

Renewable Energy Regions A guide to establishing renewable energy partnerships

Impressum

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The idea

Urban-rural partnership

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Challenges & Solutio

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THE IDEA: **URBAN-RURAL PARTNERSHIPS FOR RENEWABLE ENERGY**

Renewable energy partnerships - urban demand & rural supply

Urban areas, especially in North-West Europe, have the highest energy consumption in the European Union and are still dependant substantially on non-renewable energy sources. To reach the emission reduction targets, regions need to balance their energy demand with the supply of renewable energy locally. Hence, urban areas, as heavy energy consumers without significant renewable energy production potential, need to partner with surrounding rural areas to reliably meet their energy needs in the future. Rural areas usually have large capacities to offer renewable energy production, but limited energy consumption.

Renewable energy partnerships - a win-win situation

Renewable energy partnerships create a win-win situation between rural supply and urban demand: Urban consumers meet their renewable energy demands from reliable regional supplies. Rural renewable energy producers get access to urban consumers. The region as a whole, benefits from increased interactions, investments in energy and other infrastructure. By pooling financial and professional resources in the region, a growth impulse can be created.

Renewable energy partnerships - promoted by RegEnergy

The project RegEnergy aimed to increase the share of renewable energy in North-West Europe by establishing renewable energy partnerships between urbanised and surrounding rural territories. The RegEnergy partnership showcases the experiences gained as best-practice for interested regions and actively supports them in developing their own renewable energy partnerships.



MAIN MESSAGES



Maximise renewable energy share to reach European ambitions

The EU's climate target states a reduction of production and consumption needs to be acnet greenhouse gas emission by at least 55 % celerated. The centralised energy production by 2030, compared to 1990 levels. The EU systems and corresponding regulatory frame-Green Deal sets the objective of climate neut- works in the EU countries need to be restrucrality by 2050. In order to reach these targets, tured towards a more flexible and decentrathe increase of renewable energy share in lised approach.



Connect high energy consumption in urban areas with renewable energy potentials in surrounding rural areas

the decentralised energy model of the future. working with multilevel communication.

The RegEnergy approach for creating urban- It increases regional energy security. Additiorural renewable energy partnerships supports nally, it enables flexible policies for integrated

"Approaching 2030, all projects, no matter how small, are important inspiration for reaching our emission reduction goals"

John Green, Plymouth City Council, UK



Local investments into renewable energy partnerships create multi benefits

Urban-rural partnerships provide access to resources. Investing in renewable energy by green energy from local sources to urban con- local stakeholders means investing in local sumers. Rural areas, on the other hand, gain additional income, and infrastructure invest- pulations in rural areas see benefits instead of ments as well as financial and professional burdens, the energy transition will succeed!

growth and creating local value. As long as po-



Think locally for the energy transition - EU's energy communities give an important momentum

in the EU Renewable Energy Directive. They invol- energy. Energy communities are an important ve, amongst others, citizens, public authorities building stone of the area-based approach and and community organisations participating di- for urban-rural partnerships - they enable varirectly in the energy transition by jointly investing ous actions in different countries.

The renewable energy communities are defined in, producing, selling and distributing renewable



ESTABLISHING URBAN-RURAL PARTNERSHIPS IN YOUR REGION



GETTING STARTED. The goal is to create a joint vision, to define specific targets for your renewable energy region and to get the relevant stakeholders on board.

In this phase the following steps form an iterative process towards defining your partnership.

IMPLEMENTATION PHASE:

Building on the findings so far, the implementation phase aims to establish the partnership legally, technically and economically as well as to anchor it socially. Identified CHALLENGES need to be overcome by finding creative, innovative SOLUTIONS for your urban-rural partnership.





- 1 Analyse the status quo What is the strength of your region? Which potentials for renewable energy production exist? What is the demand?
- 2 Understand the background What are the legal, institutional and market relevant factors that need to be considered?
- 3 Develop the partnership Who are the relevant supporters? Who needs to be involved?
- 4 Check options to match supply and demand Which options exist to bring supply and demand together?

Challenges can arise regarding different aspects of partnership implementation. Mostly they need to be tackled in parallel, considering the following aspects.

- 1 Find creative solutions within the given framework
- 2 Manage renewable energy supply and demand
- 3 Increase acceptance with public involvement



OPERATIONAL PHASE:

MONITOR, SHARE and ADAPT After implementation, your renewable energy partnerships need to be continuously monitored.



