EUCF

European City Facility

2nd Call Investors Report December 2021

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What is the European City Facility?

The European City Facility (EUCF) is funding facility set up under the Horizon 2020 programme for Research and Innovation of the European Union. It provides tailor made and simplified financial support (grants of EUR 60 000) and capacity building services to municipalities and local authorities in European Union. The objective is that these entities develop sound investment concepts and mobilise finance in the field of sustainable energy.

The EUCF provides support for investment projects within the field of sustainable energy, including all investments on the energy demand side, which contribute to the improvement of energy performance and the achievement of energy savings.

This report corresponds to the 68 beneficiaries selected under the 2nd call, which was open from March 29th to May 31st 2021. Amongst 221 applications from all over Europe, 68 beneficiaries received the EUCF grant to create their investment concepts.

What happens next?

As was the case for the 1st Call, the selected beneficiaries from the 2nd EUCF call will now create their investment concepts (until mid-2022). After validation, the investment concepts will be ready to be presented to potential investors.

The EUCF Investor Network will be given the opportunity to engage with EUCF cities looking to finance sustainable energy actions across Europe

The resulting concepts will also be an initial step towards a fully-fledged business and financial plan. Potential investors are invited to contact the EUCF by registering to the EUCF investors network and obtain more detailed information about EUCF supported projects and investment concepts.

By joining the EUCF Investor Network, you will be given the chance to engage with EUCF cities, receive first-hand information on their investment concepts and seek opportunities to finance sustainable energy actions across Europe. The current report provides a summary of the projects that have been selected in the 2nd EUCF call, with an overview of investment sectors and locations.

Investment Sectors and Regions

The 68 local authorities that are beneficiaries from the 2st EUCF Call are divided into three regions: Central and Eastern Europe (CEE), Nordic countries & Western Europe (NC&WE) and Southern Europe (SE).

Among the investment sectors targeted by the call, beneficiaries can be found amongst a variety of sectors: public buildings, residential buildings, building integrated renewables, district heating, smart grids, sustainable mobility, and innovative energy infrastructure. Amongst the main sectors in which the successful applicants will develop their investment concept, "residential buildings" is targeted most, followed by "building-integrated renewables" and "sustainable urban mobility".

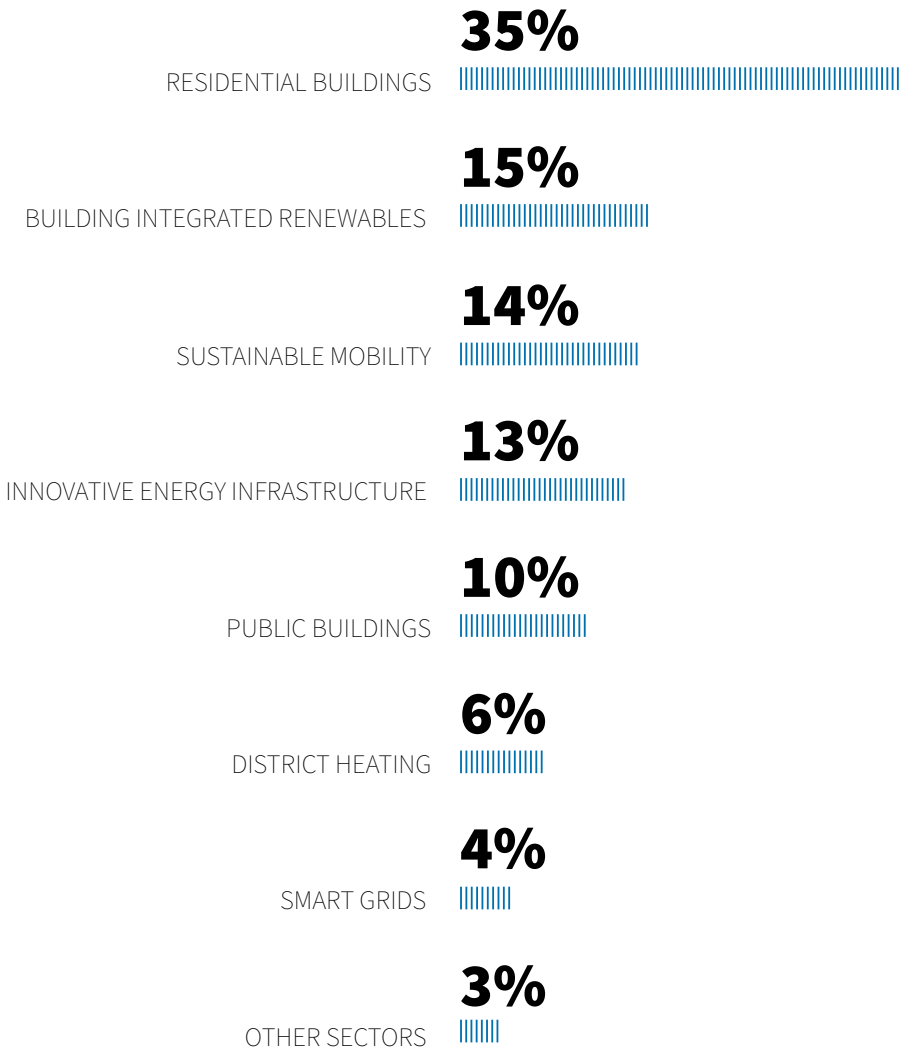
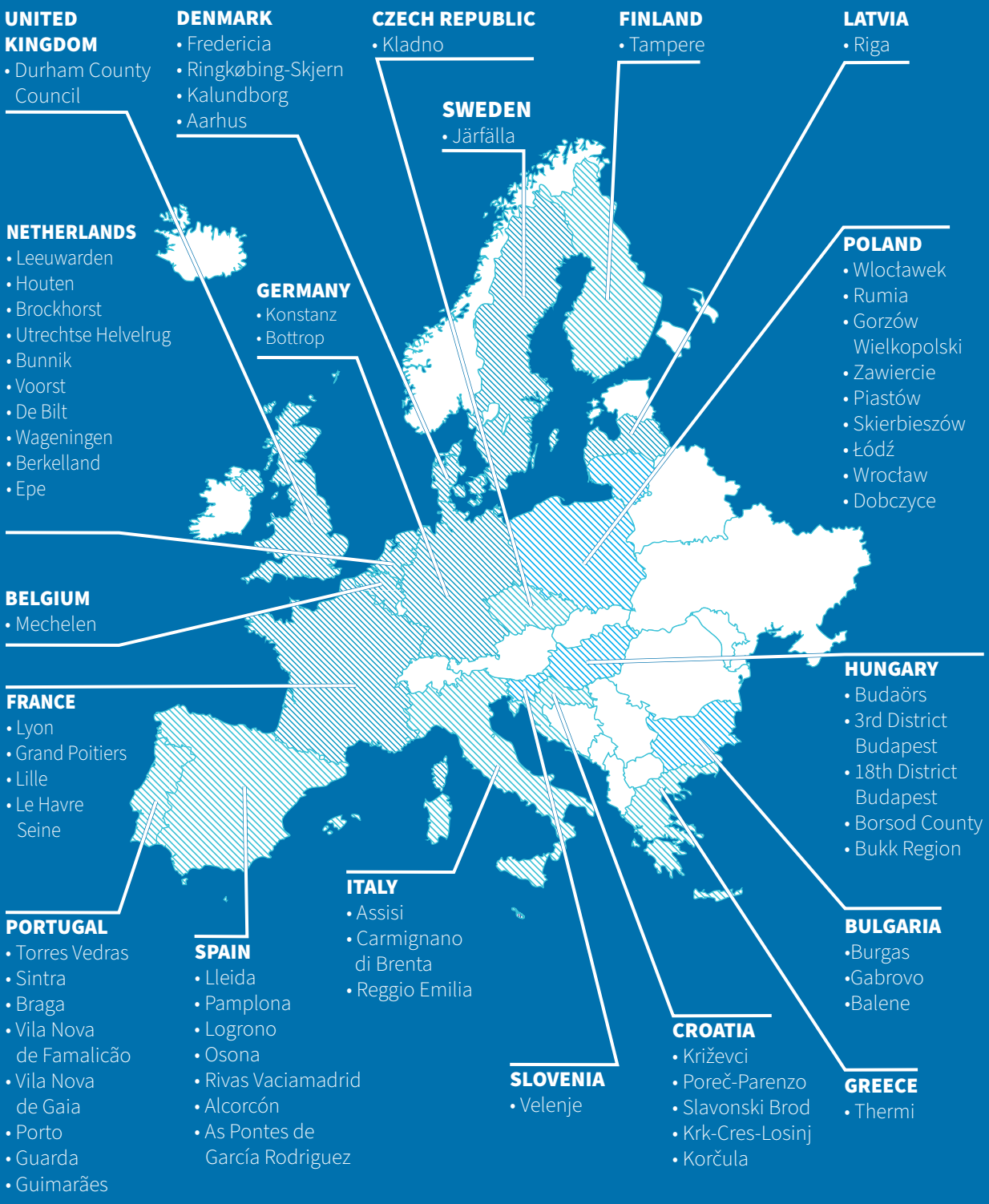


