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Renewable Energy Regions

6th Newsletter

NEWS

Dec 2021

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8th RegEnergy Project Meeting

3 Counties Energy Agency (3cea) was delighted to welcome the RegEnergy partners in Kilkenny, Ireland, for the 7th Working Group Meeting and the 8th Steering Group Meeting on October 21 and 22. This was the first in-person meeting of the RegEnergy partners since the beginning of the Covid-19 pandemic. It gave everyone the chance to meet again and for new members of each team to get to know their EU partners.

In his welcoming note Mr Martin Brett, former Mayor of the City of Kilkenny and board member of 3cea, stressed the importance of the topic of renewable energy. "Every elected person and responsible decision maker in the country is standing in front of the important question: Which energy resources can we use in our region and how can we engage in the fostering of renewable energies? It is one thing to decide for a change of direction and another thing to bring the people to change their behaviour. Meetings in person will lead to more intensive discussions, also during the networking time."

The meeting allowed the RegEnergy partners from across Europe to discuss their own experiences in the RegEnergy project up to now. Each partner explained how the project was implemented so far in their regions, what they have learned and which progresses are planned for the future. In addition to the lack of financial and technical resources for climate protection in cities, a major problem for many project partners relies in the fact that the further development of renewable energies is limited by the low level of





acceptance among citizens, companies and politicians. This barrier can only be overcome by actively demonstrating the potential, reliability and safety of renewable energy sources. The partners were also able to discuss the collective effort going forward with RegEnergy and better define some of the long-term goals of the project.

On October 22, the partnership was invited to visit the Ormonde Organics facility in Waterford. Here, Ormonde's representatives spoke about the process of developing biogas from bio-waste products taken in from all over Ireland. Michael Murphy and Tom Nolan explained in details all steps of this process: from the entry of waste until the delivery of biogas and biomethane, the procedure of feeding and controlling the digesters and how to stock the produced gas. Finally they presented the newly installed facility to upgrade biogas into bio-methane.



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RegEnergy in Ireland

3 Counties Energy Agency

The Irish counties of Carlow, Kilkenny, and Wexford belong to a rural region in which urban centres and their industries need an important amount of energy - particularly in the agri-food sector. The 3 Counties Energy Agency aims to support the three counties to reduce their CO₂ emissions by contributing to the implementation of best practices in the field of sustainable energy.



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Kilkenny	
Area:	Total 2,073 km ²
Population (2016):	Total 99,232
Carlow	
Area:	Total 897 km ²
Population (2016):	Total 56,932
Wexford	
Area:	Total 2,367 km ²
Population (2016):	Total 149,722

Sources:

- <https://archive.ph/20130412225630/http://www.cso.ie/en/studentscorner/statisticalfactsaboutyourcounty/kilkenny/>
- https://web.archive.org/web/20181016081259/http://census.cso.ie/sapmap2016/Results.aspx?Geog_Type=CTY31&Geog_Code=2AE1962914A813A3E055000000000001
- http://census.cso.ie/sapmap2016/Results.aspx?Geog_Type=CTY31&Geog_Code=2AE19629149213A3E055000000000001
- <http://www.cso.ie/studentscorner/statsfacts/wexford.htm>
- http://census.cso.ie/sapmap2016/Results.aspx?Geog_Type=CTY31&Geog_Code=2AE19629149C13A3E055000000000001



Major challenges preventing the reduction of CO₂ emissions are the limited number of grid connections, the financial and institutional barriers, and the lack of agricultural diversification, which would make a net contribution to carbon sequestration through bioenergy production.

To create a net-zero carbon society, the use of renewable energy technologies must be used wherever possible. To optimize the connection between rurally produced energy and urban consumers an assessment and analysis of the renewable energy production within the three counties area is necessary. Therefore 3cea built partnerships with local authorities in the 4-Counties region (Carlow, Kilkenny, Wexford, and Waterford) to identify the potential of developing new supply and demand channels for clean energy.

To create the rural renewable energy supply matching urban energy demand model, 3cea uses the following methods:

- E-communities stream: This involves communities in taking part in Renewable initiatives.
- Biomethane through a virtual pipeline for public sector heat via SSRH, which involves Local Authorities in committing to using biomethane in their buildings and accessing the Irish support scheme SSRH.
- Mapping available resources for BioEnergy from local supply chains, seeing where biomethane can be produced across the region.
- Minimising the impact of carbon in the transport sector.
- RES, REH, RET, which are the Irish support schemes for renewable electricity, heat, and transport.

During the project, 3cea worked with the biomethane producer Ormonde Organics and found two suitable sites for the installation of gas-fuelled heating:

Machinery Yard in Kilkenny

The Machinery Yard in Kilkenny is on the Hebron Industrial Estate. Although it's on natural gas, the thermal load is sufficient to demonstrate a pilot project and allow other savings to be made through disconnecting from the main network gas supply and eliminating all associated standing charges, capacity charges, etc.