As there are no blueprints for creating renewable energy regions yet, well-monitored experiences can function as a role-model for further partnerships towards renewable energy regions. Furthermore, the constantly changing legal and economic backgrounds mean that the identified targets as well as the composition of the partnership must be constantly reviewed and adapted.





GETTING STARTED

Analyse the status quo

Following the guiding questions "What is the strength of my region?" and "Which potentials for renewable energy production exist?", data describing your region, the energy system, corresponding greenhouse gas emissions, and future developments provide robust evidence about the status quo. Understanding the local demand and opportunities for renewable energy production are the first steps towards establishing a renewable energy partnership.

Analysis of the renewable energy potentials in South-West Ireland

3 Counties Energy Agency (3cea) supports the counties of Kilkenny, Carlow, Wexford and Waterford to reduce their CO₂ emissions in the field of sustainable energy. 3cea analysed the legal context, regional setting, challenges and opportunities for renewable energy partnerships in the counties Kilkenny, Carlow and Wexford: Greenhouse gas emissions from agriculture represent over 35 % of Irish national emissions and are expected to increase further. The South-East is a predominantly rural region, hence the potential to reduce greenhouse gas emissions with bioenergy from agricultural land, forestry, and waste residues is significant. Following this, an analysis of the potential receptacle sites in the 3-counties region was conducted, which led to the establishment of a renewable energy partnership: 3cea has worked with the public customers to identify a number of sites



In order to get started, it is necessary to be familiar with the potentials and barriers of the region. A good knowledge of the status quo makes it possible to exploit the strengths in a targeted way. Additionally, it is the time to start networking, bring the partnership together and get supporters on board.

(such as a machinery yard and a fire station in the towns of Kilkenny and Wexford) that could use the upgraded biogas (biomethane) being produced by Ormonde Upgrading.



Livestock farming accounts for a large amount of Irelands greenhouse gas emissions and is one of the reasons for high bioenergy potential.



Netherlands

The premium feed-in scheme for RE covers the difference between estimated market price of saved CO_2 emissions and cost of the technology. It is paid via a levy on energy consumer bills. For wind and PV installations, in combination with energy storage, a double energy tax may be levied. Furthermore, producers of RE receive loans and tax benefits. Biogas is not regulated, it can be distributed via separate pipelines. Biomethane has to be fed into the national grid.

UNDERSTAND THE BACKGROUND

The map shows examples of stimulating framework conditions regarding renewable energies in North-West European countries. Although many hindering obstacles exist, there are manifold opportunities that can be exploited – and the rapidly changing framework conditions bring further incentives.

"When setting-up a partnership, you realise there are constraints in technical, regulatory, economic and social point of view. They vary in the different regions and countries. It is essential to understand the relevant factors, which need to be considered. There is also a need to break new ground for new technologies."

Marc Vermeeren, Flux 50, BE

Ireland

Financial support is given for community-led projects that promote renewable electricity (0.5-5 MW). Domestic generators (up to 11 kW) receive a guaranteed tariff and nondomestic producers (maximum 50 kW) receive a tariff according to a competitive market rate. Additionally, a supportive regulatory framework for peer-to-peer energy trading is currently in discussion.

For biogas/ biomethane production no scheme is in place to generate renewable heat or transport fuel at the date hereof.

United Kingdom

High grid connection costs affect the viability of RE projects. But additional revenue streams can be opened up through grid flexibility market contracts. Suppliers must be licensed, but becoming a licensed supplier is not viable for small organisations due to costs, risks and legal burdens.

Consumers are only allowed one energy supplier which restricts peer-to-peer trading. Local suppliers and consumers are unable to share distribution cables to form virtual private wire networks.

France

All RE benefit from support schemes (feed-in tariffs, remunerations) to make them competitive and to enhance investments. A financial aid scheme also exists for renewable heat production and distribution.

Eligible producers need to conclude a power purchase agreement with EDF (Électricitéde France). Individual and collective self-consumption, storage of energy up to 3 MW as well as its management are possible.

RE renewable energy PV photovoltaic

GETTING STARTED

set-up phase

Belgium

Feeding in electricity to the grid is permitted. A grid use compensation levy exists (up to 10 kW), but the use of smart meters exempts prosumers from this levy. A competitive call is organised twice a year to support large scale PV installations (about 25 kW).

