

Clean energy for
EU islands:
CETA

Ceantar na nOileán, Ireland

Technical assistance with CETA Part I

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Preface

The island Ceantar na nOileán applied with the project *Clean Energy Transition for Ceantar na nOileán (Archipelago of Connemara)* for the second call for technical assistance from the Clean energy for EU islands secretariat in April 2022.

The Island Clean Energy Transition Agenda is a strategic roadmap for the transition process towards clean energy. It is designed by the local community, for the local community. Starting from an examination of the current dynamics on the island, the Clean Energy Transition Agenda spells out a vision of the island that is shared by the members of the island community. The perspectives of different island stakeholders are aligned to work towards this common goal.

This report contains a draft of Part I of the Island Clean Energy Transition Agenda, which was developed jointly by Comhairle Ceantar na nOileán, Údarás na Gaeltachta etc. with the support from the secretariat.

The first objective of this draft was to be the basis for the Vision Workshop, as described in the beginning of Part II of the of the Island [Clean Energy Transition Agenda](#). Comhairle Ceantar na nOileán in conjunction with Údarás na Gaeltachta organised a public meeting to discuss the development of the Clean Energy Transition Agenda for Ceantar na nOileán, with the support from the secretariat. The meeting was held on Tuesday the 6 December 2022 in the offices of Comhairle Ceantar. It was an open discussion where 15 participants expressed themselves about what is important for their community and discussed about clean energy solutions. The Secretariat was represented by Alexis Chatzimpiros from its Danish regional partner Samsø Energy Academy, who provided insight into the community-driven clean energy transition of the Danish island of Samsø, and shared the lessons learned. Samsø is a pioneer island and global brand name for covering its energy needs from local renewable resources with benefits for the island community, The outcomes of the discussion fed into the islands' vision as described in the CETA.

The next steps would be a local reflection on where the community would like to go when it comes to clean energy, to identify priorities and formulate them so that they fit into the CETA part II in further collaboration with the secretariat.

Part I: Island Dynamics

Geography, Economy & Population

Geographic Situation

Hidden along Europe's last Atlantic frontier is Ceantar na nOileán, the Island region of Connemara. Fifty-six kilometres west of Galway City lays a group of Gaeltacht islands called Ceantar na nOileán, they are situated between Kilkerrin Bay and Greatman's Bay. It is an Irish-speaking district in the West of County Galway.



Figure 1 - Ceantar na nOileán and its location with regards to Ireland

The five main islands are Eanach Mheáin, Leitir Móir, Garumna, Leitir Mealláin and Foinis though there are many more scattered in between. The causeways link the islands of Eanach Mheain, Lettermore, Gorumna and finally Lettermullan. In the archipelago, some of the other islands are themselves interconnected, to wit, Lettermullan is itself connected to Furnish and An Crappagh.

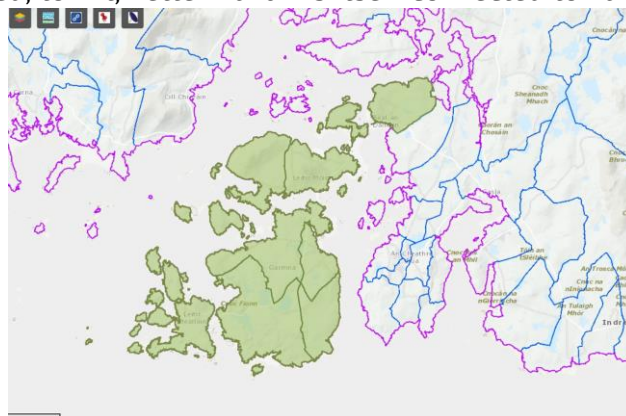


Figure 2 - Gaeltacht islands indicating Ceantar na nOileán - Source: Comhairle Ceantar na nOileán

Almost all of the Archipelago is free from SAC (Special Areas of Conservation) designation under Natura 2000, the European network of nature protection areas in the EU¹. However, the surrounding coastal waters of Cill Chiaráin Bay and many of the smaller islands are designated as candidate SAC's. This is relevant for obtaining permits and authorisations for renewable energy

¹ <https://consult.galway.ie/ga/node/30>

projects as this implies lighter environmental and biodiversity constraints (see section Policy and Regulation – RES projects authorisation process below).

There are numerous other small islands in Ceantar na nOileán which are uninhabited. Their land is of poor agricultural quality with extensive outcropping of granite bedrock².

Demographic Situation

According to the latest available information from the Irish Central Statistics Office, Ceantar na nOileán had 2,057 inhabitants in 2016³. Compared to the census of population of 2011 the population has decreased with six percent (coming from 2,193). Some of the outer islands such as Inis Eirc and An Chnapach have lost their entire populations but there remains habitation on others⁴.

Tourism on Ceantar na nOileán is heavily based on "Gaeltacht Tourism". Gaeltacht is the name for the regions in Ireland where Irish is the main language. The area experiences an influx of students learning Irish in the Summer months. There are no official numbers however, Comhairle Ceantar na nOileán has some indicative figures. Around 4000 students per year reside in the area. Parents of the students would account for 10 0000 stays per year. Additional visitors to the area would be in the region 6000 & 3000 for off peak months. In general, there is a lack of accommodation for the whole area. Accommodation is mostly rented via the online platform Air BnB.

Several socio-economic studies focus on Ceantar na nOileán, or use it as a case-study:

The study 'Irish Families and Globalization: Conversations about Belonging and Identity across Space and Time'⁵ delves deeper in the reasons for depopulation and brings forward the 'Muintearas Project a Gaeltacht Education Project started in 1980 by Commharchumann na nOilean, the local, community-owned cooperative, with as it's mission: *'The Islands' Community Education Project will be a programme for the social development of the people.... By nurturing confidence in all sections of the population, to initiate and sustain suitable forms of action, the Community Education Project will strive to create more positive and realistic attitudes in both young and adult groups toward the potential with the Islands' Community Development Co-operative five-year plan.'*

According to the study 'Aspects of Education in the Gaeltacht - Policy Implications'⁶ *'the Muintearas Project prompted to undertake a wide range of community education and community development schemes in Ceantar na nOileán. The Project developed a high level of expertise in initiating and administering a considerable range of education, employment and vocational training projects at community level. These were funded from a variety of national and EU sources'*.

² <https://consult.galway.ie/ga/node/30>

³ <https://www.cso.ie/en/releasesandpublications/ep/p-cp10esil/p10esil/ilg/>

⁴ Royle, Stephen. (2003). Exploitation and celebration of the heritage of the Irish islands. Irish Geography. 36. 23-31. 10.1080/00750770309555809.

⁵ Christine A. Readdick, (2014), Irish Families and Globalization: Conversations about Belonging and Identity across Space and Time. Ann Arbor, MI: Michigan Publishing, University of Michigan Library, 2014. Available online at <https://doi.org/10.3998/groves.9453087.0003.001>

⁶ Available online at <https://archive.ph/20130129170343/http://muintearas.com/reatha/wp-content/uploads/aspects.htm%231>

Local Government

The islands are governed by **Galway County Council**, as they do not have any local government of their own. As described in more detail in the chapter [Regional policy and regulation](#), Galway County Council has implemented a County Development plan – which targets, among others, specifically Ceantar na nOileán. The Local Authority Renewable Energy Strategy is explained more in detail below. On the basis of these plans and strategies the Council supports Ceantar na nOileán in its energy transition.

