms such as spikes, coves, inlets and areas.

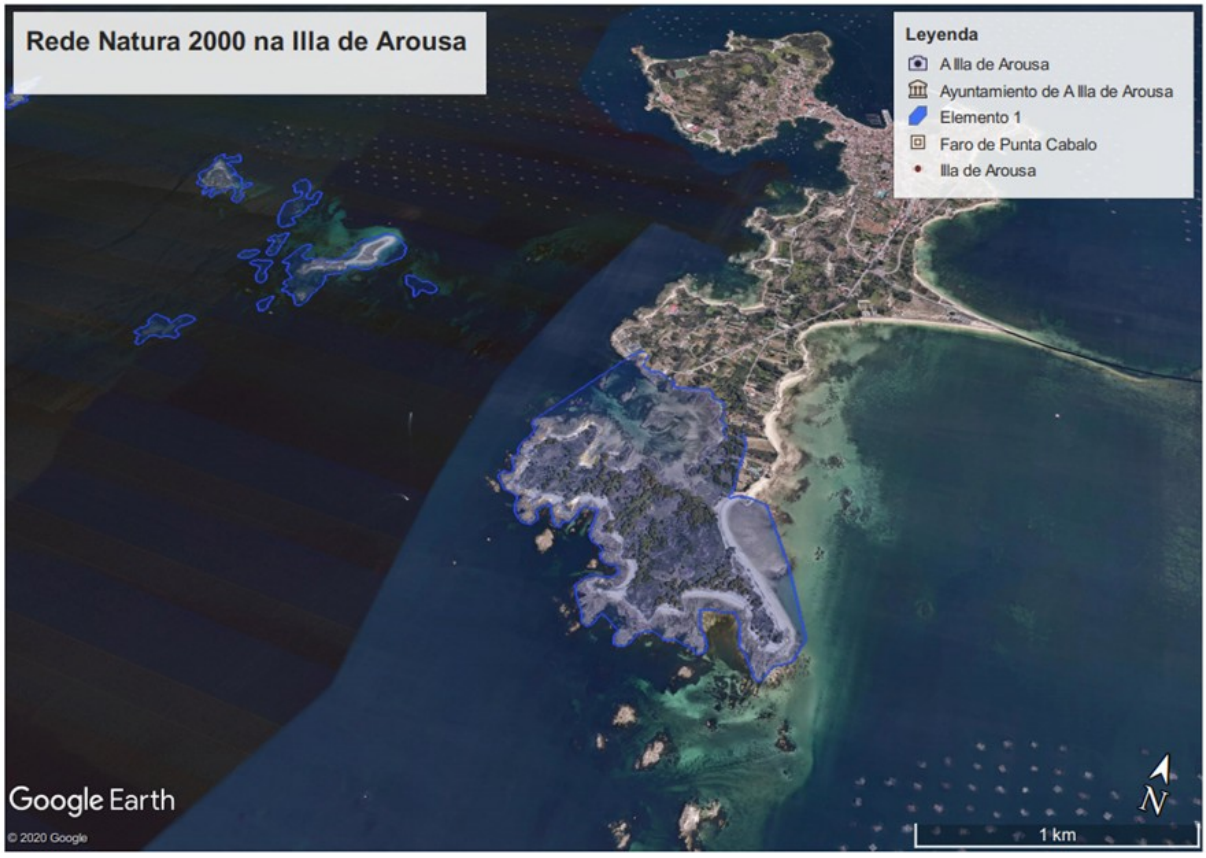
The climatic conditions are very homogeneous, the temperatures are mild with average annual values that do not fall below 15º C and the thermal amplitude rolls to 13º C. Average rainfall ranges from 1200mm to 1400mm per year.

The Island of Arousa has a unique natural heritage; on its coast small rocky and sedimentary stretches follow one another, especially on the inland coast. Sandbanks are common as well as intertidal and subtidal areas. The coastal front is arranged on accumulated marine debris. There is also a system of Atlantic sea dunes, especially in the areas of O Vao, Area da Secada, Praia de Xastelas, area of O Carreirón and the small island Guidoiro Areoso.

The O Carreirón Natural Area, located to the south of the island, belongs to the Natura 2000 Network, the European biodiversity conservation plan. To the west of the island is a small one archipelago where the islet with more entity is the Areoso. The two zones are Places of Com-

munity Importance (SCI) and Special Protection Areas for Birds (SPAs).

Regarding land uses, there is an intense agricultural, forestry and construction occupation of the interior of the island, although the abandonment of agriculture made possible the emergence of deciduous groves. The lands dedicated to agricultural work you can find in all the surroundings of the town, but by extension they are unrepresentative.



The entire coast alternates cliffs and beaches, space dedicated to shellfish farming, due to the abundance of bivalves. In the south predominate scrub and plots of forest monocultures (especially pine), mixed with small clusters of oaks.

1.2 DEMOGRAPHIC SITUATION

The growth of the Island of Arousa has always been conditioned by its geographical characteristics, giving a linear development along the isthmus. The original settlement it developed around the south Cove of San Xulián (narrowest part of the island), taking advantage of its best orography. Once complete, the population expanded to the slope of the Mount of Santo and in the lands that before were dedicated to agriculture. The impact of the bridge construction in 1985 favored linear growth along the Avenue of the Bridge, road that unites it with the center. In general it´s a compact and dense settlement, except for the most recent growths.

The census of the Island of Arousa is 4,926 people of which 2,458 are men and 2,468 women. The living balance presented by the municipality is -15 people per year. By age groups, a population distribution is as follows:

	Men	Women	Total
0 to 15 years	345	332	677
16 to 64 years	1664	1572	3236

	Men	Women	Total
65 and older	434	579	1013
Total	2443	2483	4926

Age groups. Source: Instituto Galego de Estatística. (Pax. 11 Estudo Enerxético da Illa de Arousa).

The average age of the people of Arousa is 44.88, three points under the Galician average, which is 47.3. The foreign population only represents 0.8% of the total, with 41 persons censored. The number of students enrolled in non-university education (Educación Infantil, Primary and ESO) is 562. On the Island there are five teaching centers:

Education centers	Type of Education
Instituto Galego de Formación en Acuicultura da Illa de Arousa (IGAFA)	Vocational Training Infant
IES da Illa de Arousa	Secondary
CEIP da Torre-Illa	Infant + Primary
CPR Sonrisas y Lágrimas	Infant
Escola Infantil de A Illa de Arousa	Infant

1.3 ECONOMIC ACTIVITY

The island of Arousa stands out for having the highest income per inhabitant (15,523 euros). It's for above the provincial average (13,203 euros) (Source: IGE). The main productive sectors of the island are the "bateas", flooding structures dedicated to the breeding and exploitation of mussels; followed by shellfishing on foot and by small boats and other minor fishing gear. It should be noted that there are four ports: the Port of Xufre, the Port of Ribeira do Chazo, the Port of Cabodeiro and the Port of Naval, all of them dedicated to the loading and unloading of mussels, clams and other species. In social security affiliation by the productive sector, we see how the primary sector, mainly fishing, occupies the most of the active population. In industry also a large part of companies they are related to the sea sector.

Complexo portuario do Xufre.

Sector	Afiliates	Porcentage
Agriculture and Fisheries	1.003	48,38%
Industry	212	10,23%
Construcion	88	4,25%
Services	766	36,95%
Outhers	4	0,19%
Total	2.073	100,00%

Social Security affiliates. Source: Instituto Galego de Estatística. (Pax. 14 Estudo Enerxético da Illa de Arousa).