Figure 1: Distribution of the selected projects by main investment sector.
Please note that one investment project may target more than one sector.

Investment Size Per Region

	€ INVESTMENT SIZE	EXPECTED ENERGY SAVINGS	EXPECTED RENEWABLE ENERGIES	NUMBER OF BENEFICIARIES
CENTRAL & EASTERN EUROPE	**313.4** MILLION €	**1628.6** GWh/y	**1035.4** GWh/y	**25**
NORDIC COUNTRIES & WESTERN EUROPE NC&WE	**3793** MILLION €	**2849.8** GWh/y	**1752** GWh/y	**24**
SOUTHERN EUROPE SE	**4256** MILLION €	**2856.6** GWh/y	**2587.9** GWh/y	**19**
TOTAL	**11180.4** **MILLION €**	**7334.4** **GWh/y**	**5376.2** **GWh/y**	**68**


UNITED KINGDOM
• Durham County Council
DENMARK
• Fredericia
• Ringkøbing-Skjern
• Kalundborg
• Aarhus
CZECH REPUBLIC
• Kladno
SWEDEN
• Järfälla
FINLAND
• Tampere
LATVIA
• Riga
NETHERLANDS
• Leeuwarden
• Houten
• Brockhorst
• Utrechtse Helvelrug
• Bunnik
• Voorst
• De Bilt
• Wageningen
• Berkelland
• Epe
GERMANY
• Konstanz
• Bottrop
POLAND
• Włocławek
• Rumia
• Gorzów Wielkopolski
• Zawiercie
• Piastów
• Skierbieszów
• Łódź
• Wrocław
• Dobczyce
BELGIUM
• Mechelen
FRANCE
• Lyon
• Grand Poitiers
• Lille
• Le Havre Seine
HUNGARY
• Budaörs
• 3rd District Budapest
• 18th District Budapest
• Borsod County
• Bukk Region
PORTUGAL
• Torres Vedras
• Sintra
• Braga
• Vila Nova de Famalicão
• Vila Nova de Gaia
• Porto
• Guarda
• Guimarães
SPAIN
• Lleida
• Pamplona
• Logrono
• Osona
• Rivas Vaciamadrid
• Alcorcón
• As Pontes de García Rodriguez
ITALY
• Assisi
• Carmignano di Brenta
• Reggio Emilia
SLOVENIA
• Velenje
CROATIA
• Križevci
• Poreč-Parenzo
• Slavonski Brod
• Krk-Cres-Losinj
• Korčula
BULGARIA
•Burgas
•Gabrovo
•Balene
GREECE
• Thermi

Intended Measures by Country: Detailed Overview

Belgium

MUNICIPALITY

Mechelen

INVESTMENT SIZE
319
MILLION €

RENEWABLE ENERGIES
15
GWh/y

ENERGY SAVINGS
116.6
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The project targets low energy retrofits of existing, co-owned condominiums. Currently, there are 16.371 apartment units (39% of the residential building stock in Mechelen), of which 11.600 (71%) are built before 1990. This corresponds to approx. 1.600 existing condominiums with poor energy performance. The intended energy efficiency measures concern no-regret measures (roof insulation, high-performance windows with double glazing, facade insulation) as well as the refurbishment of the heating system. Additionally, the goal is to maximise the renewable energy production on the more recent condominium rooftops, by sharing renewable energy between co-owners via energy communities.

TARGETED SECTORS

Residential buildings

Bulgaria

MUNICIPALITY

Burgas

INVESTMENT SIZE
70.6
MILLION €

RENEWABLE ENERGIES
1
GWh/y

ENERGY SAVINGS
51.65
GWh/y

MEASURES TO BE FINANCED AND SECTORS

In Burgas, there are three sets of measures: those that are planned on public buildings, on multi-family residential buildings, and those in the field of public street lighting. Activities on public buildings will include the replacement of heating and cooling systems, insulation of roofs and walls, the replacement of doors and windows, and the installation of PV and solar panels. A total of 41 buildings currently classed as C, will be refurbished to become classified as type A.

On the 82 multi-family residential buildings (class E and D), planned measures aim towards achieving the status of energy class B and include the insulation of roofs and walls and the replacement of doors and windows. In addition, there will be an installation of solar panels.

For the Public Street Lightning, a number of 4641 street lights across seven residential areas will be replaced and connected to the public lightning management system.

TARGETED SECTORS

Residential buildings

Bulgaria

MUNICIPALITY

Gabrovo

INVESTMENT SIZE
52.6
MILLION €

RENEWABLE ENERGIES
3
GWh/y

ENERGY SAVINGS
35.45
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The Investment Concept in Gabrovo will look at enhancing a four-component investment project. On one hand, there is the aim to build integrated RE solar PV systems involving solar PV panels, solar mounting structure and others. There is also a plan to build a waste-to-energy CHP system to utilize the residue from the wastewater treatment plant and landfills including having a reactor, gasifier, and other units. In third place, there will be a renovation of the envelope of 60 residential buildings with the thermal insulation of walls, floors, and ceilings.