Some of the islands have their own development company/co-operative which organises several important public functions regarding for example education and sports. However, these do not have legal jurisdiction on the islands.

Comhairle Ceantar na nOileán Ltd is the Island District Council⁷. It has a committee of 13 members. The task of the District Council is to promote local development and preserve the Islands District area. The Council's main aims are:

- To promote economic, social, and cultural developments based on the identified needs in the area in order to improve the quality of life in the area.
- Participation of the local community in the development process at all levels.
- Identify needs for employment, social facilities, recreational facilities, services, and infrastructure and make the appropriate planning to promote developments based on these needs.
- Carry out various developments based on the needs of specific groups in the community, the youth, the unemployed, women and the elderly.
- To identify the human and natural resources of the area
- Develop a partnership model from the bottom up and foster collaboration with the appropriate development organizations.
- To preserve the Environment of the Islands Area
- Give support and advice to the various committees operating in the area.
- Collaborate and support the private sector in the area to promote the development aims of the area.
- Ensuring coordination and order between the activities of the various committees.

The Comhairle meets regularly to progress the activities of the SEC. Its members include an office manager, the Chairperson, other committee members, and local business and community representatives.

The Comhairle has held information evenings and public meetings and energy awareness days which were very well attended and have built up awareness and good engagement practices within the community. During 2020 and 2021 they developed a campaign to ensure all heat pumps on the five islands got serviced regularly. They worked with a local community hall and buildings to upgrade their building standard as part of Better Energy Communities program 2020 (explained in more detail in the section Policy and Regulation below). Retrofit works included attic insulation and full LED lighting replacement.

Clár Éifeachtacht Fuinnimh is a not-for-profit social enterprise offering free and independent advice in energy efficiency upgrades⁸. They provide information sessions for a wide variety of groups within the community which covers The Better Energy Warmer Homes Scheme, SEAI grant

⁷ <https://www.cnnoilean.ie/>

⁸ <https://www.cnnoilean.ie/fuinn>

funding, the Community Energy Grants and the Better Energy Communities Scheme. Clár Éifeachtacht Fuinnimh intends to provide a mechanism where low income, non-fuel poor homes can afford to install high-cost energy upgrades in hard-to-treat situations (i.e. external wall insulation). The primary aim is to improve the comfort levels for homeowners. Clár Éifeachtacht Fuinnimh has joined the Sustainable Energy Community Network⁹ (SEC) from the Sustainable Energy Authority Ireland (SEAI). The University of Galway has signed a [charter](#) with the SEAI and Clár Éifeachtacht Fuinnimh to support the building of energy efficient communities for Clár Éifeachtacht Fuinnimh.

Údarás na Gaeltachta is the regional authority responsible for the economic, social, and cultural development of the Gaeltacht. As shown in the section ‘Economic Activities’ below, this authority supports businesses and communities in Ceantar na nOileán in various ways.

Economic Activities

The islands have always had a strong connection with the sea, making seaweed farming an important economic activity for the area. The main industries on the islands are fishing, fish processing and aquaculture. The aquaculture sector includes Marine Harvest (Fish Farm), Mòr Net (Nett manufacturing & Repair), Sea Spray (Salmon processing) & Service Sector, Oyster & Scallop Co-Op: Growing & Processing.

There are several tourism and heritage facilities that have been developed in Ceantar na nOileán. Ionad Oidhreachta Leitir Mealláin, exhibits the rich heritage of the area and attracts a significant number of tourists to the area¹⁰. Ionad na Feminine offer experiences for all including seaweed information, seaweed baths and spa treatments

There are no official numbers on tourism, but as described above there is much "Gaeltacht Tourism" which brings about 4 000 students yearly to reside during the summer months.

Údarás na Gaeltachta is supporting a boat building Course in Ceantar na nOileán The Wooden Boat Building course in the Ceantar na nOileán, Conamara.

There are also recent actions being taken to help businesses. For example a business hub was recently opened on Ceantar na nOileán¹¹. This new digital hub includes 13 workspaces, between hot desks and shared workspaces, across three different rooms and it is the fifth hub being launched in Galway Gaeltacht. The project is part of a network of 31 hubs and each of them offers highspeed broadband being developed by Údarás na Gaeltachta in locations throughout the Gaeltacht. This development is a vital part of Údarás na Gaeltachta’s 2021 – 2025 Strategy.gteic@Ceantar na nOileán will stimulate job creation, assist remote working, and encourage and enable the return of the Gaeltacht Diaspora.

Údarás na Gaeltachta offers qualifying businesses and companies from various sectors a range of incentives and supports to start up, develop, expand, or locate in a Gaeltacht region.

⁹ <https://www.seai.ie/community-energy/sustainable-energy-communities/sec-map/?id=67>

¹⁰ <https://consult.galway.ie/ga/node/30>
<https://www.ionadoidhreachta.com/>
<https://www.theseaweedcentre.com/en>

¹¹ <https://www.galwaybeo.ie/news/galway-news/huge-boost-connemara-state-art-6127786>

Connection to the mainland

The five main islands are linked by a chain of bridges and causeways which were built at the end of the last century by the Congested Districts Board. They are accessible by local bus service, all year-round.



Figure 3 - Map showing connections between Galway and Ceantar Ceantar na nOileán - [Source](#)

There are also several smaller islands but only accessible by boat¹².

Ceantar na nOileán is interconnected to the mainland via a cable, which provides all its electricity demand.

¹² <https://consult.galway.ie/ga/node/30>

Energy System Description

Several actions have already taken place in Ceantar na nOileán toward the clean energy transition, such as Better Energy Communities, LECO, retrofitting, etc. In addition, opportunities like rooftop-PV at community level, upskilling, and energy efficiency projects are present on the archipelago.

The [Better Energy Communities](#) (BEC), managed by the Sustainable Energy Authority Ireland (SEAI) is a comprehensive scheme that finances energy efficiency projects to Irish Communities. Other support systems are explained in more detail in the chapter Policy and Regulation, but it is worthwhile here to mention that many inhabitants of Ceantar na nOileán have already participated in the SEAI's BEC grant scheme from 2014-2016 and again in 2020 and have carried out extensive works. A total of 170 houses were retrofitted. Overall the experience has been positive, and the local development committee Comhairle Ceantair na nOileáin is confident that there will be a very good take up amongst the remaining 700 homes (80%). The housing stock is generally poor and uses oil fired central heating and solid fuel. It is expected that there will be a lot of interest in a locally managed BEC in 2023.

The energy consumption and CO₂ emissions breakdown per sector are shown in Table 1.

Table 1 - Final energy consumption breakdown for Ceantar na nOileán

Data based on calculations and assumptions	Final energy consumption [MWh]	CO₂ emissions [tonne]
Electricity consumption		
Residential	1250	370
Industries	162	48
Tertiary sector	2166	172.2
Transport to/from an on the island		
Road transport	15797	4046
Heating		
Kerosine, peat and coal	43604	13718
Electric	889	263
Solar thermal	274	-
Wood pellets	419	163
LPG	285	63
TOTAL	64846	18843.2

The conversion factors can be found in Annex A.

Considering the sectors presented in the table, heating represents 67% of the total energy consumption while transport to/from and on the island represent 24% of the total consumption. The electricity consumption is the smallest energy sector only consuming 5.5%. The lower share of electricity consumption is due to the fact that we are showing final energy consumption. Therefore, only the final electricity consumed by the households is considered, and not the primary energy required to produce that electricity. For interconnected islands--with no local generation-- final energy consumption is the metric generally used.