1.4 CONNECTION TO THE MAINLAND

Prior to the inauguration of the bridge in 1985, transportation to the Island was only possible through the sea. Passenger transport was covered by a small fixed-time ship known as "a Motora". For the transport of goods there was a ferry, called "A Barcaza". In those years the presence of cars on the Island was residuary. Since the arrival of the Bridge the number of cars was gradually increasing every year, both due to the propper inhabitants as by the arrival of tourists, sector that has grown significantly in the last decade. Currently wheeled traffic is common in all areas of the Island.

The connection of the public transport of the Island with the continent counts on five daily connections of buses to Vilanova de Arousa and two on weekends, a service that is reinforced during the summer. This concession, which is currently awarded to the company Monbus, is within the Metropolitan Transport of Galicia. There is a taxi rank that only has one vehicle, but which is adapted for dependent people and people with reduced mobility. Also there is a sea taxi service, on demand, which is only on service in the summer months.

1.5 LOCAL GOVERNMENT

The local corporation of the Island of Arousa is formed by eleven councilors and councilors (6 of the PSOE, 4 PP and 1 of the BNG). The municipal budget for the year 2019 was 3,758,827.57 €, which is an increase of 15% compared to 2017, which is the last year for which data are available. In spring of 2019, Arousa Island was chosen as one of the 26 pioneer islands for participate in the European Commission project "Clean Energy for EU Islands", with the aim of drawing up its Local Agenda for the Energy Transition. Since November 2019, our City Council signed the Covenant of Mayors for Climate and Energy.

2 DESCRIPTION OF THE ENERGY SYSTEM

2.1 ENERGY GENERATION.

99% of all electricity and thermal fuels are imported from the continent. In the case of electricity, the distribution company that operates is "Compañía de Electrificación S.L. ", which owns the infrastructure that connects the island to the electrical system of the mainland across the bridge and also the medium voltage ring surrounding the island. The Company also has low voltage lines and transformation centers associated with this system. The presence of renewable electricity production is practically non-existant.

With regard to fuels for thermal use, all consumption is imported by road. Its consumption is divided into two major blocks: oil derivatives, which are used for the individual mobility; and liquefied petroleum gases, widely used in stoves and heaters of sanitary water. On the island of Arousa there is only one service station that has petrol and diesel. Biomass is also present, as a thermal fuel in air conditioning and domestic hot water, especially in public buildings.

2.2 ENERGY CONSUMPTION OF THE ISLAND OF AROUSA

To know the final energy consumption of the Island of Arousa, we conducted a study that we divide by sectors. We used various data sources and study methodologies. On the one hand, we analyzed household consumption using statistical data and surveys carried out in the territory, with a range of representative participation. On the other hand we have the special case of City Council, which as project promoter and stakeholder, provided the data of consumption. A specific study of the industrial sector was also carried out, conducting surveys in the most relevant production centers. The schools were studied separately, the health center and wastewater treatment plant, due to regional ownership of these entities.

2.2.1. Households consumption

The Island of Arousa has 1,556 homes, of which 910 are single-family homes. The rest

they are inside real estate buildings. To carry out this study we follow the "Manual for statistics on energy consumption in households, edited by Eurostat. Following this guide, apart from statistical work with sources of data from the IGE, the Institute for Energy Diversification and Saving (IDAE) and the Instituto Enerxético Galego (INEGA), a total of 469 surveys were also carried out on residents of the municipality, to know their energy data.

Depending on the type of housing, the consumption of the Island is 1,290 toe (equivalent tons of oil), according to the following table:

	Average consumption by type of housing (toe)		
	Number of houses	**toe/ typology**	**Annual consumption(toe)**
Detached houses	910	1,03	934,66
Flats	646	0,55	355,3
Total	**1.556**	**0,83**	**1.290**

Average consumption by type of housing (toe). Sources: IGE, IDAE, INEGA, surveys. (Pax. 18 Arousa Island Energy Study).

The distribution of consumption, by type of fuel, is as follows:

Average fuel consumption		
Fuel	**Toe / year**	**Porcentage**
GLP	0,1708	20,60%
Diesel	0,2371	28,60%
Solar Thermal	0,0025	0,30%
Geotermal	0,0008	0,10%
Firewood	0,1078	13,00%
Pellets	0,0008	0,10%
Electricity	0,3092	37,30%
Total	**0,829**	**100,00%**

Average consumption by type of housing (toe). Sources: IGE, IDAE, INEGA, surveys. (Pax. 18 Arousa Island Energy Study)

Thus we have that more than a third of the domestic consumption of the households of the Island corresponds to the electricity consumption, in its different services, both in heating and in appliances or lighting.

Average consumption per service		
Service	**Toe / year**	**Porcentage**
Heating	0,3324	40,10%
Domestic hot water	0,1816	21,90%
Kitchen	0,0995	12,00%
Refrigeracón	0,0008	0,10%
Lighting	0,0315	3,80%
Household appliances	0,1832	22,10%
Refrigerators	0,0489	5,90%
Freezers	0,0182	2,20%
Washing machines	0,0274	3,30%
Dishwasher	0,0116	1,40%
Dryers	0,0050	0,60%
Oven	0,0191	2,30%
TV	0,0133	1,60%

Average consumption per service		
Service	**Toe / year**	**Porcentage**
Computers	0,0099	1,20%
Stand-by	0,0207	2,50%
Other appliances	0,0091	1,10%
Total	**0,829025**	**100,00%**

Average consumption per service. Sources: IGE, IDAE, INEGA, surveys. (Pax. 21 Energy Study of the Island of Arousa).

In the previous table it is possible to be observed how the thermal uses, as much of air conditioning as of hot water service and kitchen, make up most of the island's domestic consumption.

2.2.2. Industry Consumption and Services

The economy of the Island of Arousa is based on two fundamental axes: the fishing sector, mainly mussel farming in rafts and shellfish, and the service sector focused directly to tourism. 52.5% of the active working population is engaged in agriculture and fishing. 33.91% to the services sector. 9.35% to industry and 3.90% to construction. There are 232 registered companies on the Island, of which 137 are natural persons (self-employed), 62 are Limited Liability Companies (S.L.), 2 cooperatives, 2 Corporations (S.A.) and 29 constituted otherwise. For the number of workers per company, saying that more than 95% are SMEs (Small and Medium Business) and within these 66% are sole proprietors. The sector of industry and services is distributed as follows:

Sector of activity	Total	Individuals	Public limited companies	Limited liability companies	Cooperative	Outhers
C- Manufacturing Industry	17	5	0	9	1	2
E -Water Management	1	0	0	1	0	0
F- Construction	34	14	0	16	0	4
G -Wholesale and retail trade; Vehicle Repair	61	37	1	16	1	6
H- Transport and Storage	10	7	0	3	0	0
I- Hospitality	44	33	1	3	0	7
K- Financial And Insurance Activities	3	3	0	0	0	0
L- Real Estate Activities	4	1	0	2	0	1
M- Professional, Scientific and Technical Activities	14	9	0	4	0	1

Sector of activity	Total	Individuals	Public limited companies	Limited liability companies	Cooperative	Outhers
N- Administrative Activities And Auxiliary Services	13	3	0	8	0	2
P- Education	4	2	0	0	0	2
Q- Health And Social Services Activities	3	1	0	0	0	2
R- Artistic, Recreational And Entertainment Activities	6	4	0	0	0	2
S- Other Services	13	11	0	0	0	2
Totals	**227**	**130**	**2**	**62**	**2**	**31**

Distribution of industry and services by sector of activity. Sources: IGE, IDAE, INEGA, surveys. (Pax. 28 Arousa Island Energy Study).