Lastly, it is foreseen to renovate approximately 20,000 m2 of public buildings stock to energy class A. Measures such as the improvement of heating systems, the installation of building management systems, and the improvement of the building envelope, together with building lighting systems are all on the table.

TARGETED SECTORS

Residential buildings

MUNICIPALITY

Balene

INVESTMENT SIZE
13
MILLION €

RENEWABLE ENERGIES
30
GWh/y

ENERGY SAVINGS
0.6
GWh/y

Intended investments in Belena are already outlined in their municipal program for energy efficiency (2018 – 2025). The focus here is on Clean Hydrogen. There will be a total of seven municipal buildings for piloting this large-scale project. The details of the plan are as follows:

1. Construction and putting into the exploitation of 6MW solar park to power hydrogen production;

2. Construction and putting into exploitation of 4MW alkaline electrolyser hydrogen production facility

3. Renovation of existing pipeline network (5km) connecting the electrolyser with public buildings in the central area of the city to provide for direct 100% hydrogen gasification for heating

4. Purchase and adaptation of new boilers for the heating systems of public buildings to be able to work on 100% hydrogen.

TARGETED SECTORS

Innovative energy infrastructure

Croatia

MUNICIPALITY

Križevci

INVESTMENT SIZE
59.7
MILLION €

RENEWABLE ENERGIES
8.4
GWh/y

ENERGY SAVINGS
14
GWh/y

As there is no public transport in the area, the city is working hard to develop its transport in a sustainable and environmentally friendly manner. As a result, they began working their Sustainable Mobility Plan which includes a study on public transport demand, a proposal for optimal transportation paths, and EV and H2 charging station forecasting.

The first phase of the project includes the installation of a 7 MW solar power plant (via crowd-funding) and the EV and H2 charging stations. These charging stations will primarily be used to charge vehicles for the future public transport system. As the solar power plant will be located in a large area near a highway and an international railroad (connecting the Adriatic coast and Eastern Europe), a multimodal passenger and freight terminal will be built there (phase two). It will include a variety of creative digital technologies as well as car and bike-sharing services to minimise traffic congestion, air pollution, and fossil fuel demand in the city centre.

TARGETED SECTORS

Sustainable urban mobility

MUNICIPALITY

Midwest Istria sub region (Poreč-Parenzo)

INVESTMENT SIZE
4.5
MILLION €

RENEWABLE ENERGIES
71.2
GWh/y

ENERGY SAVINGS
128.3
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The EUCF grant will allow the development of an Investment concept to prepare the project on the transport sector decarbonisation of the Midwest Istria sub region, in order to achieve its 2030 decarbonisation goals of the transport sector.
The project will map public buildings and abandoned landfills and analyse their PV/hydrogen potential; map and analyse existing solutions and assess the development potential of future Poreč-Pazin mobility solutions (public transport development, micro-mobility concept, sharing systems, private investments). It will also develop an innovative investment concept for public and private investment/public-private partnerships. The approach will foster an open, transparent relation with stakeholders and the public.

TARGETED SECTORS

Sustainable urban mobility

Croatia

MUNICIPALITY

Slavonski Brod

INVESTMENT SIZE
45
MILLION €

RENEWABLE ENERGIES
218. 61
GWh/y

ENERGY SAVINGS
81.39
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The main measure is integrating low-temperature district heating (DH) system (4th Generation) in the city. The measure will contribute significantly to the efficient use of energy resources and better integration of renewable energy and surplus heat into the existing district heating system. It includes the modernisation and optimisation of the existing system. There is also the introduction of renewable energy sources (geothermal heat plant, large-scale heat pumps, solar thermal) and surplus heat (industrial waste heat). ICT will be used for optimum integration of energy sources, a high-efficiency operation of the system and communication with the consumers. A new decarbonised and optimised DH system will be integrated with other parts of the energy systems and will use heat from different sources and combine them into a smart thermal grid.

TARGETED SECTORS

District heating

MUNICIPALITY

Islands in Kvarner region (grouping) (Cres, Krk, Losinj)

INVESTMENT SIZE
458.3
MILLION €

RENEWABLE ENERGIES
34.8
GWh/y

ENERGY SAVINGS
53.26
GWh/y

MEASURES TO BE FINANCED AND SECTORS

To become model islands for climate-neutral mobility, it is planned to establish a groundbreaking decarbonized system powered by RES, primarily PVs (integrated and non-integrated). By establishing a two-way flow of energy and data, electrical vehicles (EVs) will support the operation of a Smart grid with a high share of RES in real-time, resulting in a synergy between the transport and energy systems. With the gradual introduction of EVs, the development of a dense public and private charging network, new mobility services such as a multimodal vehicle sharing system, and energy-efficient public transport will help reduce energy consumption and emissions, optimise traffic and alleviate congestion. Their active participation in the energy transition will be encouraged by establishing domestic microgrids, with integrated PVs, EVs, and energy storage systems. The beneficiaries will be, the towns of Krk, Mali Losinj, and Cres; on the island of Krk- Municipality of Malinska-Dubasnica and the towns of Baska; Dobrinj; Omišalj; Punat and Vrbnik.

TARGETED SECTORS

Sustainable urban mobility

Croatia

MUNICIPALITY

Island of Korcula (grouping)

INVESTMENT SIZE
108.5
MILLION €

RENEWABLE ENERGIES
58.58
GWh/y

ENERGY SAVINGS
93.9
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The investment concept will be developed around the following measures (non-exhaustive list) in the different municipalities on the Croatian island of Korčula:

1.Replacement of existing lighting fixtures with more energy-efficient light bulbs

2.Installation of solar thermal collectors

3.Reconstruction of the boiler room and transition to biomass or switch to high-efficiency heat pumps

4.Replacement of exterior carpentry of the building

5.Reactive power compensators

6.Introduction of photovoltaic systems on households roofs

7.Installation of a photovoltaic power plant of at least 50 kW

In addition, there will be mobility measures such as building new bike paths and promoting cycling; the introduction of 10% biofuels in transport, car-sharing between city residents, and the electrification of public and maritime transport

The grouping applied consists of the following cities and municipalities: the City of Korčula, Municipalities of Vela Luka, Blato, Smokvica and Lumbarda.

TARGETED SECTORS

Others

Czech Republic

MUNICIPALITY

Kladno

INVESTMENT SIZE
18.2
MILLION €

RENEWABLE ENERGIES
1.75
GWh/y

ENERGY SAVINGS
26.5
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The project is focused on the smart and deep renovation of buildings. This will include setting up smart metering (sensors, smart meters, etc.), the creation of a photovoltaics network, and the modernization of the district heating network (including renewable sources, decentralization, etc.).

TARGETED SECTORS

Public Buildings

Denmark

MUNICIPALITY

Fredericia

INVESTMENT SIZE
76
MILLION €

RENEWABLE ENERGIES
0
GWh/y

ENERGY SAVINGS
16.12
GWh/y

The plan includes the development of a new infrastructure for bus transport, with three new bus routes. There will be a shuttle connection between the city and railway station using existing tracks. The cost includes rolling stock, signals, and tracks repairs amongst others.
A new train station will also be built in Erritsø.
Generally, the plan is focused on creating better options for multimodal transport, including the improvement of existing transport hubs and the creation of new hubs that are flexible and attractive to use, including secure bike parking and service facilities. One of the main impacts of the project is to reduce the use of privately owned cars due to more attractive transport solutions that this project may bring.