Electricity

Ceantar na nOileán is interconnected to the mainland via a cable which provides all its electricity demand. The island thus has no local electricity generation. As no data was received from the local DSO, the electricity consumption on Ceantar na nOileán has been estimated based on the known electricity consumption of a neighbouring region, the Aran Islands [1], which are just 15 km more to the south. The Aran islands are home to approximately 1260 permanent residents, which corresponds well with Ceantar na nOileán which has a population of about 2000 permanent residents. The Aran islands draw a significant number of tourists in Summer, almost tripling the population, while this not the case for Ceantar na nOileán, which has some tourism and heritage facilities but not as extensive compared to the Aran Islands. Regarding economic activities, the Aran islands is mostly focused on tourism, but farming and fishing are also prevalent. Ceantar na nOileán is mostly focused on fishing, fish processing and aquaculture, making it reasonably similar to the Aran Islands with the exception of the stronger tourism sector there. The electricity consumption for Ceantar na nOileán has been estimated by scaling up the electricity consumption from the Aran islands¹³ based on the population of permanent residents. The results of this scaling exercise are shown in Table 2.

Table 2: Overview of electricity consumption

	Final energy consumption [MWh/year]	Share of Final energy consumption [%]	Primary Energy Consumption [MWh/year]	CO₂ Emissions [ton/year]
Residential	1250	34.7%	2273	370
Commercial	22	0.6%	40	6.5
Industrial	162	4.5%	295	48
Public buildings	540	15.0%	982	159.8
Utilities	1604	44.6%	2916	474.8
Transport	20	0.6%	36	5.9
TOTAL	3598	100.0%	6542	1065

Heating and cooling

Heating on Ceantar na nOileán is mostly done via either kerosene, peat, or coal. As these heating sources are mostly bought separately by per household, there is no ledger that gives an overview of the total amounts bought per year. Therefore, the yearly energy consumption for heating on Ceantar na nOileán is based on the Building Energy Rating (BER) certificates for the region. This certificate rates the building's energy performance based on the volume, insulation, climate, etc. The BER gives an indicative energy performance (kWh/m²) which takes into account space heating, water heating, and lighting. These data have been collected for each of the eight Statistical Small Areas, making up the archipelago. The heating energy demand of the non-residential buildings on the archipelago was estimated using average SEAI country statistics. The methodology used for both residential and non-residential is further detailed explained below. Table 3 shows the final and primary energy consumption, as well as the CO₂ emissions for each heating source.

¹³ This scaling was performed based on the known electricity consumption of Árainn (840 people) and Inis Meáin (160 people). Inis Oírr (260 people) was not included as its electricity consumption is not known.

Table 3: Overview of heating energy consumption for all buildings

Heating source	% of buildings using heat source (%)	Residential Final Energy Consumption (MWh/year)	Non-Residential Final Energy Consumption (MWh/year)	Total Final energy consumption (MWh/year)	Heating efficiency (%)	Primary Energy Consumption (MWh/year)	CO ₂ Emissions (tons/year)
Kerosene	53.28%	11,780	1,712	13,492	60% ¹⁴	22,486	5,824
Peat	35.26%	7,796	1,133	8,929	50% ¹⁴	17,859	6,786
Coal	6.44%	1,423	207	1,629	50% ¹⁴	3,259	1,108
Electric	1.93%	427	62	489	55% ¹⁵	889	263
Solar thermal	1.03%	228	33	261	95% ¹⁴	274	-
Wood pellets	1.16%	256	37	293	70% ¹⁴	419	163
LPG	0.90%	199	29	228	80% ¹⁴	285	63
TOTAL	100%	22,109	3,213	25,322		45,471	14,207

Heating for residential buildings

The heating energy consumption for residential buildings is based on the Building Energy Rating (BER) certificates for the region. This certificate rates the building's energy performance based on the volume, insulation, climate, and so forth. The BER gives an indicative energy performance (kWh/m²) which takes into account space heating, water heating, and lighting. These data have been collected for each of the eight Statistical Small Areas, making up the archipelago, as can be seen in Table 4. A difference is made between occupied dwellings and vacation houses, as there are quite a few vacation houses, and their heating energy consumption is quite different.

Table 4: Overview of heating energy consumption for residential buildings

Small Statistical Area	% of dwellings with a BER (%)	Average floor area (m ²)	Average BER (kWh/m ² /year)	Occupied dwellings		Vacation houses		Total heating energy (MWh/year)
				Number of occupied dwellings (-)	Energy for SH and DHW ¹ (kWh/m ² /year)	Number of vacation houses (-)	Energy for SH and DHW ² (kWh/m ² /year)	
67102002	0.60%	122.1	318.9	117	289.9	36	58.0	4,396
67163003	5.70%	96.8	281.5	136	255.9	12	51.2	3,428
67102005	21.50%	76.2	264.6	120	240.5	39	48.1	2,342
67102006	12.40%	87	294.8	110	268.0	7	53.6	2,597
67102003	1.90%	130.9	146.1	76	132.8	19	26.6	1,387
67102004	4.50%	131.1	287.7	64	261.5	10	52.3	2,263
67163002	1.20%	51.7	821.7	62	747.0	7	149.4	2,448
67163001	8.00%	99	445.1	77	404.6	20	80.9	3,245
TOTAL	7.76³%	98.86³	334.00³	762	303.64³	150	60.733	22,109

1. The assumption is that 9% of the energy consumption is used for lighting and thus removed from the average BER

¹⁴ <https://totalenergy.co.uk/are-oil-boilers-energy-efficient/>

¹⁵ <https://www.seai.ie/data-and-insights/seai-statistics/key-statistics/electricity/>

2. The assumption is that the energy consumption in vacation houses is only a fifth of occupied dwellings since these are only used part of the year, and often times during Summer when heating demands are low.

3. Weighted average based on the number of occupied dwellings per Small Statistical Area

One caveat of this method is that for most Small Statistical Areas, the share of dwellings with a BER is relatively low. The weighted average of dwellings with a BER equals 7.75%. This availability bias (dwellings with a BER tend to be dwellings that are newer or recently renovated) can lead to a positively skewed image of the heating energy consumption of residential buildings on the archipelago.

Heating for non-residential buildings

The heating energy consumption for non-residential buildings is based on a list of all non-residential buildings present on the archipelago, as can be seen in Table 5. This list clarifies the function of each building (community hall, pubs, offices, etc.), but does not offer information on the net floor area for these buildings. As no detailed information was available, each non-residential building is assumed to be an exact average of the Irish non-residential building stock.

In 2015, an extensive survey of the commercial buildings stock in the Republic of Ireland was performed by the SEAI, looking into their heating energy consumption and insulation standards. The commercial building stock was divided in five groups: “office, retail, restaurants/public house, warehouse and hotels”. For each of these groups, an average final energy consumption was derived as is shown in Table 5 **Error! Reference source not found.** Matching every non-residential building on Ceantar na nOileán to one in the SEAI classification allows to derive a rough estimate of the yearly heating energy consumption according to national averages. As Ceantar na nOileán and its buildings are rather small compared to the national average, the eventual figure is most likely an overestimation, but still offers a preliminary view on the heating demand of the non-residential buildings.