The processing of data on consumption in the industrial sector and the services sector, gives us the next results:

Consumption of the Industrial Sector	
Uso da Enerxía	**Annual toe**
Electricity	1.090,03
Fishing, Agriculture, Mining, Construction	643,18
Conventional fuels for thermal use	1.078,05
Wastes for thermal use	16,63
Renewable energies for thermal use	0,7
Total consumption of the industrial sector	**2,828,59**

Consumption of the Industrial Sector on the Island of Arousa. Sources: IGE, IDAE, INEGA, surveys. (Pax. 30 Arousa Island Energy Study).

Sector	Annual consumption (Tep)
Industry	2.859,90
Services	596,37
Total	3.425,96

Consumo anual da Industria e os Servizos na Illa de Arousa. Fontes: IGE, IDAE, INEGA, enquisas. (Pax. 30 Estudo Enerxético da Illa de Arousa).

Consumption by energy source:

In the industrial sector, electricity is the main source of energy, followed very closely by the thermal fuels. Important is the fuel used by the vessels engaged in the fishing and boating sector (1/4 of total consumption). Waste utilization for thermal use, and renewable energy have a very low presence.

In the case of the services sector, electricity is the main protagonist, followed by fuels of thermal use, and again a low presence of renewable energies, which in this case are aerothermal heat pumps with high SPF (Seasonal Performance Factor).

Consumption by energy source industrial and service sector

Energy Use	Annual toe
Electricity	1.441,73
Fuel Fishing, Agriculture, Mining, Construction	643,18
Conventional fuels for thermal use	1.321,72
Wastes for thermal use	16,63
Renewable energies for thermal use	1,7
Total	3.424,96

Consumption by energy source of the industrial and services sector. Sources: IGE, IDAE, INEGA, surveys (Pax. 32 Arousa Island Energy Study).

2.3 TRANSPORT

To know the reality of transport within the Island it is necessary to refer to the Integral Plan of Mobility (PMUS) which has the council. The PMUS collects usage data and mobility habits of the Island, as well as all corrective measures to reduce the CO2 emissions and promote sustainable mobility.

Based on the PMUS and the surveys conducted, we collect the most relevant data on the mobility system on the island of Arousa. With regard to the mobile fleet, we start from the existing data of the General Directorate of Traffic and of the census of the municipal archive and we obtain the evolution of the census of vehicles from 2015 to 2019.

We have observed a significant decline in the number of industrial vehicles, a fact that may go up linked to lower activity in this sector, as well as an increase in the number of passenger cars.

	Cars	Vans and trucks < 20 tn	Trucks ≥ 20 tn	Motocycles and mopeds	Totals
2015	2.141	308	8	306	2.763
2019	2.497	286	5	375	3.163
Variation	**356**	**-22**	**-3**	**69**	**400**
	14,26%	**-7,69%**	**-60,00%**	**18,40%**	**12,65%**

Vehicle census on the Island of Arousa (2015-2019). Sources: General Directorate of Traffic, muni-

Cars	Vans and trucks < 20 tn	Trucks ≥ 20 tn	Motocycles and mopeds	Totals

cipal archive of the Island of Arousa. (Pax. 34 Arousa Island Energy Study).

From the PMUS data and surveys, we obtain energy consumption data associated with mobility within the Island: m

Diesel	Gasoline	Outhers
80,20%	17,82%	1,98%

Typology of the car park of the Island of Arousa. Sources: Comprehensive Mobility Plan-PEMUS, surveys. (Pax. 35 Energy Study of the Island of Arousa).

According to PMUS data, the sum of traffic circulating on the Island is 896,016 km per year.

This data corresponds to the local traffic of residents and own services of the Island.

The seasonal traffic of the summer months are not contemplated:

Annual km traveled	Average consumption per vehicle (1/100 km)	Annual liters consumed
896,016	6	5376096

Behavior of traffic circulating on the island of Arousa. Sources: Comprehensive Mobility Plan-PEMUS, surveys. (Pax. 35 Energy Study of the Island of Arousa).

3 MAP OF RELEVANT ACTORS: STAKEHOLDERS

The stakeholders that support the Axenda 2030 project for the Energy Transition on the Illa de Arousa signed a letter of support in the beginning of 2019, when we applied for participating in the European Clean Energy for EU Islands project. Many of them, as far as possible, they got involved in the sectorial talks and conferences, as well as in the elaboration process of the agenda itself. In the newly created association "Arousa in Transition" we want to involve more people from collaborating entities and other local fabric organizations and surrounding associations; encouraging them to join the goals and actions of the agenda.

CIVIL SOCIETY ORGANIZATIONS:

Nosa Enerxía Sociedade Cooperativa Galega	**Nosa Enerxía S. Coop. Galega** The cooperative Nosa Enerxía is active on the island with the presence of associates and as an organization at the institutional level. The organization works in the search for the energy transition based on the participation and democratization of energy in the hands of the citizens. www.nosaenerxia.gal
COLECTIVO ECOLOXISTA DO SALNÉS · Apdo. 100 - O GROVE ·	**Colectivo Ecoloxista do Salnés** Ecological organization involved in the conservation of natural spaces and carrying out environmental education activities in the region of O Salnés. www.facebook.com/Colectivo-Ecoloxista-do-Salnés. www.facebook.com/Colectivo-Ecoloxista-do-Salnés
ESCOLA DE NAVEGACIÓN TRADICIONAL DORNA Nos ventos da tradición	**A.C.Dorna** It is the most important cultural association on the island with more than 700 people associated in its different sections, from traditional music and dance, traditional sailing school, Gaelic football, basketball and much more. www.facebook.com/escueladepau
PDRA PLATAFORMA EN DEFENSA DA RÍA DE AROUSA	**Plataforma en Defensa da Ría de Arousa PDRA** NGO that brings together various groups and organizations in the area, with the aim of defending the Ría de Arousa from the risks of pollution. www.facebook.com/PDRArousa/

ECONOMIC AND INDUSTRIAL SECTOR:

MEXILLÓN DE GALICIA Denominación de Orixe Protexida	**Concello Regulador do Mexillón de Galicia** This entity defends the recognition of the Galician mussel with the seal "D.O.P. Mussel of Galicia ", since in 2007, wich was the first product of the sea that obtained this badge like Denomination of Protected Origin. Almost 100% of the musselfarmers of A Illa de Arousa are represented in this organization.
	www.mexillondegalicia.org
O.P.P.20	**OPP 20** Organization of seafood producers and marine cultures of the province of Pontevedra.
	www.cofradiailladearousa.org
unión RENOVABLES coop	**Unión Renovable** It is the federation of energy cooperatives in Spain that supports its associated cooperatives to achieve the energy transition.
	www.unionrenovables.coop

PUBLIC SECTOR:

CONCELLO DE A ILLA DE AROUSA	**Concello da Illa de Arousa** With an area of about 7 km2 and about 5,000 inhabitants, it is located in the estuary of the same name, the Ría de Arousa, belonging to the province of Pontevedra, within the autonomous community of Galicia. The municipal entity is the largest consumer of energy in the town and yet is the most interested in leading and promoting the energy transition. Its role is to implement transition and energy efficiency policies, cooperate with the population and other organizations to achieve this goal.
	www.illadearousa.es
fundación deportiva municipal A ILLA DE AROUSA	**Fundación Deportiva Municipal** The City Council of the Island of Arousa and several local entities collaborate in the financing of this entity, which promotes and coordinates multiple activities during the year.
	www.ailladearousa.es/fundacion-deportiva-municipal/

FEDERACIÓN ESPAÑOLA DE UNIVERSIDADES POPULARES	**Universidades Populares** The Popular universities are a cultural development project that operates in the municipality, which aims to promote social participation, education and training, to improve the quality of life of people and the community.
	www.feup.org

EDUCATIONAL AND ACADEMICAL SECTOR:

	Escola infantil A Galiña Azul Belongs to the network of nursery schools in Galicia. They have set up composters and a small nursery of native trees.
	www.escolasinfantisdegalicia.es/illadearousa/
XUNTA DE GALICIA CEIP TORRE ILLA CONSELLERÍA DE EDUCACIÓN, UNIVERSIDADE E FORMACIÓN PROFESIONAL	**CEIP Torre-Illa** College of Infant and Primary Education. They carry out environmental education projects (garden and school garden, composting…) and are actively participating from the outset in the process of developing the 2030 Agenda. Participates in Erasmus + with a project called Looking for New Energies, to share experiences in renewable energy.
	www.edu.xunta.gal/centros/ceiptorreilla/
IES da Illa de Arousa Rúa Bouzas s/n, 36626 A Illa de Arousa(Pontevedra) Tfno:886151059; FAX: 886151065	**IES da Illa de Arousa** Institute of Secondary Education. Students carried out an eco-audit on the energy efficiency of the center, which promotes environmental education projects: greenhouse, school garden, beach cleaning, studies of invasive alien species, nursery of native trees for planting in collaboration with the City Council and other educational institutions.
	www.edu.xunta.gal/centros/iesillaarousa/
	Instituto Galego de Formación en Acuicultura, IGAFA Institute of professional training in aquaculture and diving, unique in all Galicia.
	www.igafa.es

4 POLICIES AND REGULATIONS

4.1 POLICIES AND REGULATIONS ON THE LOCAL LEVEL

Waste:

Reducing the amount of waste and its proper recycling is a civic responsibility that concerns both the neighborhood and the City Council. The Island was a pioneer in the introduction of composting as an organic waste management system thanks to the launch of the Life project "Individual composters: the strategy to close the cycle of organic matter in small municipalities. The case of the Island of Arousa "(Life 98 ENV / E / 00343), co-financed by the European Union and which between 1998 and 2001 laid the foundations of the domestic composting program on the island.

The recently formed City Council of the Island of Arousa that time installed a system that today includes more than 400 houses with more than 500 individual composters installed, which represents a participation of more than 25% of the population. Since 2016, it has been expanded with the modality of community composting in neighborhood centers, attended by master composters of the municipal staff, thanks to the support of the Provincial Council of Pontevedra through the project "Revitaliza" for staffing and equipment.

Mobility:

The PMUS (Sustainable Urban Mobility Plan), promoted and designed by the City Council, includes initiatives such as the creation of safe routes for bicycles and a public rental system, the installation of a parking deterrent, the implementation of school roads and various awareness campaigns on sustainable mobility; initiatives that are currently being launched through the Island project "Move", cofunded by the European Regional Development Fund (ERDF).

CE4EUIslands:

The City Council of the Island of Arousa together with the Cooperativa Nosa Enerxía has joined this initiative for the transition of European islands to clean energy. We embarked on this project at the beginning of 2019 with the aim of elaborating our Energy Transition Agenda,

reflected in this document.

Covenant of Mayors:

On November 15, 2019, the Island adheres to the Covenant of Mayors, whose vision for the future towards 2050 includes the following challenges:

• Carbon-free territories, thus helping to keep average global warming at a maximum of 2 ° C above pre-industrial levels, according to the international climate agreement reached at COP 21 in Paris in December 2015.

• Territories more resistant to the inevitable adverse effects of climate change.

• Universal access to safe, sustainable and accessible energy services for all, thus improving the quality of life and increasing energy security.

Accession means taking on the goals adopted by the European Union to curb climate change, taking the necessary measures to reduce, by 2030, 27% of energy consumption and 40% of CO2 emissions, while increasing by 27 % the use of renewable energies. In addition, it involves the adoption of adaptation measures against risks and vulnerabilities such as droughts, rising sea levels or a higher frequency of episodes of extreme temperatures and torrential rains.

The keys that underpin this Pact are:

ATENUATION: accelerate the decarbonization of our territories.

ADAPTATION: Strengthen our ability to adapt to the inevitable impacts of climate change.

SAFE, SUSTAINABLE AND ACCESSIBLE ENERGY: increase energy efficiency and the use of renewable energies.

4.2 POLICIES AND REGULATIONS AT THE REGIONAL LEVEL

At present, the policies at the level of the autonomous community of Galicia are practically non-existent, being reduced the actions in this sense to the subsidies granted from the INEGA (Energy Institute of Galicia) for projects of generation of renewable energies and of energetic efficiency. The energy transition is not a priority issue in the institutional agenda of the Xunta de Galicia, although there is a Galician Strategy for Climate Change and Energy, including the goal of zero emissions for 2050.

4.3 POLICIES AND REGULATIONS AT STATE AND EUROPEAN LEVEL.

The Government of Spain completed in March 2020 its National Integrated Energy and Climate Plan (PNIEC - Integrated Energy and Climate Plan) covering the period 2021-2030 and which includes several key objectives that will involve a deep decarbonization of the country:

• GHG (Greenhouse Gas) emissions should be 23% lower than 1990 levels. Given that in 2017 emissions in Spain exceeded that index by 18%, this target involves a 40% reduction in only ten years.

• 42% of all energy consumed will come from renewable sources (currently 20%)

• 74% of electricity must be renewable.

• An improvement in energy efficiency of 39.5%.

To achieve these goals the plan envisages mobilizing 241 billion euros in these ten years, 80% from private investors. In May 2020, the government sent to Parliament the Climate Change Bill (Climate Change and Energy Transition Bill), which is especially relevant given that Spain has so far lacked a law of this nature at the state level, although there are some at the regional level, such as the Balearic Islands. It includes objectives similar to those of the PNIEC, although a little less ambitious:

• Reduction of GHG emissions by 20% compared to 1990 levels.

- Renewable source of 35% of energy consumed.
- Renewable source of 70% of the electricity produced.
- 35% improvement in energy efficiency.

It should be stressed that the bill prohibits the exploration or exploitation of fossil fuels, including fracking; establishes the adoption of policies to ensure that light commercial vehicles sold beyond 2040 emit 0grCO2 / Km, that the tariff system is adapted for the promotion of renewables with a new auction system, a fossil fuel divestment strategy and the obligation to conducting climate risk assessments to financial institutions, insurance companies and listed companies; and also creates a committee of climate change experts.

In addition, public consultation processes on different issues such as energy storage strategies and the roadmap on renewable energy, hydrogen, biogas, wind energy and offshore energy are underway.

As for the islands 'energy transition, the bill includes an obligation to define low-emission zones before 2024 and allows them to restrict the use of fossil fuel-powered cars and vans.

(Source: Summary of national policy and legislation on the website of the Clean Energy for EU Islands Secretariat, prepared on 27.05.20 by Pau de Vílchez Moragues / Universitat de les Illes Balears).

PARTE II ROUTE TO TRANSITION.

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1 VISION 2030 AND OBJECTIVES

For many years now, A Illa de Arousa has begun a process of internal reflection in search for a model of living space that is able to respond to the current demands of society and the characteristics that must define the spaces of coexistence in towns, villages and cities.

That reflective process now has the opportunity to be executed in reality through an innovative, pioneering and necessary project that is defined in varied and diverse initiatives and challenges.

We consider it a priority to promote a new cleaner and more sustainable energy model, also for future generations, launching certain actions in different spaces, times, and with multiple agents, with the ultimate goal of preserving the environment and improving the quality of life of people.

We intend to develop our vision from different perspectives:

- • **From a social perspective**, the mission will be to recover the feeling of belonging to a community with a unique insular character, recovering forms of cooperativism with historical roots in our locality and making real initiatives such as energy communities, which generate energy and share surpluses.