The site currently uses 123,303 kWh of heat energy which mostly comes from natural gas but has the potential to be converted to biogas.

Clonard Avenue Fire Station

The Clonard Avenue Fire Station currently uses 73,964 kWh a year with most of this being MGO /LPG/CHP gas. It has a peak monthly consumption of approx. 10,000 kWh. The primary heat supply is a 22.8 kW LPG CHP heating system. The secondary heating system is a GE315 Gasoil boiler whose heating power is not confirmed.

Challenges

A difficulty faced by 3cea during this project has been figuring out the transport of the gas from Ormonde Organics to the sites listed above. As biogas is not a commonly used fuel in Ireland yet, the infrastructure to transport the gas in one go is not yet available and any machinery that could move the biogas is not being used for biogas but instead is being used for other gas types. Trailers are available to rent for transport of the gas, however, these are very large and expensive and will also require a special license to use as transporting compressed gas comes with many risks. Finally, the amount of biogas we are looking to move is small in quantity to what would normally be moved and so we would incur a high cost for a system that would be seldom used.

So, 3cea is faced with regulatory, cost, and scale issues. The lack of an established supply chain for biogas in Ireland is the key problem we are looking to overcome.

The RegEnergy project has given us the opportunity to address this problem and begin exploring solutions, and we are happy to say we have been working hard on this and are nearing a solution. Ormonde Organics have begun producing the biogas and we hope to be able to transport it in the first half of 2022.



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Ormonde Upgrading Limited

The biogas / biomethane industry in Ireland is underdeveloped when compared to its EU peers. Currently biogas does not make a substantial contribution to the energy mix and the urban consumption relies on natural fossil gas. Obviously the enabling of the renewable biogas industry in Ireland can displace fossil natural gas and make a significant contribution to the decarbonisation. However, in order to achieve this, a number of barriers need to be overcome:

- The absence of a clearly proven business model for the sector.
- The cost of biogas production is greater than the market value of natural fossil gas. Consequently, a support scheme is required to enable the development of the biogas sector.
- The cost of connecting biogas production facilities to the national gas grid are high and the time required to obtain a connection agreement is significant.



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Biogas is produced by the fermentation of organic matter. It could be made from a variety of sources including food waste, agri-food waste, organic sludge, manure and grass silage.

Biomethane is biogas which has been upgraded in a manner which allows this renewable gas to be used as a direct substitute for natural fossil gas.

To demonstrate that renewable biogas can make a significant contribution to Ireland's decarbonisation targets, renewable energy partnerships need to be established between consumers of fossil natural gas and producers of biogas. Ormonde Upgrading Limited takes up the challenge and builds an entirely new value chain for renewable energy production and consumption. To achieve this they explain to energy users the benefits of decarbonising their



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energy consumption by transitioning from using natural gas to using renewable biomethane and to show to rural biogas producers that it is economically and technically feasible to upgrade rural biogas produced by them and to transport the resultant biomethane to consumers within the region. As a next step, a viable off-grid solution can be created through agreements and investments between the diverse producers, the supplier and the consumers in areas where it is difficult to create a local renewable energy network.

In order to raise awareness of urban consumers on renewable energy and elaborate a new distributed business model which could address the issue of finding a relevant economic model for the biomethane production and to establish a value chain for biomethane, Ormonde Upgrading Limited built up a pilot site in the region. The installation comprises the necessary upgrading facility to purify 22,000 MWh/y of biogas, thus giving confidence that the demand of the public buildings in the 3 counties can be met by biomethane. Purification is necessary to allow the storage and transport of the biomethane and to allow customers to use this energy without making significant alternations to their existing energy infrastructure. Possible demonstration sites (e.g. public buildings) are selected as well by 3cea to provide public show cases. Ancillary equipment allowing these urban consumers to receive the biomethane will be installed at two sites by the 3 Counties Energy Agency (3cea).



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Waterford Institute of Technology

In the rural Dingle area, on the western coast of Ireland, industries and offices of the regional authority Údarás na Gaeltachta add up to a substantial electricity consumption. To facilitate the integration of renewable energy at these distributed sites, both innovative smart grid processes and a legislative framework were implemented, enabling the regional actors to function as Energy Communities and take control of their energy use as prosumers.

The energy industry is going through a paradigm shift from a unidirectional, demand driven model with large centralised power generation to a market driven by smart grid ideals where supply and demand will be balanced with variable and intermittent renewable energies in a more regionalised manner. The Waterford Institute of Technology is designing a software platform to optimise renewable energy production and consumption with variable market prices and coordinating the implementation of smart grid technologies with the potential of being the hub of energy clusters. Peer to peer energy sharing can play a significant role in the Clean Energy Transition by enabling Energy Communities to take control of their energy profiles and become prosumers. The software platform is being trialled within an industrial and commercial cluster where aggregated loads are optimised with renewable energy, storage and time of use market tariffs.

