CLEAN ENERGY FOR EU ISLANDS

CLEAN ENERGY TRANSITION AGENDA

Cape Clear Island

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CLEAN ENERGY FOR EU ISLANDS

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Preface

This Clean Energy Transition Agenda is the strategic and tactical roadmap for the transition process towards clean energy of Cape Clear Island, as desired by the stakeholders on the island.

This Transition Agenda was developed jointly by Comharchumann Chléire Teoranta (the island-owned Community Development Cooperative) with support from University College Cork (UCC) and the Clean Energy for EU Islands Secretariat.

This Transition Agenda marks the first time that an island-wide energy strategy was developed for Cape Clear Island. This meant that mapping the available information, gathering it and shaping it into an agenda was an elaborate process that required significant effort from the island's small community. When reading this document, it is important to consider the limited resources that were available to draft the document. This version of the Transition Agenda is a starting point that sets a baseline to be used to develop a more comprehensive energy strategy in the future.

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Part I: Island Dynamics

1. Geography, Economy & Population

Geographic Situation

Cape Clear Island is the southernmost island of Ireland, as shown in Figure 1. It is located in Roaring Water Bay, south of the mainland and fully open to the south with the Fastnet Rock to the southwest, in the North Atlantic, on the Southwest Coast of Ireland.

Coordinates: 51°26'20"N 9°29'34"W

Total area: 6.7 square kilometres

Figure 1: Cape Clear island and its location with regards to Ireland

Demographics

Official population: 130

Peak summer population: 750

The normal winter population of the island is 130, this rises during the spring, summer and autumn tourism season to a peak of up to 750 during the busiest parts of the season. The human pressure on the islands' infrastructure including freshwater, energy distribution, sewage and waste recuperation and treatment, roads, ports, telephones, internet, transports, postal services, healthcare and fire brigade, can be calculated by the total man-days spent on the island divided by the number of days in a year, seen in Table 1.

Table 1: Human pressure in terms of man-days on Cape Clear[1]

Population	***Days on island***	***Size***	***Man-days spent on island***
Residents	*365*	*125*	*45,625*
Summer residents	*60*	*450*	*27,000*
Summer college students	*20*	*300*	*4,000*
Visitors	*1*	*25,000*	*25,000*
Sum of man-days			***101,625***

The human pressure on the island is 101,625 man-days, which is equivalent to a residential population of 278 inhabitants.

Local Government

Cape Clear Island is situated on the South coast of Ireland and is administratively part of the West Cork Municipal District of Cork County Council. The island Cooperative was established 50 years ago to create a structure to bring electricity to the island and to engage in socioeconomic and infrastructural development.

Economic Activities

The gross domestic product is estimated at € 2,355,000, based on estimated total income for 2019. Main economic sectors are: Tourism, Farming, Community Development, Gaelic Language Summer College, Marine Leisure, IT Services, Fishing, Construction, Schooling, Health and Social Services, Crafts, Horticulture and Distilling.

Connection to the mainland

The main harbour for ferries and cargo is Trá Chiaráin (North Harbour). This is also the location of the only sandy beach. North Harbour is owned and maintained by the Department of Agriculture, Fisheries and Food. The frequency of cargo vessels to Cape Clear depends on the demand.

There is a pontoon facility available for visiting yachts and other pleasure crafts. This facility has a provision for power and potable water supply. There is a new deep-water slipway in the north side of the harbour to accommodate heavy cargo landing. Passenger ferries operate about 5 times per day during summer months and 2 times per day during the winter months, depending on the weather.

Barges and Roll-on Roll-off ferries can also access the island via Cuas an Duglais (at the eastern end of the island), which is maintained by Cork County Council. There are two other piers on the island – Foilcoagh and South Harbour.

Water and waste systems on the island

The island potable water system is utilising water pumped from boreholes which is treated and pumped to reservoirs from where it is delivered by gravity feed. The system has been rehabilitated recently as it had been leaking up to 90 %. There is a significant energy savings as a result of this initiative as well as the obvious benefits for the island ground water table.

Waste management on the island consists of a full recycling facility providing for plastics, paper/cardboard, glass, drink cans and food cans. This facility is operated by Comharchumann Chléire, the island development Cooperative.

There is a service for the transport of landfill waste to the mainland. The island has recently taken possession of a compactor to reduce the volume of waste being transported to the mainland. Every effort is made to keep landfill waste to a bare minimum through the utilisation of recycling.