TARGETED SECTORS

Sustainable urban mobility

MUNICIPALITY

Ringkøbing-Skjern (grouping)

INVESTMENT SIZE
645
MILLION €

RENEWABLE ENERGIES
0
GWh/y

ENERGY SAVINGS
346
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The investment concept will be developed for a project titled WeCARe IC. Its objective is to transition the car fleet to electro mobility through the financing of technical measures such as Electrical Vehicles (EVs) infrastructure.
WeCARe IC specifically identifies four relevant types of EV chargers with different charging speeds and properties, necessary to ensure a full transition to electro mobility. These are the residential charger (used for charging Battery EVs at houses and apartment buildings), a commercial charger (retail and hospitality locations), a so-called Fast charger (usable for charging BEV at high speed, e.g., at workplaces, campuses, commercial parking spaces) and an “ultra-fast charger” used for charging BEV at very high speed, e.g., at highway stops.
The grouping applied consists of the following cities and municipalities:
Frederikshavn, Skive, Ringkobing-Skjern, Horsens, Sonderborg og Hoje Taastrup.

TARGETED SECTORS

Sustainable urban mobility

Denmark

MUNICIPALITY

Kalundborg

INVESTMENT SIZE
54
MILLION €

RENEWABLE ENERGIES
348
GWh/y

ENERGY SAVINGS
24
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The investments will mostly target house owners and are divided into the following categories: renovations, renewable energy and heat pumps.
For home renovations, the investment concept will focus on improving the climate shell of the building and isolation (wall, roof, floor and windows). This will amount to an investment of 10.000 €/house. As it concerns renewable energy, there will be solar panels installed on the homes- the investment of 9.000€/house is foreseen. The last measure is the conversion of the heating system to a heat pump system. This will amount to an Investment of 13.500 €/house if it concerns an individual home. In cases where an energy utility or private company builds a collective system in a village based on heat pumps, the investment will be 23.500€/house. Some house owners will implement more than one solution at the same time. In 15 municipalities 200 house owners will choose to renovate, establish solar power and/or change the heating system to a heat pump.

TARGETED SECTORS

Residential buildings

MUNICIPALITY

Aarhus

INVESTMENT SIZE
18
MILLION €

RENEWABLE ENERGIES
0
GWh/y

ENERGY SAVINGS
107.7
GWh/y

MEASURES TO BE FINANCED AND SECTORS

In Aarhus, the focus is industrial energy efficiency. The technology development within heat pumps has in recent years reached a level where they can deliver, recover and upgrade industrial waste heat, reaching a necessary level to decarbonise thermal processes in industrial processes. Conventional heat pump solutions are generally limited to supply heat around 70°C to 80°C. HTHP, or industrial heat pumps, can be defined as heat pumps being able to deliver heat for industrial processes that require a temperature of 100°C to 200°C. The applications range from hot water production to upgrading waste energy to be used in other industrial processes. The challenges of HTHP are the integrability into the production process industry and to match the required heat demand. The HTHP seeks to substitute liquefied petroleum gas (LPG), fuel oil and natural gas with electrically powered HTHP based on a high percentage renewable energy mix. Any derivative investments in infrastructure followed by HTHP is excluded from this project.

TARGETED SECTORS

Innovative energy infrastructure

Finland

MUNICIPALITY

Tampere

INVESTMENT SIZE
223
MILLION €

RENEWABLE ENERGIES
969.9
GWh/y

ENERGY SAVINGS
815.1
GWh/y

MEASURES TO BE FINANCED AND SECTORS

This project is essentially about the optimisation of the current energy infrastructure. District heating covers over 70 % of the residential heating requirements in the City of Tampere, which makes it a vital part of the emission reduction potential. In 2022, the biomass-fired power plant “Naistenlahti 3” is to be completed by the local energy provider, Tampereen Sähkölaitos. As a result, the local district heating production will run on biomass, natural gas and municipal waste.

To achieve the city’s objective of becoming carbon neutral by 2030, this investment concept includes carbon capture in Naistenlahti 3 and a connected Power-to-X system to turn the part of the captured CO2 into synthetic fuels. Synthetic fuel can replace natural gas in peak-load boilers to help meet the heat demand in winter sustainably and in transportation to replace fossil fuels in heavy vehicles. The Power-to-X process creates a lot of excess heat, which is captured to replace waste incineration and heat-only biomass boilers.

TARGETED SECTORS

District heating

France

MUNICIPALITY

Lyon

INVESTMENT SIZE
126
MILLION €

RENEWABLE ENERGIES
23.9
GWh/y

ENERGY SAVINGS
47
GWh/y

MEASURES TO BE FINANCED AND SECTORS

At the technical level, the city of Lyon will seek to address all relevant issues: insulation of walls and roofs, change of windows, heating systems, hot water, lighting, ventilation and the production of renewable energy (heat network, heat pumps on groundwater, photovoltaic solar energy) of their building stock.

The best available technology will be deployed to achieve the objective of approaching net-zero emissions. Another method to be used is to put more emphasis on performance procurement, rather than traditional (means) procurement. Raising the standards of the tender specifications is underway and is the first step of the strategy.

TARGETED SECTORS

Public Buildings

France

MUNICIPALITY

Grand Poitiers

INVESTMENT SIZE
35.5
MILLION €

RENEWABLE ENERGIES
29
GWh/y

ENERGY SAVINGS
12.5
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The technological investments in Grand Poitiers envisaged are :

1. Installation of a photo-voltaic system on a parking lot covering 1150 parking spaces (1, 6 ha).

2. The installation of 1 575 local electric charging stations (€5.5 M), which means a CO2 reduction of 1575 t/year

3. A 'short distribution channel electricity' network comprising 2200 photovoltaic installations on private roofs or Grand Poitiers's buildings (€25 million) and a production of 15 GWh/y

4. Digital Remote Control System (Smart Grids) to calculate production and to manage the fluxes of energy though the grid..

TARGETED SECTORS

Public Buildings

MUNICIPALITY

Lille (public entity)

INVESTMENT SIZE
313
MILLION €

RENEWABLE ENERGIES
0
GWh/y

ENERGY SAVINGS
111
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The investment concept in Lille aims to deploy a deep renovation model of industrial revolution houses in northern Europe ("1930" houses). The renovation model received the Solar Decathlon Europe award in 2019. It was designed by students from Lille's schools and universities. It is based on a healthy, inclusive and aesthetic accommodation, following the New European Bauhaus premises (environmental performance, adaptation and the aesthetics of use).

There will be a focus on the optimisation of the renovation process with building information modelling, standardisation of solutions and mutualisation. The collaboration between academia and local actors through interdisciplinary academic projects is key. The renovation model will be tested in 2022 on houses and will then be deployed on blocks and streets on grouped sites. The investment concept will specify the legal, financial and social conditions tied to the project.

