NORTHERN AND WESTERN REGION, IRELAND

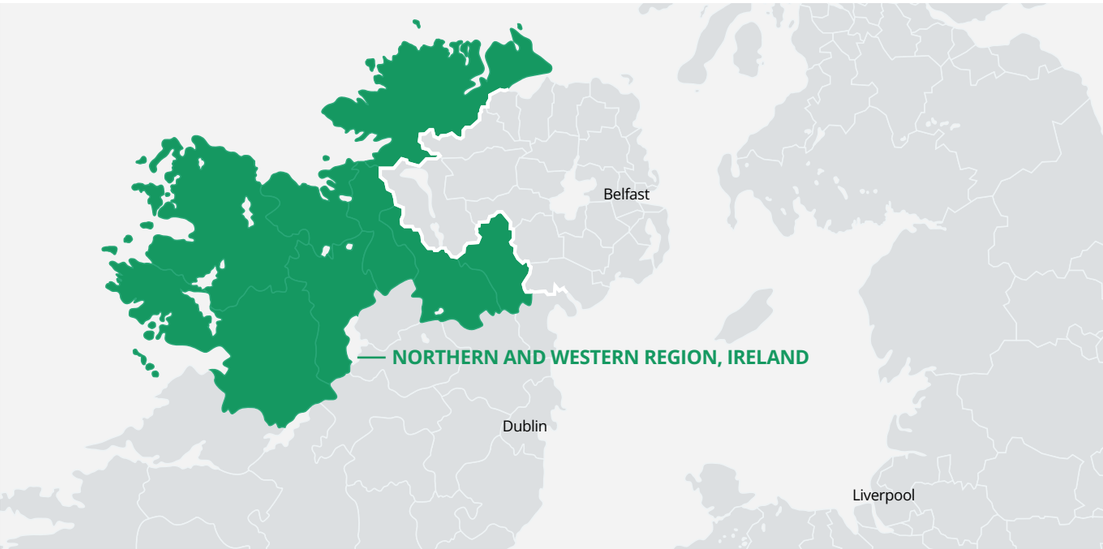


Photo credit Sebastian Ganso, Pixabay

The Northwest (NW) region has 1,797,000 hectares of Agricultural Land including Commonage , comprising 72% of the total land surface in the region. Beef and sheep farming, in relatively small holdings, accounts for most farms in the NW region.

Pig and poultry sectors are generally represented by a smaller number of large volume farms. The Border region accounts for 30% of pigs and 70% of poultry in the State and are generally the more energy intensive farms in the region. Dairy farms in the region also have quite specific energy needs. The policy focus on agriculture in Ireland is to decarbonise through land management and improved animal production efficiency. Uptake of Renewable Energy in the agricultural sector remains low but is expected to improve due to emerging policy incentives and growing knowledge supports.

A SWOT analysis for RE in Agriculture:

Strengths

- Very good wind energy resource – onshore capacity factor 28%
- Solar resource comparable to Denmark – Denmark has approx. 28x Solar PV installed
- Cheap land owned by farmers

Opportunities

- SSRH opened in 2019 – good potential for pig and poultry sector.
- Climate Action Plan (CAP) targets for 2030:
  - 70% of all electricity from renewable sources: 1.5GW Solar PV, 8.2GW onshore wind
- RESS includes a category for 'Community owned' projects
- Sustainable Energy Community (SEC) Programme
- GNI target for 20% Renewable Gas on the network by 2030 (11.6 TWh):
  - AD deployment and AD feedstock potential
  - Sligo Local Gas Network project in development stages
- Microgeneration Support Scheme (MSS) currently in public consultation:
  - Export payment for excess renewable electricity (up to 50 kW)
  - Review of Planning exemptions and grid connection process for RE ongoing
- Emerging policy for CPPAs:
  - May provide a route to market for small-scale renewable electricity

Weaknesses

- Small farms with limited financial or technical capacity for investment
- Aging farm holder profile
- Beef and sheep farming are not energy intensive – low potential for self-consumption
- No available market tariff for small scale (50kW to 500kW) Renewable Electricity generation for export to grid
- Very limited market for energy crops
- Infrastructural deficits – proximity to electricity and natural gas grid

Threats

- Administrative burden of support schemes
- Regulatory barriers
- Cost and availability of grid connection
- Local opposition to onshore wind energy
- No clear emerging policy for 50kW to 500kW renewable electricity export to grid
- Policy focus on decarbonization of agriculture through land management and improved animal production efficiency. While this is a valid approach, it may result in less consideration of the RE opportunities for farms.

Barnaderg Community Solar Farm

Tuam, West, Ireland

4MW Community owned, grid connected, Solar Farm in the West of Ireland.

Photo credit StockSnap, Pixabay

The 2015 Energy White Paper recognised the importance of community and citizen participation in the future energy infrastructure of Ireland. Community ownership of energy generation has been very limited in Ireland to date. Renewable energy projects in Ireland have been predominantly led by private developers with minimal community engagement – a situation that has led to community mistrust and objections to such developments.

Barnaderg Solar Farm empowers the community by retaining control of the development and directing profits from the sale of energy back into the local economy.

Barnaderg Solar Farm is located on a 12 hectare site outside Tuam, Co. Galway, Ireland and incorporates the following:

- C. 40,000 m2 Solar PV array
- C. 4MW Maximum Export Capacity
- Owned by a Community Cooperative on a voluntary basis (>50 members)

The route to project delivery for grid-scale Renewables in Ireland requires 2 key regulatory steps: Step 1 – grid connection, Step 2 – Power Purchase Agreement. The Renewable Electricity Support Scheme (RESS) provides a Feed In Price for renewable electricity over an appropriate contract term. This is the main current mechanism for the sale of renewable electricity in Ireland. In contrast to previous schemes, RESS provides an exclusive category for community-led projects. Barnaderg Solar Farm has been successful in the 1st RESS Auction under the Community Category. The Community category included in RESS supports the findings of years of consultation aimed at gaining public support for more renewables on the Irish grid.

This project has been successful in the 1st RESS auction – this means that this project can now finance itself to completion. Without a Community category projects such as these would have much less chance of success. This community owned project will generate in excess of 3,500 MWh of clean electricity each year during its operational life.

Resources needed

Approx. capital costs €4m.

Evidence of success (results achieved)
Barnaderg Solar Farm has received planning permission, grid connection and has been successful in the 1st RESS Auction under the Community Category. Now that the project has a grid connection and electricity sale agreement, construction will begin in 2021 for completion. In operation this solar farm will generate in excess of 3,500 MWh of clean electricity each year.

Challenges encountered

The community have had to carry the risk and costs of early stage developments such as planning studies & grid connection process. This is a significant challenge for a community with 1 project as opposed to private developers with a pipeline of multiple projects.

Potential for learning or transfer

Barnaderg Solar Farm is an example of many that are being developed around the country.

Main institution in charge

Dunmore Sustainable Energy Community

Timescale (start/end date)

Initial Planning application submitted in 2016. Now that the project has a grid connection and electricity sale agreement, construction will begin in 2021 for completion.

Further information:

https://www.seai.ie/community-energy/ress/

Kinkade Dairy Solar PV project

Cavan, Northwest, Ireland

Installation of PV panels with a capacity of 9kWp and with 4.8kWh battery storage system in a Dairy Farm. Better Energy Communities (BEC) is a national retrofit initiative with grant support of up to €20 million for 2020. BEC supports new approaches to achieving energy efficiency in Irish communities. Upgrades and Renewable Energy installations can take place across building types to reduce energy use and costs throughout the community. The scheme aims to deliver energy savings to homeowners, communities, and private sector organisations. All projects should be community oriented with a cross-sectoral approach, and you must show that you can sustainably finance the proposed project.

Solar PV array fixed to the farm shed. Photo Credit: Pat Smith

Dairy farms incur significant electricity costs in their operation for pumps, lighting and cooling systems. Electricity is generally grid supplied. Dairy farm sites and buildings are often well suited to solar energy, but owners require trusted and independent guidance to explore the appropriate options.

Douglas Kinkade runs a 110 cow dairy farm in Co. Cavan. Douglas, working with Pat Smith of Local Power, installed a 6.5-kilowatt peak (kWp) solarwatt solar photovoltaic (PV) panel system with 4.8kWp of battery storage to act as a buffer between generation and usage and an EDDI device – which diverts surplus electricity to heat water.

Local Power coordinated the grant application and the project under the SEAI Better Energy Communities (BEC) Scheme, which provided 30% of the system capital costs.

The system is connected to both the farm and the house to optimise the on-site consumption.

The BEC scheme is Ireland's national retrofit initiative aimed at upgrading building stock and facilities to high standards of energy efficiency and renewable energy usage, thereby reducing fossil fuel usage, energy costs and greenhouse gas emissions. As part of this initiative, BEC supports new approaches to achieving high quality improvements in energy efficiency within Irish communities. By bringing together groups of buildings under the same retrofit programme, communities projects facilitate community-wide energy improvements more efficiently and cost effectively than might otherwise be possible. The Communities Energy Grant is designed to engage all members of SEAI's Sustainable Energy Community (SEC) network who wish to participate in delivery of energy efficiency works, as well as those Project Coordinators who have previously participated in SEAI Community Energy Grant projects

The BEC scheme is opened on an annual basis and requires a cross-sectoral approach, i.e. applications must include beneficiaries from more than one sector, e.g. private homeowners, private business & public sector. The scheme is available to all sectors including agriculture and rural projects.

Resources needed

Total BEC Annual budgets vary but are in the region of €20 million to €30m.

For the Kinkade Dairy Solar PV Project the BEC scheme provided a 30% grant of the total project cost of approx. €18,000.

Evidence of success (results achieved)

The installed system provides approx. 40% of the total electricity demand for the farm.
Annual energy generated = C. 8,000 kWh
Annual savings = C. €1,500
Annual CO2 savings = 4 tonnes

Challenges encountered

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Potential for learning or transfer

The BEC scheme evolves each year. However there remains significant potential for improvement through continuous assessment, and therefore also potential for learning and knowledge transfer. This specific project has potential for replication in similar dairy farms throughout the region.

Main institution in charge

Department of Communications, Climate Action & Environment (DCCAE)
Sustainable Energy Authority of Ireland (SEAI) – BEC Grant funders

Timescale (start/end date)

Completed in the 2019 BEC Scheme.

Further information:

https://www.agriland.ie/farming-news/infrastructure-focus-installing-solar-panels-on-a-dairy-farm-in-co-cavan/

J & M Dairies Solar PV Installation

Kilkenny, Southeast, Ireland

Installation of PV panels with a capacity of 9.54kWp and with 10kWh battery storage system in a Dairy Farm. Better Energy Communities (BEC) is a national retrofit initiative with grant support of up to €20 million for 2020. BEC supports new approaches to achieving energy efficiency in Irish communities. Upgrades and Renewable Energy installations can take place across building types to reduce energy use and costs throughout the community. The scheme aims to deliver energy savings to homeowners, communities, and private sector organisations. All projects should be community oriented with a cross-sectoral approach, and you must show that you can sustainably finance the proposed project.

John Ryan (Farm owner) next to his Solar PV array

Dairy farms incur significant electricity costs in their operation for pumps, lighting and cooling systems. Electricity is generally grid supplied. Dairy farm sites and buildings are often ell suited to solar energy, but owners require trusted and independent guidance to explore the appropriate options.

Dairy farmers, John and Marguerite Ryan, run a busy dairy farm in Gortnahoe, Thurles, Tipperary. They were spending upwards of €500 a month on electricity alone. Milking 130 cows twice daily, washing out milking machines and lighting the parlour were major drains on power on the family farm. The solution provided for the Ryan farm includes a 9.54kWp Solar PV array with 10kWh Sonnen battery storage system to optimise on-site utilisation of the clean energy.

3CEA coordinated the grant application and coordination of the project under the SEAI Better Energy Communities (BEC) Scheme.

The BEC scheme is Ireland's national retrofit initiative aimed at upgrading building stock and facilities to high standards of energy efficiency and renewable energy usage, thereby reducing fossil fuel usage, energy costs and greenhouse gas emissions. As part of this initiative, BEC supports new approaches to achieving high quality improvements in energy efficiency within Irish communities. By bringing together groups of buildings under the same retrofit programme, communities projects facilitate community-wide energy improvements more efficiently and cost effectively than might otherwise be possible. The Communities Energy Grant is designed to engage all members of SEAI's Sustainable Energy Community (SEC) network who wish to participate in delivery of energy efficiency works, as well as those Project Coordinators who have previously participated in SEAI Community Energy Grant projects

The BEC scheme is opened on an annual basis and requires a cross-sectoral approach, i.e. applications must include beneficiaries from more than one sector, e.g. private homeowners, private business & public sector.

The scheme is available to all sectors including agriculture and rural projects.

Resources needed

Total BEC Annual budgets vary but are in the region of €20 million to €30m. For the J & M Dairies Solar PV Project the BEC scheme provide a 30% grant of the total project cost of approx. €25,000.

Evidence of success (results achieved)

The installed system provides approx. 40% of the total electricity demand for the farm.
Annual energy generated = 10,499 kWh
Annual savings = € 1,889.76
Annual CO2 savings = 4.3 tonnes

Challenges encountered

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Potential for learning or transfer

The BEC scheme evolves each year. However there remains significant potential for improvement through continuous assessment, and therefore also potential for learning and knowledge transfer. This specific project has potential for replication in similar dairy farms throughout the region.