2. Energy System Description

The existing energy consumption in the Cape Clear Island is classified per energy carrier in order to achieve a better understanding of the energy system of Cape Clear Island. The classification is based on the following forms:

- Electricity: used in municipal buildings, tertiary sector (tourism and services), residential sector, public lighting, primary and secondary sectors (agriculture and fisheries).
- LPG: used for cooking purposes in residential buildings and restaurants.
- Diesel oil: used in the primary and secondary sector (agriculture and fishing), indoor space heating, transportation on the island and transportation between the island and the mainland.
- Gasoline: used exclusively for the transportation sector.
- Kerosene, polish and smokeless coal, peat briquettes and timber are all used exclusively for indoor space heating.

As there are no official records of energy consumption on the island, the values presented below are best estimates of the island's consumption based on an inventory of the island facilities and extrapolation from statistics available at regional or national level. In the future, this energy system description can be improved by considering island-specific, bottom-up ways of energy monitoring.

Electricity

The electricity is provided by a 1 MW cable from mainland Ireland. The island has an annual electricity demand of 343.8 MWh (estimated) with a peak load of 0.45 MW. The equivalent carbon emissions using Ireland's emission factor[2] is 129.0 tonneCO_2/year. The island grid system is 10kV utilizing main cables (25s) and most spurs also '25s' with connection to the 130 customers mostly via '16s' or bundle except for a small number of minor industrial connections for workshops, etc.

There are 14 transformers on the island currently. There are no system sized backup generators on the island. There are of course a number of small household type generators for use during outages that occur, in particular during extreme weather events.

Historically, Cape Clear has been a frontrunner for renewable energy. In 1987, a German Department of Energy funded project had two wind turbines with a battery system installed as part of a technology test, each at a capacity of 33kW with 12.5m blades, which was a first of its kind in those times[3]. These turbines are no longer operational, but the infrastructure surrounding the turbines, including the towers, are still in good order. Additionally, wind speed records and power generation records from the project are all in the possession of Comharchumann Chléire.

Small scale solar PV systems are utilized on the island for purposes such as outdoor lighting, water pumping, cattle fencers etc. Additionally, a community radio project is currently using a clean energy system utilising PV and batteries for transmission to the surrounding islands and

[2] CO_2 emissions intensity of electricity supplied in Ireland is 375.2 gCO_2/kWh (2018). Source: SEAI, Energy-related CO_2 emissions in Ireland 2005 – 2018, 2020 report. February 2020.
[3] Source: https://www.rte.ie/archives/2017/1020/913985-innovative-wind-technology-on-cape-clear/

the coastal communities. There is no data available on the energy contribution of these systems.

Transport

Public and private transport utilize gasoline and diesel-powered vehicles on the island, with exception to an electric vehicle pilot project. A Sustainable Mobility project sponsored by the National Transport Authority of Ireland will begin in September 2020.

The project will use electric vehicles on Cape Clear Island and will initially use green units purchased for the purpose of charging the vehicles during off-peak hours. The aim is to utilize PV at the earliest possible opportunity to charge the electric vehicles. Two Nissan EV200 Evalia vehicles were purchased through the Green Public Transport Fund to provide Local Link services on Cape Clear with zero tailpipe emissions. Both vehicles are 100% electric and one has been converted to be wheelchair accessible to address the transport needs of the local community.

This programme will focus on supporting additional similar vehicles in other suitable rural locations to assist in the decarbonisation of Local Link services. This programme will also play an important demonstrative role, normalising the use of electric vehicles within a locality, as well as enabling a number of citizens to experience the technology and carry out their public transport journeys with reduced transport emissions.

Transport to and from the island use ferries and barges. These vehicles are refuelled on the mainland. No data is included on their fuel usage.

Island buildings using energy:

Residential homes:110, of which 50 are permanent residents, 60 part time or holiday homes.

Non-Residential buildings: 15

Public buildings: 5

Other: 17

Our local distillery, Cape Clear Distillery, uses all possible means to capture and reuse heat generated through the manufacturing processes to achieve a green status. Solar tubes are currently used to preheat water for distillations and to provide water for cleaning purposes.

Fuel sources

Heating and other non-electrical energy consumption on the Island consist of kerosene, coal, peat briquettes and gas while transportation is fuelled by diesel and petrol. The fuel consumption for 2019 is summarised in the next table together with the emission estimates.