Peer-to-peer trading is allowed but subject to paying the grid tariffs. Lower tariffs exist for direct connections between two enterprises. Closed distribution grids are allowed only under specific conditions.

Germany

Feed-in tariffs exist for PV (up to 100 GW), wind (onshore up to 71 GW / off shore up to 20 GW) and biomass. "Innovation auctions" tender an additional capacity of 500-850 MW/year (not technology-specific). The pay-out structure of feed-in remunerations shall motivate plant operators to install storage systems.

2 % of the land is to be designated for wind energy. The use of roof solar energy is mandatory for new commercial buildings and incentives for landlords promote the installation of PV.

Switzerland

PV and hydro-electric installations can apply for investment subsidies. But Switzerland lacks clear regulation for the storage of RE.

It is economically more interesting to self-consume then to sell back to the grid. Local producers and consumers can create a self-consumption group. Generators are allowed to decline their provision of RE to the grid, limiting the flexibility of exchange.



DEVELOP THE PARTNERSHIP

Who has to be included - directly and indirectly?

The stakeholders directly involved in the establishment of a partnership are usually those who will profit the most: consumers, producers, infrastructure providers. Interest groups participating or influencing indirectly need to be identified as well. The success of the partnership will also depend on the level of acceptance in the region. Therefore, it is important to involve decision makers on local and regional level as well as citizens and local interest groups. They promote your vision, create acceptance and support your partnership.

Which type of partnership is appropriate?

There exist numerous possibilities for partnerships. Define for your region which level of cooperation is helpful – a rather informal, coordinative collaboration or a more formalised, institutionalised cooperation.



Types of partnerships can be formal or informal – such as mutual agreements, purchase contracts or providing different kinds of support: technical, knowledge transfer, coordinative, financial

A closer look into the wide range of potential stakeholders examples from energy partnerships in Belgium (left) and UK (right)

ireen Energy Park: producer of solar electricity and operator	۱
f the battery system	k
lux50: owner/ investor of the battery system to balance pro-	0
uction and consumption	r
Pata centre: main consumer of electricity and provider of was-	L
e heat	E
ocal companies: to be future prosumer of electricity and heat	1
Developer of residential area: to be potential customer of	t
vaste heat	F
Potential) operator of district heating system: responsible	5
or functioning heating network	Ę
Iniversity: to model the (future) energy sharing flows and	E
eer-to-peer trading	1
Distribution system operator (DSO) for the Flemish region:	(
nabling the re-use of infrastructure	
<i>Iunicipality of Asse:</i> responsible for construction permits e.g.	t
or a heating network	0
lemish regulator VREG: responsible for the tariff structure	F
indering cost efficient energy sharing	
aw firms: to provide insight in the opportunities of implemen-	e
ng local energy communities	



The more different energy sources are exploited, the more stakeholders need to be involved.



- **Western Power Distribution:** responsible for electricity distribution in the region
- Office of the Gas and Electricity Markets (Ofgem):
- responsible for energy regulation in Great Britain
- **Large electricity suppliers:** including British Gas, EDF Energy, EON, Npower and Scottish Power
- **Local electricity generators:** community energy organisations, including Creacombe CIC, Yealm Community Energy and Plymouth Energy Community
- **Supporting organisations:** including Devon Community Energy gy Network, Devon Energy Collective CIC & Community Energy England
- Large consumers: for example, Derriford hospital and local industry
- **Regen:** a not for profit organisation providing technical expertise, industry research, market insight, policy knowledge on low carbon opportunities for public and private sector organisations **Plymouth City Council and Devon County Council:**
- local authorities that play a coordinating role, as well as being electricity consumers and investors



Photovoltaic installation Creacombe Solar, UK.



CHECK OPTIONS TO MATCH SUPPLY AND DEMAND

Considering the framework conditions regarding renewable energy and the vision for your renewable energy partnership, the options to bring supply and demand together need to be explored. The following checklist developed by RegEnergy partners summarises the main issues that need to be considered.