Table 5: Overview of heating energy consumption for non-residential buildings

Type of building	# buildings Garumna	# buildings in Leitit Moir	Total buildings	SAEI classification	Classification final energy consumption (MWh/year)	Total final energy consumption (MWh/year)
Elderly center	1	0	1	Hotel	475	475
Health centre	0	1	1	Hotel	475	475
Community hall	1	1	2	Office	40	81
Primary school	3	1	4	Office	40	162
Creche	1	0	1	Office	40	40
Pre-school	1	0	1	Office	40	40
After-school	1	0	1	Office	40	40
Offices	3	0	3	Office	40	121
Heritage center	1	0	1	Restaurant/ Public house	94	94
Sports hall	1	0	1	Restaurant/ Public house	94	94
Restaurant	1	1	2	Restaurant/ Public house	94	188
Pub	1	3	4	Restaurant/	94	375

				Public house		
Church	2	1	3	Restaurant/ Public house	94	281
Police station	0	1	1	Restaurant/ Public house	94	94
Golf club	0	1	1	Retail	73	73
Shops	0	3	3	Retail	73	218
Butcher	0	1	1	Retail	73	73
Hairdresser	1	1	2	Retail	73	145
Garage	1	1	2	Retail	73	145
TOTAL	19	16	35	/	/	3213

Transport

As the archipelago is connected to the mainland via several bridges, transport only occurs via road, and not via ship or plane.

Data was gathered in two ways in order to estimate the transport energy consumption. The first way relates to collecting the sales volume from the local gas station. The second way relates to the findings of a vehicle count done on the bridges towards Ceantar na nOileán performed by the Galway County Council. Both methods are performed, and their results compared in order to increase the trustworthiness of the results.

The gas station method

Data was received from the gas station located on the archipelago. This way, the yearly sales volume of all types of transport fuels were derived, as can be seen in Table 6. It was estimated by the island representatives that the local gas station represents only a fifth of total transport fuel, so this amount was multiplied by five to estimate the total quantity of fuel needed for transport on the archipelago.

Table 6: Overview of transport energy consumption via gas station method

	Quantity sold at gas station (l/year)	Estimated quantity needed on the island (l/year)	Primary Energy Consumption (MWh/year)	CO ₂ Emissions [tons/year]
Unleaded petrol	93,000	465,000	4,073	1,228
Road diesel	187,000	935,000	9,070	2,235
Agriculture gas	38,000	190,000	2,654	584
TOTAL			15,797	4,046

The vehicle count method

Data was received from Galway County Council on the vehicle count that was performed during a 10-day period from December 12th until December 21st on two bridges on the archipelago. The first bridge is the East/West bridge between Beal an Daingin that connects to Galway city. The second bridge is the North/East bridge between Lettermore Island and Garumna Island. The vehicle count included data on the number of vehicles driving over the bridge for each hour of the day, split up per direction. On this basis, an estimate was made of an average weekday and weekend day for the

second bridge, as indicated in Table 7. This can be converted to an estimated 423,878 vehicles per year either entering or leaving the island.

Table 7: Results of the vehicle count

	Average weekday	Average weekend day
Vehicles passing per day (Average of leaving and entering the island)	12,24.5	10,14.5
Vehicles passing per year	318,370	105,508
Total number of vehicles passing per year	423,878	

Based on the fact that an equal number of vehicles cross the bridge in both directions within one day and based on the time of day that vehicles cross the bridge, it is assumed that the main reason for transport is commuting to work during the week, or other errands during the weekend. These will be most likely done in Galway City, which is approximately 50 km from the middle of the archipelago. While other trips are definitely possible (to different cities, vacations, etc.), only a certain distance can reasonably be attributed to “island transport” and this distance is chosen to be the distance towards the county capital. Additionally, only a one-way trip is attributed to island transport as the other way could be attributed to Galway itself, meaning that only 50 km is attributed to island transport each time a car leaves or enters the island. This implies that 21,193,900 km can be attributed to island transport on a yearly basis.

Finally, assuming that each vehicles has an average fuel efficiency of 6.06 l/km¹⁶ leads to a total fuel consumption of 1,283,752 litres. As no additional information is known on the fuel type of each vehicle passing on the bridge, the share is assumed to be the same as the one sold on the island. The final results for the second method can be seen in Table 8.

Table 8: Overview of transport energy consumption via vehicle count method

	Estimated fuel quantity consumed on the island (l/year)	Primary Consumption (MWh/year)	Energy	CO ₂ Emissions [tons/year]
Unleaded petrol	375,437	3,289		991
Road diesel	754,911	7,323		1,804
Agriculture gas	153,404	2,143		471
TOTAL		12,755		3,267

The final transport energy consumption

The two methods give somewhat different results. The first method results in an estimate of 1,590,000 litres per year while the second method has 1,283,752 litres as a result (23.9% difference). It’s hard to estimate which one is “correct” as the exact figure depends for a large part on what to include as “island transport”. As there is no clear-cut answer for this when an island is connected to the mainland via a bridge, the author has opted to show the methodology so that the

¹⁶ Based on the average fuel efficiency from all cars sold in Ireland from 1998 until 2018. <https://www.cartell.ie/2018/03/vehicles-fuel-efficient-yet-ireland-faces-carbon-penalty/>

figures could be revised when needed. For the purpose of this report, the higher value of the first method is used since it offers a more conservative result.

Stakeholder mapping

This section should provide an overview of the local actors that are relevant for the clean energy transition on Ceantar na nOileán. For every relevant organisation, the following questions are answered to the extent possible:

1. Perspective on the transition
2. Engagement in the transition
3. If applicable, contact person in the organisation

Civil society organisations

Clár Éifeachtacht Fuinnimh

Clár Éifeachtacht Fuinnimh is a not-for-profit social enterprise offering free and independent advice in energy efficiency upgrades¹⁷.

1. Perspective on the transition: Developing their own set targets to meet the transition
2. Engagement in the transition: Lead part of the steering committee
3. Contact person: Patrick McHugh

Local sporting groups (GAA) & Sportlann Naomh Anna

1. Perspective on the transition: GAA strategic 5-year plan & developing their own set targets for their building/club to meet the transition
2. Engagement in the transition: Part of the steering committee
3. Contact person: Róisín Nic Leoid.& Marie Nic Chualáin

Comhar Chuigal

1. Perspective on the transition: Developing their own set targets to meet the transition
2. Engagement in the transition: Part of the steering committee
3. Contact person: Eileen Perkins

Glór na nOileán

1. Perspective on the transition: Developing their own set targets to meet the transition.

¹⁷ <https://www.cnoilean.ie/fuinn>

-
2. Engagement in the transition: Part of the steering committee
 3. Contact person: John Mac Donnacha
-

Muintearas

1. Perspective on the transition: Developing their own set targets to meet the transition
 2. Engagement in the transition: Part of the steering committee
 3. Contact person: Máirín Ní Chonghaile
-

Businesses

Seaweed Centre

Visitors can find out about different species of seaweed; they can see seaweed being prepared for cosmetic treatments; they have the opportunity to go on a guided seaweed harvesting trip on the shore or they can take a seaweed foot bath; they can buy seaweed products and enjoy items from a seaweed themed menu in the cafe.