- • **In the field of education**, we will address a comprehensive work involving all agents of educational action (school, teachers, students, families), to train our students as an essential basis to raise awareness, educate and train in the energy and ecological transition in which we are immersed.

- • **The productive sectors play a decisive role in the energy transition**. The sea will be the driving force behind pilot projects on renewables; tourism will be a modifying agent in favor of sustainability; trade will be the executor of eco-energy initiatives; the hospitality industry will integrate dynamics that favor responsible consumption, energy saving and the use of renewable energies; thus, the locality and its customs will integrate new, more environmentally friendly tools.

- • **Mobility and transport**, both within the island and in connection with the mainland, will be another bet for the future. Creating cleaner mobility, with low-emission zones, balancing motor vehicle uses and the use of renewable energy will be key initiatives in the next decade.

In order to achieve the planned objectives, it will be necessary to develop activities such as:

- Promote and encourage strategies to reduce greenhouse gas emissions and generate clean energy for self-consumption, through the participation of all social, economic and cultural sectors.

- Create an energy community on the island of Arousa, as set out in Royal Decree-Law 23/2020, of 23 June.
- Promote decarbonisation, through the implementation of renewable energies, ecological production, responsible consumption.
- Work on the resilience of the Island of Arousa to climate change, as a sustainable territory, and in the search for environmental security, infrastructure and energy supply.
- Encourage the reduction of the use of motor vehicles, replaced by sustainable means of transport and travel. Promote the shared use of resources, spaces and machines.
- Promote the construction and rehabilitation of homes based on energy efficiency.
- To promote the carrying out of research and development studies.
- To promote the involvement and political commitment of the different local, regional, state, European and international administrations.
- Work on the conservation of the environmental values of the Island of Arousa for the improvement of the quality of life, encouraging the creation of new niches of work that facilitate the socio-economic and ecological equity.
- Encourage the development and dissemination of environmentalism and environmental education.
- To promote sustainable forms of development and to work for a global transformation of society and its economic and social relations.

2 XESTIÓN E GOBERNANZA DO PROCESO DE TRANSICIÓN.

The process of the energy transition to a more sustainable, ecological and resilient island in the face of climate change depends on the persistence and individual commitment and the ability to find the right ways and actions, collaborating with all stakeholders in the future of Arousa.

The City Council, as the highest representative of the citizens of the island, is aware of the importance of the participatory route to achieve the best results, as well as acting as an engine to make these important changes. In this sense we have the cooperative Nosa Energía as a perfect ally to guide us and promote our integration in the project of the European Islands CE4EUIslands. During 2019 the coordinating team, the mayor and the municipal architect participated in the meetings in Madrid and La Palma, and in the forums in Stockholm and Croatia, exchanging views and perspectives with other European islands and the Secretariat of Clean Energy for EU Islands.

Fourteen entities from different sectors of society on the island and its surroundings (Part 1, Section 3) signed the letter of support for this project, promoted by the City Council, participating in the various talks and seminars that were organized. The Transition Team ("Arousa in Transition") is created as a participatory table for the ecological transition, made up of a multidisciplinary group of 10-20 people with great enthusiasm, work capacity and convening.

Throughout that year 2019 and until the confinement of Spanish society, in March 2020, due to the Covid-19 pandemic, more informative talks and events were held; from the sectoral conferences organized by the different working groups are the lists of actions for each pillar of the transition (Part II, Section 4). In September 2020, the "Arousa en Transición" association was set up to give a formal entity to the team that draws up the agenda and to promote specific projects, such as the creation of an energy community.

As next objectives we intend to disseminate the Agenda2030, seek interaction with more associations, entities and people on the island, to participate in the decarbonization process, and also the collaboration of organizations from different sectors "of the continent". The Agenda document will be reviewed annually to evaluate the process, completing, detailing, adjusting and celebrating the results.

3 TRANSITION PATHS

From the beginning, extensive communication work was needed to expose the project to the public and the agents who have a greater presence in the village.

It was necessary to use collaborative work strategies to create a team made up of a large number of people representing civil society, institutions and local entities. Periodically, this Team for the Energy Transition had a presence in the media and soon all the people were aware of this initiative.

We also worked very closely with the Galician energy cooperative Nosa Enerxía, which contributed its know-how and experience throughout the work process for the elaboration of the agenda presented here.

Among the first activities in which they participated were those organized by the Secretariat:

- meeting in Madrid of the Spanish islands participating in the project, which took place at the IDAE (Institute for Energy Diversification and Saving);

- European Islands Forum, in Stockholm, and signing of the commitment to join the Clean Energy for EU Islands;

- participation in the transversal day in La Palma;

- European Islands Forum, in Croatia;

- participation in different webinars organized by the Secretariat of Clean Energy for EU Islands.

With the aim of disseminating and raising awareness, the following initiatives have been launched by the Energy Transition Team:

- Presentation of the Clean Energy for EU Islands program.
- Informative talk "The electricity bill and the energy market" with Nosa Enerxía.
- Paper on the project of the "Electric Boats" with a panel of experts in the field and good participation of the sector, also from the continent.
- Exemplification of the potentialities and characteristics of the Energy Communities.
- Explanation to the public of hydrogen as an energy source.
- Activities for more humane, natural and sustainable mobility.
- Visits of various organizations to promote the energy transition: Energy cooperatives throughout Spain, for the birthday of Nosa Enerxía, and Greenpeace (Rainbow Warrior)

Next, the work towards the elaboration of the agenda began to be systematized, planning the different sectorial days and their schedule.

The people from the sectors represented in the Transition Team contributed their great capacity for work to articulate dynamics that favor citizen participation.

We have a diversity of professionals who helped to take the key steps for the development of the initiatives, proposals and actions that are integrated in this agenda.

• Continue and increase the knowledge, participation, awareness and commitment of the citizens of the Island of Arousa in the Energy Transition Agenda of the town.

• Give the opportunity to all the people who wanted to contribute their ideas, proposals, initiatives... that they could consider useful for their integration in this final document.

From November 2019 to March 2020 we hold the following conferences:

1. September 2019: "Mobility Week". Talk by the Mayor to explain the characteristics and circumstances of the implementation of the Short-Term Sustainable Urban Mobility Plan (PMUS).

2. November 2019: Conference on the achievements and challenges in the management of our waste and composting, taking advantage of the celebration of the 20th anniversary of the domestic composting program on the island of Arousa and to know in situ the community composting system.

3. November 2019: Conference "Women who accelerate the energy transition and slow down climate change", dedicated to the role of women in the energy transition and mitigating the effects of climate change. Organized by women from the Xenegia Cooperative for the Popular University of the Island of Arousa, they focused on issues with a gender perspective, such as our rights, responsibilities and opportunities, and we provided ideas for a better future.

4. December 2019: Talk on the potential of hydrogen as storage + energy source, especially for our ships, by Dr. Marta Maroño of the Division of Combustion and Gasification Department of Energy of the CIEMAT

PARTE II ROUTE TO TRANSITION.

5. February 2020: Sectorial Conference "The role of education in the energy transition". It was a conference with a high participation of teachers from different stages, centers and specialties. It was addressed how teaching can help the realization of the energy transition. Likewise, the problems of the centers that show the need for a change in the energy and environmental model were highlighted; The proposals, ideas and initiatives were collected in a dossier that was given to all attendees to make them part of the challenge ahead.

6. February 2020: Sector day "The sea we want." With more than thirty participants from the marine sector (shellfish gatherers, musslefishers,...) the improvements of recent years in environmental matters were analyzed, addressing the current problems and difficulties for the energy transition and ending with the proposal of solutions and actions integrated in this agenda.