Checklist "Getting started to match supply and demand"

- robust evidence
- Analyse type of energy production and supply potential from renewables in your rural areas
- Analyse demand potential of renewable energy consumption in the urban area
- ✓ Assess future energy market
- ✓ Identify functional linkages between urban and rural areas
- partnership
- Consider public support/ opinion on renewable energy or its different energy sources
- Analyse (economic) potential of renewable energy partnerships (business cases, value chains, certifications etc.)
- V Develop long term and win-win scenarios for your renewable energy partnership



Understand the status quo, existing barriers and opportunities of urban and rural areas based on

Contact stakeholders: consumers, producers, infrastructure, other – and choose a potential type of



CHALLENGES AND SOLUTIONS

exist.

Which barriers or challenges exist?

Barriers can arise regarding different aspects of partnership implementation:

- grid connection costs influence the business case greatly.
- voltaic and wind turbines).
- zens and businesses is sometimes limited.

What are the potential solutions?

Reliable solutions must be found, which vary greatly depending on the background conditions in the different regions. The elaboration and implementation of optimal institutional and administrative arrangements - such as cooperation agreements between cities and countryside - are one potential strategy. Long term and win-win scenarios for the potential renewable energy partnerships help to create a benefit for both the urban as well as the rural communities involved.



In the next step the partnership needs to be established legally, technically, economically and anchored in the local community. Although manifold barriers stand in the way of urban-rural partnerships, creative solutions already

• The institutional and legal situation is complex in the different countries. For example, feed-in tariffs or

· A major challenge is the technological and infrastructural management of demand and supply, as renewable energy generation is not constant but for example dependent on the weather (for photo-

· Furthermore, the acceptance and thus the adoption of innovative renewable energy solutions by citi-

FIND CREATIVE SOLUTIONS WITHIN THE GIVEN FRAMEWORK

Even though renewable energy partnerships provide various opportunities, counterproductive law, regulations, administrative hurdles and complex local institutional requirements limit their potential.

As shown, the institutional and legal situation is complex in the different countries. For example, tariff structures vary greatly. Hence, a reliable and profitable solution in one region may not be as economically attractive or may not even be allowed in other regions.

National framework conditions do not always allow to apply the favoured renewable energy approaches. Creative solutions need to be found that work in the given settings.

Nevertheless, it is worthwhile to learn from each other and understand which regulations made positive changes elsewhere possible.

"A challenge is to remove financial and institutional barriers to support communities in participating in the energy transition. They need to be supported both financially and technically and to be guided through the minefield of legislation and regulations around implementing energy projects. In Ireland, there is no easy way to organise citizens who want to cooperate in an energy sector for the betterment of their local communities."

Paddy Phelan, 3 Counties Energy Agency, IE



Ormonde Upgrading in Ireland and Waterstromen in the Netherlands created partnerships promoting biogas/ biomethane usage in their regions. The examples demonstrate the manifold possibilities to foster biomethane usage under differing legal and procedural opportunities and obstacles. The different approaches help to understand the necessity for individual solutions.

In Ireland, even though the use of biomethane can contribute to decarbonisation and energy safety, it's integration to the Irish gas grid faces challenges. The injection of biogas and its upgraded version biomethane into the existing grid is hindered by high costs and a considerable ill-defined authorisation process. An alternative off-grid system supply-demand chain was developed to unlock the potential of biomethane and overcome



A view over the Ormonde Upgrading biogas and biomethane production site in Waterford, Ireland.

grid related challenges. The local off-grid partnership delivers biomethane from the producer Ormonde Upgrading, directly to its customers using special transportation and storage equipment thus providing its customers with access to additional/ alternative renewable energy.

In the Netherlands feeding in biomethane into the natural fossil gas system is permitted and supported by a premium feed-in scheme. In Doetinchem in the Province of Gelderland, carbon rich waste water from a paper mill and residential sludge from the city are being used to extract biogas which will supply the paper mill. Furthermore, by direct injection of the upgraded biomethane into the grid, it can be easily provided to households and industries without creating microgrids to balance demand and supply.



Separate piping was installed between the paper mill and the waste water treatment plant.

Balancing supply and demand with local microgrids combining different energy sources in Switzerland, Ireland and Belgium

The RegEnergy partners Planair in Switzerland, Walton Institute in Ireland and Flux50 in Belgium have taken up the challenge of balancing supply and demand in local microgrids. Partnerships were created with local business parks, industrial companies and offices. Amongst others, the integration of different options to store energy and smart platforms for supply-demand management were tested as solutions. All partners exploited the advantages of combining different energy sources.