1. Perspective on the transition: Developing their own set targets for their building to meet the transition
 2. Engagement in the transition: Associate of the steering committee
 3. Contact person: Padraig Mac Diarmaid
-

Connemara Island Golf Club

1. Perspective on the transition: Developing their own set targets for their building and club to meet the transition
 2. Engagement in the transition: Part of the steering committee
 3. Contact person: John Lynch
-

Heritage Center in Lettermeallain

1. Perspective on the transition: Developing their own set targets for their building to meet the transition
 2. Engagement in the transition: Associate of the steering committee
 3. Contact person: John Baba Jack Ó Conghaile
-

Páirc Pobal Leitir Móir

1. Perspective on the transition: Developing their own set targets for their building to meet the transition

-
2. Engagement in the transition: Associate of the steering committee
 3. Contact person: Tina Ní Flaherty
-

Public Sector

Governmental Actors

Údarás na Gaeltachta

1. Perspective on the transition: Developing their own set targets to meet the transition through their Gaeltach Glas policy
 2. Engagement in the transition: Part of the steering committee
 3. Contact person: Eamonn Ó hEanaigh
-

Galway County Council

1. Perspective on the transition: Galway County Development Plan
 2. Engagement in the transition: Part of the steering committee
 3. Contact person: Tina Ryan
-

Department of Gaeltacht

1. Perspective on the transition: The Gaeltacht Act
 2. Engagement in the transition: Associate of the steering committee
 3. Contact person: Tbd
-

Department of Rural and Community Development

1. Perspective on the transition: Our Rural future & Climate Action Act
 2. Engagement in the transition: Associate of the steering committee
 3. Contact person: John Mac Donnacha
-

Sustainable Energy Authority Ireland

The Sustainable Energy Authority of Ireland¹⁸ (SEAI) is a governmental body established to promote and aid in the development of sustainable energy in Ireland.

The SEAI 'Community Grant' supports energy efficiency community projects through capital funding, partnerships, and technical support. Offshore islands score more favourably in the selection process, due to their more challenging installation requirements.

the SEAI launched the National Energy Research Development and Demonstration (RD&D) Funding Programme 2022¹⁹, which invests in innovative energy RD&D projects which contribute to Ireland's transition to a clean and secure energy future.

In addition, the Sustainable Authority of Ireland partners with Local Authorities to provide bridge funding for community energy upgrades. A new partnership between the SEAI and the Atlantic Seaboard North Climate Action Regional Office, which consists of counties Donegal, Sligo, Mayo and Galway, will pay communities up to €25,000 towards the upfront costs of their energy upgrade projects.

1. Perspective on the transition: Sustainable Energy Communities & Climate Action Act
 2. Engagement in the transition: Part of the steering committee
 3. Contact person: Ruth Buggie
-

Schools and Academia

Higher Education and Research

University of Galway

University of Galway is the first university in Ireland to join the SEAI Sustainable Energy Communities Network. A SEC embraces an inclusive and community approach, across all sectors, to develop a sustainable energy system. To do so, SECs aim to be energy efficient, to use renewable energy where feasible and to develop decentralised energy supplies. By joining the SEC Network, University of Galway commits to knowledge sharing with SEC members and to developing and implementing energy-saving initiatives. Joining the SEC network offers many benefits to University of Galway (and community partners), including: the potential for energy and financial savings by implementing energy efficiency initiatives; an opportunity to promote community building through a partnership approach, where resources and expertise are shared across the network; an opportunity to contribute to national energy reduction targets; to assist in the development of sustainable energy supplies through investment and installation of renewable energy technology.

The University of Galway has signed a charter with the SEAI and Clar Eifeachtacht Fuinnimh to support the building of an energy efficient community for Clar Eifeachtacht Fuinnimh.

1. Perspective on the transition: Tbd
-

¹⁸ <https://www.seai.ie/>

¹⁹ <https://www.seai.ie/grants/research-funding/research-development-and-demonstration-fund/SEAI-RDD-Call-Document.pdf>

-
2. Engagement in the transition: Part of the steering committee
 3. Contact person: Michael Curran
-

Policy and Regulation

National policy and regulation

General policy

The Integrated National Energy and Climate Plan for the Republic of Ireland aims to achieve a share of renewable electricity of 70% by 2030, a share of renewable heating and of 24% by 2030 and a share of renewable energy in the transport sector of 13.4% by 2030.

Regarding **Strategic Planning**, specific attention is given to islands in the Policy Document ‘Our Rural Future’: rural development policy for 2021-2025²⁰. The plan spans over 120 pages and details 150 different actions to revive rural Ireland. Chapter 10 ‘Supporting the Sustainability of our Islands and Coastal Communities’ is especially relevant from the perspective of the clean energy on EU islands initiative. There are 12 Policy Measures mentioned for the Islands and Coastal communities, the main one being the 10 Year policy for Islands Development to 2030. It promises an extensive consultation process with island communities and will address issues such as housing, health, energy, utilities, waste management, climate change, education, digital connectivity, employment, infrastructure, and transport.

Specifically for islands, the Irish Government is developing a new national policy for the development of the islands around Ireland, called the ‘new National Policy for the Future Development and Sustainability of Communities on the Offshore Islands of Ireland’²¹. This new 10-year Policy for Islands Development to 2030²² will focus on developing new opportunities for islanders and building sustainable futures for island communities. *“The Programme for Government commits to the production of a long-term plan outlining how Ireland will take advantage of the significant potential of offshore energy on the Atlantic Coast and achieve 5 GW capacity in offshore wind by 2030 off Ireland’s Eastern and Southern coasts. This plan will position Ireland to become a major contributor to a pan-European renewable energy generation and transmission system.”* The focus with the Irish islands when it comes to energy transition is on using the islands as testing sites for the innovative technologies and behavioural change.

Ireland’s planning hierarchy in relation to energy policies is done at different levels, namely national, regional, and municipal.

The National Planning Framework (NPF) and the National Development Plan (NDP) are the two pillars of Project Ireland 2040, setting out a shared vision for coordinated planning and investment, linking national spatial development priorities and enhancement of physical Infrastructure. Project Ireland 2040 is the government’s long-term overarching strategy to make Ireland a better country for all of its citizens²³. It is about doing things differently. Ireland has changed how it invests in public infrastructure, moving away from the approach of the past which

²⁰ <https://www.gov.ie/en/publication/4c236-our-rural-future-vision-and-policy-context/>

²¹ <https://www.gov.ie/en/publication/02a4d-island-policy-consultation-paper/>

²² <https://www.gov.ie/pdf/?file=https://assets.gov.ie/132413/433aebac-f12a-4640-8cac-9faf52e5ea1f.pdf#page=91>

²³ <https://www.gov.ie/en/campaigns/09022006-project-ireland-2040/>

saw public investment spread too thinly and investment decisions which didn't align with a clearly thought out and defined strategy.

Project Ireland 2040 is committed to the delivery of the NPF as a blueprint for spatial planning in Ireland to 2040, with the National Development Plan supporting the delivery of the Ten National Strategic Outcomes of the NPF out to 2027²⁴. The National Strategic Outcomes (NSO) are the tools which the NPF will use to deliver its goals. Most relevant in this context is NSO 8 Transition to low carbon and climate resilient society.

The National Climate Policy position establishes the national objective of achieving a transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. This objective will shape investment choices over the coming decades. New energy systems and transmission grids will be necessary for a more distributed, renewables focused energy generation system, harnessing both the considerable on-shore and off-shore potential from energy sources such as wind, wave and solar and connecting the richest sources of that energy to the major sources of demand.

The Irish Government published a Climate Action Plan in 2021. This is a plan for taking decisive action to achieve a 51% reduction in overall greenhouse gas emissions by 2030 and setting Ireland on a path to reach net-zero emissions by no later than 2050, as committed to in the Programme for Government and set out in the Climate Act 2021²⁵.

The Plan lists the actions needed to deliver on climate targets and sets indicative ranges of emissions reductions for each sector of the economy. It will be updated annually, including in 2022, to ensure alignment with a legally binding economy-wide carbon budgets and sectoral ceilings.