Table 2: Fuel sources and uses breakdown (2019)

Data for year 2019	Volume consumption	CO_2 emissions [tonne]
Transport		
Diesel: public transport (land based)	*2,546 L*	*6.89*
Petrol: cars	*8,004 L*	*17.94*
Diesel: Agriculture	*51,048 L*	*138.08*
Cooking		
Gas: domestic cooking	*2,857.68 kg*	*8.28*
Gas: commercial cooking	*1,927 kg*	*5.59*
Heating of homes		
Kerosene	*34,049 L*	*87.37*
Coal	*20.8 ton*	*64.11*
Smokeless coal	*4.8 ton*	*14.79*
Peat briquettes	*4.8 ton*	*8.06*
Timber	*24 ton*	*n/a*
Coal briquettes	*0.8 ton*	*2.47*

The estimated annual carbon dioxide emissions on the island is 353.59 tonne for non-electrical fuels.

Although significant amount of timber is used to heat homes, about 25% of all timber is sourced on the island in a sustainable manner. The remainder of the timber is sourced from the mainland from forestry activity. The CO_2 emissions from transportation of the timber is captured in the transportation fuels, however, the island is intent on reducing reliance on wood fuel.

3. Stakeholder mapping

Civil society organizations

Comharchumann Chléire

Comharchumann Chléire Teoranta (Cape Clear Island Development Cooperative) represents the island community at local, regional, national and European level, this includes liaising with the various state agencies and ensuring that all necessary services are provided for the island.

The Comharchumann is partially State funded through an administration grant to ensure the sustainable development of the island. This grant is provided through Údarás na Gaeltachta the Development Authority for the Gaelic speaking regions.

Representative: Máirtín Ó Méalóid, Manager

Businesses

Drioglann Chléire

Island Community Owned Distillery
Will engage at local business lever and implement transition actions.

Representative: Séamus Ó Drisceoil, Co-Founder and Managing Director

Public Sector

Governmental Actors

Cork County Council

West Cork Municipal District responsible for Cape Clear Island.
Will provide support to the island in achieving clean energy transition.

Representative: Mac Dara Óhlcí, Principal Officer West Cork Municipal District

Economic Activities

Údarás na Gaeltachta

Gaelic Speaking Region Development Authority
Will provide support in developing economic activity during transition.

Representative: Eamon Ó hÉanaigh, Gaeltacht Regions Development Officer

Schools and Academia

Higher Education and Research

University College Cork
Will provide Higher Education focus. UCC can contribute by carrying out the energy modelling of the island and, eventually, a detailed study of the potential of other renewable energy sources (notably, offshore wind, wave, tidal), which would complement those included in the Clean Energy Transition Agenda. This can be completed, if need be, with a preliminary design of the offshore wind, wave or tidal farms for the island. UCC can also assist by helping to prepare joint applications for funding, e.g., from European projects, directed to realising the Clean Energy Transition Agenda in Cape Clear.
Representative: Prof Gregorio Iglesias, Professor of Marine Renewable Energy

Secondary Education

Coláiste Pobail Chléire
Cape Clear Irish Language College Will provide Island Summer College focus. Will implement transition actions.
Representative: Eibhlín Bn Uí Lionán, Summer College Coordinator.

Primary Education

Scoil Inis Cléire
Inis Cléire School Will provide primary educational focus. Will implement transitions actions.
Representative: Shane O Neill, Teacher

4. Policy and Regulation

Local policy and regulation

On Cape Clear Island the community, the community organisations and the island businesses work in a collective way to develop the island in a sustainable manner. All the businesses on the island are keen to develop in a way that is kind to the environment and will ensure a sustainable future for the islanders and the island heritage, culture and environment.

Cape Clear Island signed the Covenant of Mayors/Pact of Islands in Brussels on 25 June 2015. We gave a commitment to reduce energy use and carbon footprint and we have already taken action to do this, in particular the replacement of the water mains infrastructure on the entire island has meant a 90% saving on energy use for water pumping and treatment[4].

Cape Clear island is internationally active in the European Small Islands Federation ESIN and has taken part in various projects to impact environmental sustainability and the reduction of carbon emissions through responsible energy use[5]. Cape Clear Island also participated in the EU funded SMILEGOV energy project. [6]

Regional policy and regulation

In the West Cork Islands Integrated Development Strategy the energy management objectives include the following:

- The key objective for the West Cork Islands in terms of energy demand and supply is to reduce the demand for and consumption of energy in the long term and to develop the islands as self-sufficient entities. Potential constraints arise to plans for development on the islands as they are reliant on mainland sources of power.
- The movement towards self-sufficiency of energy supply is a key opportunity for the islands. This can be achieved through a number of separate approaches. The priority for the islands should be to reduce their demand for energy.
- Information on energy efficiency should be made available, new ideas on alternative energy sources should be investigated and the most appropriate solutions implemented for each island.