Y-PARC, a swiss science and technology park with over 200 companies, developed a method to combine e-mobility and renewable energy production. Energy generated from photovoltaic installations is fed into the microgrid to cover consumption of buildings and additionally electric vehicles which can even serve as mobile or stationary batteries. The synergy between e-mobility and renewable energy generation allows to store daily solar peaks for self-consumption and thus decreases the pressure on the grid. The Walton Institute developed a software platform, that enables the management of an Energy Community within commercial and industrial trial sites of the regional authority Údarás na Gaeltachta. Locally generated energy from solar and wind can be shared in a peer to peer fashion within the cluster which is then optimised with flexible loads and battery storage systems. Thus, the optimisation platform maximises the cluster's sustainability and coordinates the implementation of smart grid technologies.

The Flemish Green Energy Park is designed to facilitate solar energy to cover the electric and thermal demand of over 70 companies, a data centre and a nearby residential area. All companies inject renewable energy into the microgrid which is supported by storage systems. The Smart Village Lab monitors the interaction of batteries, photovoltaic-collectors and e-mobility charging stations to optimise self-consumption and grid stability.



A view over the swiss science and technology park Y-PARC in Yverdon.

MANAGE RENEWABLE ENERGY SUPPLY AND DEMAND INTEGRATIVELY

One of the biggest challenges for the energy transition is to match renewable energy supply and demand in terms of timing, technology and location. Renewable energy production is increasingly diversified and decentralised using different sources such as wind, solar gain or water with an ever-increasing number of technologies and infrastructure requirements coming into play. The management of these is a major challenge for renewable energy partnerships in your region.

Solutions like smart microgrids, provide opportunities for the integrated management of the region's supply with variable and intermittent renewable energies and its demand. Furthermore, the integration of storage capacities, e. g. through battery systems or vehicle-to-grid technology, assists the balancing of supply and demand in terms of timing.

The development of infrastructure networks, such as networks for heat or biogas from rural to urban areas, is additionally necessary to connect them with consumers of renewable energy physically. "Renewable energy partnerships can act like microgrids, trade with each other and eventually roll up to a regional smart grid. These networks are based on distributed, local generation resources such as solar, wind and battery storage which can be shared in a peer to peer environment, allowing the integration of renewable energies in local communities."

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Sean Lyons, Walton Institute of Technology, IE

INCREASE ACCEPTANCE WITH PUBLIC INVOLVEMENT

Having met the legal, institutional as well as technical challenges, many regions face an additional barrier: inhabitants rally against renewable energy projects. Reasons are manifold: The NIMBY phrase - i. e. "not in my backyard" - describes the doubts of many opponents. Understanding of the complex technical background and market situation is often limited and hence scepticism prevails.

One solution can be the active involvement of public administrations as well as citizens in the renewable energy partnerships creating added (financial) value for the area. The advantages of public bodies engaging in the partnerships can result in a stronger administrative setting, improved access to information, leverage of funding and further resources. Public bodies can create synergies which in turn enhance citizens' acceptance, e. g. providing discounts for green energy in social housing.

Another option to increase acceptance is to publicly demonstrate the potentials, reliability and safety of renewable energy supply projects.

"Innovative administrative contracts between local authorities have a huge potential to bring the idea of renewable energy regions into practice. They create or revive links between urban and rural areas and therefore create many benefits even beyond the energy supply. The involvement of local authorities increases acceptance and interest in renewable energies."

Sylvie Mingant, Brest métropole, FR



The public authorities of Brest métropole in France and Plymouth City Council in the UK have showcased how innovative cooperation and contracts across administrative borders create benefit for local economic value, energy security and decarbonisation.

In France, Brest métropole and the county of Central West Brittany collaborate based on a "contract of reciprocity" ("contrat de réciprocité") to link rural renewable energy production to urban heat and electricity consumption and thus establish the region as a "prosumer" – producing and consuming own energy from renewables. The contract allows them to establish a new form of inter-municipal collaboration to overcome institutional and administrative barriers. It facilitates the joint use of technology and exchange of know-how and experience. Joint actions target contractual and financial agreements between urban con-



Solar projects developed by energy cooperatives help overcome Nimbyism - the profit stays with the members.

sumers, locally and regionally centralised electricity producers on the rural territory, for example through a power purchase agreement between urban public consumers and producers in the rural area.