Citizens, communities, and business will all have a role to play. The government will support the changes through the €165 billion National Development Plan which includes funding for retrofitting homes, building new public transport, reskilling workers and supporting a just transition.

In the Public Sector, the plan aims to:

- Reduce emissions from the public sector by 51% by 2030 with Green Teams in every public body
- Prohibit new fossil fuel heating systems in public buildings after 2023 (limited exceptions)
- Mandate all new fleet purchases to be electric from 2023 (where vehicle type available)
- Improve energy efficiency of public sector from 33% in 2020 to 50% by 2030

The Climate Action Fund (CAF) was established to provide assistance and financial support to projects which will help Ireland achieve its climate and energy targets²⁶. The CAF will provide at least €500 million in government funding up to 2027 towards this aim.

Regional Spatial and Economic Strategy (RSES) set out the key strategic assets, opportunities and challenges and set out policy responses to ensure that people's needs – such as access to housing,

²⁴ <https://assets.gov.ie/37937/12baa8fe0dcb43a78122fb316dc51277.pdf>

²⁵ <https://www.gov.ie/en/publication/6223e-climate-action-plan-2021/>

²⁶ <https://www.gov.ie/en/publication/de5d3-climate-action-fund/>

jobs, ease of travel and overall well-being – are met, up to 2030 and beyond²⁷. Included in these regional strategies are the region’s Climate Action Strategy – to accelerate climate action, ensure a clean and healthy environment and to promote sustainable transport and strategic green infrastructure. The North West Regional Assembly is responsible for the NW RESS (2020-2032).

The Government’s Climate Action Plan 2019²⁸ requires each Local Authority to identify and develop plans for one decarbonisation zone - an area in which a range of climate mitigation, adaptation and biodiversity measures are identified to address local low carbon energy, greenhouse gas emissions and climate needs, to contribute to national climate action targets. After identifying the most suitable area for the zone, each Local Authority must develop their implementation plan ahead of the deadline (December 2021)²⁹.

Furthermore, local authorities in Ireland are now charged with developing individual climate action plans³⁰. They are supported, on a regional level, and connected through the coordinating role and work of the Climate Action Regional Offices (CAROs).

Specific funding under the Climate Action Fund for community initiatives will be routed through the local authority framework.

In addition, the Sustainable Authority of Ireland partners with local authorities to provide bridge funding for community energy upgrades. A new partnership between the SEAI and the Atlantic Seaboard North Climate Action Regional Office, which consists of counties Donegal, Sligo, Mayo and Galway, will pay communities up to €25,000 towards the upfront costs of their energy upgrade projects.

The energy transition discussion for the islands is currently mainly focused on electricity, as this is centrally controlled and planned. When it comes to heating, it is managed locally. Energy performance of Irish buildings needs to improve not just on the islands but also on the mainland. Most transport from/to the island is locally owned.

Renewable energy

Support systems

There are no island specific support systems in Ireland. The generally applicable support systems are described below. The Renewable Electricity Support Scheme (RESS) is the main government support to help deliver on Ireland’s 70% renewable electricity target by 2030. The scheme has a number of community features designed to ensure community participation. Of particular interest to island communities are the provisions of the Community Benefit Fund and the Community-led category. The former provides for all RESS projects, including offshore projects, to share project revenues with local communities for sustainable purposes and the latter provides a route to market for community-led projects.

According to the Sustainable Energy Authority Ireland, around 90% of the residents on islands are part of a community and the vast majority of islands is represented in the community’s programme. Although it does not have a specific island mandate, it is significantly contributing to the clean energy development on islands. According to a certain interviewee the reason for this

²⁷ An example: <https://emra.ie/rses/>

²⁸ <https://www.gov.ie/en/publication/ccb2e0-the-climate-action-plan-2019/>

²⁹ <https://www.caro.ie/news/local-authority-decarbonisation-zones>

³⁰ <https://www.lqma.ie/en/publications/local-authority-sector-reports/delivering-effective-climate-action-2030.pdf>

high interest in sustainable energy communities on the islands is that there are full-time people employed in community cooperatives on the islands and they are looking into renewable energy to provide for their (small) island community. That is why they make so much use of the support system.

Ireland offers several incentives for the deployment of renewable technologies in the electricity generation, heating and cooling sector and transport. Support for larger RES projects (both solar and wind power) is allocated through auctions. Additionally, a solar PV scheme provides subsidies for the purchase and installation for roof-mounted PV. The heating and cooling sector is addressed through a grant scheme for heat pumps, an operational tariff for biomass/biogas installations and grants for the energy upgrading of dwellings. In the transport sector, grants are provided for the purchase of private and commercial EVs and the installation of public and private chargers. Ireland has a biofuel obligation scheme and offers tax relief and tax exemption for electric vehicles.

Support schemes:

- A Solar PV scheme offers grants for the purchase and installation of roof-mounted PV. Battery storage is also eligible for support.
- The RESS 1 auction offers support to medium and large wind and solar power projects and has a specific Community Preference Category to support communities.
- The Pig & Poultry Investment Scheme offers grant aid to pig and poultry farmers for specific investments in renewable generation and energy efficiency measures.
- The Young Farmers' Capital Investment Scheme offers grant aid to young farmers for renewable generation and energy efficiency measures.
- The tax regulation mechanism 'Accelerated Capital Allowance' is a tax-relief scheme that promotes renewable generation, measures on energy efficiency and electric mobility to enterprises located in the Republic of Ireland through accelerated depreciation.
- The tax regulation mechanism 'VAT Refund for farmers' refunds the VAT for farmers that purchase wind turbines or PV plants.
- The support scheme 'Renewable Heat' provides grants for the purchase and installation of heat pumps.
- The subsidy 'Better Energy Homes' provides grants for the energy upgrading of dwellings.
- The subsidy 'Electric Vehicle Grant Scheme' provides grant for the purchase of private and commercial electric vehicles.
- Under the tax regulation mechanism 'Vehicle Registration Tax', electric vehicles are exempt from the vehicle registration tax.
- Ireland has a biofuel quota scheme under which fuel suppliers are required to include a certain percentage of biofuels in their annual fuel sales.
- The 'Electric Vehicle Home Charger Grant' & 'Electric Vehicle Public Charger Grant' offer grants for the installation of electric chargers.

RES projects authorisation process

A range of permits must be obtained for renewable energy projects including from the local planning authorities, the national regulator, the distribution and/or transmission grid operator and the national valuation office. The permit and authorization process for RES in the Republic of Ireland includes the following steps:

- Site selection: project developers should consider specific planning regulations, which are stated in the Local Development Plans. For onshore wind, specific guidelines are available (currently under revision).