TARGETED SECTORS

Residential buildings

France

MUNICIPALITY

Le Havre Seine Métropole (public entity)

INVESTMENT SIZE

150

MILLION €

RENEWABLE ENERGIES

150

GWh/y

ENERGY SAVINGS

0

GWh/y

MEASURES TO BE FINANCED AND SECTORS

The project is about developing renewable energy production from photovoltaic power plants. This is fully in line with the EIB lending policy which supports, inter alia, power generation and will give priority to investments that improve the flexibility of networks.

In addition to reducing the carbon footprint of the city and raising awareness on carbon neutrality objectives, the project will provide flexibility to the local electricity distribution network. The development of solar power plants allows to:

- Reconfiguration of the electricity distribution network, by positioning the power plants at strategic points (in areas where consumption will increase) and

- Smoothing out demands and consumption on the network by storing the energy produced and releasing it at consumption peaks.

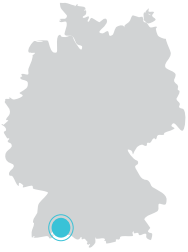
TARGETED SECTORS

Others

Germany

MUNICIPALITY

Konstanz



INVESTMENT SIZE

41

MILLION €

RENEWABLE ENERGIES

33.74

GWh/y

ENERGY SAVINGS

2.9

GWh/y

MEASURES TO BE FINANCED AND SECTORS

The technology measures to be financed include LED-lighting, heat pumps, low-carbon heat grids, photovoltaic systems, solar thermal systems, access to local renewable heat sources (e. g. geothermal drillings) and charging stations for electric vehicles and bicycles. All of these technologies shall be used in a way that is compatible with the European Investment Bank (EIB) eligibility criteria.

TARGETED SECTORS

Public Buildings

Germany

MUNICIPALITY

Bottrop

INVESTMENT SIZE
135
MILLION €

RENEWABLE ENERGIES
33.7
GWh/y

ENERGY SAVINGS
55.7
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The Investment Concept will be focused on energy optimisation in Bottrop Fuhlenbrock/Vonderort in order to identify the efficiency potential in the district, and then develop clear projects that can be financed. This is because a grouping of small-scale projects can generate synergy effects and cost savings by combining the purchase of materials and the handling of refurbishment, building insulation and heating replacement.

A “financing by citizens” programme can create an additional benefit for (private) investors through the contribution to energy upgrades and climate resilience in the home district.

TARGETED SECTORS

Residential buildings

Greece

MUNICIPALITY

Municipality of Thermi

INVESTMENT SIZE
99
MILLION €

RENEWABLE ENERGIES
5.9
GWh/y

ENERGY SAVINGS
51.9
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The investment project aims at promoting cost-effective technologies fostering the major renovation of the buildings and promoting sustainable mobility. Firstly, 48 public buildings (20 offices and 28 schools), 150 private offices and 2,000 buildings of the residential sector constructed before 2000 will be renovated. The combination of the interventions includes the insulation of the building envelope (external walls, roof and windows with double glazes), the installation of heat pumps for the coverage of heating and cooling demand, the installation of energy-efficient lighting systems and the production of renewable energy from photovoltaics for self-consumption.

Moreover, electric chargers (50 units) will be installed fostering the deployment of electric vehicles (20 light and 20 heavy-duty municipal vehicles and 1,000 passenger vehicles). The planned investments will ensure the cost-benefit achievement of the climate targets.

TARGETED SECTORS

Public Buildings

Hungary

MUNICIPALITY

Budaörs

INVESTMENT SIZE
20.5
MILLION €

RENEWABLE ENERGIES
16.2
GWh/y

ENERGY SAVINGS
6.5
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The planned Positive Energy District will include the following elements, to be examined and prepared in the frame of the investment concept:

1.Solar panels will be installed on buildings' flat roofs and S-SW facing pitched roofs, over tennis courts, the bus station and the parking lots of major commercial units.

2.Heating and cooling systems of buildings (except for those supplied by district heating) will be renewed primarily through applying heat pumps and ground-source heat pumps, as well as smart heating solutions for 1,050 residential apartments, using sensors and smart meters.

Power generated by the solar panels will mainly be utilised by the buildings themselves, while excess power will be taken up by e-vehicles through 2 charging stations installed and by Decathlon's electric car fleet. The investment plot will be part of the to-be-set-up e-bike sharing system, 3 charging stations and 3 smart solar benches will be installed.

TARGETED SECTORS

Building integrated renewables

MUNICIPALITY

Municipality of 3rd District-Budapest (grouping)

INVESTMENT SIZE
121
MILLION €

RENEWABLE ENERGIES
38.9
GWh/y

ENERGY SAVINGS
41.98
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The intended technology measures to be financed cover a complex range of investments. The modernisation of multistorey residential buildings in Óbuda and Újpest housing estates covers renovation (thermal insulation, replacement of windows and doors), and provision of geothermal energy for heating and solar panels on the roofs and facades providing electricity.

With 30 residential buildings in Óbuda, 59 residential and 39 public buildings in Újpest, savings amount to a total of 75 GWh/year. In Szentendre, four investments are planned: the creation of a solar park and three measures for the modernisation of the district's heating system, contributing to a further 2.5 GWh yearly saving. Three further innovative energy infrastructures (a 1 GWh/year capacity per solar park) are planned to be built by Budapest Waterworks and Sewerage Works to provide the energy for its plant. Moreover, further investment possibilities, such as the use of water energy for producing electricity will be assessed.

TARGETED SECTORS

Residential buildings

Hungary

MUNICIPALITY

Municipality of 18th district of Budapest

INVESTMENT SIZE
307.7
MILLION €

RENEWABLE ENERGIES
17.6
GWh/y

ENERGY SAVINGS
58.7
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The concept will explore four investment modules and their combinations following the trias energetica model. First, functional repurposing, and envelope refurbishment using green constructions will target demand reduction both in transportation and building energy. This includes creating dwelling offices, shared work- and leisure spaces, envelope measures and green roofs. Second, smart micro grid, neighborhood virtual storage and digital twinning will be explored to improve energy efficiency. Specifically, this means laying a 5th generation district heating/cooling network for distribution, and neighbourhood-scale BMS for coordinating control. Third, bio solar roofs and heat pumps will be designed to meet the remaining demand. Finally, a local energy community will be facilitated to ensure sustainable building use and the involvement of vulnerable inhabitants amongst others.

TARGETED SECTORS

Smart Grids

MUNICIPALITY

Borsod County (grouping)

INVESTMENT SIZE
19.2
MILLION €

RENEWABLE ENERGIES
12.9
GWh/y

ENERGY SAVINGS
0
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The goal of the project is to spread innovative solar distribution systems for outdated panel houses' condominiums in residential condominium buildings.
Concretely, there is an intention to launch an umbrella project for four cities in Borsod-Abaúj-Zemplén County. The concept of the project contains the setting up local "Energy Agencies" in each city involved. It will provide a grant to approximately 16 000 local flats arranged into condominiums to implement PV panel and solar energy distribution systems. This will provide the residents with the possibility to diminish their energy cost with an appropriate return while decreasing CO2 emissions and the carbon dependency of the settlements.