The implementation of battery storage technologies assists in balancing local clusters, while modelling the potential of renewable energy technologies in a cluster of industrial clients helps to optimise the cluster load with the market and available on-site technologies, and thus to reduce the risk for the cluster as a whole.

Renewable energy clusters such as the Údarás na Gaeltachta offices and industries can act like micro grid, trade with each other and eventually roll up to a regional and then national level to form the smart grid. This network is based on distributed, local generated resources (solar, wind and battery storage) which can be shared in a peer to peer environment, allowing the integration of renewable energy in local communities.

At the moment the Waterford Institute of Technology has integrated the software platform at 2 sites. The first site is an office block

Established in 1980, **Údarás na Gaeltachta** is the regional authority responsible for the economic, social and cultural development of the Gaeltacht. The preservation and strengthening of Irish as a living language, as well as passing it on to the next generation is the primary objective. They strive to achieve this objective by fostering enterprise development and employment and supporting community, cultural and events.

<https://udaras.ie/en/>
<https://udaras.ie/en/about/what-we-do/>



comprising of 10 offices with variable loads with some rooftop solar and we have integrated a battery storage system to aid in balancing. The second site is larger and based in an industrial park with a wide variety of businesses. The aggregation of loads will facilitate the design of a renewable energy system to suit the combined loads once the transposition of EU Directives enables mechanisms such as peer to peer energy trading.

The battery module is being integrated into the software platform such that the cluster can operate completely remotely and automatically to integrate the maximum level of renewable technologies and at the best economic cost. The project team of the Waterford Institute of Technology is heavily involved in the consultation process with Government Regulators and is sharing trial data with stakeholders to ensure the advantages of renewable Energy Communities can be realised. As soon as Regulatory Environment becomes clear investment in REC's can be realised.

Renewable Energy Cluster - Renewable Energy Community

The **renewable energy clusters** emerging now in the context of the Energy Transition are built on the complementarity of different energy sources, flexibility, as well as interconnectivity of all sorts of different actors – be they small or large, professional or not – requiring bi-directionality of energy flows.

The **renewable energy communities** are defined in the EU Renewable Energy Directive (RED II, 2018). They involve 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. The definition is flexible according to local contexts and recognising that different legal and economic models abound. If renewable energy communities and renewable energy clusters may have slightly different definitions, they are both socio-technical mirrors of the same concept: the energy clusters offer an engineering model while communities do provide a governance model, necessary in a renewable energy transition.

<https://www.sciencedirect.com/science/article/pii/S1364032119306975>

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Events

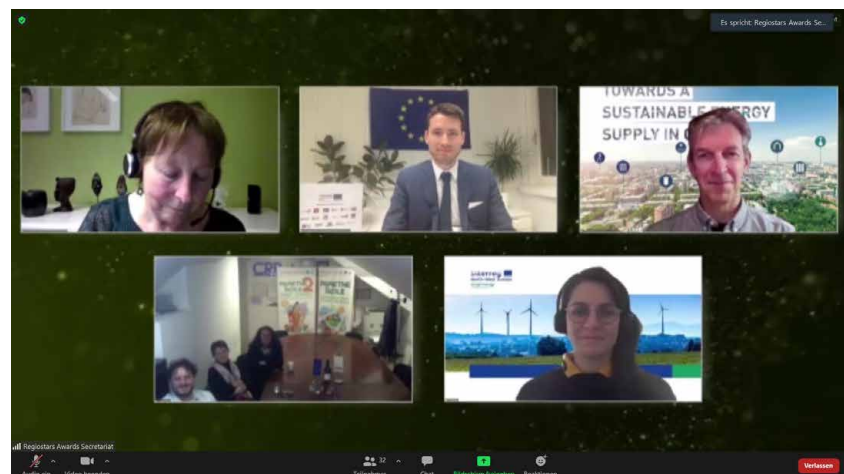
December 2021

Climate Alliance

RegioStars 2021 ceremony

The REGIOSTARS awards are a yearly competition organised by the European Commission. Over the last thirteen years, it has become Europe's label of excellence for EU-funded projects which demonstrate innovative and inclusive approaches to regional development. This year, 25 projects were selected as finalists – 5 in each category – out of a record-high 214 applications.

The REGIOSTARS Awards Ceremony took place online on December 2, 2021. During this high-level event, European Commissioners announced the winner in each category “Fair Europe”, “Urban Europe”, “Green Mobility”, “Green Europe” and “Smart Europe”. RegEnergy was finalist of the category “Green Europe”, in competition with 4 other very high-level projects. If the prize of the category did not get to RegEnergy, the partnership is still very proud to have come this far in the competition and would like to congratulate the winners of the 5 categories and the ones of the Public Choice Awards.