Plymouth City Council has worked with two rural energy communities, one of which has been a pioneer in investing in renewable energy projects, the profits from which go back to support the community. To develop the partnership, contractual agreements, such as power purchase agreements or synthetic power purchase agreements with a large urban consumer were explored. Battery storage systems and independent private wires have been shown to provide benefits to the local grid and also opportunities for maximising incomes for local organisations. Due to these obvious benefits of working with local community organisations, public acceptance is generally high.



The contract of reciprocity between Brest métropole and the county of Central West Brittany facilitates joint complementing actions for renewable energy in the territories.





MONITOR, SHARE AND ADAPT

After implementation, it is useful to monitor and evaluate the process. By putting standardised reporting and monitoring procedures in place, valuable data can be collected, which supports evaluation. Additionally, direct and honest communication with all cooperating partners should be used to collect experiences made which, together with relevant data, can also function as role-model for other regions. Active dissemination of the lessons-learned within and outside the region can support the energy transition in your area and might even inspire new initiatives beyond.

The constantly changing technological, legal and economic backgrounds mean that the identified targets as well as the composition of the partnership must regularly be reviewed and adapted. In close cooperation with all relevant stakeholders, your vision can be tailored to the challenge, become more ambitious or more realistic over time.

A nationwide network to bring renewable energy regions together

In Germany, Climate Alliance identified the lack of regional energy coordination structures to be a major obstacle for the establishment of renewable energy regions. They created the Region-N initiative, a network of regional stakeholders which serves as an exchange platform. The goal is for regions to be supplied 100 % from renewable sources by 2030, to use their efficiency and energy-saving potential and thus to strengthen climate action. Stakeholders are invited to exchange their knowledge and expertise, build up on successful experiences and jointly develop campaigns and partnerships. Regular events and meetings are key elements of the network and make it possible to establish different focus groups. The network consists of regions, municipalities as well as counties. This bottom-up approach has the potential to achieve a nation-wide strategy transfer of urban-rural partnerships, thanks to the comprehensive exchange between Region-N mission







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ABOUT REGENERGY

Strong partnership to connect urban demand und rural supply

From 2018-2022 the international project of RegEnergy developed partnerships for renewable energy in North-West Europe. Since North-West Europe has a high dependency on non-renewable energy sources, RegEnergy aimed to break up existing structures in order to increase the use of renewable energy in its regions. Creating renewable energy partnerships between urbanised and surrounding rural territories leads to reduced greenhouse gas emissions.

Model cases for establishing renewable energy regions

Nine project partners from seven North-West Europe countries, representing metropolitan regions, cities, rural communities, regional agencies, scientific institutions and renewable energy producers, developed strategies and models to illustrate how such partnerships can be built. Pilot partnerships across North-West Europe were established and invested in:

- Institutional arrangements for regional prosumers,
- lacking renewable infrastructure,
- · regional supply-demand chains,
- coping with limited grid capacity and intermittent renewable energy supply,

• balancing regional supply and demand profiles. The examples and main lessons learned can be found throughout this brochure. Further information can be found on: www.nweurope.eu/projects/project-search/regenergy-renewable-energy-regions.



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PERSONAL EXPERIENCES FROM THE REGENERGY PARTNERSHIP



"At the beginning of the RegEnergy project a lot of obstacles were encountered. Nevertheless, the partners found innovative solutions to overcome barriers and successful renewable energy partnerships evolved."

Svenja Enke, Climate Alliance, DE

"Obstacles in Ireland are similar to those being placed in other member states. It was helpful to hear other voices and different opinions."

Michael Murphy, Ormonde Upgrading, IE

"I learned a lot about the current evolution of alternatives in the sector of renewable energy and got to know about different approaches in the legal framework of the different countries and sectors. Thorough approaches to create a clean energy transition became applicable instruments rather than unsure concepts to me."

Yorick Schigt, Waterstromen, NL





"It is important to link with other renewable energyregions.During the project, we exchanged our experiences and learned a lot from it."

Hélène Rizzotti, Climate Alliance, DE

"I experienced how common ideas, goals and values were transformed into specific local projects. It is inspiring to imagine, think and design local solutions linked to the idea of European cooperation."

Geoffrey Orlando, Planair, CH

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