These local energy agencies will operate grants to condominiums /flat cooperatives for their investment into solar distribution systems with legal, technical and financial counselling included.

TARGETED SECTORS

Residential buildings

Hungary

MUNICIPALITY

Bükk region (grouping)

INVESTMENT SIZE

7.6

MILLION €

RENEWABLE ENERGIES

2.8

GWh/y

ENERGY SAVINGS

4.6

GWh/y

MEASURES TO BE FINANCED AND SECTORS

Planned measures for this project consist of, in 1st place, the mapping of the existing public building stock with regards to energy flows, RES capacities and the opportunities to accommodate decentralized energy storage. This will be followed by developing a technically sound investment concept, that is acceptable by the local municipalities and is in line with the other policies at regional and national levels.

This investment concept will be then developed into a concept that can be submitted to the ELENA facility for further funding. The application to be developed will include three main pillars: (i) incorporation of already existing RES capacities into a common EMS via retrofit of SCADA controllers; (ii) installation of new RES capacities; (iii) installation of decentralized battery storage providing for self-consumption and selling electricity on the market; (iv) local electric transportation.

TARGETED SECTORS

Smart Grids

Italy

MUNICIPALITY

Carmignano di Brenta (grouping)

INVESTMENT SIZE

32.6

MILLION €

RENEWABLE ENERGIES

28.6

GWh/y

ENERGY SAVINGS

0

GWh/y

MEASURES TO BE FINANCED AND SECTORS

Some of the technological measures of this project are:

1. Agriculture analysis for the identification of the crops produced and usable in the co-generation process.

2. Development of the prototype for the co-generation machinery to produce electric and thermal power from agricultural waste

3. Gas emissions analysis, considered as the identification of emission standards and related firing and filtration systems

4. Chemical analysis of the waste of the cogeneration process, to understand how to reintroduce them in the cycle as fertilizers in a circular economy (as fertilizers)

5. Study and development of a supply chain to link all the different phases of the cycle, such as agricultural waste production, collection, distribution, etc.

TARGETED SECTORS

Building integrated renewables

Italy

MUNICIPALITY

Reggio Emilia

INVESTMENT SIZE

40

MILLION €

RENEWABLE ENERGIES

28.5

GWh/y

ENERGY SAVINGS

11.5

GWh/y

MEASURES TO BE FINANCED AND SECTORS

The development of renewable energies is essential to reduce CO2 emissions. The introduction of technologies based on the coupling of Solid Oxide Electrolysis/Solid Oxide Fuel Cells in the biogas sector allows to use the excess electricity from renewable sources (solar, wind) and convert CO2 and H2O wasted from biogas into syngas (CO / H2). The syngas is easy to store and convert into additional electrical energy (SOFC) when requested.

The investment concept aims to optimise the waste resource generated from eight existing biogas plants that use biomass waste feedstock from the local area to produce additional electrical energy by installing eight SOEC/SOFC modules and eight photovoltaic modules. The added modules optimise and expand the production of electricity.

The investment includes technologies eligible according to the New EIB 2019 energy lending policy, focusing on the topic: Production and storage of gaseous, liquid and solid energy carriers from low-carbon energy sources.

TARGETED SECTORS

Innovative energy infrastructure

MUNICIPALITY

Comune di Assisi

INVESTMENT SIZE

212

MILLION €

RENEWABLE ENERGIES

2

GWh/y

ENERGY SAVINGS

28.2

GWh/y

MEASURES TO BE FINANCED AND SECTORS

The city will set up two One-Stop Shops (OSS) for Energy and the technical cell of the municipality will set up two One-Stop Shops (OSS) for Energy and Environment to support citizens and companies for the improvement of building energy efficiency, PV installation, the fuel switching from diesel and liquid gas to natural gas, and the use of renewable sources. Particular attention will be paid to the use of technical solutions which do not undermine the protection of the historic value of the city. These OSS will have the task of organising the annual meeting to communicate the progress of the SECAP action and the target reached.

TARGETED SECTORS

Residential buildings

Netherlands

MUNICIPALITY

Leeuwarden

INVESTMENT SIZE
48
MILLION €

RENEWABLE ENERGIES
39.9
GWh/y

ENERGY SAVINGS
5.9
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The increasing amount of renewable energy projects is causing overcapacity on the energy grid, risking grid malfunction. The municipality of Leeuwarden is one of the first in The Netherlands where grid challenges are causing a delay in the transition towards sustainable energy production and the development of new SMEs, specifically in Business Park De Zwette. Various business owners have shown interest in becoming sustainable but the local grid capacity is an obstacle.

A communally-owned energy storage solution in which decentralized renewable energy generation can be stored locally to mitigate grid scarcity on De Zwette can therefore accelerate the local energy transition. Several potential technical solutions are envisaged, such as an aqua battery, variable energy storage in the vehicle fleet and /or different methods of battery. The project will identify which solution is most fitting based on the local technical, legal and financial framework.

TARGETED SECTORS

Innovative energy infrastructure

MUNICIPALITY

Houten

INVESTMENT SIZE
186
MILLION €

RENEWABLE ENERGIES
43.35
GWh/y

ENERGY SAVINGS
23.44
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The focus here is on energy savings and also to find and implement heat and renewable energy solutions. A collective approach for investments leads to different business concepts and technical solutions. For residential areas, there is no ESCO willing to take the whole neighbourhood as a target area. Natural gas is phased out and district heating might be a solution depending on the level of isolation and renewable heat supply. What fits best is under research and the resulting investment concept includes the whole energy value chain.
The needs and demands of dwellers are the main focal point. An ESCO should be accepted as a solution for all groups, especially the poor. Increasing energy standards coincides with an increase in comfort, healthy living programmes, poverty reduction and generation-proof housing. The details will be presented in the research currently under way.

TARGETED SECTORS

Residential buildings

Netherlands

MUNICIPALITY

Gemeente Bronckhorst

INVESTMENT SIZE
186
MILLION €

RENEWABLE ENERGIES
43.35
GWh/y

ENERGY SAVINGS
23.44
GWh/y

MEASURES TO BE FINANCED AND SECTORS

In Bronckhorst, the creation of an ESCO will reduce energy consumption and, if convenient, implement heat and renewable energy solutions. It will focus on the renovation of housing to a higher energy standard: isolation, restoration, and it may include integrating renewables (e.g. solar panels) and the heating system as an integral part of the energy system of residential and public buildings, or buildings for small businesses. In the investment concept so-called 'linkage opportunities' regarding the public space, traffic, circularity, climate adaptation, and biodiversity will also be considered.

TARGETED SECTORS

Building integrated renewables

MUNICIPALITY

Utrechtse Heuvelrug

INVESTMENT SIZE
195
MILLION €

RENEWABLE ENERGIES
7
GWh/y

ENERGY SAVINGS
70.5
GWh/y

MEASURES TO BE FINANCED AND SECTORS

Utrecht will focus on residential buildings and their energy consumption in the 70s neighbourhood of De Hofjes. The activities will support the ageing population in improving their homes, especially where the financial possibilities are low. Focusing on energy savings will make the neighbourhood ready for an alternative heating system based on renewable energy. The ageing population creates financing challenges for which an innovative investment construct is needed. The solution of an ESCO will be investigated with particular attention to the governance structure.