Additionally, under the National Adaptation Frameworks (NAF), which was published in response to the provisions of the Climate Action and Low Carbon Development Act 2015, all Local Authorities were tasked with producing a Climate Adaptation Strategy for their functional areas. The Environment Directorate of Cork County Council developed the Climate Adaptation Strategy for Cork County. The strategy draws on the data issued by both national and international forums in addition to those from regional and local sources [7].

[4] https://www.water.ie/projects-plans/our-projects/cape-clear-watermains-reh/
[5] https://europeansmallislands.com
[6] http://www.sustainableislands.eu
[7] Full text available here: https://www.corkcoco.ie/sites/default/files/news/Cork%20County%20Council%20Climate%20Adaptation%20Strategy%20Draft%20%28B%29%202019-2024%20Final_0.pdf

National policy and regulation

Article 4 of the European Union's Directive 2009/28/EC on renewable energy requires each Member State to adopt a national renewable energy action plan (NREAP). All Member States must submit this plan to the European Commission.

Ireland's NREAP sets out our national targets for the share of energy from renewable sources to be consumed in transport, electricity and heating and cooling in 2020. The plan demonstrates how the Member State will meet its overall national target established under the Directive.

Irelands National Renewable Energy Action Plan (NREAP) was submitted to the European Commission in July 2010. The document sets out the Government's strategic approach and concrete measures to deliver on the 16% emissions reduction target. The Government has set a target of 40% electricity consumption from renewable sources by 2020. For the transport sector, a two-pronged strategy has been put in place which combines significant increases in the use of biofuels with the accelerated development and use of electric vehicles in Ireland. Heating targets have been set at 12% of heat sourced from Renewable Energy by 2020. [8]

Most of Cape Clear Island is within a Special Area of Conservation under the Natura 2000 framework.

European policy and regulation

Energy is one of several shared competences between the European Union (EU) and the Member States. EU policy is currently based on three pillars (known as the "energy trilemma"):

- Competition;
- Sustainability;
- Security of supply

Through policy and regulation, the EU promotes the interconnection of energy networks and energy efficiency. It deals with energy sources ranging from fossil fuels, through nuclear power, to renewables (solar, wind, biomass, geothermal, hydro-electric and tidal). Three legislative packages were adopted to harmonise and liberalise the internal European energy market between 1996 and 2009. These addressed issues of market access, transparency and regulation, consumer protection, supporting interconnection, and adequate levels of supply.

For a while now, the EU is actively promoting Europe's transition to a low-carbon society and is regularly updating its rules to facilitate the necessary private and public investment in the clean energy transition.

A variety of measures aiming to achieve an integrated energy market, the security of energy supply and a sustainable energy sector are at the core of the EU's energy policy:

[8] Full report available here:
https://www.dccae.gov.ie/documents/The%20National%20Renewable%20Energy%20Action%20Plan%20(PDF).pdf

- Renewables Directive: mandatory targets, national plans grid rules…
- Emission Trading Scheme (ETS), reflecting a carbon price to achieve the cap.
- Energy Union: secure, sustainable, competitive and affordable energy
- 3rd energy package: unbundling, harmonised grid operation rules, network codes etc.
- Energy Efficiency Measures
- Institutional measures: ENTSOs, ACER, CEER…
- Development of the longer-term framework: 2020, 2030, 2050

Latest EU legislation on energy environment and climate

On 11 December 2019, the European Commission presented its Communication '**The European Green Deal'**[9], setting a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy, where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use.

Figure 2 - Clean energy targets Green Deal[10]

[9] Communication on The European Green Deal. European Commission - European Commission. https://ec.europa.eu/info/publications/communication-european-green-deal_en. Accessed March 16, 2020

[10] Clean energy. European Commission - European Commission. https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6723. Accessed March 16, 2020

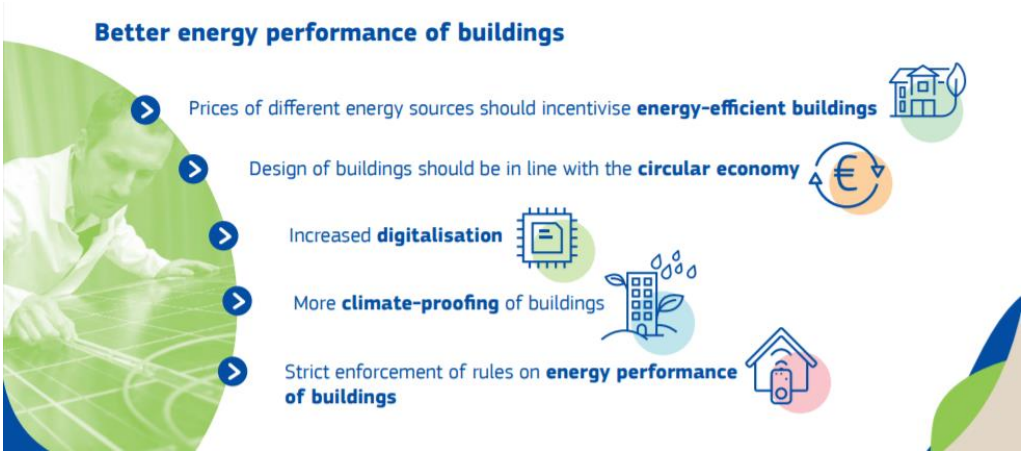

Figure 3 - Building and Renovation targets Green Deal[11]