Main institution in charge

Department of Communications, Climate Action & Environment (DCCAE)
Sustainable Energy Authority of Ireland (SEAI)
– BEC Grant funders
3 Counties Energy Agency (3CEA)
– Project Coordinators

Timescale (start/end date)

Completed in the 2018 BEC Scheme.

Further information:

https://www.seai.ie/grants/community-grants/

https://3cea.ie/sectors/agriculture/j-m-dairies/

O'Shea Farms 250kWp Solar PV Project

Kilkenny, Southeast, Ireland

Installation of 250kWp Solar PV system for on-site energy use. The project was supported by the Better Energy Communities (BEC) grant scheme. Better Energy Communities (BEC) is a national retrofit initiative with grant support of up to €20 million for 2020. BEC supports new approaches to achieving energy efficiency in Irish communities. Upgrades and Renewable Energy installations can take place across building types to reduce energy use and costs throughout the community. The scheme aims to deliver energy savings to homeowners, communities, and private sector organisations. All projects should be community oriented with a cross-sectoral approach, and you must show that you can sustainably finance the proposed project.

East-West Solar PV array

O'Shea Farms supply fresh produce to supermarkets across the country resulting in a year round electricity demand for refrigerated cold storage and grading equipment at their site.

The chosen solution for O'Shea farmers was to meet their base load demand with the installation of 250kWp solar photovoltaic system for the following reasons:

- Solar energy coincides with energy needs for cooling during the summer months. Therefore, a solar PV System can provide an effective solution to supply energy during peak demands especially in hot summer months where energy demand is high.
- Solar power generation is carbon neutral hence; it will firmly ground O'Shea Farms' sustainable practice credentials.
- Solar power generation does not require a primary energy source attributed with conventional power generation methods. Therefore, it reduces O'Shea Farms' exposure to fluctuating energy prices.
- Solar power generation requires little to no operational and maintenance costs compared to other renewable energy technologies.

O'Shea Farms engaged with 3CEA (3 Counties Energy Agency) to develop the renewable energy project at their site. 3CEA were successful in applying for 20% grant funding towards the capital cost of the solar PV project at O'Shea Farms from the SEAI.

The BEC scheme is Ireland's national retrofit initiative aimed at upgrading building stock and facilities to high standards of energy efficiency and renewable energy usage, thereby reducing fossil fuel usage, energy costs and greenhouse gas emissions. As part of this initiative, BEC supports new approaches to achieving high quality improvements in energy efficiency within Irish communities. By bringing together groups of buildings under the same retrofit programme, communities projects facilitate community-wide energy improvements more efficiently and cost effectively than might otherwise be possible. The Communities Energy Grant is designed to engage all members of SEAI's Sustainable Energy Community (SEC) network who wish to participate in delivery of energy efficiency works, as well as those Project Coordinators who have previously participated in SEAI Community Energy Grant projects

The BEC scheme is opened on an annual basis and requires a cross-sectoral approach, i.e. applications must include beneficiaries from more than one sector, e.g. private homeowners, private business & public sector.

The scheme is available to all sectors including agriculture and rural projects.

Resources needed

Total BEC Annual budgets vary but are in the region of €20 million to €30m.

For the O'Shea Farms Solar PV project:

- Total project cost €287,500
- BEC Grant amount €57,500

Evidence of success (results achieved)

The installed system provides approx. 11% of the total electricity demand for the farm.
Annual energy generated = 210,000 kWh
Annual savings = € 27,000
Annual CO2 savings = 39 tonnes

Challenges encountered

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Potential for learning or transfer

The BEC scheme evolves each year. However there remains significant potential for improvement through continuous assessment, and therefore also potential for learning and knowledge transfer.

Main institution in charge

Department of Communications, Climate Action & Environment (DCCAE)
Sustainable Energy Authority of Ireland (SEAI)
– BEC Grant funders
3 Counties Energy Agency (3CEA)
– Project Coordinators (formerly Carlow Kilkenny Energy Agency)
Solar Electric Ireland – Installers

Timescale (start/end date)

Completed in the 2015 BEC Scheme

Further information:

https://www.seai.ie/grants/community-grants/

http://3cea.ie/sectors/agriculture/oshea-farms/

https://www.solarelectric.ie/projects/irelands-largest-private-investment-in-pv/


O'Shea Farm

Polecat Springs Solar PV

Elphin, Northwest, Ireland

The Polecat Springs Water Treatment Plant serves approx. 600 drinking water connections as part of a rural Group Water Scheme Co-operative in Co. Roscommon. In 2019 the Co-operative, in partnership with their plant operator, Veolia Water Ireland, installed a 50kW Solar PV system to reduce overall electricity costs and associated CO2 emissions.


AgroRES tour at the Solar project. Photo credit IT Sligo.

The Polecat Springs Water Treatment Plant (PSWTP) consumes approx. 120,000 kWh of electricity each year. This is primarily used to pump the treated water from the Polecat PSWTP to the Header Tank which supplies the Group Water Scheme members. The parameters of this pumping operation are:

- Distance 7.5km
- Lift 78m
- Volume 450 m3/day (average)

The Group Water Scheme (GWS) Co-op sought to reduce both the energy costs and CO2 emissions of the plant by installing a 50kW Solar PV to provide renewable electricity for the pumping operation. Group Water Schemes are a common solution in rural Ireland where a publicly owned water supply system is not available. The GWSs are co-funded by the Irish exchequer and the GWS Co-op members.

The PSWTP site is in a rural location with an open aspect suitable for Solar energy. The current available space owned by the Co-op could facilitate a 150kW Solar PV array. Therefore the Planning Permission allows for expansion of the current 50kW in future phases. The Co-op engaged a number of partners in the project including, Energy Co-operatives Ireland and Veolia as the plat operator and a Project Coordinator to help source appropriate funding to support the project.

The Co-op were initially provided with technical support in SEAI's Sustainable Energy Community (SEC) programme. The Project Coordinator then secured capital funding through the Better Energy Communities (BEC) scheme providing 50% of eligible costs.

The first 50kW Solar PV system was installed and commissioned in Dec 2019. Further work is ongoing to optimise Solar utilisation in balance with the pumping operation. This is the first Group Water Scheme in Ireland to install such a system.

Resources needed

Capital cost of the install was €58K of which 50% was grant funded through the BEC scheme. Other costs were incurred during initial project development and planning in the region of €10K.

Evidence of success (results achieved)

The 50kW Solar PV system has generated 27,000 kWh in its first 7 months of operation (Dec 2019 to June 2020). This represents a reduction of more than 8,900 tonnes of CO2. Any electricity generated which is not used on-site is exported to the national electricity grid. Work is ongoing to optimise on-site utilisation.

Challenges encountered

The current system is configured to use the Solar PV electricity on-site when there is a suitable demand. Any excess Solar PV is exported to the grid but does not provide revenue for the owners or operators of the Water Treatment Plant. Work is ongoing to optimise on-site utilisation by (i) Load Shifting and (ii) Energy storage.

Potential for learning or transfer

The project is transferable to any similar GWS. There are in excess of 5,000 GWS in Ireland alone.

Main institution in charge

Polecat Springs Group Water Scheme

Timescale (start/end date)

Phase 1 (50kW) was completed in 2019.

Further information:

https://www.veolia.ie/media/news-and-press-releases/group-water-scheme-launches-new-solar-energy-project

Biocore Roscommon AD Plant

Roscommon, Northwest, Ireland

Biocore operate this Roscommon based Anaerobic Digestion (AD) plant, taking regional organic wastes to produce 1MW of renewable electricity through CHP generators and producing an organic fertiliser to the Irish agricultural sector.


Aerial view of the AD plant. Photo credit Biocore.

The Biocore AD plant in Roscommon was commissioned in 2017 and includes 2No. 2,500m3 digesters. The plant provides a waste treatment service to regional water utilities and sells electricity to the grid via the Renewable Energy Feed-in Tariff (REFIT). The electricity is generated using the biogas from the AD process in 2No. 500kWe CHP generators. In addition to this the plant produces an organic fertiliser, using waste heat to dry the digestate, which is applied to local agricultural land banks, reducing the use of conventional mineral fertilisers. Bio-Core's strategy for this facility is to shift its energy output from electricity generation to biomethane production. The biomethane produced would be compressed on-site and either transported to an injection facility and/or utilised by HGV/Agricultural vehicles.

Resources needed

Capital costs of €7.5m with electricity exported supported under REFIT

Evidence of success (results achieved)
Annual outputs at the plant:

- C.20,000 tonnes of waste materials treated
- C. 18,000 tonnes of organic fertiliser produced
- C. 7,000 MWh renewable electricity generated

Challenges encountered

-

Potential for learning or transfer

Biogas presents a growing opportunity for Irish Agriculture to reduce the climate change impact

related to agriculture. There are also many environmental and practical benefits. Biogas production is not widely deployed in Ireland, despite Anaerobic Digestion being a commercially available technology, with many thousands of successful installations internationally.

The deployment of AD plants and Biogas at farm-scale has proved challenging in Ireland. There are many barriers to overcome, including knowledge-gaps, and availability of cost-effective solutions at smaller scale, availability of feedstocks and use for the biogas. As the indigenous renewable gas market grows through emerging climate policies, rurally located plants such as Biocore can provide a pathway for farm scale participation including:

- Customers for fertiliser products
- Farm based feedstock supply chains
- Acting as a central biomethane upgrade hub – for grid injection

Main institution in charge

Biocore

Timescale (start/end date)

Construction commenced 2016. Operating since October 2017.

Further information:

https://www.biocore.net/roscommon-ad-plant

McCauley Wood Fuels – Biomass Supply Chain Upgrade

Mohill, Northwest, Ireland

Increased wood fuel processing capacity for growing and variable demand. McCauley Wood Fuels is a biomass wood fuel business based in Co. Leitrim. The growing demand for woodchip biomass could not be sustained by McCauley Wood Fuels' processing capacity prior to availing of funding. LEADER funding supported the purchase of a new mobile biomass wood chipper for this business. This has helped improve the business by providing for larger capacity, and more reliable and efficient wood chipping, as well as giving it greater flexibility. Capacity now exists to chip in accordance to periodic peak demands and this has also opened the option to process smaller lots on-site for local forestry growers.

The growing demand for woodchip biomass could not be sustained by McCauley Wood Fuels' processing capacity. Growing demand requires more reliable and efficient wood chipping, as well as greater flexibility in processing smaller for local forestry growers.

The LEADER Programme part funded investment in improved and more efficient chipping and loading equipment. The LEADER grant provided 50% support to purchase a Kesla Oyj chipper and loader from Oakleaf Forestry. The purchase of new wood chipping equipment has enabled increased reliability, flexibility and provides capacity to meet periodic peaks in demand. It enables the production of high quality woodchip which is required for biomass heating boilers.

Resources needed

LEADER Programme for 2014-2020 has allocated a budget of €250m for Ireland.

McCauley Wood Fuels project cost: €149,668
RDP support €74,834

Evidence of success (results achieved)

This project has allowed McCauley Wood Fuels to expand its client base in the North West region, including a local swimming pool, and a number of local pig and chicken farms. It has also expanded its core base of larger clients. Almost the equivalent value of the new wood chipper has been spent in the local economy in order to source raw material. For example, since January 2018 McCauley Wood Fuels has spent €105,000 on raw materials with its core supplier the Western Forestry Cooperative.

Challenges encountered

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Potential for learning or transfer

The project is a replicable model for local wood fuel supply chains throughout Ireland.

Main institution in charge

European LEADER Association for Rural Development
In Ireland the Programme is managed by the Department of Rural and Community Development, and administered by 29 Local Action Groups (LAGs)
Leitrim Local Community Development Committee

Timescale (start/end date)

The current programme is from 2014 to 2020. A further programme from 2021 is in development.

Further information:

https://www.nationalruralnetwork.ie/leader-case-studies/biomass-supply-chain-upgrade-mc-cauley-wood-fuels/

McCauley wood fuel operations. Photo credit McCauley Wood Fuels.

IB Eggs 50kWp Solar PV Project

Virginia, Northwest, Ireland

Installation of 50kWp Solar PV system for on-site energy use in IB Eggs Free Range Egg Farm, Co. Cavan. The project was supported by the Better Energy Communities (BEC) grant scheme.
Better Energy Communities (BEC) is a national retrofit initiative with grant support of up to €20 million for 2020. BEC supports new approaches to achieving energy efficiency in Irish communities. Upgrades and Renewable Energy installations can take place across building types to reduce energy use and costs throughout the community. The scheme aims to deliver energy savings to homeowners, communities, and private sector organisations. All projects should be community oriented with a cross-sectoral approach, and you must show that you can sustainably finance the proposed project.

AgroRES site visit. Photo credit IT Sligo.

IB Eggs is a free range egg producer with 60,000 chickens, supply fresh eggs to markets across the country. The laying sheds on the farm consume significant amounts of electricity for lighting, ventilation and processing.

The chosen solution for the farm was the installation of 50kWp solar photovoltaic system for the following reasons:

- Solar energy coincides with energy needs during the day
- A solar PV System can provide an effective solution to supply energy during peak demands especially in hot summer months where ventilation demand is higher.
- Solar power generation requires little to no operational and maintenance costs compared to other renewable energy technologies.
- The system size and operation is designed for complete on-site consumption, thereby getting the best value for the investment

IB Eggs engaged with NRG Panel (https://nrgpanel.ie/) to develop the renewable energy project at their site. The project received 30% grant funding towards the capital cost of the solar PV project from the SEAI BEC Scheme.