7. February 2020: Sector day "My efficient home. The path of construction in the energy transition". With a large participation of professionals and companies in the sector, an analysis of the improvements made to housing in recent years and the possibilities of reducing consumption without sacrificing comfort were presented; ending with the improvements and challenges we face in terms of energy transition and housing

8. March 2020: Sectoral conference "The tourism model we want." It was the last of the sectorial days and it was attended by representatives of the local tourism sector. In addition to detecting the main problems and analyzing the consequences of mass tourism, it has delved into measures to reduce the environmental impact of tourism, taking into account the threats and environmental problems that are emerging today and will continue to appear in the coming years. A report was prepared on this day, which includes the reflections, objectives and strategies to be integrated into the 2030 Agenda

9. March 2020. The cross-cutting day could not be carried out when the state of alarm was declared on March 14, due to the covid-19 pandemic.

10. September 2020. Graphic documentation of sea level rise during high tides (highest of the year); collection of photos and videos from all over the coast of the Island, thanks to the great citizen participation convened through social media, the press and the school.

3.1 STUDIES REALIZED TO CARRY OUT THE AGENDA

During these months, the Arousa Energy Transition Team also developed a set of initiatives of great importance for the elaboration of the 2030 Agenda. Among them are especially noteworthy:

- The Energy study of the Island of Arousa: elaborated by the collaborating entity Nosa Enerxi a Sociedad Cooperativa Galega, this study allows us to know the current situation of the consumptions and sources of energy used, as well as of the potentialities of sustainable energy generation.

- Municipal Energy Study. Also carried out by Nosa Enerxia, its aim is to know the energy consumption of municipal facilities, buildings and services, for the possible implementation of renewable energy sources.

- Study for the creation of an Energy Community. Elaborated to know the characteristics, operation and needs related to the creation of an energy community of consumption, like an initiative that will contribute social, economic and environmental benefits, repercuting in the local area. To achieve the above objectives, the figure of the ENERGY COMMUNITY is born. Although in Spanish legislation, this figure "local energy community" is not defined, we can understand that an Energy Community is a legal entity where citizens, SMEs and local authorities come together , as final users of energy, to cooperate in the generation, distribution of consumption, storage, supply, aggregation of energy from renewable sources or to offer energy efficiency and / or demand management service. "

3.2 POTENTIAL ROUTES TO REACH THE DESIRED FUTURE

Based on the collaboration of all relevant agents and institutions, our paths to transition will be based on the following lines of action:

1. Establishment of information, dissemination and awareness channels.

2. Implementation of a sustainable mobility system.

3. Incorporation of intelligent technological solutions.

4. Identification of funding sources.

5. Development of sustainable local projects.

6. Rehabilitation and / or adaptation of houses and buildings for better energy efficiency.

7. Research and data collection for proper planning.

4 PILLARS OF THE ENERGY TRANSITION

1 Electricity

2 Mobility on the island and at sea

3 Continental mobility

4 Air Conditioning / Energy Efficiency

5 Education

6 Ecosystems

The relevant sectors to the energy transition are specified in these six pillars, which include the objectives and necessary actions for the decarbonisation of Arousa Island. Pillars that support the bridge of the transition to a future with renewable energies and that were defined during the process of the elaboration of this agenda, through the sectorial days organized by the Arousa Transitionteam.

We modified the model the secretariat of the CE4EUIslands project, joining in pillar 4, Air Conditioning / Energy Efficiency, the cold and heat generation sectors and we added pillars 5 and 6, Education and Ecosystems, for their relevance.

For each action/ project we also propose the sectors or entities who will be responsible for its implementation.

4.1 ELECTRICITY

Total current consumption 2,352.88 toe / year

OBJECTIVES	
1.a	Generation and self-consumption of energy from renewable sources.
1.b	Energy saving.
1.c	Active participation in energy management.
1.d	Implementation of the ISO 50001 energy management standard.
1.e	Energy efficiency
1.f	Electrification for various uses.
1.g	Energy self-management.

Nº Action and Who	ACTIONS

1.1. Citizenship	Purchase of efficient equipment with energy label A.
1.2. Citizenship	Participation in the energy community of the Island of Arousa.
1.3.Citizenship	Electrification of various uses.
1.4.Citizenship	Implementation of self-consumption and participation in shared facilities.
1.5. Industry and services	Implementation of the ISO 50001 energy management standard. Energy audit and management systems.
1.6. Industry and services	Use of EE.RR. for self-consumption: Photovoltaic energy.
1.7. Industry and services	Co-generation: Heat + Electricity in the same generator.
1.8. Industry and Services, Sea sector	Marine energy generation.
1.9. City Council, Industry and Services	Provide electric charging points for electric vehicles and boats.
1.10. Industry and Service	Implement renewable energy solutions in beach bars.
1.11. City Council	Creation and leadership of the energy community of the Island of Arousa.
1.12. City Council	Generation for self-consumption in municipal buildings.
1.13. City Council	Municipal ordinance for the promotion of energy self-consumption: tax bonus.
1.14. City Council	Efficiency in public services: control of water pumping, separation and pumping in sanitation, municipal lighting.
1.15. City Council	Municipal electricity distribution network: Smart Council implementation.
1.16.City Council	Reduction of urban effluents. Methanation in sewage treatment plant / Homes.
1.17.City Council	Against energy poverty: social bond, improvements in electricity contracting of affected households.
1.18.City Council	Encourage the generation of renewable energy on roofs.

4.2 MOBILITY ON THE ISLAND AND AT SEA

Total current consumption 4,464.86 toe / year

OBJECTIVES	
2.a	Sustainable, healthy, clean and responsible mobility.
2.b	Increased bicycle use, walking, car sharing.
2.c	Zonas peonís e de baixas emisións.Pedestrian and low emission areas.
2.d	Electric mobility, charging points.
2.e	Decarbonization of ships.

Nº Action and Who	ACTIONS
2.1. Citizenship	Change of habits in islandmobility: • Walk • Bicycle use • Public transport • Electrification of mobility • Alternative fuels, LPG
2.2. Citizenship	Active participation in change: collaboration with the implementation of the PMUS.
2.3. Industry and Services	Promotion of VE in the hospitality industry: installation of recharging points in hotels and restaurants.
3.4. Industry and Services	Incorporation of electric vehicles.
2.5. Industry and Services	Fleet management: business mobility plan.
2.6. Industry and Services, Sea Sector	Use of alternative technology in the mobility and mechanization of vessels.
2.7. Industry and Services, Sea Sector	Electric boats based on renewables.
2.8. City Council	Application of the PMUS: • Deterrent parking • Installation of charging points • Pedestrianization of streets • Encouragement of bicycle use, rental system, electric bicycles • Modification of the IVTM ordinance: bonus for low-emission vehicles • Introduction of VE and alternative fuels in the municipal fleet
2.9. City Council	Shuttle buses from deterrent parking lots and circular bus.

Nº Action and Who	ACTIONS
2.10. City Council	Prohibition of access of vehicles to the surroundings of the lighthouse, to the access road to Carreirón, except owners of farms, campsites and parking.
2.11. City Council	Conditioning of paid car parks with time limit, in disused plots and with native trees.
2.12. City Council	Prohibition of bicycle traffic in Carreirón.
2.13. City Council	Control of car congestion in beach areas and have public transport.

4.3 CONTINENTAL MOBILITY

OBJECTIVES	
3.a	Shared and public transport.
3.b	Limitation of the influx of cars in summer.
3.c	Clean and responsible consumption vehicles.