TARGETED SECTORS

Residential buildings

MUNICIPALITY

Bunnik

INVESTMENT SIZE
79
MILLION €

RENEWABLE ENERGIES
3.5
GWh/y

ENERGY SAVINGS
37.9
GWh/y

MEASURES TO BE FINANCED AND SECTORS

Bunnik will use the EUCF grant to produce an investment concept that focuses increasing energy standards of residential buildings via, primarily, rooftops restoration and installation of solar panel. The creation of an ESCO will be explored to enable such actions, ensuring energy consumption reduction and the implementation of heat and renewable energy solutions.

TARGETED SECTORS

Residential buildings

Netherlands

MUNICIPALITY

Gemeente Voorst

INVESTMENT SIZE
101
MILLION €

RENEWABLE ENERGIES
6
GWh/y

ENERGY SAVINGS
54
GWh/y

MEASURES TO BE FINANCED AND SECTORS

In Voorst, the investment concept will assess the possibility of ESCOs that may enable a CO2 free Wilp, focusing on energy efficiency in housing and building integrated renewables. The work will, at first, focus on Wilp as a pilot, the resulting construction will be available for the whole of municipality of Voorst. The grant will allow to support a social infrastructure for an energy community, design an institutional framework and build a collective business case for an ESCO.

TARGETED SECTORS

Residential buildings

MUNICIPALITY

De Bilt

INVESTMENT SIZE
148
MILLION €

RENEWABLE ENERGIES
8
GWh/y

ENERGY SAVINGS
68.3
GWh/y

MEASURES TO BE FINANCED AND SECTORS

In the Bilt, an ESCO will aim at reducing energy consumption and, if possible, implement heat and renewable energy solutions. The investment concept, developed within the EUCF, will focus on the renovation of housing to a higher energy standard and may include integrating renewables and the heating system as an integral part of the energy system of residential and public buildings, or buildings for small businesses.

TARGETED SECTORS

Residential buildings

MUNICIPALITY

Wageningen

INVESTMENT SIZE
112
MILLION €

RENEWABLE ENERGIES
5
GWh/y

ENERGY SAVINGS
45.1
GWh/y

MEASURES TO BE FINANCED AND SECTORS

Wageningen will use the support of the EUCF to develop an investment concept aiming at reducing energy consumption in the housing sector and explore the possibility to implement heat and renewable energy solutions. An ESCO will work to increase the energy standard of housing: isolation, restoration, and may include integrating renewables such as solar panels.

TARGETED SECTORS

Residential buildings

Netherlands

MUNICIPALITY

Berkelland

INVESTMENT SIZE
222
MILLION €

RENEWABLE ENERGIES
9.6
GWh/y

ENERGY SAVINGS
77.5
GWh/y

MEASURES TO BE FINANCED AND SECTORS

In the city of Berkelland, the EUCF grant will be used to assess the possibility of ESCOs as a solution to reduce energy consumption in the housing sector. The project mainly focuses on the needs and demands of the dwellers and this may differ per area or house. Increasing energy standards needs to coincide with an increase of comfort, healthy living programmes, poverty reduction and generation-proof housing. Making business cases viable, while safeguarding the freedom of choice for the residents regarding the degree to which they would like to be unburdened and supported by the ESCO.

TARGETED SECTORS

Residential buildings

MUNICIPALITY

Epe

INVESTMENT SIZE
136
MILLION €

RENEWABLE ENERGIES
8.1
GWh/y

ENERGY SAVINGS
62
GWh/y

MEASURES TO BE FINANCED AND SECTORS

In Epe, through a pilot in Oene, the investment concept will focus on how an ESCO can facilitate CO2 neutrality, in a collective manner in energy communities with affordable measures. The focus of the ESCO is to reduce energy consumption and implement heat and renewable energy solutions. As part of the larger network, the knowledge centre, the possibility of innovative energy infrastructure, like 5th generation heating concepts is included. The intended technology measures are:

1.Integrating renewables (e.g. solar panels)

2.Isolation, restoration

3.Heating system as an integral part of the energy system of residential and public buildings, or buildings for small businesses.

Measures need to coincide with an increase of comfort, healthy living programmes, poverty reduction and generation-proof housing, fitting the needs and demands of dwellers. This is especially the case in Oene where every building is different. An ESCO should be accepted as a solution by residents and therefore be able to meet their needs.

TARGETED SECTORS

Residential buildings

Poland

MUNICIPALITY

Włocławek

INVESTMENT SIZE

191

MILLION €

RENEWABLE ENERGIES

119.38

GWh/y

ENERGY SAVINGS

12.36

GWh/y

MEASURES TO BE FINANCED AND SECTORS

The development of the concept aims to attract investors for the investment (191 million €), a much higher sum than the city's annual investment budget (39 million €). Apart from CO2 reduction and sustainable energy development, the project will improve the life quality of 108 561 residents, also by smog reduction (PM 2.5 dust emission - 50th place in the EU according to IQAir, 12th place in Poland among 66 cities with the worst air quality), city functionality and will relieve the budget, enabling further act.

1.Construction of photovoltaic installations on public buildings and PV farms

2.System of intelligent metering, monitoring and energy management

3.Decarbonisation of the municipal heating system (covering 70% of the city's residents)

4.Thermomodernisation of public and residential buildings being part of the city's resources

5.Modernisation of street lighting

6.Creating an energy cluster

7.Construction: power grid, wind farms, hydroelectric power plant

8.Expansion of a biogas-based cogeneration system

TARGETED SECTORS

Building integrated renewables

Poland

MUNICIPALITY

Gmina Miejska Rumia

INVESTMENT SIZE

451

MILLION €

RENEWABLE ENERGIES

169.37

GWh/y

ENERGY SAVINGS

266.94

GWh/y

MEASURES TO BE FINANCED AND SECTORS

Rumia plans to fully comply with the assumptions of the European Green Deal and achieve climate neutrality by 2050. Work is currently underway to prepare and adopt a roadmap for carbon neutrality (with a 2050 timeline). Taking into account the current situation, especially in terms of energy, two phases of the process are planned - 2021-2030 and 2030-2050, that encompass both private and public sectors.

In the first phase, investments will be made primarily on public and private resources, which, after preparatory and analytical work, will mainly require appropriate financial outlays as well as the involvement and consent of individual stakeholder groups.

In the second phase, it's necessary to develop and implement new solutions based on renewable energy sources, local low-temperature heating networks and the concept of distributed and community energy.

TARGETED SECTORS

Residential buildings

MUNICIPALITY

Gorzów Wielkopolski

INVESTMENT SIZE

93

MILLION €

RENEWABLE ENERGIES

39.2

GWh/y

ENERGY SAVINGS

396.97

GWh/y

MEASURES TO BE FINANCED AND SECTORS

The plan is to establish a system for monitoring media consumption for the collection of invoice data. The successive expansion of this system with modules for analysis and reporting of consumption and media costs in city-owned facilities will be the result.