The BEC scheme is Ireland's national retrofit initiative aimed at upgrading building stock and facilities to high standards of energy efficiency and renewable energy usage, thereby reducing fossil fuel usage, energy costs and greenhouse gas emissions. As part of this initiative, BEC supports new approaches to achieving high quality improvements in energy efficiency within Irish communities. By bringing together groups of buildings under the same retrofit programme, communities projects facilitate community-wide energy improvements more efficiently and cost effectively than might otherwise be possible. The Communities Energy Grant is designed to engage all members of SEAI's Sustainable Energy Community (SEC) network who wish to participate in delivery of energy efficiency works, as well as those Project Coordinators who have previously participated in SEAI Community Energy Grant projects

The BEC scheme is opened on an annual basis and requires a cross-sectoral approach, i.e. applications must include beneficiaries from more than one sector, e.g. private homeowners, private business & public sector.

The scheme is available to all sectors including agriculture and rural projects.

Resources needed

Total BEC Annual budgets vary but are in the region of €20 million to €30m.
For the O'Shea Farms Solar PV project:
- Total project cost €287,500
- BEC Grant amount €57,500

Evidence of success (results achieved)

Annual energy generated = C.45,000 kWh
Expected payback for the investment is 3-4 years
Annual CO2 savings = C.14 tonnes

Challenges encountered

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Potential for learning or transfer

The BEC scheme evolves each year. However there remains significant potential for improvement through continuous assessment, and therefore also potential for learning and knowledge transfer.

Main institution in charge

Department of Communications, Climate Action & Environment (DCCAE)
Sustainable Energy Authority of Ireland (SEAI) – BEC Grant funders
Midland Warmer Homes – Project Managers
NRG Panel – Installers

Timescale (start/end date)

Completed in the 2021 BEC Scheme

Further information:

https://www.seai.ie/grants/community-grants/

Claremorris Community Solar Farm

Claremorris, West, Ireland

4MW Community owned, grid connected, Solar Farm in the West of Ireland.

Claremorris Energy Co-op

The 2015 Energy White Paper recognised the importance of community and citizen participation in the future energy infrastructure of Ireland. Community ownership of energy generation has been very limited in Ireland to date. Renewable energy projects in Ireland have been predominantly led by private developers with minimal community engagement – a situation that has led to community mistrust and objections to such developments. Lisduff Solar Farm empowers the community by retaining control of the development and directing profits from the sale of energy back into the local economy.

Lisduff Solar Farm is located on an 11 hectare site outside Claremorris, Co. Mayo, Ireland and incorporates the following:
- > 34,300 m2 Solar PV array
- C. 4MW Maximum Export Capacity
- Owned by a Community Cooperative on a voluntary basis (>50 members)

This project is being delivered by partnership between Claremorris & Western District Energy Co-Operative, Community Power and Mayo County Council.

The route to project delivery for grid-scale Renewables in Ireland requires 2 key regulatory steps: Step 1 – grid connection, Step 2 – Power Purchase Agreement. The Renewable Electricity Support Scheme (RESS) provides a Feed In Price for renewable electricity over an appropriate contract term. This is the main current mechanism for the sale of renewable electricity in Ireland. In contrast to previous schemes, RESS provides an exclusive category for community-led projects. Lisduff Solar Farm has been successful in the 1st RESS Auction under the Community Category.

The Community category included in RESS supports the findings of years of consultation aimed at gaining public support for more renewables on the Irish grid.

This project has been successful in the 1st RESS auction – this means that this project can now finance itself to completion. Without a Community category projects such as these would have much less chance of success. This community owned project will generate in excess of 3,500 MWh of clean electricity each year during its operational life.

Resources needed

Approx. €4.5m.

Evidence of success (results achieved)
Lisduff Solar Farm has received planning permission, grid connection and has been successful in the 1st RESS Auction under the Community Category. Now that the project has a grid connection and electricity sale agreement, construction will begin in 2021 for completion. In operation this solar farm will generate in excess of 3,500 MWh of clean electricity each year.

Challenges encountered

The community have had to carry the risk and costs of early stage developments such as planning studies & grid connection process. This is a significant challenge for a community with 1 project as opposed to private developers with a pipeline of multiple projects.

Potential for learning or transfer

Claremorris Community Solar Farm is an example of many that are being developed around the country. The Claremorris and Western District Energy Co-Operative was set up five years ago in a bid to develop more community-led projects and promote sustainability in the area.

Main institution in charge

Claremorris and Western District Energy Co-Operative

Timescale (start/end date)

Initial Planning application submitted in 2016. Now that the project has a grid connection and electricity sale agreement, construction will begin in 2021 for completion.

Further information:

https://claremorris-energy-coop.com/

https://www.seai.ie/community-energy/ress/

Small Biogas Demonstration Programme (SBDP)

Midlands & Mid-West Region, Ireland

This project aims to stimulate the deployment of innovative on-farm small-scale biogas production by providing support and a capital contribution to three demonstration projects. Research will assist in understanding how biogas can drive sustainability improvements at farm level.

AD Plant study tour. Photo credit Irbea.

Biogas presents a great opportunity for direct on-farm action to reduce the climate change impact related to agriculture. There are also many environmental and practical benefits. Biogas production is not widely deployed in Ireland, despite Anaerobic digestion being a commercially available technology, with many thousands of successful installations internationally. The handful of biogas production projects in Ireland, tend to be medium to large scale plants, which process a high proportion of non-farm waste and produce electricity for export to the grid under a feed-in-tariff. Farm-scale biogas projects tend to be smaller in size and do not import any off-farm waste. The deployment of Biogas at farm-scale has proved challenging in Ireland. There are many barriers to overcome, including knowledge-gaps, and availability of cost-effective solutions at smaller scale, availability of feedstocks and use for the biogas. There has also been a lack of non-electricity routes to market for biogas. Ireland is starting from a very low base in terms of innovation in deploying small-scale biogas in the agri-sector.

To achieve its goals, the project will pursue the following specific objectives:
1. Develop the capacity of technology providers in delivery of farmscale biogas production;
2. Demonstrate compliance with sustainability criteria in the context of the EU renewable energy directive;
3. Raise awareness amongst the farming community of the increasing challenges of addressing climate change &
4. Demonstrate that the results are widely deployable.

The scheme is available expressions of interest from farmers. 3 beneficiaries will be selected.

Resources needed

The main funding is provided by the Rural Development Programme 2014 – 2020 for Operational Groups. Total budget is €994,273

Evidence of success (results achieved)

The project remains at an early stage of development.

Challenges encountered

The project remains at an early stage of development.

Potential for learning or transfer

There is significant potential for learning and knowledge transfer, both nationally and internationally, to farms of similar scale and type.

Main institution in charge

Irish BioEnergy Association (IrBEA)

Timescale (start/end date)

2019 – 2023

Further information:

https://www.irbea.org/farmbiogas/

Dempsey Poultry biomass heating system

Kiltimagh, Northwest, Ireland

Family run pig & poultry farm in Co. Mayo which has installed Solar PV to reduce reliance on grid electricity and has recently commissioned a Biomass heating system, becoming one of the first poultry farms in Ireland to avail of the Support Scheme for Renewable Heat (SSRH).

150kW Biomass (wood chip) boiler. Photo credit IT Sligo.

Poultry farming is one of the most heat intensive sectors in Irish agriculture. The input and control of heat in chick rearing are crucial to consistent production. Heating in this sector has traditionally been based on fossil fuel systems e.g., oil & gas. While farms generally have the space and technical capability to handle a biomass system, the initial capital cost can be prohibitive. The Support Scheme for Renewable Heat (SSRH) offers an operational support to significantly reduce running costs for biomass systems.

The SSRH was launched in 2019 and has been delayed in its early deployment through 2020. The SSRH has been designed based on the lessons learned in other jurisdictions. This has resulted in some early stage challenges. The Dempsey family farm has been a pioneer of the scheme, becoming one of the first installations to complete the process through to commissioning and have been central to addressing these early challenges.

Resources needed

€300 million for the rollout of the scheme for the period up to 2027.

Evidence of success (results achieved)

Dempsey Farm biomass system:

- 2 x 150kW biomass boilers with 10,000 litre buffer tank supplying the total heating needs for the poultry houses
- Wood chip supplied by McCauley Wood Fuels
- Total energy use C. 560 MWh/year
- SSRH provides an operational grant of C.€23K per year which greatly reduces the wood chip fuel costs for the farm

Challenges encountered

The SSRH operational tariffs provide higher incentives for the lower heat use scale up to 300 MWh/year. This would suit nursing homes, small hotels, leisure centres and poultry farms. However, such organisations are less likely to have the capacity to address the complexity of a biomass heating installation as opposed to an oil or gas solution.

Potential for learning or transfer

As a pioneer of the scheme, the Dempsey Farm can demonstrate the challenges at the farm/user end.

Main institution in charge

Department of Communications, Climate Action & Environment (DCCAE)
Sustainable Energy Authority of Ireland (SEAI)
Biomass Engineering – Design & Installation

Timescale (start/end date)

The SSRH application process began in 2019 when the scheme opened and commissioned the biomass system in 2020. The system was designed and installed by Biomass Engineering (https://biomassengineering.ie/)

Further information:

https://biomassengineering.ie/first-ssrh-project-commenced/

https://www.teagasc.ie/publications/2021/lets-talk-poultry-webinar---the-ssrh---planning--implementation.php

Targeted Agricultural Modernisation Schemes (TAMS) – Dairy Equipment Scheme

Ireland

Targeted Agricultural Modernisation Schemes (TAMS) – Dairy Equipment Scheme.

The Targeted Agricultural Modernisation Schemes (TAMS) are a grouping of capital grant schemes designed to incentivise private investment in physical farming assets as part of the Rural Development Programme (RDP) 2014-2020. Investments are carried out under measure four, "investments in physical assets", of the RDP with the objective of improving the economic and environmental performance of agricultural holdings.

The objective of the Dairy Equipment Scheme is to encourage, in particular, new entrants/young farmers in milk production by providing them with a level of support to meet the considerable capital costs associated with establishment of their enterprise and ensuring that they have the most up-to-date technology available to compete in the modern dairy sector.

The scheme supports the full range of dairy equipment including energy efficient water heating. Grant aid of up to 40% of eligible costs is provided subject to a maximum eligible investment of €80,000, or €160,000 in the case of a joint application by two partners under a registered partnership.

The scheme is available to all farmers with a Department identifier and who have a minimum of 5 hectares of "eligible land" owned and/or leased or rented which have been declared under the Basic Farm Payment Scheme or equivalent.

Resources needed

The total allocated budget for TAMS II is €395 million under the 2014-2020 RDP. TAMS II is partially funded by the European Union, under the European Agricultural Fund for Rural Development (EAFRD) fund, at a contribution rate of 53%.

The Dairy Equipment Scheme is allocated €50m (12.7% of the total budget).

Evidence of success (results achieved)

Case studies of heat pumps installations are available.
https://www.youtube.com/watch?v=-ft8KfVSqfU

Challenges encountered

The stated objective of the Dairy Equipment Scheme is to encourage new entrants/young farmers in milk production. As such it does not specifically target energy efficiency or renewable energy. The dairy industry is also subject to considerable market fluctuations.

Potential for learning or transfer

The scheme is a small part of the TAMS. TAMS is now in it's second phase (TAMS II) with a review expected in 2020/2021. Therefore there is significant potential to learn more and inform future scheme design e.g:

- How can the scheme promote renewable energy uptake that aligns with our Climate Action Plan targets?

Main institution in charge

Department of Agriculture, Food and the Marine (DAFM)

Timescale (start/end date)

2014 / ongoing

Further information:

https://www.agriculture.gov.ie/farmerschemespayments/tams/tamsiidairyequipmentscheme/

Finian O'Harte Poultry biomass heating system

Monaghan, Northwest, Ireland

Finian O'Harte continues generations of running the family farm in Co. Monaghan. The poultry farm had replaced it's direct fired gas heating system with a new heating system, becoming one of the first poultry farms in Ireland to avail of the Support Scheme for Renewable Heat (SSRH).

Biomass (wood chip) boiler. (https://www.chpmechanical.com/case-studies/finian-oharte/)

Poultry farming is one of the most heat intensive sectors in Irish agriculture. The input and control of heat in chick rearing are crucial to consistent production. Heating in this sector has traditionally been based on fossil fuel systems e.g., oil & gas. While farms generally have the space and technical capability to handle a biomass system, the initial capital cost can be prohibitive. The Support Scheme for Renewable Heat (SSRH) offers an operational support to significantly reduce running costs for biomass systems.

The SSRH was launched in 2019 and has been delayed in its early deployment through 2020. The SSRH has been designed based on the lessons learned in other jurisdictions. This has resulted in some early stage challenges. The O'Harte family farm has been a pioneer of the scheme, becoming one of the first installations to complete the process through to commissioning and have been central to addressing these early challenges.

The O'Harte farm holds 175,000 chickens in each batch, processing multiple batches per year. The heating system for the operation consumes approx. 850MWh per year.

Resources needed

€300 million for the rollout of the scheme for the period up to 2027. The O'Harte Farm capital investment is C.€270K for the new biomass heating system.