Nº Action and Who	Action
3.1. Citizenship	Change of habits in travel: 1 Walk 2 Bicycle use 3 Public transport 4 Electrification of mobility 5 Alternative fuels, LPG
3.2. Industry and Services	Promotion of VE in the hospitality industry: installation of recharging points in hotels and restaurants.
3.3. Industry and Services	Fleet management: business mobility plan.
3.4. Industry and Services	Mobility changes: electric vehicles and charging points.
3.5. City Council	Promotion of public transport: Reinforcement and optimization of public transport. Information to the public on the advantages of the Metropolitan Transport of Galicia. Extension of public transport connections with the mainland and coordination of bus schedules with the nearest train station (Vilagarcia).
3.6. City Council	Application of the PMUS: • Deterrent parking

Nº Action and Who	Action
	• Installation of charging points • Pedestrianization of streets • Encouragement of bicycle use, rental system, electric bicycles • Modification of the IVTM ordinance. Bonus for low-emission vehicles • Introduction of VE and alternative fuels in the municipal fleet
3.7. City Council	Circular bus shuttle for transport service to the beaches in the summer.
3.8. City Council	Regular access services by sea to the Island of Arousa in summer, recover "A Motora".
3.9. City Council	Establishment of a form of payment for parking (blue line, tourist tax...).
3.10. City Council	Reduction in waste transport: Promotion of domestic and community composting.

4.4 AIR CONDITIONING (COLD / HEAT)

OBJECTIVES	
4.a	Improving energy efficiency and savings.
4.b	Warmer, more comfortable and healthier homes.
4.c	Self-sufficient housing, institution buildings and companies.
4.d	Improvements in the facilities and thermal environment of deficient homes.

Nº Action and Who	Action
4.1. Citizenship	Energy efficiency in the building; improvement of the thermal envelope of buildings (exterior carpentry, facades, roofs ...).
4.2. Citizenship	Use of solar thermal energy to support heating and DHW (domestic hot water).
4.3. Citizenship	Change of energy sources for heating: • High SPF (Seasonal performance factor) Heat Pump • Biomass
4.4. Industry and Services	Improvement and efficiency in processes with thermal uses: • Energy audits • Use of solar thermal energy • Reuse of by-products for combustion
4.5. Industry and Services	Air conditioning of offices and shops: • Use of solar thermal energy

Nº Action and Who	Action
	• Biomass • High SPF heat pump
4.6. Industry and Services	Information on sustainable homes.
4.7. Industry and Services	Rehabilitation project and audit of the improvements obtained in energy rehabilitation of pilot houses.
4.8. Industry and Services	Ongoing Training Plan for Energy Efficiency.
4.9. City Council	Promotion of energy rehabilitation of buildings: • Modification of house tax • Rehabilitation area plans • Information to the public on plans of other administrations
4.10 City Council	Low emission systems in air conditioning of buildings and municipal services: Biomass, High SPF heat pump, Geothermal, Special plan for the Town Hall
4.11. City Council	Use of solar thermal energy: Heating support and DHW.
4.12. City Council	Improvement of the living conditions of the houses in the neighborhood to avoid energy poverty.
4.13. City Council	Information on incentives and aid to improve energy efficiency.

4.5 EDUCATION

OBJECTIVES	
5.a	Training, awareness, information and activation for the energy transition.
5.b	Creation of an axis of collaboration in environmental matters between the school and the village.
5.c	Centros Educativos con mellor eficiencia enerxética.Educational Centers with better energy efficiency.
5.d	Fostering an ecological (“educological”) educational community.
5.e	Awareness and participation in the 2030 Agenda.
5.f	Improvements towards sustainable school mobility.
5.g	To extend the teaching practice outside the classrooms in contact with the nature of the environment.
5.h	Creation of citizen participation channels attending to the different stages: childhood, adolescence and adulthood.

Nº Action and Who	ACTIONS
5.1. Education, City Council, parent association	Information and training campaigns on new technologies, good practices, environmental awareness and energy transition.
5.2. Education, City Council, parent association	Responsible consumption in the purchase and acquisition of materials.
5.3. Education, City Council, parent association	Healthy and sustainable dining rooms (products km 0).
5.4. Education, City Council	Energy-educational audits in the centers.
5.5. Education, City Council, parent association	Creation of new work structures and exchange of information.
5.6. Education	Reduce the generation of waste in schools to zero.
5.7. Education, City Council, parent association	Actions to achieve responsible use of transport and positive initiatives against climate change that children can carry out in their daily lives.
5.8. Education, City Council, parent association	Installation of bicycle parking.
5.9. Education, City Council, parent association	Environmental Themes in Family Schools.
5.10. Education, City Council, parent association	Didactic cooperation projects between institutions in the town for the analysis of environmental problems in the students' environment (leisure areas, festive dates, beaches, mountains, ports).
5.11. Education	Integral, multidisciplinary and transversal training of students in energy transition, climate change, ecological footprint, sustainability.
5.12. Education	Training teachers as agents of change.
5.13. Education, City Council	Ecological activism initiatives: beach cleaning, tree planting, care of natural environments ...
5.14. Education, City Council, parent association	Creation of more lively and green patios, school garden and composting.

Nº Action and Who	ACTIONS
5.15. Education	Work commissions between levels and stages (EI, EP, ESO, BACH).
5.16. Education, City Council, parent association	Necessary endowment to the public educational centers so that they are efficient buildings, by means of the collaboration of the City council with the provincial and autonomic institutions in order to improve the air conditioning infrastructures (exterior carpentry) and to reduce the energy cost .
5.17. Education, City Council and parent association	Creation of the municipal school environmental commission, in which girls and boys have a voice and vote.

4.6 ECOSYSTEMS

OBJECTIVES	
6.a	Conservation and sustainable development.
6.b	Air, water and soil quality.
6.c	Mitigation of the effects on the coast and territory of the island caused by sea level rise and climate change.
6.d	A plastic-free Island.
6.e	Regeneration and conservation of natural spaces, native fauna and flora. Special protection for wetlands, dunes and coast.
6.f	Better use of renewable resources.
6.g	Reduction of pollution and energy consumption through efficient water treatment plan.
6.h	Use of less polluting products in household cleaning.
6.i	Change habits in waste reduction.

Nº Action and Who	ACTIONS
6.1. Citizenship, Industry and Services	Use of natural products in sticks, paints, bags, cables, etc. and for the cleaning and maintenance of vessels.
6.2. I ndustry and Services, City Council, Xunta	Control of polluting discharges generated by administrations and companies (Porto, Varadoiro, Depuradoras, EDAR).
6.3. I ndustry and Services	Coordination of the productive sectors for the cleaning of the coast and seabed.

Nº Action and Who	ACTIONS
6.4. Industry and Services, Sea sector	Point of selective collection of waste and bilges in the port, reusing plastics for other uses.
6.5. Citizenship, Industry and Services	Sea Research on the use of seaweed, shells and natural fibre for textile use, fertilizers, etc.
6.6. Industry and Services, Sea sector	Port cleaning point, for small boats, in order to eliminate chemical spills on beaches.
6.7. Industry and Services, Sea sector	Use less polluting cleaning products in homes and work areas, especially at sea.
6.8. Citizenship	Use biodegradable sunscreens.
6.9. Industry and Services, Sea sector	Elimination of the use of plastic bottles through the promotion of "zero kilometer water".
6.10. Industry and Services	Installation of taps for soft drinks in bars and bars.
6.11. Industry and Services	Elimination of plastic sugar envelopes in hotel establishments.
6.12.Citizenship, Industry and Services	Creation of the “Arousa Plastic Free” brand.
6.13. Industry and Services	Creation of a central purchasing office in the hospitality sector for circular economy products.
6.14. Citizenship, City Council, Industry and Services	Proliferation of vegetarian menus.
6.15. Citizenship, City Council, Industry and Services	Collaboration of the sector with the "Zero Waste Lab" as a waste reduction laboratory.
6.16. City Council, Industry and Services	Awareness campaign to avoid throwing poop and using ashtrays on the beach.
6.17. Citizenship, City Council, Industry and Services	Campaign "Here begins the sea": do not throw rubbish / waste in river sewers.
6.18. City Council, Xunta	Plant native trees and act against the problem of invasive alien species.
6.19. City Council, Xunta	To promote and conserve the protected areas of the Natura 2000 Network.
6.20. City Council, Xunta	Protection, conservation of the coastline.