Figure 4 - Sustainable mobility targets Green deal[12]

The Commission stated that the European Green Deal will reflect this growth strategy in its long-term vision for rural areas. It will pay particular attention to the role of outermost regions in the European Green Deal, considering their vulnerability to climate change and natural disasters and their unique assets: biodiversity and renewable energy sources. The Commission will take forward the work on the Clean Energy for EU Islands Initiative to develop a long-term framework to accelerate the clean energy transition on all EU islands.

On the 4th of March 2020 the European Commission unveiled the **European Climate Law**[13] proposal aiming at cutting greenhouse gas emissions to zero by 2050 and making it legally-binding for all member states. The European Commission is proposing a mechanism for regularly raising the EU's emissions reduction target over the next three decades. By September 2020, the Commission shall review the Union's 2030 target for climate in light of the climate-neutrality objective and explore options for a new 2030 target of 50 to 55% emission reductions compared to 1990. The European Commission stressed that she will engage with all parts of society to enable and empower them to take action towards a climate-neutral and climate-resilient society, including through launching a European Climate Pact.

[11] Building and renovating. European Commission - European Commission. https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6725. Accessed March 16, 2020

[12] Sustainable mobility. European Commission - European Commission. https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6726. Accessed March 16, 2020

[13] The European Climate Law. European Commission - European Commission. https://ec.europa.eu/commission/presscorner/detail/en/FS_20_360. Accessed March 16, 2020

On **30 November 2016**, the European Commission published its so-called "Winter Package" with eight proposals to facilitate the transition to a "clean energy economy" and to reform the design and functioning of the European Union's electricity market. This package of proposals can be divided into three categories:

- proposals to amend the existing energy market legislation;
- proposals to amend the existing climate change legislation;
- proposals for new measures.

In the autumn of 2018 and spring of 2019, several directives were adopted under the **Clean Energy for all Europeans Package**. The eight legislation measures can be placed in four groupings:

1. Energy Efficiency:
    - The Energy Efficiency Directive; and
    - The Energy Performance in Buildings Directive
2. Internal Energy Market Reform:
    - The Internal Electricity Market Design Regulation;
    - The Internal Electricity Market Design Directive;
    - The Agency for the Cooperation of Energy Regulators (ACER) Regulation; and
    - The Risk Preparedness in the Electricity Sector Regulation.
3. Renewable Energy:
    - The Renewable Energy Directive;
4. Governance:
    - The Governance of the Energy Union and Climate Action Regulation.

These new Electricity Market Design (EMD) rules make the energy market fit for the future and place the consumer at the centre of the clean energy transition. The new rules are designed to empower energy consumers to play an active role in driving the energy transition and to fully benefit from a less centralised, and more digitalised and sustainable energy system. The new rules enable the active participation of consumers whilst putting in place a strong framework for consumer protection.