Evidence of success (results achieved)

O'Harte Farm installation:
- 500kW biomass boilers with 10,000 litre buffer tank.
- SSRH provides an operational grant of C.€27K per year which greatly reduces the wood chip fuel costs for the farm.
- Total energy cost savings on the farm are C.€49K per year, providing a payback in less than 6 years and a significant 150t reduction in CO2 emissions per year.

Challenges encountered

The SSRH operational tariffs provide higher incentives for the lower heat use scale up to 300 MWh/year. This would suit nursing homes, small hotels, leisure centres and poultry farms. However, some organisations are less likely to have the capacity to address the complexity of a biomass heating installation as opposed to an oil or gas solution.

Potential for learning or transfer

As a pioneer of the scheme, the O'Harte Farm can demonstrate the challenges at the farm/user end.

Main institution in charge

Department of Communications, Climate Action & Environment (DCCAE)
Sustainable Energy Authority of Ireland (SEAI)
CHP Mechanical Services Ltd. – Design & Installation

Timescale (start/end date)

The SSRH application process began in 2019 when the scheme opened and commissioned the biomass system later that year. The system was designed and installed by CHP Mechanical (https://www.chpmechanical.com/)

Further information:

https://www.chpmechanical.com/case-studies/finian-oharte/

Targeted Agricultural Modernisation Schemes (TAMS) – Pig & Poultry Investment Scheme

Ireland

Targeted Agricultural Modernisation Schemes (TAMS) – Pig & Poultry Investment Scheme.

The Targeted Agricultural Modernisation Schemes (TAMS) are a grouping of capital grant schemes designed to incentivise private investment in physical farming assets as part of the Rural Development Programme (RDP) 2014-2020. Investments are carried out under measure four, "investments in physical assets", of the RDP with the objective of improving the economic and environmental performance of agricultural holdings.

The Pig & Poultry Investment Scheme covers investment in more energy efficient technology, water meters, solar panels and medicated water feeds for the pig and poultry sectors. It is noted that increasing energy costs have significantly impacted these two sectors in recent years. The purpose of this scheme, therefore, is to address this. Depending on the individual investment item in question, the scheme is expected to have a secondary impact on animal welfare, environmental impact and economic competitiveness.

The scheme will support installation of Solar Thermal, Solar PV, Heat Pumps and Heat recovery projects with a grant aid of up to 40% of eligible costs.

The scheme is available to all farms in the pig and poultry sectors subject to the following:
- Maximum 11kW Solar PV system is grant aided
- Self-consumption for on-farm use only

Resources needed

The total allocated budget for TAMS II is €395 million under the 2014-2020 RDP. TAMS II is partially funded by the European Union, under the European Agricultural Fund for Rural Development (EAFRD) fund, at a contribution rate of 53%.

The Pig & Poultry investment scheme is allocated €17m (4.3% of the total budget).

Evidence of success (results achieved)

Case studies of heat pumps and Solar PV installations are available.

Challenges encountered

-

Potential for learning or transfer

The scheme is a small part of the TAMS. TAMS is now in it's second phase (TAMS II) with a review expected in 2020/2021. Therefore there is significant potential to learn more and inform future scheme design e.g:
- Is the incentive enough to promote greater uptake?
- Does the scheme foster interest in energy generation for supply?

Main institution in charge

Department of Agriculture, Food and the Marine (DAFM)

Timescale (start/end date)

2014 / ongoing

Further information:

https://www.agriculture.gov.ie/farmerschemespayments/tams/pigandpoultryinvestmentscheme/

Photo credit Fabio Grandis, Pixabay

LAZIO, ITALY

Lazio is one of the main production engines of the country, with a GDP of € 198 billion. Overall, Lazio shows good performance for most of the indicators compared to the national objectives of the Europe 2020 strategy. Public spending has already reached and exceeded the national target. On the national scene, the agricultural sector accounts for 6.7% of greenhouse gas emissions and is responsible for 40% of methane emissions and 49% of nitrous oxide (Ispra, 2012).

In line with “Europe 2020” - the strategy for the economic and social growth of EU countries launched by the European Commission (2010) - and with the provisions of the National Bioenergy Sector Plan, the development of the agro-energy supply chain is fundamental.

The agricultural sector remains one of the fundamental sectors for the Lazio economy too.
The sector is characterized by a strong push towards the implementation of new agricultural and rural development models based on safeguarding the balance of the natural environment, on the development of typical agricultural productions, on the recovery of internal and residual areas and on the enhancement of territories to tourist purposes.
Renewables are constantly growing: photovoltaics went from 150 to 1,750 Gwh, wind from 15 went up to over 110 GWh, bioenergy from 100 to 700 Gwh but total production still comes from fossil sources for 84.7 %, due to the presence of mega plants starting from the coal-fired one in Civitavecchia.
The production of energy from renewable sources is only 15.3% (national average over 35%) and the presence of mega-plants, starting from the Civitavecchia plant, weighs heavily on this figure.
There is a need for an energy revolution in Lazio, with wind and photovoltaics on the roofs, low enthalpy geothermal energy, self-consumption, distributed production, efficiency, green mobility.
If you want to know more about the potential of this region, read the Regional Self-Assessment from Regione Lazio.

An Organic and Multifunctional Closed Cycle Farm: Energy, Food and Culture

Cittaducale, Lazio, Italy

Organic and multifunctional closed cycle farm, with energy supply through photovoltaic and biomass.

Photovoltaic plant

LAZIO, ITALY

Tularù is an organic and multi-purpose closed-cycle farm located 850 meters above sea level, in a mountain area 15 km from Rieti in north part of Lazio Region, between the valleys of the Salto and Velino rivers.

The property is 60 Ha, 30 of which are woodland, 30 of which are directly managed by the farm.
The company activity is based on the primary production of ancient cereals, vegetables, fruit and wild fruit and on breeding of cattle and chickens grown in a natural way exclusively with grass and hay.

In order to achieve significant savings in terms of expenses incurred, the farm Tularù has implemented the following closed-loop system:

- Production of photovoltaic energy
  - Photovoltaic panels on a roof (6 kw) in energy exchange

- Production of thermal energy
  - Termal storage: with 800 liter boiler without coil in series and with 600 liter boiler with coil for the production of domestic hot water, powered by solar panels mounted on the roof with east-west exposure;
  - Inverted flame wood stove (gasification) of 35 kw;
  - Thermal composting: system of about 30 cubic meters, from branches wood chips, pruning waste and forest cleaning.
  - Pyrolysis: a wood-fired oven, which produces "biochar" as a byproduct, which, enriched with biofertilizer, guarantees excellent health for farm crops.

The main direct beneficiary of the practice is the farm itself, which has created a chain of ancient Rieti grains involving 9 other farms, 1 local pasta factory and 2 ovens (stakeholders).

Resources needed

Own resources
- Thermal system € 6,000

Public funds
- Photovoltaic € 10,000 - Measure 6.1 of the Rural Development Programme of the Lazio Region 2014-2020
- Thermal system € 18,000 - "Conto Energia" (Energy account) 2.0 - introduced with EU Directive 2001/77/EC

Evidence of success (results achieved)

The practice has developed a renewable energy supply mainly for self-consumption. The activity of this organic farm is significantly oriented towards multifunctionality. By the discovering of the supply chain of ancient local grains Tularù has been able to involve part of the local community to the objectives of sustainable agriculture. Moreover, through the restaurant and agritourism activity, this farm could also promote a sustainable tourism with a socio-economic impact on the rural community.

Building thermos compost, Tularù has added to the wood produced within the farm also that of the pruning companies of the nearby cities (Rieti, Cittaducale) forming a circular economy chain.

Challenges encountered

For the composting system to work properly, the humidity of the compost pile must be between 60% and 75%. Excessive humidity in case of constant rain, in fact, risks suffocating the bacteria, compromising the composting process for a long period. The construction of a good draining base (a layer of stones or a spiral of corrugated pipe), the insertion of aerating elements and access to a water source, preferably rainwater, are essential.

Potential for learning or transfer

Thermal composting is built with pruning waste and forest cleaning, which are composted and the heat produced by micro-organisms is used. This method guarantees a constant production of heat and the waste material the end of the cycle constitutes an excellent soil improver for horticulture, with excellent water savings and better plant health. When the camping service was active, this thermal composting produced enough hot water to ensure the proper functioning of the outdoor showers used by about 750 campers. It was surprising both the continuity of hot water production at 55 degrees and the ability to retain water once the compost material was transferred into the ground.

Main institution in charge

Tularù

Timescale (start/end date)

Year of implementation 2018

Further information:

http://www.tularu.it
info@tularu.it
+393286666038 – +393471077789

Maccarese Agricultural Company: from animal farming to energy production

Maccarese – Fiumicino – Roma, Lazio, Italy

Production of electricity from two biogas plants fed by by-products derived from animal farm, such as effluents and feed waste, and from dedicated biomass.

Biodigester biogas plants. Photo credit Maccarese S.p.A.

Biogas plant 999 kW plan detail. Photo credit Maccarese S.p.A.

300 kW Photovoltaic plant on stable roof. Photo credit Maccarese S.p.A.

20 km North of Rome, the Maccarese farm, founded in 1930 and privatised in 1998, is the largest in Italy with its 3240 hectares of flat land. The farm's prevalent productive address is fodder-zootechnic with production of cereals and fruit. Inside the farm, in an area of 16 hectares, there is the largest dairy cow breeding in Italy: 3,600 selected cows of the Friesian breed, with 1250 lactating cows, for the daily production of 48,000 litres of milk. Adhering to the plan promoted by the Government in favour of RE, the farm realized two plants for the production of electricity from biogas: 1) Built in 2010; with a power of 625 Kw, it is able to produce 4.500.000 Kw net/year. It uses cattle slurry (mc 130/day) and silage (22 tons/day). Articulated on two circular digesters with a diameter of 24 m. by 9 m. of height, it is equipped with a preloading tank, a torch, a feeding system for the loading of silage and uses a Jenbacker j312 engine;. 2) Built in 2012, it has a power of 999 Kw.It is fed exclusively with cereal silage, and is able to produce 8,750,000 Kw net/year. Articulated on three digesters, it is equipped with an overloading tank, a torch, a feeding system for loading silage and uses a Jenbacker j416 engine.

The liquid digestate,, deprived of any odor, is spread on the fields as a soil improver, while the solid part is used as litter for adult cattle and then as a soil improver.

The main beneficiary is the farm itself but also the whole community.

Resources needed

These plants were built with the company's own funds (€ 6 mil) and benefit from national incentive policies pursuant to Article 2 par 145 of Law 244/2007. This law allows companies to benefit from a fixed all-inclusive tariff for the electricity produced with RE and fed into the operator's network (0.28 €/kw).

Evidence of success (results achieved)

In 2019, the first plant produced 4,732,667 gross kw per year with an engine efficiency of 97.80 % or 8573 hours of operation per year with a 6 % self-consumption of energy for the operation of the plant.

In 2019 the second plant produced 8,203,909 gross kw per year with an engine efficiency of 99.18% equal to 8688 hours of operation per year with a percentage of 7% self-consumption of energy for the operation of the plant itself.

LAZIO, ITALY

Challenges encountered

-

Potential for learning or transfer

Biogas plants, besides being a model of circular economy, bring to the environment important advantages such as the reduction of the diffusion in the atmosphere of methane naturally produced by cattle droppings and help to support the development of sustainable agriculture as using digestate for the improvement of soil fertility reduces the use of chemical products.

The attention to the environment on the part of the company is then confirmed by the attention to biodiversity in the conservation of 200 hectares of Mediterranean maquis constituting a naturalistic oasis.

Finally, the company preserves important historical buildings (Castle of San Giorgio and the Spring Tower of 16th century) and in its spaces there is also the headquarters of Biodiversity International, the FAO research institute

Main institution in charge

MACCARESE spa

Timescale (start/end date)

Gennaio 2010 Biodigestor plant- Agosto 2012 Photovoltaic plant/ongoing

Further information:

http://www.maccaresespa.com

The development of renewable energies in the Rural Development Program 2014-2020 of the Lazio Region

Rome, Lazio, Italy

The Rural Development Programme, or RDP, is the main operational programming and financing instrument for agricultural, forestry and rural interventions in the region.

Regione Lazio

The RDP defines at regional level the strategic priorities deriving from the national and Union (CAP) priorities and defines them according to the needs of its territory.

The RDP strategy for the development of renewable energy in agriculture is:

- Promote the improvement of the competitiveness of agriculture through the adoption of processes and / or systems of energy efficiency and production of renewable energy for self-consumption and / or marketing incentivized to the network manager and enhancement of products, by-products and company residues.
- Contribute to the sustainable management of natural resources and mitigate the action of fossil fuels on the climate.
- Promote the diversification of primary activities towards complementary activities in order to increase the income of agricultural entrepreneurs (Multifunctional Agriculture).

The energy consumption of agriculture and the forestry sector of the Lazio Region is higher than the national and European average. Although energy consumption accounts for only 3% of total regional final one, it is considered particularly susceptible to development initiatives for both renewables and energy efficiency as opportunities for technological progress, sustainable exploitation of local resources and relaunching the economy of companies in the sector to encourage restructuring and modernisation.