- Application preparation: This step includes the preparation of the Environmental Impact Assessment Report (EIA Report) and/or the Natura Impact Statement (NIS) for onshore wind/ ground-mounted PV and expectedly for offshore wind.
- Electricity production licence: This step foresees the issue of the License to Generate (operation license) by the Commission for Regulation of Utilities (CRU). Its application can follow the Authorisation to Construct license (see below) or a single application is possible. Planning permission and grid connection offer is mandatory for the issue of this license.
- Administrative authorisation: This step includes the issuing of the planning permission by the Planning Authority or An Bord Pleanála. The application includes all accompanying documents, such as the EIA Report and the NIS.
- Grid connection procedure: A standard approach, the Enduring Connection Policy (ECP) is followed since 2018, which the latest taking place in 2020. The transmission system operator (TSO) Eirgrid and the distribution system operator (DSO) ESB Networks announce the initiation of the application window. ECP defines the categories and the number of projects which will be offered a connection ('batch process'). By accepting the connection offer, project developers can realise their grid connection works.
- Corporate legal-fiscal: The step concerns the 'Revaluation' process, which is the periodic update of commercial property rates in local authorities.
- Other: This foresees the issue of the Authorisation to Construct by the Commission for Regulation of Utilities (CRU). Application for Authorisation to Construct can come first and then the License to Generate may follow. However, the project developer can submit a single application for both licenses. In any case, planning permission is necessitated while a proof of grid connection suffices for the application submission

Grid

The Irish islands are fully interconnected. The grid connection procedure is defined by the 'Enduring Connection Policy' (ECP). Additional grid connection/ development works are classified as contestable i.e., that can be carried out by the project developer and or non-contestable i.e., that are carried out by the TSO/DSO. Grid access is non-discriminatory. Ireland has one distribution system operator and one transmission system operator. The country has a smart meter penetration rate of 3.7%. The electricity supplier switching rates for household customers in 2018 was 14.2%.

Supported energy efficiency measures

Several of the schemes under 'supported RES technologies', such as the Pig & Poultry Investment Scheme and the Better Energy Homes, offer grants to energy efficiency measures as well. Apart from that, the Energy Efficiency Obligation Scheme requires every energy supplier to achieve a certain energy efficiency target by carrying out energy efficiency projects in the domestic or non-domestic sectors. The Excellence in Energy Efficiency Design grant scheme offers subsidies to public and private organisations for the design and implementation of energy efficient projects. Finally, the Better Energy Communities is a comprehensive scheme that finances energy efficiency projects to Irish Communities.

Regulatory best practice

Contrary to the Renewable Electricity Support Scheme (RESS), the grants for energy efficiency projects foresee a 'grant uplift' of 50% for islands. Island inhabitants could thus ask for 50% more funding for energy efficiency renovations. The special funding applied to two schemes –

phase three of the greener homes scheme, which allows homeowners to install energy efficient technologies such as geothermal heat pumps, solar panels and biomass boilers and stoves, at a subsidised cost; and the home energy saving scheme. This extra allocation is still active on the Better Energy Homes Scheme and the grant is uplifted by 50% when there is an application from an eligible off shore island.

Also, the SEAI ‘Community Grant’ supports energy efficiency community projects through capital funding, partnerships, and technical support. Offshore islands score more favourably in the selection process, due to their more challenging installation requirements.

Supporting policies

Ireland has an official training and certification programme called Renewable Energy Installers. The National Standards Authority of Ireland also offers certification for energy efficiency measures, while additional accreditation for energy auditors is required in order to qualify for the Excellence in Energy Efficiency Design (EXEED) grant scheme. The Public Sector Energy Programme provides support to public sector entities for energy savings. Ireland also issues annual calls for RD&D projects on clean energy transition.

Self-consumption and community energy

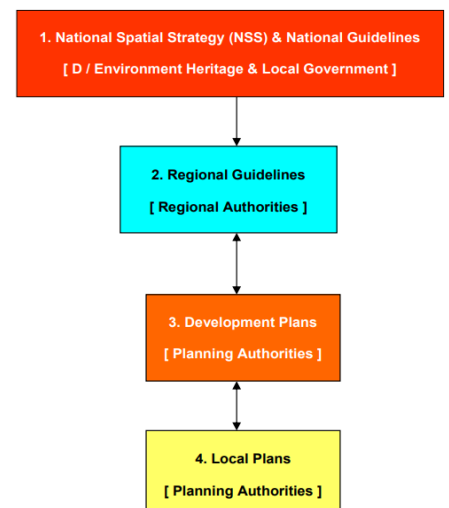
A community preference category was taken up in the country’s first RES auction, the Renewable Energy Support Scheme. Currently, there is no specific legal framework with regard to prosumers, but the distribution system operator is planning to introduce a micro-generation support scheme for prosumers.

Regulatory best practice

Energy communities do not need to have a planning permission before their grid application while commercial projects do need to have it, making it less burdensome. On top of that new bill has recently passed simplifying authorization procedure for community projects³¹.

Spatial Planning

At a national level two main organisations have responsibility for planning: Department of Housing, Heritage, and Local Government and An Bord Pleanála (which is an independent, statutory, quasi-judicial body that decides on appeals from planning decisions made by local authorities). As the main overseer of the planning system in Ireland, the Department of Housing, Heritage and Local Government is responsible for the framing of planning legislation as well as the preparation and issue of policy guidance³². In addition the regional authorities, of which there are eight, have responsibility for drawing up and implementing Regional Planning Guidelines (RPGs) to support strategies for regional development. The implementation of the physical planning system in Ireland is the responsibility of the 88 local planning authorities: Development Plans and Local Plans are made by the 29 County Councils, 5 City Councils and 49 Towns.



³¹ Planning and Development (Solar Panels for Public Buildings, Schools, Homes and Other Premises) (Amendment) Bill 2021 (<https://www.oireachtas.ie/en/debates/debate/seanad/2021-06-28/18/>).

³² <http://residentsalliancegroup.com/docs/planning%20in%20ireland.pdf>

The Planning and Development Act 2000³³ (as amended) forms the foundations for planning in Ireland. This Act covers a huge range of planning-related issues, and combines a wide range of different legislation into one place. It sets out the detail of regional planning guidelines, development plans and local area plans. It sets out how the process of applying for and obtaining planning permission works. It contains special requirements for protected structures, conservation areas and areas of special planning control.

Regional policy and regulation

[To be filled with any relevant policies or schemes at the local level related to energy or mobility.]

Galway County Development Plan 2022 – 2028

In accordance with Section 12(1)(b) of the Planning and Development Act 2000 (as amended), Galway County Council has prepared the Draft Galway County Development Plan 2022 – 2028.³⁴

Chapter 13 looks at the Galway Gaeltacht and Islands³⁵ and has several strategic aims such as:

- (i) promoting and facilitate sustainable development that is appropriate to the character, heritage, amenity and strategic role of the Gaeltacht and Island communities in County Galway;
- (ii) supporting an appropriate level of services and infrastructure to provide for existing and future growth and sustainable development in a manner that protects and is complementary to the environment, heritage, character and amenities;
- (iii) promote a strong sense of community spirit, civic pride, local identity and social inclusiveness.