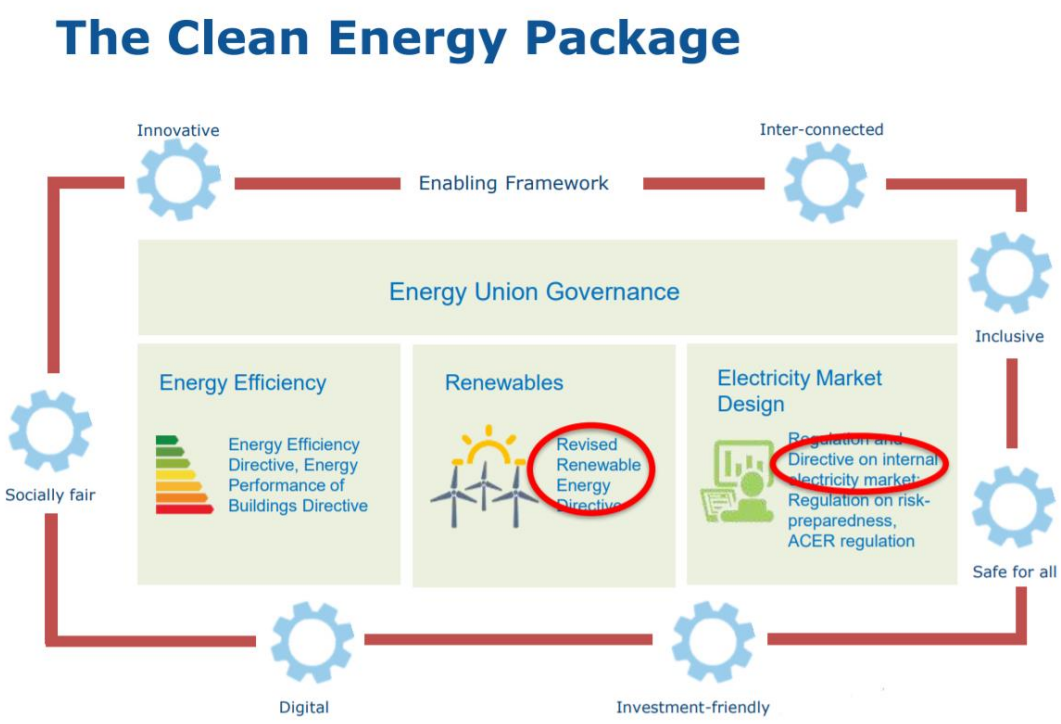

Figure 5 - Structure of the CEP[14]

Energy communities

For EU Islands the most important new rules are those that empower citizens and small producers under the new concept of Renewable (REDII) or Citizens (EMD) Energy Communities. These are groups of citizens, social entrepreneurs, public authorities and community organisations participating directly in the energy transition by jointly investing in, producing, selling and distributing renewable energy.

What?

- Generation of energy from renewable resources and technologies, which are partly or wholly owned by local communities

Who?

- Groups of citizens, social entrepreneurs, public authorities and community organisations participating directly in the energy transition by jointly investing in, producing, selling and distributing renewable energy

What can they do?

- Produce, consume, store and sell renewable energy, including through renewable power purchase agreements;
- Share, within the renewable energy community, renewable energy that is produced by the production units owned by that renewable energy community;
- Access all suitable energy markets both directly or through aggregation in a non-discriminatory manner

It is noticed throughout the EU that the participation of local citizens and local authorities in renewable energy projects through renewable energy communities has resulted in substantial added value in terms of local acceptance of renewable energy and access to additional private capital which results in local investment, more choice for consumers and greater

[14] energy_communities_in_eu_legislation_ispra_js.pdf

participation by citizens in the energy transition. Therefore, the RED II and the EMD state that the Member States should ensure that renewable energy communities can participate in available support schemes on an equal footing with large participants. To that end, Member States should be allowed to take measures, such as providing information, providing technical and financial support, reducing administrative requirements, including community-focused bidding criteria, creating tailored bidding windows for renewable energy communities, or allowing renewable energy communities.

It is up to the Member States to set the fees and tariffs to be borne by the CEC. They can allow the CEC to be a distribution system operator (DSO) or a closed distribution system operator (CDS), and they must facilitate the roll-out of RECs by removing market barriers and taking account of RECs in support mechanisms.

Part II: Island Transition Path

1. Vision

A realistic target for Cape Clear Island to reach complete carbon neutrality on the island is that this would be achieved by **2040** and that transport to and from the island would have achieved this by **2050**.

The Community of Oileán Chléire (Cape Clear Island) has had a vision for Clean Energy Transition going back to the mid-1980s. Efforts to fulfil some of the islands' goals in this regard were successful but ultimately failed for various reasons including the lack of support for energy transition at that time. There continues to be a strong desire to fully embrace Clean Energy Transition and significant steps have been taken in recent years to enable this transition in a planned way with achievable timelines.

The island community has discussed the island energy transition and the use of digital technologies at the Annual General Meeting for the last few years and it has been agreed that there is a strong desire to become a Smart Island in every sense.

Cape Clear Island signed the Covenant of Mayors/Pact of Islands in Brussels on 25 June 2015 to show its commitment to reduce energy consumption and its carbon footprint. Because of the desire to write a realistic achievable energy transition plan an application was made to the Clean Energy for EU Islands Secretariat to develop an Island Clean Energy Transition Agenda. Success in this endeavour placed Cape Clear as one of the 26 islands that was to produce such a document.

There is a high level of interest in climate action on the island and a strong desire to move forward in this regard. At the Annual General Meeting of Comharchumann Chléire Teoranta in November 2018 it was agreed that we would begin developing an energy plan covering all aspects of island activities in 2019 to enhance the actions that are already in motion, such as the Sustainable Green Transport Initiative (electric buses).