The RDP main actions for the efficiency and use of renewable energy in agriculture are as follows:
4.1.3 - Investments in individual farms to improve the energy efficiency of production processes.
4.1.4 - Investments in individual farms for the supply/use of renewable energy sources, by-products, waste and residues and non-food raw materials.
4.2.2 - Investments in agri-food enterprises, aimed at improving energy efficiency.
4.2.3 - Investments in agri-food enterprises for the production and supply of energy from renewable sources.
6.4.2 - Production of energy from alternative sources.
Among these, we would like to highlight measure 4.1.4, which supports tangible and/or intangible investments aimed at building plants for the production and distribution of energy from renewable sources using biomass and other renewable energy sources, intended for the production of electricity and/or heat, mainly using photovoltaic solar energy; Action 7.2.2 Investments in public body to promote the supply and use of energy from renewable sources for self-consumption, suitable for the public bodies in Lazio, has also received many requests for financing (178).

Resources needed

Actions 4 and 6 : Applications submitted 232 intervention amount € 42,691,324.26.

Details:

Actions	Applications	Intervention
4.1.3	4	€ 322.967,34
4.1.4	128	€ 15.769.307,35
4.2.2	26	€ 12.160.740,97
4.2.3	3	€ 2.262.034,31
6.4.2	71	€ 12.176.274,29

Actions 7.2.2: Applications submitted 178 - intervention amount € 29,129,678.11

Evidence of success (results achieved)

The success of the 4.1.4. action is highlighted by the numbers: with a total investment of € 15,769,307.35 and 128 applications submitted, it represents a success in terms of participation and investments made.

Out of 39 applications submitted for the first tender almost completed, 29 have already had access to funding. 74%, therefore.

In the second call for proposals, 88 applications were received, which are still under investigation and if the same trend continues at the end of the second call for proposals, it is expected that 65 other companies will receive the funds, bringing the total to more than 100 funded applications.

Challenges encountered

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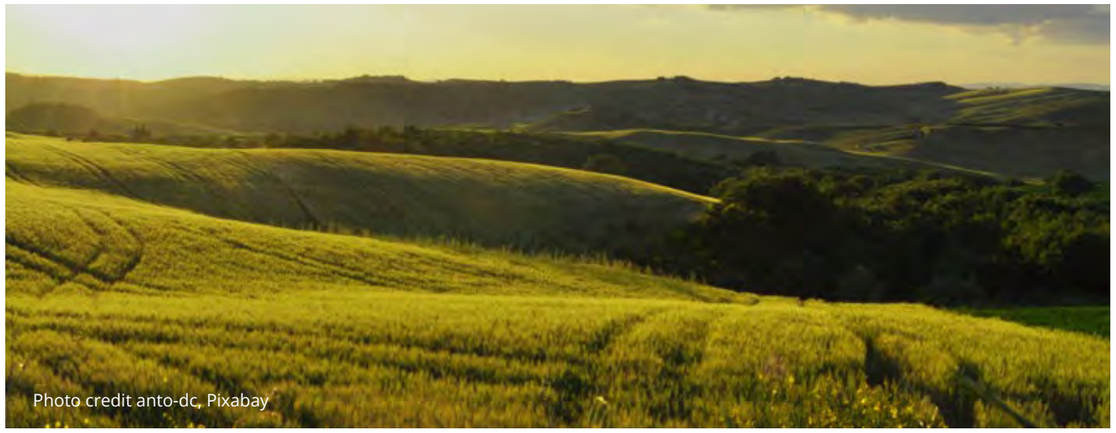
Photo credit anto-dc, Pixabay

Potential for learning or transfer

The regional network, with all the actors involved between authorities and companies, has worked very well.

The regional administration has allowed with a great deal of staff work the correct execution of the call for proposals, which has guaranteed amounts for almost all the funding. It has arrived with good publicity to a large number of companies that have been put in a position to access the funds that will allow them to build plants for the production and distribution of energy from renewable sources using biomass and other renewable energy sources, intended for the production of electricity and/or heat, mainly using measure 4.1.4. on photovoltaic solar energy.
The applications found to be inadmissible are a minority part of the totality.

Main institution in charge

Regione Lazio

Timescale (start/end date)

2015- ongoing

Further information:

http://www.lazioeuropa.it/psrfeasr

Energy efficiency in Rome agrifood market (CAR)

Guidonia Montecelio (Roma), Lazio, Italy

CAR is a complex structure with different structures, facilities and services that has managed to apply energy efficiency measures savings both in economic and environmental terms.

CAR - Centro Agroalimentare Roma

CAR, a consortium company (private and public capital), is one of the most important fruit, vegetables and fish market in Europe. Covering a total area of 140 hectares, it has about 270,000 square meters of covered areas. CAR needs a large amount of electricity (about 22 GWh/year) and of Natural Gas (about 200,000 Sm3 /year), for lighting, heating, water pumping and refrigeration products. That is why It has planned to develop an energy strategy, through an Energy Management System (EMS), aimed at ISO 50001 certification.

The Campus has several photovoltaic plants producing about 4.5 MW. This allows Car to be as SEU. SEU acronym for Efficient User System a system in which one or more plants of production of electricity (with a total capacity not exceeding 20 MW are directly connected to a consumption unit and aimed at energy supply of the consumer himself.

A complete monitoring system (Building Management System) of all energy vectors, necessary for measurement and control, has been implemented.

A series of energy efficiency activities have been undertaken related to some utilities offered (insulation, cooling, air conditioning and lighting) that have gradually reduced electricity consumption from 23.4 GWh in 2016 to 20 GWh in 2019, despite the expansion of the facilities (new warehouses).

The two largest GAS heat generators have been replaced for heat production and heat pump machines of equal power have been installed.

Efficiency policies have also been used for the use of drinking water as well as for industrial water, allowing here too a decisive containment of costs and waste.

The principle stakeholder the 400 companies that have their operational headquarter in the structure.

Resources needed

No costs have been incurred for photovoltaic systems that are not owned but which have allowed significant savings (Legislative Decree no. 102/2014 of 4 July 2014, which implements the Directive 2012/27/EU).

Evidence of success (results achieved)

The recognition as SEU, obtained in 2017, allows CAR to reduce electric network charges to 5% instead of the 55% due. The economic advantage obtained from this is around 100,000 €/year.
Thanks to the policy of raising the awareness of its users and the energy efficiency activities carried out on buildings, large reductions in the consumption of drinking and industrial water have been achieved.

CAR is now working to be able to implement, maintain and improve an SGE in accordance with the requirements of ISO 50001.

Challenges encountered

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Potential for learning or transfer

The special vocation of the CAR with regard to the management of precious and sensitive assets, such as fruit, vegetables and fish, commits it to promoting an its own sustainable development strategy.

The CAR, as a reference agro-food centre on the national and European territory, has decided to undertake a path to improve its environmental impact and energy efficiency. This path, which is still in progress, can be an example for similar realities in Europe.

Main institution in charge

CAR - Centro Agroalimentare Roma

Timescale (start/end date)

2015 – ongoing

Further information:

https://www.agroalimroma.it/

AGROENER - Energy from agriculture: sustainable innovations for the bioeconomy

Rome, Lazio, Italy

Agroener is an applied research project that studies the efficiency of agricultural machinery and the developpment of biomass and biogas supply chain, disseminating the results achieved.

Uniconfort Global 30 biomass boiler 350 kWth.

Control system and combustion chamber with moving grate.

Detail of combustion chamber with mobile grill. Photo credits Gallucci Francesca.

CREA (Council for Research in Agriculture and Analysis of Agricultural Economics) is the main Italian research body dedicated to agri-food chains with legal personality under public law, supervised by the Ministry of Agricultural, Food and Forestry Policies (Mipaaf). It enjoys full scientific, statutory, organizational, administrative and financial autonomy.It has 12 research centers, 6 of supply chain and 6 transversal, present in a capillary way on the national territory. CREA is implementing the Agroener project. The project consists of 5 work packages in addition to the coordination activity: 1) Improvement, development and promotion of energy efficiency of machinery, agricultural equipment and mechanization; 2) Development of solid agroforestry biomass supply chain; 3) Development of the biogas supply chain; 4) Biorefineries integrated in agri-food production cycles; 5) Implementation of experimental plants, demonstrations and dissemination.
The research done is detailed on the project website (http://agroener.crea.gov.it/avanzamento.html) as well as the transfer, training and communication activities.

The project makes use of 25 external collaborations that also include companies as well as research institutes. Both of them fall into the category of project stakeholders together with farmers and the community as a whole.

Resources needed

The project is funded by the Ministry of Agriculture, Food and Forestry with a contribution of € 4,344,813.00 (Decree n. 26329 of of April 1st 2106). There are 55 researchers, 14 operational units, 25 collaborators and external bodies working on the project.

Evidence of success (results achieved)

The project fully addresses the main aspects of the use of renewable energy in agriculture from the perspective of a science closely related to the operational aspects of the agricultural sector.It is interesting to note that Agroener has also focused its research on the reduction of absolute levels of consumption without which every effort seems, in the long term, destined not to produce the expected results.

Challenges encountered

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Potential for learning or transfer

The results of the research lines and the consequent transfer and dissemination activity foreseen in the project may be of interest for the whole Europe especially where the concept of “producing more with less” can be proven in the identification of new agronomic techniques related to the hypothesis of sustainable intensification.

Main institution in charge

CREA - Consiglio per la ricerca in agricoltura e l’analisi dell’economia agraria

Timescale (start/end date)

09/06/2016 – ongoing

Further information:

http://agroener.crea.gov.it

Cogeneration from biogas of an agrozootechnical company

Sutri (Viterbo), Lazio, Italy

Cogeneration plant for the production of electrical and thermal energy, with an electrical power of 750 kW, fueled by biogas obtained largely with the company's livestock waste.

BRUNI ENRICO E ALDO SOC. AGR. S.S.

The company covers an area of 200 hectares used for corn, sorghum and ryegrass production for feeding cattle and partly for silage for energy use.
The farm is made up of 600 cattle.

The biogas plat is composed by two anaerobic digesters, fed with a mix of organic matrices, mostly from the farm, and from a short supply chain for the rest. Anaerobic digestion takes place in two reactors, of 1,100 m3 each, and their feeding changes according to the matrices: mechanical (loading shovel) for the solid ones, hydraulic with pumping systems for the liquid ones (vegetation waters) and semi-liquid ones (sewage). The feeding is managed by a computerized system that regulates the flow of matter to the digesters on a daily basis. The biomass remains in the reactors for about 50 days. The biogas is produced in a mesophilic regime (about 40°C), the heating of the digesters is obtained thanks to the recovery of the electricity generators' cooling heat and maintained by an efficient insulation system of the reactors. After undergoing a chemical-physical-biological cleaning, the biogas, with a methane content of 55-60%, feeds three generators with internal combustion engines of 250 kWe each, to produce electrical and thermal energy.

Most of the electricity is sold to the national transmission network, about 3% of the electricity produced is self-consumed in the company for the handling of the organic matrices and the hydraulic loading. The thermal energy, in the form of hot water at 85°C, is produced by recovering the cooling heat of the generators and the exhaust fumes; it's totally consumed in the company.

The solid and liquid digestate produced is used in the company to restore the organic substance in the soil. About 50% of the thermal energy produced during the winter is destined to the digesters' thermoregulation.

The biogas production process is wet and uses part of the generation heat produced by the prime movers of the generators. The practice is of absolute benefit because it can be easily inserted in the process of managing and disposing of wastewater and nitrogen in medium and large livestock farms, allowing them to transform into great advantages what represents only disadvantages and costs to them. The practice in question was implemented to produce electricity using largely the company's livestock manure. In addition to the electricity production, the biogas plant allows a strong reduction in the volume of livestock waste to be disposed of, its odorous power and nitrogen emissions into the atmosphere.

The process of generating electricity is enhanced by the simultaneous production of heat which, a part is used in the anaerobic digestion process in digesters, and the rest is made available for company use. The amount of electricity produced by the biogas plant is usually higher than the average business needs of the average and large typical livestock farm, and therefore allows an important portion of it to be fed into the national grid.

The beneficiaries of the practice are, first of all, the company, but also the environment and the entire community.

Resources needed

The initial investment cost of € 600,000 for the construction of the plant, was supported for a share of € 200,000 from regional funding (PSR 2007-2013 AXIS 3, MEASURE 311 "Diversification into non-agricultural activities"). For the second cogeneration group's purchase the Company participated in the ENAMA-Mi-PAAF tender.

The Company benefits from the All-inclusive Rate (0.28 € / kWh) reserved for plants fuelled by biogas with a power of less than 1 MW (Article 2 paragraph 145 Finance Law No. 244/2007).

Plant costs: € 2,400,000
Operating costs: € 60,000 / year
Raw material costs: € 300,000 / year
(agro-industrial residues, transport and diesel)
Digestate disposal costs: none

Evidence of success (results achieved)

The practice can be considered excellent because it has brought immediate benefits, evincible from the energy fed into the national grid and the resulting revenues.

On average, every year the biogas plant in question is able to feed over 4,000,000 kWh of electricity into the national grid, almost uniformly in the various periods of the day and week.

Challenges encountered

The challenge faced and the lesson learned is represented by the need to always keep the plant and the cycle of biogas production and waste management efficient.

The other aspect is the improving in the company's workers' skills, dedicated to operating the plants: they have had the opportunity to grow because they have learned to manage more technologically advanced systems than those usually found in livestock farms.

Potential for learning or transfer

The implemented practice is potentially advantageous because it optimizes the cycle and the management costs of wastewater of the medium and large livestock farm and allows generating profits thanks to the introduction into the national grid of the electricity produced with the biogas plant.