October 2021

RegEnergy TALKS

In the second episode of the RegEnergy Talks, Geoffrey Orlando (Planair, Switzerland) and Sean Lyons (Waterford Institute of Technology, Ireland) provided background information about the regulatory and political environment of their respective countries before sharing their experience about the technological solutions they are developing for two energy parks.

At Y-Park in Yverdon-les-Bains (Switzerland), Planair is studying the effects of the joint development of photovoltaic and electro-mobility in a micro-grid. Geoffrey Orlando speaks about the impact of electric mobility and Vehicle-To-Grid (V2G) on the energy balance of a micro-grid in a real life scenario before presenting potential business models for the value created based on different scenarios in order to take advantage of battery electric vehicle flexibility.



The Walton Institute of Waterford Institute of Technology (Ireland) is developing a software platform which facilitates the development of a Renewable Energy Community and its integration in 2 trial sites. Sean Lyons gives further information about mechanisms such as Peer to Peer Energy Trading, Storage Technologies, Renewable Energy Generation and Market Integration, which enable communities to take control of their energy profiles and engage with the market as prosumers. He also discusses economic model scenarios based on potential mechanisms that may be employed on the transposition of the EU Directives.



You can find the recording [here](#).

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News

November 2021

Waterstromen

Biogas network is approaching its final form

The installation of the biogas network between the Papierfabriek Doetinchem and Waste Water Treatment Plant of Etten is approaching its final form. At this point, Yorick Schigt, Project Manager at Waterstromen, explained that around 95% of the pipelines have been placed in the ground and that Waterstromen is expecting to complete it at the end of December 2021. The installation work on the Waste Water Treatment Plant is progressing fast as well. Currently the tanks are being built and the gas-treatment will be placed soon. The installation will be tested around February 2022 and we can expect to start receiving the first water to make biogas from in the beginning of March.

November 2021

Flux50

Flemish minister of economy and innovation Hilde Crevits launched the Smart Village Lab



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The Flemish Minister for Economic Affairs and Innovation, Hilde Crevits, opened the Smart Village Lab, in Zellik, Flanders. The Smart Village Lab is run by the Green Energy Park with the support of numerous partners, including Flux50. The Lab aims at stimulating collaboration



between companies, knowledge institutions, governments and end users by offering a living lab where innovative technology and forms of cooperation can be tested in a realistic environment. So it may provide sound answers to the question of how the energy transition can be realized and the climate targets for renewable energies can be realized.

The development of the Smart Village Lab was made possible thanks to the cooperation with Flux50, the Flemish spearhead cluster for energy. It supports the development of the living lab through the Interreg NWE project RegEnergy and the European Regional Development Fund project Smart Multi Energy Lab (SMEL). The research in the domain “energy and mobility” is coordinated by the EVERGi team within the VUB research group MOBI and supported by European Horizon 2020 and Flemish ICON projects.

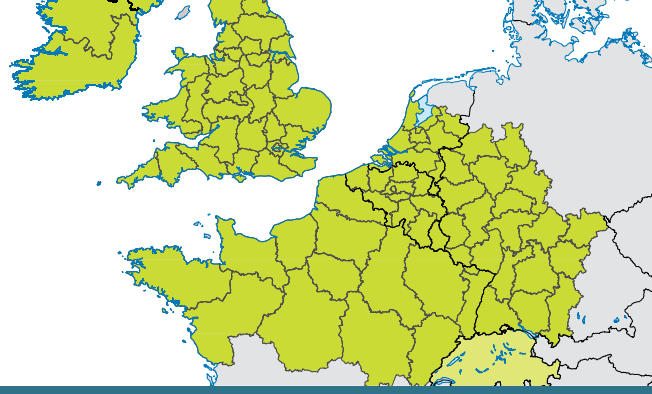
In the context of the RegEnergy project 2 midsize battery systems were installed, serving as neighbourhood battery systems, allowing to balance production and consumption, but also serving as a component of a microgrid (behind the meter topology). One of the research topics of the Evergi team in the project is to setup and test a peer-to-peer trading system of energy within an industrial park, where the batteries play a buffering role in that mini-market.

More information can be found [here](#) and [here](#).
[Watch a video here.](#)

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Facts & Figures

The Partnership

Climate Alliance (Lead Partner, DE)
Brest Métropole (FR)
Flux 50 (BE)
Plymouth City Council (UK)
Waterstromen Etten BV (NL)
3 Counties Energy Agency (IE)
Planair (CH)
Waterford Institute of Technology (IE)
Ormonde Upgrading Limited (IE)

Upcoming Events

FINAL CONFERENCE
18 May 2022
Brest Métropole, France

Project Facts

Duration:
October 2018 – September 2022

Funding:
€11.08 million total project funding
€6.1 million funded via ERDF

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