There is no opposition to developing an energy plan that we are aware of.

It is part of our long-term vision for our island to develop and implement a realistic strategy that will take account of energy use and the use of the latest digital technologies to enable us to become a SMART community.

2. Transition Governance

Comharchumann Chléire Teoranta (Cape Clear Island Development Cooperative) represents the island community at local, regional, national and European level. The island Cooperative was established 50 years ago to create a structure to bring electricity to the island and to engage in socioeconomic and infrastructural development. It is a Community owned Cooperative registered with the Irish Co-operative Organisation (ICOS) and is managed by a voluntary management committee with an employed Manager and staff. The work of the cooperative includes:

- Liaising with the various state agencies and ensuring that all necessary services are provided for the island;
- Providing premises to successful small local businesses and working with many local voluntary groups, including: childcare group, various sports groups, and active retirement group, Cape Clear International Storytelling Festival, Cape Clear Museum Society, National School committee.
- Social and community activities include the provision of facilities for all manner of events that benefit the entire community, but we do make a particular point of targeting the more vulnerable people amongst us.
- Oileán Chléire has been a part of the rural transport programme for over a decade and we brought our neighbouring island Sherkin into this programme a number of years ago. This programme provides transport services to those who would otherwise be isolated and is of great benefit as it ensures vulnerable members of the community have the opportunity to attend various services and events as well as providing for delivery of groceries and other vital services.
- Work closely with the island businesses to develop the island in a sustainable manner.

The Cape Clear Island Development Cooperative is the central driver and stakeholder for the transitioning of the island.

The National Transport Authority is sponsoring a pilot project on Cape Clear Island that will see two electric vehicles being used to assess their potential for the development of green transport on the islands and the mainland. This project will use green units purchased for the purpose of charging the vehicles during off peak hours. The vehicles and charging infrastructure are currently being prepared for the island and the project will be ongoing and subject to review and re-configuration as needed.

Cork County Council, Údarás na Gaeltachta and other State agencies are active now in encouraging the development of Green Energy projects and sustainable living.

The transition team is the local cooperative **Comharchumann Chléire Teoranta** along with **University College Cork** and **MaREI**.

University College Cork, the academic partner for the preparation of Transition Agenda will provide assistance with the development of an achievable long term energy transition that will provide for practical educational opportunities for the island.

3. Pathways

Cape Clear aims to transition to complete carbon neutrality on the island by 2040 and that transport to and from the island by 2050 through the following pathways:

- Implement relevant research and data collection for planning
- Information and education program for island community
- Identify relevant funding and co-funding sources for energy transition
- Upgrading and retrofitting buildings to achieve energy efficiency
- Development of small-scale RES projects at domestic and business level
- Transition of island transport to green solutions
- Utilization of existing and emerging technologies to achieve transition goals
- Commercialisation of green energy production to fund community development

4. Pillars of the Energy Transition

Electricity generation:

The island plans to reduce its reliance on mainland electricity sources by implementing renewable energy systems to supply the community. The electricity balance can be maintained through the existing connection to the mainland. The key electricity projects relevant to the island transition are:

- ***Wind Energy**: Cape Clear Island developed Ireland's first integrated wind energy system of its type in the world in the 1980s. This project was funded by the German Department of Energy and ended in the early 1990s when the German participation ended. The project utilised 2 x 33kw windmills to provide electricity during suitable periods, also charged a large bank of batteries for conversion during times when wind was slack. Oileán Chléire is anxious to revive wind energy to provide power and generate income. Wind speed records and power generation records from the project are all in the possession of Comharchumann Chléire and will be of significant benefit in reducing lead in time for the deployment of new turbines.*
- ***PV**: We will continue to implement small PV systems for outdoor use and also to integrate larger rooftop PV systems to provide power in the domestic and public buildings context. Larger systems will provide energy during the sunnier part of the year when there is less wind potential.*
- ***Micro Hydro**: There is an opportunity to utilize the year-round river systems for hydro energy. This will require a study on the available resources and suitable technology to implement in a sustainable and feasible manner.*
- ***Wave and tidal**: As wave and tidal energy technologies are developed, it is envisaged that these would be good potential energy sources for islands in the future.*

Heating and cooling:

The heating sources used by buildings on the island contribute significantly to the carbon emissions of the island. This is due to the use of carbon sources and the high heating demand from poorly insulated buildings. We aim to reduce our reliance on carbon sources by:

- ***Retrofitting of buildings**: Align existing buildings with insulation material, replace windows with 'n higher pane number and sealing poorly air leaks on buildings. This will be prioritized due to efficient building design being a prerequisite for sourcing funding for energy efficient equipment.*
- ***Solar Thermal**: Further implement solar heating for hot water and space heating will contribute to reducing the reliance on carbon fuels.*
- ***Heat Pumps**: To further reduce reliance on carbon fuels and to off-set the intermittency of sunlight on the solar thermal systems, electrical air or ground based heat pumps will be implemented.*

Transportation

Transport on the island: It is hoped that electric vehicles will be utilized broadly for transport on the island in the future and that they will be charged with electricity generated from PV, wind and any emerging technologies to achieve transition goals. This would include the public and

private transport as well as the movement of heavy goods and materials. The private vehicle industry is expected to be electrified through the purchase of second-hand electrical vehicles as an affordable replacement of the existing vehicle fleet.

Transport to and from the island: As technologies emerge that will reduce the reliance on fossil fuels for sea transport, hybrid and electric vessels will be implemented as part of the overall clean energy transition goals.

Waste Management

Waste contributes to the island's energy transition since waste disposal use energy to ship non-recyclable waste to the mainland and the realization that waste can be a source of energy.

Cape Clear Island has a recycling program in place for glass, cans, aluminium cans, paper and cardboard and other materials. There are regular white goods collections in partnership with Cork County Council.

A compactor has been purchased recently and it is intended to reduce the volume of shipments through compacting.

There are plans to implement small digestors in the future to reduce landfill waste and to produce biogas for use as a cooking and or heating fuel. The local distillery also plans to utilize the biomass waste to generate gas and reuse as heat in the distilling process.

Water

The island potable water system is utilising water pumped from boreholes which is treated and pumper to reservoirs from where it is delivered by gravity feed. The island water system has been rehabilitated recently as it had been leaking up to 90 % previously. There is a significant energy savings as a result of this initiative as well as the obvious benefits for the island ground water table.

Other initiatives that will encourage water reuse and use of rainwater collection systems at domestic and business level will reduce energy consumption from the pumps.

5. Monitoring

Indicator 1: Clean Energy Transition Agenda

Score 5

An island-wide Clean Energy Transition Agenda exists that has been approved by the transition team and accepted by the Clean Energy for EU Islands Secretariat.

Indicator 2: Vision

Score 4

There is a long or medium-term island-wide vision on clean energy that includes clear objectives.

Indicator 3: Community – Stakeholders

Score 4

There is a commitment from multiple stakeholder groups (2-3) to advance the transition to clean energy on the island. This commitment is formalised at an island level (e.g. the CE4EUI pledge).

Indicator 4: Community – Organisation

Score 4

An island-wide Transition Team is in place that consists of and is supported by actors from multiple stakeholder groups that drives the energy transition process. (e.g. a community initiative with the support from academia)

Indicator 5: Financing concept

Score 3

The different funding opportunities for clean energy projects have been listed.

Indicator 6: Decarbonisation plan – Island diagnosis

Score 4

A technical and economic analysis of the island energy system exists that includes a final energy consumption breakdown or energy balance for some of the sectors above.

Indicator 7: Decarbonisation plan – Data

Score 4

A recent inventory of consumption and CO2 emission data exists for all sectors based on local reporting. There is no periodic reporting process in place.

Indicator 8: Decarbonisation plan – Action Plan

Score 4

There is an island-wide action plan on clean energy that describes the necessary actions to achieve the vision.

Indicator 9: Multi-level governance

Score 4

There is interaction with some other levels of governance on clean energy transition to align the Clean Energy Transition Agenda with existing plans.

References

1. Sustainable Energy Authority of Ireland (SEAI), Energy-related CO_2 emissions in Ireland 2005 – 2018, 2020 report. February 2020.
2. Communication on The European Green Deal. European Commission - European Commission. https://ec.europa.eu/info/publications/communication-european-green-deal_en. Accessed March 16, 2020
3. Clean energy. European Commission - European Commission. https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6723. Accessed March 16, 2020
4. Building and renovating. European Commission - European Commission. https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6725. Accessed March 16, 2020
5. Sustainable mobility. European Commission - European Commission. https://ec.europa.eu/commission/presscorner/detail/en/fs_19_6726. Accessed March 16, 2020
6. The European Climate Law. European Commission - European Commission. https://ec.europa.eu/commission/presscorner/detail/en/FS_20_360. Accessed March 16, 2020
7. Pleijel C, 2017, Water saving challenge, Field study 7, Cape Clear Island

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The role of the EU Islands Secretariat was to advise the islands transition team and to facilitate the written agenda.