It increases its technological level, it improves its economic stability on the market and its competitiveness, especially towards European Union companies, while respecting and protecting the environment.

What's more, the necessary investments affect important and fundamental national sectors for innovation, growth and technological evolution of the Lazio Region and the Nation.

Another extremely important aspect is the reduction in the use of fossil fuels to produce electricity, to the benefit of reducing CO2 emissions and environmental pollution.

Main institution in charge

BRUNI ENRICO E ALDO SOC. AGR. S.S.

Timescale (start/end date)

START DATE 2009

Further information:

-

A cow's milk processing company in 2020: quality, territoriality, sustainability, short supply chain

Nepi (VT), Lazio, Italy

IPA's sustainable "zero emissions" policy has led to the construction of a photovoltaic plant and above all a 0,25 MW biogas plant that contributes to minimising CO2 emissions into the atmosphere by producing electricity and thermal energy through the exploitation of waste from agricultural and agro-industrial activity.

I.P.A. S.r.l. Industria Prodotti Agroalimentari

I.P.A. s.r.l. is a cow's milk processing company that processes on average 100,000 litres of milk per day. The plant has 6000 square meters of covered structures set in 170 hectares of farm, an internal dairy of 2000 square meters, fresh lines, UHT lines with sterilizer, loading platforms, offices, laboratories.

In its path of sustainability, the company has replaced the heat generators of the heating plant with high efficiency and heat recovery models, 2 x 450 kWt, together with the use of photovoltaic systems installed in a coplanar way on the roofs of the company's buildings (300 kWp).

Ipa uses a fully eco-sustainable integrated production method, thanks to the adoption of a modern biogas plant (250 kW of electricity) currently under construction, fed largely with by-products and waste from processing and transformation of the company's production activity: an expression of care for the environment and attention to preserving precious natural resources.

The practice in question has been implemented to improve the aspects related to the energy costs of production, the company's competitiveness on the market, the company's energy efficiency and CO2 emissions, and achieves the objectives by reducing the energy needs of production and consequently the energy costs.

Biogas plant also allows you to produce energy using the company's processing waste, bringing the double benefit of generating energy and reducing

costs and consumption for the disposal of waste. In conclusion, this whole process has the company as its primary beneficiaries, but also the environment and the entire community.

The electricity that biogas plant can produce, when fully operational, can be estimated at approximately 1.000.000 kWh per year.

Resources needed

The financial resources used amount to about € 800,000.00, part of which (43,12%) was financed by FEASR - PSR Lazio 2014-2020.

Evidence of success (results achieved)

Together with the immediate benefits for the company, which are demonstrable from the reduction of energy costs, concrete proof is provided:

- from the measurement of fossil fuels used for the production of thermal energy, which was lower than the previous periods due to the improved efficiency of the installed systems;
- from the measurement of electricity withdrawn from the national grid, which was also lower thanks to the use of that self-produced in the company with the photovoltaic system (with the next activation of the biogas system the situation will further improve).

With the activation of the plants described in this practice the advantages for the environment and for the community of Nepi, deriving from the use of biogas, are significant:

- equality between CO2 emitted and absorbed: the carbon dioxide emitted by the combustion of biogas is the same as that taken by animals indirectly through plants;
- methane (the main component of biogas and naturally produced by the decomposition of plants and sewage) is physically trapped, preventing its diffusion in the troposphere: methane is one of the most powerful and dangerous greenhouse gases;
- renewable electricity production: 1000 kw/h per year will be used entirely in the company for self-consumption;
- production of renewable thermal energy thanks to the cogeneration process of generating electricity from the biogas plant: about 100 kW;
- possibility to use a natural fertilizer purified from polluting components.

Challenges encountered

-

Potential for learning or transfer

The lesson learned is the need to measure and store the consumption of energy carriers and the energy needs of the various production phases in order to demonstrate any targets achieved and/or distance from them.

Another important aspect concerns the improvement of the skills of the company's workers, who have had the opportunity to grow as they have learned to manage plants that are technologically more advanced than the previous ones.

The project implemented not only reduces the energy cost and therefore the production cost incurred by the company, but also increases its technological level, improves its economic stability on the market and its competitiveness while respecting and protecting the environment.
It is important to combine words such as environment, localisation, competitiveness, permanent training and quality in the perspective of the European Green New Deal and that is what this project has succeed in.

Main institution in charge

I.P.A. S.r.l. Industria Prodotti Agroalimentari

Timescale (start/end date)

2019/Ongoing

Further information:

http://www.ipa-alimenti.it/

From the ancient waters of the Latin lands to a modern 400 Kwp photovoltaic plant

Sezze (LT), Lazio, Italy

Installation of 1539 solar panels and 20 inverters on the roof of the warehouse of the San Lidano cooperative.

San Lidano soc coop agricola arl

Founded on 1997 in the heart of "Agro Pontino" (the fruitful lowland Southern of Rome saved from the waters by centuries of land reclamation), San Lidano is today a Producers Organization with more than 60 member farmers specialized in the production of pretailed vegetables of IV range ready to use and /or to eat.

Exponential growth required a more energetic consumption, when it was necessary to increase storage cells with temperatures constantly lower than 8°c on any day and with new machinery for washing and drying vegetables.

Kw/h consumptions in 2019 were 5,497,729 KW/h.

The photovoltaic plant for the year 2019 has produced 468,510 kw/h including about 10% of the energy requirements.

the installation has a power of 400.14 kwp, partly covering the shed surface with 260 Wp Benq solar panels with Solaredge inverter model SE17000-EUR three-phase including P600-MC4-RM optimisers.

Resources needed

The plant had a total cost of € 507,232.91, of which € 177,531.51 was financed by the European Agricultural Fund for Rural Development and the Lazio Region, within the scope of the energy efficiency aid from Renewable sources - Action 4 (35% public contribution 65% cooperative investments).

Evidence of success (results achieved)

In 2015 Sanlidano save 60,000 kw/h for a bill saving of € 11,500.

So far the plant has produced 2,170,000 kW/h per year with an estimated energy saving of 370,000 € while the environmental benefits correspond to 805.869,88 avoided C02 emissions and 24,052.75 trees planted.

Challenges encountered

-

Potential for learning or transfer

The investment has already been amortized in the first four years with a significant environmental benefit, while recognizing that it covers only 10% of energy requirement. It has strongly demonstrated how cost-effective energy efficiency measures are from both an economic and environmental point of view.

Main institution in charge

San Lidano soc coop agricola arl

Timescale (start/end date)

04/10/2013-24/08/2015

Further information:

https://www.sanlidano.it/

Photo credit Bruno / Germany, Pixabay

From the sustainability of renewable energy to the quality of the wine produced

Cori (Latina), Lazio, Italy

The Cincinnato wanted to realize an important photovoltaic system integrated in the landscape for the improvement of the quality of the wine produced.

800 photovoltaic panels covering the roof of the Cori winery.
Photo credit Temistocle Lucarelli.

In 1947 some farmers founded the Cooperativa Cincinnato in Cori, Latina, south part of Lazio Region, with the aim of transforming and marketing their members' products and promoting the progress of local agriculture and the well-being of the community itself. At the end of the Sixties, the Cooperative intervened to support the typicality of the local viticultural production, obtaining in 1971 the recognition of the Cori Rosso and Cori Bianco DOC. In 1979, an innovative winery with a high technological content was created. Today the Cincinnato represents 62 years of history, 400 hectares of land, 189 members.

For many years, Cincinnato has implemented a policy of respect for the environment. Many members voluntarily adhere to the organic method.

More and more electricity has become necessary for the refrigeration of the products being processed for the continuous improvement of the wines. At the same time, however, with this project the environmental impact has been reduced. For this reason, a photovoltaic system was designed, with a power of 200 Kwp, to be positioned on the oenopole covering on the south-facing slopes, essentially maintaining the same inclination of the slopes in order to reduce the visual impact, reducing it to zero, to make the system itself "integrated" to the landscape.

The surface area involved is about 1,500 square metres and the energy produced will be used mainly for the refrigeration of the products, greatly improving their quality.

The grid connection system is characterised by the following components:

- n° 928 SANYO HIP214 modules, with a total power of 198,590 Wp. These modules will be connected to form strings. A string of modules consists of modules connected in series. Several strings will be connected in parallel. The series and parallel connection of the modules depends on the voltage to be brought to the inverter input.
- No. 16 POWER ONE PVI 12.5 string inverters, capable of covering a DC power range up to 14,300 Wp, complete with the necessary interface devices, integrated and certified, which guarantee the safety of the system and compliance with the characteristics required by the electricity companies.
- Supporting structure, consisting of a frame formed by a warp of metal profiles fixed to the supporting structure.
- Three-phase parallel panel: electrical panel containing network-inverter interface device to meet CEI 11-20 and DK5940, protection and dis connection devices.

Resources needed

The cost of the project was about 900.000,00 partially financed by the European Agricultural Fund For Rural Development Lazio 2007-2013 Misura 311 Azione 4

Evidence of success (results achieved)

The investment has on the one hand allowed a return in economic and environmental terms but has also had an important impact on the quality of the wine produced thanks to the reduction in refrigeration costs necessary to guarantee a better quality of wine.

Challenges encountered

-

Potential for learning or transfer

-

Main institution in charge

CINCINNATO COOP AGRICOLA ARL

Timescale (start/end date)

2010 – 2013

Further information:

https://cincinnato.it/

A photovoltaic plant in roman countryside - Agrinova

Campagnano di Roma (Roma) Lazio, Italy

Integrated GSE STORAGE system to store all the electricity produced from renewable energy.

Photovoltaic plant 2 17kW
AGRINOVA SRL

Photovoltaic plant 1 63kW.
Photo credits Nazario Nazzarri.

The production consists of organic hay that is sold to organic livestock farms in the province of rome and breeding of horses. the agricultural area is totally flat and about 25 hectares are irrigated by a reservoir (12,000mc) and underground lines that feed 2 self-propelled rollers.

On the roof of an old stable for dairy ovines a new fv plant has been installed producing up to 63 kwh peack using the benefits arrivoing from the 4th conto energia more the additional premium for absestus removal. A photovoltaic plant composed by three sections with the capacity production of 18 kwh peak each (total peak production 63 kwh) on the roof of an old rural stable has been realized using the benefit arriving from the 4th conto energia (0,20 € / kwh produced) in addition to the energy market price.

The old roof cover in asbestos plates has been removed and disposed and replaced by a new insulated metal panel roof; thank to this ecologic operation an further benefit for 0,05 € /kwh produced was obtained. All energy produced is sold to the national gse granting an important pillar to the farm income balance. This first fv plant has been realised during 2012. In addition in 2018 a second smaller photovoltaic plant has been realised without the benefits of the expired gse conto energia. The second plant has a peak capacity of 17 kwh ,is on the top of a rural roof and the production is not totally sold to the national gse but it is mainly self-consumed in the farm activities. Only the surplus continues to be sold to the gse. The economic goal of this investment is to maximise the self-consumption percentage, in fact the price difference between the sold and bought energy is considerable – 0,21/5 € /kwh in case of buying and 0,05/7 € /kwh in case of selling. It is crystal clear as the economic breakeven point is much closer as the percentage of self-consumption increases.

Resources needed

€ 120.000,00 for the first plant + € 15.000,00 the second smaller plant. There are no other benefits or electricity sales.

Evidence of success (results achieved)

In the first case the initial investment € 120.000,00 generates a positive gross cash flow for approx. € 25.000 /year, deducted the expenses for insurance maintenance etc the result has been a net income for over € 20.000/year. The initial investment has been paid back in 6 year and starting from 2019 the plant continues to generate an increasing of the yearly farm income for approx. € 20.000,00. The situation is different in the case of the second plant.

Without the fv plant the yearly cost of the energy consumed in the farm was approx. € 7/8.000,00 now the cost of the energy bought from the national suppliers don't reach € 4.000,00 /year. also in this case the payback period is approx. 5/6 years.

Challenges encountered

-

Potential for learning or transfer

The still high cost of the batteries for the energy storage limits the diffusion of this technology in the domestic use reducing the positive impact of the technology in the field of sustainability.

Main institution in charge

Società Agrinova srl

Timescale (start/end date)

1st plant- january 2012 – july 2012 / august 2012 connected to the grid – ongoing.
2nd plant - march 2018 – june 2018 connected to the grid – ongoing.

Further information:

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Photo credit sylen, Pixabay

LUBELSKIE VOIVODESHIP, POLAND

The Lubelskie Voivodeship is located in the south-eastern part of Poland. The eastern border of the voivodeship is also the border of Poland and EU. It is the fourth largest province in the country with an area of 25 thousand square km and a population of over 2 million. The capital of the region is the city of Lublin, a large administrative, academic and cultural center. The Lubelskie Voivodeship is a typically agricultural region. The agri-food industry, including agriculture and agri-food processing, forms one of the largest, dynamically developing segments of the economy of the Lubelskie Voivodeship. Agricultural land in the region constitutes 68% of the total area (first place in Poland), and is one of the largest domestic producers of cereals, ground vegetables, fruit and herbs. The region also has very favorable conditions for the development of renewable energy production from sun, wind and biomass.

The project "A nationwide system of advisory support for the public & housing sector and enterprises in the field of energy efficiency and RES"

Lubelskie Voivodeship, Poland

The advisory project is designed to eliminate the identified barriers to the development of a low-carbon economy, support the preparation and implementation of SEAPs, monitor best practices and identify projects in the field of energy efficiency and RES.

Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej

The project is implemented by the National Fund for Environmental Protection and Water Management in cooperation with Partners throughout the country in 15 Regional Funds for Environmental Protection and Water Management and by the Lubelskie Voivodeship.

There are 6 energy advisors working in the Lubelskie Voivodeship. Advisors operate in a territorial and expert system, i.e .:

- advisers specialize in specific areas related to the subject of the support provided,
- the priority of the advisors' work distribution system is an appropriately high level of services provided,
- each adviser was assigned a group of municipalities covered by advisory support.

The aim of the project is to support investment projects contributing to the reduction of the emission intensity of the economy through:

1. Support in the preparation and implementation of investments in the field of energy efficiency and RES.
2. Raising awareness of the development of a low-carbon economy.
3. Support for municipalities in the preparation and implementation of Low-Emission Economy Plans.

Activity of energy advisers:
- Assistance in the preparation of documents:
  - Low -Emission Economy Plans,
  - Energy audits (of buildings, street lighting),
  - Assumptions for the heat, electricity and gaseous fuels supply plan for the commune,
  - TOR for investments related to energy and energy efficiency,
  - Thermographic reports.
- Education and promotion activities:
  - seminars,
  - training cycles,
  - conferences.
- Assistance in applying for external funds.
- Assistance in the implementation of projects under the OPI & E, ROP LV.

Resources needed

The project is financed under the Operational Programme Infrastructure and Environment for 2014 -2020 under Priority Axis I "Reducing the emissions of the economy". The amount of the co-financing: EUR 1,813,232.

Evidence of success (results achieved)

Tasks carried out by the 6 energy advisors in the Lubelskie Voivodeship:
1. Verification of Low -Emission Economy Plans in 2015 -2018 - 170 in number,
2. LCEP update in 2019 -2020 (e.g. for the purposes of measure 5.5) - 62 no.,
3. Energy audits - 52 no.,
4. Certificates of energy performance of buildings in the resources of the Provincial Property Management Board – 4 no. (Biała Podlaska, Chełm, Zamość, Lublin),
5. "White Certificates" - applications to the Energy Regulatory Office in the Łaszczów, Poniatowa, Sławatycze communes - 3 no.,
6. Thermographic measurements made and reports prepared - 27 no.,
7. Education and promotion activities:
   - A series of trainings for candidates for municipal energy specialists. A total of 90 people were trained, creating three training groups of two training days. One training group participated in 6 training days. There were 18 training days in total;
   - A series of trainings for employees of Social Welfare Centers. The total number of people trained – 319;
   - Training workshops for the employees of local government units on the "Clean Air" programme, organized in 20 Poviat Authorities. A total of 312 people participated in the workshops;
   - Information and promotion meetings entitled "Meetings with new energy" organized in 70 municipalities;
   - Training workshops in 124 communes under the Priority Programs: "My Electricity", "Clean Air" and "Agroenergy". The total number of participants - 2010 people.

Energy consulting project in Poland:
1. Number of consultations provided - 57 604,
2. Number of advice provided - 91 267,
3. Number of educational and training activities carried out - 2,247.

Challenges encountered

-

Potential for learning or transfer

The implementation of such projects will contribute to increasing knowledge in the field of low-emission economy development and to increasing knowledge in the preparation and implementation of investments in the field of energy efficiency and RES.

Main institution in charge

National Fund for Environmental Protection and Water Management

Timescale (start/end date)

2015-2023

Further information:

-

My Electricity Priority Program

Lubelskie Voivodeship, Poland

The program aims to increase electricity production from photovoltaic micro-installations.

Photovoltaic instalation on the roof. Photo credit Adam Głąb.

The My Electricity priority program is an instrument, unique on the scale to date in Poland, dedicated to supporting the development of prosumer energy, and specifically supporting the segment of photovoltaic (PV) micro-installations.

The implementation of the program will contribute to the development of prosumer energy and will significantly contribute to the fulfillment of Poland's international obligations in the field of renewable energy development.

The beneficiaries of the project are natural persons generating electricity for their own needs, who have concluded a comprehensive agreement regulating the issues related to the introduction of electricity generated in micro-installations to the grid.

Under the program, projects involving the purchase and installation of photovoltaic micro-installations with an installed electrical power of 2 kW to 10 kW, used for the needs of existing buildings, especially in rural and less industrialized areas, can be implemented.

Co-financing under the My Electricity program is in the form of a subsidy up to 50% of eligible costs of the micro-installation included in the project, not more than EUR 1100 per one project.

Resources needed

The budget for the implementation of the program objective is Euro 217 million, including Euro 217 million for non-returnable forms of funding.

Evidence of success (results achieved)

Currently, under the My Electricity program, 73,000 applications have been submitted, and the capacity of already installed PV installations is 408 MW.

Challenges encountered

-

Potential for learning or transfer

The implementation of the "My Electricity" program will significantly increase the public's interest in photovoltaics in agricultural and urban areas. The development of prosumer energy will contribute to reducing CO2 emissions.

Main institution in charge

National Fund for Environmental Protection and Water Management

Timescale (start/end date)

2019 - 2025

Further information:

-

Installation of a photovoltaic panels on the Pstrąg Pustelnia fish farm buildings and the fish sale building in Wola Rudzka

Wola Rudzka, Lubelskie Voivodeship, Poland

The idea behind making a photovoltaic installation on the buildings of fish farm Pstrąg Pustelnia was to reduce its operating costs thanks to the self-produced electricity from photovoltaic cells.

The Pstrąg Pustelnia fish farm is located in the Lubelskie Voivodeship in the village of Wola Rudzka. The fish farm deals with the breeding and sale of fish, i.e. trout and carp, on an area of 400 ha.
In order to increase the management efficiency and to increase the competitiveness of the farm, photovoltaic installations have been made. The installations enabled the production of electricity for self-consumption, i.e. mainly for electricity supply in buildings:
- Photovoltaic installation on the fish farm buildings with a capacity of 30 kWp,
- Photovoltaic installation on the fish sale building with a capacity of 35 kWp.

Resources needed
The implementation of photovoltaic installations by the Pstrąg Pustelnia fish farm was financed under the Operational Program "Fisheries and Sea" for the years 2014 - 2020, sub-measure 1.1.2. Supporting activities aimed at reducing emissions of substances causing climate change:
- Photovoltaic installation on the Pstrąg Pustelnia fish farm buildings"
  Total value of the operation: Euro 39 600
  The funding value: Euro 16 100
- Photovoltaic installation on the fish sale building in Wola Rudzka"
  Total value of the operation: Euro 42 600
  The funding value: Euro 17 300

Evidence of success (results achieved)

Two photovoltaic installations with a total capacity of 65 kWp were installed.

Challenges encountered

-

Potential for learning or transfer

Projects of similar type should find wide application in agricultural areas among farmers engaged in agriculture or agricultural activities.
Benefits of implementing such projects:
1. Increasing the efficiency of management and

savings on operating costs thanks to the production of own electricity.
2. Increasing the profitability of running a farm through savings, that is lower costs and increasing farm income.
3. Perception of the farm as modern, innovative, ecological and environmentally friendly.
4. Increase of the farm competitiveness.

Main institution in charge

"Pustelnia" Ltd fish farm from Opole Lubelskie

Timescale (start/end date)

2017

Further information:

-

Agroenergy Priority Program

Lubelskie Voivodeship, Poland

The program aims to increase the production of energy from renewable sources in the agricultural sector.

A rural view in the Lubelskie Voivodeship. Photo credit Adam Głąb.

The first call for applications under the Agroenergy program was addressed to individual farmers who had lived for at least 5 years in the commune in which one of the agricultural real estates is located and the total area of agricultural land on the farm does not exceed 300 ha.

Types of co-financed projects:
- Projects relating to the construction of new generating units, including the possibility of connecting them to the distribution / transmission network, in which energy production uses:
  a) renewable sources,
  b) cogeneration sources,
  c) waste heat utilization technologies.
- Projects involving, et. al., construction, expansion or modernization of production installations or equipment, leading to a reduction in the consumption of primary raw materials (as part of own production lines), including by replacing them with recyclable materials, waste or leading to a reduction in the amount of waste generated, including:
  a) Non-waste technologies (NWT) and low-waste production technologies ensuring the most comprehensive use of the raw materials used;
  b) Technologies limiting the unit water consumption in production processes or closed water circulation systems;
  c) Material production technologies using combustion by-products / production processes or waste generated by the applicant;
  d) Technologies for the production of alternative fuels and substrates for their production from the waste generated by the applicant, including sludge;
  e) Modernization of the water demineralization and decarbonisation station (if necessary for the implementation of the investment generating the environmental effect).
- Projects in line with the "Announcement of the Minister of Energy of 23 November 2016 on the detailed list of projects to improve energy efficiency" aimed at improving energy efficiency, as well as technological changes in existing facilities, installations and technical devices aimed at this, including in:
  a) Technologies for rationalizing electricity consumption,
  b) Technologies for rationalizing heat consumption,
  c) Modernization of production and processing methods in the field of energy efficiency,
  d) Implementation of energy and quality management systems and implementation of power grid management systems at farm facilities.

Under the first call for proposals, funding was in the form of a loan up to 100% of eligible costs, and a subsidy of up to 40% of eligible costs, not more than EUR 174,000.

The new call for the updated Agroenergy 2020 program assumes that other entities running agricultural activity in the same area or economic activity in the field of agricultural services may also benefit from co-financing for renewable energy sources. Types of co-financed measures to be implemented in the updated Agroenergy 2020 program:
- Photovoltaic installations, wind farms and heat pumps for the Applicant's own energy needs with an installed capacity of more than 10 kW and not more than 50 kW.
- Energy storage facilities for photovoltaic installations or for wind farms.
- Hybrid installations, i.e.: photovoltaics with a heat pump or a wind farm with a heat pump, combined into one system, the submission of the application is conditioned by the prior carrying out of an energy audit, which recommends the use of a heat pump.

As part of the update of the Agroenergy program, co-financing will be in the form of subsidies up to 20% of eligible costs for energy generating installations.

Resources needed

The budget for the implementation of the program objective under the first call for proposals was Euro 43.5 million, including:
1) for non-returnable forms of financing - Euro 17.4 million
2) for returnable forms of co-financing - Euro 26.1 million

The budget for achieving the program objective in the Agroenergy 2020 update is Euro 43.5 million, including:
1) for non-returnable forms of financing - Euro 37 million
2) for returnable forms of co-financing - Euro 6.5 million.

Evidence of success (results achieved)

As part of the first edition of the program, for which the call for applications ended in December 2019, a total of Euro 43.5 million was granted: Euro 17.4 million in the form of subsidies and Euro 26.1 million in the form of loans.

In the period from July to December 2019, NFEP&WM accepted 449 grant applications and 89 loan applications.

Finally, as many as 53 contracts were signed for installations with a total capacity of 1,819 MWp.

Challenges encountered

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Potential for learning or transfer

In the ecological context, the most important objective of the Agroenergy program is to reduce the emission of environmentally harmful carbon dioxide, which is generated as a result of burning hard coal in power plants. The program plan assumes that CO2 emissions after the implementation of RES installations will drop to 170,000 Mg per year. Implementation of the program will increase the use of energy from renewable sources in the agricultural sector.

Main institution in charge

National Fund for Environmental Protection and Water Management

Timescale (start/end date)

2019 – 2025

Further information:

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Construction of the agricultural biogas plant and distillery in Łany Wielkie

Łany Wielkie, Silesian Voivodeship, Poland

The purpose of this project was to use waste from distilleries by processing them into biogas for use in the production of electricity and heat.

In November 2011, the biogas plant and distillery were launched. This investment is a unique combination of two separate technological processes.

Producing 0.5 MW of electricity, the biogas plant consumes distillery waste, mainly decoction, manure and other organic residues from farms. In addition to electricity, the product derived from biogas is an excellent (ecological and odorless) organic fertilizer used in its own farming fields. Most of the energy produced is used for the company's own needs.

The distillery has an annual production capacity of 1,600,000 liters of agricultural distillate from cereals with an average content of 94% alcohol, which can be directly used for the production of vodka and contaminated alcohol.

The scientific employees of the University of Life Sciences in Lublin had substantive participation in the development and during the implementation of the project. Their participation in the development of this project gives the opportunity to apply similar solutions in the Lubelskie Voivodeship.

Resources needed

Built with nearly 16 million PLN in Łany Wielkie, the biogas plant and distillery installation was implemented with the investor's own funds, bank loans and 50% of subsidies under the Rural Development Program, measure 123 "Increasing the added value of basic agricultural and forestry production".

Evidence of success (results achieved)

The newly created installation is a modernized distillery with a capacity of 1.6 million liters per year and a biogas plant with a 526 KWe cogenerator. The raw material for this installation is mainly maize cultivated by a group of agricultural producers on almost 2,000 ha, used for the production of spirit and stillage. Additives are also dosed in the amount necessary for the proper process of anaerobic digestion (cattle slurry and manure from own dairy farming).

The liquid part of digestate produced during anaerobic digestion is exported to arable fields as fertilizer. The dry part, in turn, returns as litter to the barns.

The heat obtained during the fermentation process in the biogas plant is completely utilized in the distillation process, and the resulting electricity covers the needs of the entire biogas and distillation installation - any surpluses will be sold to the power grids.