5 MAIN OBSTACLES AND OPPORTUNITIES

MAIN OBSTACLES AND OPPORTUNITIES

STRENGTHS (POSITIVE)

The level of involvement of the members of the Arousa Transitionteam, the high citizen participation and confidence in this project that will allow A Illa de Arousa to be a benchmark for consumption, through the creation of an energy community at the Municipal level.

The sense of identity that the people of Arousa have and their resilient and combative spirit when it comes to preserving and improving their quality of life.

The enormous potential of tidal energy: the location of the tidal mill in Aceñas (currently disused) has all the requirements to house a tidal power plant.

The great potential of wind energy: according to the energy study carried out by Nosa Enerxía, the most suitable for the Island and with less visual impact, would be mini wind energy (integrable in buildings and with an impact on self-consumption similar to photovoltaic solar energy). Within this category we find many alternatives, from the scale replicas of large multi megawatt wind turbines, vertical axis alternators, and even windless systems without blades (possibility to integrate these generators in mussel farming rafts and on the bridge).

The potential of solar energy: The island of Arousa, with an extension of 7 km² has very favorable climatic characteristics for the implementation of this type of energy, being located within an area listed by the European Commission with an average value of about 4.7 Kwh / m² of average solar radiation.

WEAKNESSES (NEGATIVE).

Need for improved communication with relevant actors (stakeholders), as essential pillars in the transition process.

The mobility habits of A Illa de Arousa and the absolute dependence on combustion vehicles, even for small journeys within the town.

Reluctance of energy companies on the island of Arousa, to cooperate in changing the energy model.

Possible problems in relation to infrastructures in the electricity supply network.

OPPORTUNITIES (POSITIVE)

The alignment of the project with European, national and local policies on energy transition.

The advancement of technology and digital innovation: its application is being used to mitigate the environmental impact and consequently improve the quality of life of citizens. In this context, the concept of "Smart Village" and "Smart City" arises, a development supported by various areas of Community policy, through the lines EAFRD, LEADER, HORIZON 2020…). In smart villages there are new networks and services based on digital innovation (management of public lighting, access control to restricted traffic areas, applications to discover local hotel and tourist services).

The health crisis caused by covid-19, highlights the need to preserve the environment, as biodiversity and the conservation of ecosystems, act as a mitigating factor against pandemic agents. The European Union, in response to the economic crisis triggered by covid-19 is pushing European regional development funds (ERDF), whose goals are to accelerate the dual ecological transition (energy and digital). On the other hand, this economic crisis highlights the need for an energy context towards self-consumption, which reduces the costs of households, businesses and local entities.

The tourist overcrowding, increasing exponentially every summer, is generating great discomfort among the citizens of Arousa, which has altered its quality of life, but also its mobility habits. For this reason, more and more voices are being raised requesting the organization of tourist practice, as well as the management of local traffic. This incipient awareness of the pressure of vehicles in summer, will mean a better reception of traffic management measures (especially in coastal areas) and the pedestrianization and humanization of the urban

center, included in the PMUS (Sustainable Urban Mobility Plan).

THREATS (NEGATIVE)

The inherent complexity in the creation of an energy community, since being something new, there are many doubts at the legal, structural and decision-making level; that is, at the executive level.

Legislative insecurity: as there is a possibility of a change in the current legal framework that promotes the creation of energy communities to decentralize energy production. Likewise, the location of the Island of Arousa in a protected natural environment may involve adaptations in accordance with the specific regulations in this matter.

The dependence on optimal management of the competent entities and possible bureaucratic and administrative barriers, for the granting of aid for investment in electricity generation facilities with renewable energy sources throughout the country.

6 FINANCIAL CONCEPTS.

The identification of funding instruments is an ongoing process. It will be essential for the success of the implementation of the agenda, to ensure the existence of sufficient funding instruments to cover all those costs that cannot be economically funded as a result of the energy saving. The team of Arousa in Transition, through the sectorial days, obtained some ideas on how to finance the process of transition:

Creation of a financing line "Green - Sustainable Arousa 2030", a local financing box with fixed rate deposit, which will allow residents to access a micro-credit plan, to finance passive energy efficiency measures and to decentralize the generation of energy. This line of financing will be closely linked to the possibility of establishing, in the medium term, an eco-rate for all vehicles visiting the Island (also establishing a daily vehicle ceiling, since in summer season, the volume of traffic is alarming). From the Transitionteam, we would try to negotiate with the City Council of Arousa to allocate a small percentage of the collection to environmental preservation, as well as to the financing of sustainable projects of general interest.

Others:

- Micro-patronage or crowdfunding (of citizens and local institutions and entities).
- Institutional subsidies at European level (Horizon, Nesoi), national, regional and Provincial Council.
- Ethical banking and social works of savings banks.
- Business foundations with ecological identity.
- "Bit coin" with extra tax.

7 FOLLOW-UP

During the elaboration of the agenda, in the sessions of the transitionteam and with the contributions of the participants in the different sectorial days, a transparent and accessible to all the citizenship process was made. Through the analysis of the results obtained in the energy study and the household consumption survey, relevant information was collected to prepare a first database, which will have to be reviewed and repeated in the future to see progress and detect needs for improvement.

To monitor the Agenda, the Association Arousa en Transition will organize annually (every autumn) a participatory transversal day, which will review objectives, actions and achievements, with the collaboration of the City Council and stakeholders.

In this sense, the project to install air quality meters at sensitive points on the Island will allow us, in addition to collecting significant data, to establish lines of collaborative work with educational and scientific institutions to strengthen the process of monitoring the reduction of polluting gases.

As indicators of the transition process will also act: the degree of involvement of the people and institutions of both the Island of Arousa and the continent over the next decade, the support of funds to the project and the installation of the Decarbonization Plan of the town council within the Covenant of Mayors for Climate and Energy, scheduled for this winter 2020-21.

Although much remains to be done, we are on the right track, as documented in the results obtained in the tool "Island Self-Assessment Matrix" provided by the Secretariat of Clean Energy for EU Islands to see our evolution, and which has been covered three times by the team . It analyzes the following indicators:

		EVALUATION DATES		
INDICATORS		**11/04/19**	**01/29/20**	**09/28/20**
CETA: Clean Energy Transition Agenda		1.5	3.5	4
Vision		2.5	3.5	4
Comunity	Actores relevantes	2.5	4	4.5
	Organización	2.5	4.5	5
Financial concepts		1.5	3	3.5
Plan of Decarbonization	Island diagnosis	1	2	3
	Data	1.5	2	3
	Action plan	1	2	3
Multi-Government level		2.5	3	3.5
SUMMARY		16.5	27.5	33.5
TOTAL SCORE:		1,8	3,05	3,7

Rating scale: 1 to 5.

The future begins today...

There is a lot left to do!

WEBSITES:

- *Concello de A Illa de Arousa:*

https://www.ailladearousa.es/

- *Arousa en Transición:*

https://sites.google.com/view/arousatransicionenerxetica/inicio

- *Nosa Enerxía Cooperativa Galega:*

http://nosaenerxia.gal/index.php/gl/

- *Clean Energy for EU Islands:*

https://euislands.eu/

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