Chapter 14 ‘Climate Change, Energy and Renewable Resource’ of that County Development Plan list some climate mitigation measures in different sectors:

Building	Transport	Energy production
Support energy efficient building design	Support the construction of greenways/cycle tracks/pedestrian routes	Promoting energy efficient building design
Promote the construction of smaller/higher density energy efficient homes for populations with better infrastructure available	Support car-free developments	Promote links between developments and renewable energy resources, for example sourcing energy on site in a renewable way or from low carbon fuel sources
Promote renewable and low-carbon energy	Strengthen transport links and encourage their use	
Creating or improving carbon sinks	Support the localization of jobs/shops/services to minimize the need for common travel patterns	
	Supporting electric vehicle charging points and the electrification of the Council's fleet	

That chapter also contains an Energy Strategy. According to the plan: ‘A secure energy supply is essential for future growth and sustainable development of County Galway. Detectable and low cost energy is essential for a high quality of life for the residents of County Galway and also to ensure that the County is an attractive place to do business. Despite that, it is necessary to ensure that energy demands are met without harming the environmental quality. Energy efficiency, the

³³ <https://www.gov.ie/pdf/?file=https://assets.gov.ie/118297/b65e91a5-ea82-460a-9f8c-cc6bb8c754f5.pdf#page=null>

³⁴ <https://consult.galway.ie/ga/node/17>

³⁵ <https://consult.galway.ie/ga/node/30>

development of renewable energy and moving towards a low-carbon economy are the central themes of this Plan.' The Energy outlook for Galway until 2028 is as follows:

- A reduction in demand for non-renewable fuel sources, such as coal and oil, as well as an increased demand for electricity from all sectors, resulting in a more sustainable use of energy around the county.
- A significant increase in demand for electricity resulting from a reduction in the use of fossil fuels is expected. A bigger factor in that is the transport sector, with electric vehicles being developed and as they become more widespread, the estimated sector will see a reduction in oil use.
- A significant reduction in the use of coal and peat for home heating is expected due to advances in home heating technology, improvements in home insulation and new laws limiting the burning of fossil fuels for home heating due to climate change and environmental obligations.
- Natural gas will continue to play a role in the transition to a low-carbon economy.
- In the longer term, fossil fuels will be replaced with renewable energy sources in County Galway in accordance with the *Renewable Energy Strategy 2012 - 2020* which is aimed at decoupling energy from dependence on fossil fuels.
- The implementation of the targets and policy objectives mentioned in the Renewable Energy Strategy prepared for County Galway as part of the County Development Plan can be found within [Appendix 1](#).

Local Authority Renewable Energy Strategy

With expected increases in population and economic growth, growth in demand for energy is expected in the coming years. A secure and resilient supply of energy is critical to a functioning economy, so that it can be relied upon for heating, cooling, and fuel for transportation, power industry, and electricity generation.

In 2013, SEAI published a Methodology for Local Authority Renewable Energy Strategies (LARES)³⁶ to provide guidance to local authorities engaging with spatial planning for renewable energy. This methodology aims to facilitate consistency of approach in the preparation of LARES, and to assist local authorities in developing robust, co-ordinated and sustainable strategies in accordance with national and European obligations.

To facilitate the sustainable growth of renewable energy, a Renewable Energy Strategy (LARES) was prepared for the county as part of a plan and is available in Appendix 1 of the County Development Plan. The LARES states the potential of renewable energy resources and is a strategic aim to ensure that those developments located appropriately, economically and sustainably in the long term. The Strategy was prepared taking into account relevant European, national, regional and local planning frameworks and guidelines.

LARES reinstates the Wind Energy Strategy to the Galway County Development Plan 2015 (as amended).

LARES states the potential for a range of renewable resources, including bioenergy, micro-renewables, wind, solar, geothermal, hydro, energy storage and marine renewables (offshore, wave and tidal energy). It recognizes the significant assistance they can deliver to make the county more energy secure, less reliant on traditional fossil fuels, establishing future energy exports and

³⁶ <https://www.seai.ie/publications/Methodology-for-Local-Authority-Renewable-Energy-Strategies.pdf>

complying with assigned climate change targets. LARES recognizes the importance attached to infrastructure within the county including road, electricity, gas and rail networks, and harbours.

The aims of the local renewable energy policy are summarized below:

- Renewable Energy Generation and auxiliary facilities: Facilitate and support appropriate levels of renewable energy generation and auxiliary facilities in the county to comply with national, regional and county renewable energy targets, to facilitate a reduction in CO2 emissions and the promotion of a low-carbon economy
- Wind Energy Developments: Promotion and facilitation of developments on wind farms in suitable locations, paying attention to the areas of the County designated for that purpose in the Local Authority's Renewable Energy Strategy. The Planning Authority will assess any proposals for planning submissions for wind energy production in accordance with the Local Authority's Renewable Energy Strategy, DoEHLG Guidance for Planning Authorities on Wind Energy Development, 2006 (or any updated/adopted documents instead), paying due attention to the Habitats Directive and the detailed aims of the policy and the Development Standards set out in the Local Authority's Renewable Energy Strategy.
- Solar Energy Developments: Promotion and facilitation of developments on solar farms in suitable locations, paying attention to the areas of the County designated for that purpose in the Local Authority's Renewable Energy Strategy. The Planning Authority will assess any proposals for planning submissions for solar energy production taking due account of the Habitats Directive and the detailed aims of the policy and Development Standards set out in the Local Authority's Renewable Energy Strategy.

Local policy and regulation

The islands are under the jurisdiction of the county. Irish islands do not have their own local authorities but depend on the county level on the mainland. The section Local Policy and Regulation is thus irrelevant.

Part II: Island transition path

Comhairle Ceantar na nOileán in conjunction with Údarás na Gaeltachta organised a public meeting to discuss the development of the Clean Energy Transition Agenda for Ceantar na nOileán. The meeting was held on Tuesday the 6 December 2022 in the offices of Comhairle Ceantar. It was an open discussion where 15 participants expressed themselves about what is important for their community and also thought about clean energy solutions.

Some key take aways from that public meeting are retained below:

- The high cost of retrofitting poses a barrier to several stakeholders.
- There is a lack of contractors who can do retrofits in the area.
- Solar community projects on homes and on public buildings could be an opportunity. The development cooperative could lease the rooftop.
- It will be key to make more use of the natural resources which are present in the area, such as tidal energy, between the sounds of the islands, and wind energy between the offshore islands which are not inhabited.
- Feasibility studies on:
 - Central district heating system for the estate in Tír an Fhia and the Sports Centre with a radius of 500 to 750 meters.
 - Floating Wind Turbines, South west of Centar na noileán, 7.2KM from shore and 23.2 KM from Rós a Mhíl Port.

Appendix

Annex A: Conversion factors

This section gives an overview of the energy and emission conversion factors for each type of fuel mentioned in the document. Additionally, it also includes fuel densities of several fuel types, required for the calculations in the report.

Energy content

The energy content factors are given per litre or per kg for fuel types, as shown in Table 9.

Table 9 Energy conversion factors

Type	Amount and unit	Source
Petrol	8.76 kWh/l	[3]
Diesel	9.7 kWh/l	[4]
Kerosene	12.89 kWh/kg	(2)
Coal	8.61 kWh/kg	[5]
Peat ³⁷	2.778 kWh/kg	[6]
Natural gas	13.11 kWh/kg	[7]
Propane	13.97 kWh/kg	[7]
Wood pellets	4.75 kWh/kg	[8]

Emissions

The CO₂ emission factors are given per kWh or litre for specific fuel types, as shown in Table 10. These are the standard emission factors and not the life cycle assessment emission factors.

Table 10 Emission conversion factors

Type	Amount and unit	Source
Petrol	2.64 kg CO ₂ /l	[9]
Diesel	2.39 kg CO ₂ /l	[9]
Kerosene	0.259 kg CO ₂ /kWh	[10]
Coal	0.34 kg CO ₂ /kWh	[11]
Peat	0.38 kg CO ₂ /kWh	[11]
Natural gas	0.2 kg CO ₂ /kWh	[11]
Propane	0.22 kg CO ₂ /kWh	[12]
Wood pellets	0.39 kg CO ₂ /kWh	[11]
Electricity	0.296 kg CO ₂ /kWh	[2]

³⁷ The energy content of peat depends heavily on its moisture level, which can range from dry peat at 2% moisture to wet peat at 60%. The figure presented here is the average energy content of both as the islands indicated there was a big difference in peat moisture and quality.

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