Challenges encountered

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Potential for learning or transfer

Unfortunately, the Polish food processing industry is still using renewable energy sources insufficiently. Initially, the investments included modern process systems, packaging machines and logistics, now the time has come for energy efficiency. There is a significant potential in biogas installations for the management of processing residues and sewage sludge. In an increasingly competitive market, in addition to raw material costs, energy costs have a huge share in the unit cost of production. Depending on the type of food processing, energy costs can be reduced to around 30% in the brewing industry, 15-25% in the spirits industry and several percent in the meat and dairy industries.

Main institution in charge

BIO-BUT Sp. z o.o

Timescale (start/end date)

2009-2011

Further information:

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Construction of a biogas power plant for electricity production in combination with heat in Siedliszczki

Siedliszczki, Lubelskie Voivodeship, Poland

The aim of the project was to build a biogas power plant for the production of electricity in combination with heat in Siedliszczki in the Piaski Municipality.

Biogas power plant. Wikana Bioenergia Sp z o.o.

The biogas plant in the Piaski Municipality is located near the dairy cooperative, from which it will collect the substrate needed for biogas production, and in return will provide heat energy to OSM Piaski. The power plant uses methane, which is the main component of biogas formed in the methane fermentation process, to drive the power block. Installed capacity of electricity in cogeneration not less than 998 kWe, installed capacity of heat energy in cogeneration not less than 850 kWt, annual production of electricity 6,200 MWh, annual heat production in the amount of 16000 GJ.

As a substrate for biogas production, it uses soft biomass obtained either from plantations of special purpose plants such as corn, sugar beet, sunflower, various types of grass or grain, or from post-production waste from the food industry (e.g. from dairies, breweries, breeding farms and other organic waste).

Resources needed

The investment was co-financed with the support of the Operational Program Infrastructure and Environment

Action IX.1. High efficiency energy production
Total cost of the Project: 20 081 980,52 PLN
The amount of co-financing by the European Union from the Cohesion Fund:
7 877 044,96 PLN

Evidence of success (results achieved)

In the case of investments in the construction of biogas plants using plant substrates and industrial waste for methane production, there is a positive impact on the state of the natural environment by stopping the emission of harmful compounds into the atmosphere. First of all, it is about abandoning the emission of gases and dusts (mainly nitrogen oxides) and carbon dioxide that would take place if conventional energy sources were used.

The average volume of energy produced in this installation is 6200 MWh per year. Assuming that 950 kg of CO_2 is needed to generate 1 MWh of energy, annual discontinued carbon dioxide emissions will reach almost 5,938 tons. However, over the entire lifetime of the biogas plant, which is estimated at an average of 15 years (assumed infrastructure depreciation), abandoned emissions will be close to 89,063 tonnes of CO_2. This is a direct ecological effect of the planned undertaking.

Challenges encountered

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Potential for learning or transfer

Biogas plants are one of the most important goals set by "Poland's energy policy until 2030". The development of biogas installations will improve energy security, enable the creation of so-called local value chains, activating the villages economically and increasing employment in small local markets. An extensive information and education campaign should be prepared for farmers and agricultural producers, local governments and entrepreneurs, disseminating knowledge about the production of energy from renewable sources and the use of locally available sources.

Main institution in charge

Wikana Bioenergia Sp. z o.o.

Timescale (start/end date)

2009-2011

Further information:

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Photovoltaics farm in Bordziłówka (Lubelskie)

Bordziłówka, Lubelskie Voivodeship, Poland

The aim of the project was to build a biogas power plant for the production of electricity in combination with heat in Siedliszczki in the Piaski Municipality.

Photovoltaics farm in Bordziłówka. Photo credit Adam Głąb.

The Lubelskie Voivodeship is low industrialized. One of the sources of income for municipal local governments is agricultural tax. The influence is not high and does not offer many development opportunities. That is why the authorities often have to look for other solutions. The area of the Lubelskie region is characterized by the highest sunshine in Poland. In 2012, five municipalities: Wisznice, Rossosz, Sosnówka, Jabłoń and Podedwórze formed a self-government company Energia Dolina Zielawy in order to provide energy security for its members and to cut pollution by increasing the share of renewable energy used in electricity production. It was a joint operation, because they are very small municipalities and they knew from previous experience that they could not individually manage large renewable energy projects.

Aware of the need to make heating systems less reliant on traditional energy sources, the partners identified solar power as an alternative. In 2014 they started the construction of a photovoltaic farm with the capacity to generate 1.4 megawatts of power. The photovoltaic farm uses solar power to produce electricity which is fed into the grid. In all, 5 560 polycrystalline silicon modules were installed to convert sunlight into electricity. The size and power of farm should meet the current needs of five municipalities and local schools, libraries and offices. It is possible to supply electricity to a maximum of 500 households, depending on the current capacity of the power plant.

The farm also has an important research function. In addition to the polycrystalline panels, thin-film modules with a total power of 10 kW were installed there. The purpose of the installation is to compare the work of thin-film panels in different weather conditions, with different insolation and a reference to polycrystalline panels. The research should show how to use photovoltaic panels in an efficient and economically justified way.

Resources needed

Total investment for the project is EUR 1 829 761, with the EU's European Regional Development Fund contributing EUR 619 516 Regional Operational Programme of Lubelskie for the 2007-2013. The remaining amount comes from the loan granted by the bank in Wisznice.

Evidence of success (results achieved)

The production of electricity as part of the photovoltaic plant operation ensures energy security not only for five municipalities of the partnership, but also improves the security of electricity supply in the neighbourhood. And it should be remembered that this is a completely agricultural area, devoid of industry and conventional sources of electricity production.

In the long term, a solar farm and the production of energy from renewable sources affect the growth of economic competitiveness: investors are interested in this area taking into account a high potential for the development of renewable energy sources in this agricultural region. In turn, this affects positively the local labour market and reduces the unemployment.

Challenges encountered

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Potential for learning or transfer

This is the first association of several municipalities signed in order to support the development of renewable energy sources. With partners it was easier to apply for financial support to build a photovoltaic farm. The farm ensures local energy security, guarantees additional income and also help to create an environmental friendly image of municipalities.

Main institution in charge

Energia Doliny Zielawy Sp. z o.o.

Timescale (start/end date)

2014 - 2015

Further information:

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"Dolina Zielawy" – a partnership for joint development

Wisznice, Lubelskie Voivodeship, Poland

The mission of the partner operation of local governments in the cluster is to create conditions for economic development of the Dolina Zielawy and to achieve economic specialization while ensuring a high quality of life for the residents.

Local self-governments have difficulty in financing new infrastructure using only their own budget. It is also a challenge for them to compete with bigger municipalities to gain EU funding. That is why, in 2007 local municipalities from Lubelskie: Wisznice, Sosnówka, Rossosz, Jabłoń and Podedwórze decided to form a partnership called Association of Dolina Zielawy (Zielawa Valley). Thanks to this cooperation it was possible to implement two big projects using good local conditions for investments in solar energy.

In 2010 municipalities started a new project called Clean Energy in Dolina Zielawy" which was co-financed from Regional Operational Programme of Lubelskie for 2007-2013. Within this project households and public buildings have been equipped in 925 solar sets converting solar energy into thermal energy.

In 2012 the partnership formed a company Energia Dolina Zielawy in order to gain funding for the construction of a photovoltaic farm (in Bordziłówka) 1.4 megawatts of power . This investment was successfully realized in 2014 with the combination of funding from ROP of Lubelskie and bank.

In 2018 Energy Cluster Dolina Zielawy gained a Certificate of Pilot Energy Cluster awarded by the Polish Ministry of Energy.

In this case, it is necessary to appreciate and emphasize the innovative idea of willingness to cooperate with several neighbouring local governments on the principles of long-term planning, without guarantee of quick success. Many years ago it was a rare and unusual phenomenon among competing entities.

Resources needed

Both the costs and benefits of partnership are measured individually for each unit, and the reference point is in each implemented activity. Although the financial benefits are measurable, it is difficult to quantify and it is impossible to present even an indicative amount.

Evidence of success (results achieved)

Thanks to the cooperation of local municipalities it was possible to get funding for two big projects in solar energy. Future investments are also planned. This kind of initiative was awarded the President of the Republic of Poland in 2013, also gaining a Certificate of Pilot Energy Cluster. Having the status of a certified cluster may bring many benefits in the future when applying for external financing in connection with the regulations being developed on cluster support.

Challenges encountered

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Potential for learning or transfer

The case of the "Dolina Zielawy" partnership shows that an innovative approach to challenges allows finding interesting solutions. The idea of joint operation of several local governments, which have similar challenges and similar possibilities, enabled the implementation of projects on a larger scale, often unattainable for individual entities.

Main institution in charge

Dolina Zielawy

Timescale (start/end date)

2007 - ongoing

Further information:

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Construction of a straw boiler house in Grabowiec

Grabowiec, Lubelskie Voivodeship, Poland

The idea of creating a straw boiler house in Grabowiec was to use local surpluses of agricultural biomass and reduce the cost of maintaining public buildings.

Grabowiec is located in the Lubelskie Voivodeship. About 956 people live in the village. The main profile of activity is agriculture. The most important institutions in this area are the Commune Office, Cooperative Bank, elementary school, high school and Commune Culture Center.

On the initiative of the representatives of the Grabowiec Commune Office and the ATEX company (contractor), a large straw-fired boiler house was established in 1996. Today, the boiler house provides heat to several public facilities in Grabowiec: a complex of school buildings, the Bank, the Commune Office, a hydrophore plant, a health center and the building of the boiler house itself. The implementation of the investment, from raising funds to starting operation, lasted about 9 months.

Resources needed

At that time, the cost of the project amounted to PLN 2 150 297.00.

The project was financed in 43.9% from subsidies from the National Fund for Environmental Protection and Water Management, in 14% from subsidies from the Ekofundusz Foundation, in 13.3% from own funds of the Commune Office in Grabowiec, in 1.9% from subsidies of the Zamość Voivode and in 26.9% from a loan from the Provincial Fund for Environmental Protection and Water Management.

Evidence of success (results achieved)

There were installed two boilers with 400kW of thermal power each, which produce annually about 1300 MWh by heating an area of about 5,000. m2. This installation reduces annual emissions by 448 tons of CO_2.

Challenges encountered

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Potential for learning or transfer

Projects of this type should be widely used in typically agricultural areas where there is unlimited access to biomass resources. This installation uses fuel in the form of straw bales, prepared using straw harvesting presses common on farms. There is no need to build processing lines that would require additional expenses and consume energy. However, to disseminate such activities, information campaigns and appropriate financial and expert support are needed.

Main institution in charge

Grabowiec Municipality

Timescale (start/end date)

1996

Further information:

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LUBELSKIE VOIVODESHIP, POLAND

Boiler house using biomass for the School Complex in Ostrów Lubelski

Ostrów Lubelski, Lubelskie Voivodeship, Poland

The aim of the project is to replace the heating source of the School Complex in Ostrów Lubelski. The biomass-fired boiler house will increase the energy security of the inhabitants of the Lubartów poviat by using renewable energy sources.

Boiler house in Ostrów Lubelski, ZS Ostrów Lubelski.

Statistical data shows that as a result of agricultural production, there is a surplus of biomass each year, which after processing can be used to produce solid biofuels for combustion in properly prepared boilers. Burning such material guarantees reduction of carbon dioxide emissions into the atmosphere. In addition, biomass does not produce harmful chemicals, as is the case with the burning of fossil fuels. During the biomass combustion cycle, plants absorb carbon dioxide from the atmosphere through photosynthesis. Burning biomass does not cause a greenhouse effect, and the resulting ash can be used as a mineral fertilizer. According to experts, the construction of a biomass boiler house was economical and ecological. The investment may also improve the financial situation of local farmers interested in growing energy crops and developing other biomass surpluses. It is also a plus for the poviat itself, because it is local governments that have the task of reducing emissions and promoting energy from renewable sources.

Resources needed

The project "Boiler house using biomass for the School Complex in Ostrów Lubelski" received funding from the European Regional Development Fund under the Regional Operational Program of the Lubelskie Voivodeship for the years 2007 - 2013, Priority Axis VI Environment and clean energy, Actions 6.2 Environmentally friendly energy.

The total value of the project is: 3 182 370, 00 PLN. The amount of funding from the ERDF: 2 705 014, 50 PLN.

Evidence of success (results achieved)

The objectives of the action are:

- protecting the natural environment by increasing the use of energy from renewable energy sources (RES),
- reducing the amount of greenhouse gases and other harmful substances emitted to the atmosphere (dust, sulfur dioxide (SO2), nitrogen dioxide (NO2), carbon monoxide (CO) and carbon dioxide (CO2)),
- minimizing the costs of heat energy production,
- reducing the dependence of heating systems on conventional energy resources through the use of biomass,
- reducing the amount of waste generated in the process of burning traditional energy raw materials,
- increasing the tourist attractiveness and natural values of the commune by limiting the emission of pollutants and shaping its modern and environmentally friendly image.

Challenges encountered

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Potential for learning or transfer

On a regional scale, many such facilities can be created thanks to EU subsidies, especially in the Lubelskie region. Such solutions are very desirable in agricultural areas where it is possible to easily obtain the raw material and do not need high expenditure on its transport.

Main institution in charge

Lubartowski Poviat

Timescale (start/end date)

2011

Further information:

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Photo credit David Mark, Pixabay