The monitoring system will be about:

1.Energy measurements and audits in thermal modernization

2.Calculations and measurements to select the most effective solutions for replacing the heat substation

3.Energy measurements and audits in public transport

4.Measurements and calculations of energy savings in the case of using LED lighting and

5.Technological analyses concerning the use of an energy transformer in tram transport.

TARGETED SECTORS

Building integrated renewables

Poland

MUNICIPALITY

Zawiercie

INVESTMENT SIZE
33.6
MILLION €

RENEWABLE ENERGIES
3.8
GWh/y

ENERGY SAVINGS
6.79
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The following technologies are planned to be used in investment activities:

1.Photovoltaic installations

2.Wind turbines

3.Cogeneration (CHP systems)

4.Electric and hydrogen cars

5.Energy storage system

6.Efficient lighting system based on LED lamps

7.Energy efficiency improvements to the building envelope and building systems

8.Smart energy metering

TARGETED SECTORS

Innovative energy infrastructures

MUNICIPALITY

Piastów

INVESTMENT SIZE
34.3
MILLION €

RENEWABLE ENERGIES
1.7
GWh/y

ENERGY SAVINGS
4.2
GWh/y

MEASURES TO BE FINANCED AND SECTORS

In Piastow, the investment concept will cover:

1.Photovoltaic installations

2.Electric cars and other means of transport (electro mobility)

3.Energy storage system

4.Efficient lighting system based on LED lamps

5.Energy efficiency improvements to the building envelope and building systems

6.Smart energy metering

TARGETED SECTORS

Innovative energy infrastructures

Poland

MUNICIPALITY

Ostróda

INVESTMENT SIZE
63
MILLION €

RENEWABLE ENERGIES
92
GWh/y

ENERGY SAVINGS
92
GWh/y

MEASURES TO BE FINANCED AND SECTORS

There will be a development of an investment concept feasibility study for the project that will contain an analysis of the legal, technical and economic conditions of the investment. The investment is about the implementation of a hydrogen production installation with the use of a photovoltaic farm for the needs of a municipal heating plant, which will make it possible to abandon the use of fossil fuels.

TARGETED SECTORS

Innovative energy infrastructure

MUNICIPALITY

Skierbieszów

INVESTMENT SIZE
68
MILLION €

RENEWABLE ENERGIES
25.5
GWh/y

ENERGY SAVINGS
27.39
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The project includes an investment component (by sector). In the residential buildings sector, it is foreseen to construct renewable energy installations for residents, such as photovoltaic panels, heat pumps and biomass stoves. In the sector of Public buildings, the project looks at the thermal modernisation of public buildings. In terms of sustainable urban mobility, there will be the development of electromobility (charging stations, charging points, RES installations for stations, smart city solutions and the purchase of buses. As to Innovative energy infrastructure, there would be the construction of a biogas plant, solar farms and energy storage.

TARGETED SECTORS

Innovative energy infrastructure

Poland

MUNICIPALITY

The City of Łódź

INVESTMENT SIZE
68
MILLION €

RENEWABLE ENERGIES
25.5
GWh/y

ENERGY SAVINGS
27.39
GWh/y

MEASURES TO BE FINANCED AND SECTORS

In Łódź, in 2017, the housing sector had the largest share in the total CO2 emissions (46%). For this project, a hundred municipal buildings in the historic centre of Łódź are chosen for the project. More than half of these buildings are tenement houses from the 19th century that have entered the municipal register of monuments. They are currently inhabited by about 2,600 people. At least 80% of apartments have an active coal furnace. Overall, these buildings have a specific architecture, so standard solutions will not be possible to implement.

The assumed activities are the following:

1.Complex thermo-modernization of buildings.

2.Renovation of buildings allowing for safe decarbonisation.

3.Replacing coal stoves with more ecological methods of heating.

TARGETED SECTORS

Residential buildings

MUNICIPALITY

Urząd Miejski Wrocławia

INVESTMENT SIZE
26.3
MILLION €

RENEWABLE ENERGIES
0
GWh/y

ENERGY SAVINGS
2.23
GWh/y

MEASURES TO BE FINANCED AND SECTORS

Wrocław has the largest system of waterways in Poland. The assumption of the project is to reduce the share of cars (individual transport) in the overall transport in the Wroc Agglomeration area, in favour of environmentally friendly water transport. At the present stage, the communes of Wroc Agglomeration are making plans for the water tram routes to be served by vessels powered by alternative fuels, with electric propulsion, e.g. solar energy or using other innovative and pro-ecological solutions contributing to energy savings and reduction of CO2 emissions. The development of zero-emission transport is particularly important from the point of view of environmental protection, rationalization of the demand for parking spaces, the accessibility of collective transport for residents, and the reduction of traffic flow, including from suburban areas. The assumptions of the project are included in the Wroc Electromobility Development Strategy and are in line with objectives adopted by PGN.

TARGETED SECTORS

Sustainable urban mobilityt

Poland

MUNICIPALITY

Dobczyce

INVESTMENT SIZE

12.3

MILLION €

RENEWABLE ENERGIES

8.8

GWh/y

ENERGY SAVINGS

0.72

GWh/y

MEASURES TO BE FINANCED AND SECTORS

Within the project, it is considered to build the new council office in Dobczyce, accessible and energetically positive and moving to it the head council office from the old building. It is also considered to modernise street lights aimed at energy savings and to establish a building renewable energy development centre. There will be the installing of new renewable energy sources in residential buildings: photovoltaics, heating pumps and solar panels. The installation of new renewable energy sources in public buildings will be the following: photovoltaics (2 MW), a new photovoltaic power station (2 MW) and the creation of an energy community based on installed renewable energy sources, including software for energy balancing. Metering will also be built, resulting from the conditions of cooperation with the energy system operator.

TARGETED SECTORS

Building integrated renewables

Portugal

MUNICIPALITY

Torres Vedras Municipality

INVESTMENT SIZE

265.5

MILLION €

RENEWABLE ENERGIES

228

GWh/y

ENERGY SAVINGS

540.4

GWh/y

MEASURES TO BE FINANCED AND SECTORS

Different technologies will be involved all along with the three Structural Projects #1 Renewable Energy Communities #2 Energy Management in Municipal Building-#3 Green Public Road Transports, such as the following (non-exhaustive):

1.Photovoltaic panels and Building Integrated Photovoltaics (BIPV)

2.Inverters, convert the electric energy produced by the direct current photovoltaic panels to alternating current;

3.Instantaneous counting and monitoring system for the energy produced with GPS

4.Management, Monitoring and Control Equipment

5.Sensor for energy efficiency in municipal buildings and weather stations

6.Interoperable tools: Energy network management services; Power flow monitoring; Demand and supply matching; Predictive DR algorithms; Analytics cross-domain Big Data; Forecasting tools

7.Renewable power generation and H&C systems

8.HVAC solutions for Municipal Buildings

9.Green Hydrogen Electrolyser (10 MW)

TARGETED SECTORS

Building integrated renewables

Portugal

MUNICIPALITY

Vila Nova de Famalicão

INVESTMENT SIZE

299

MILLION €

RENEWABLE ENERGIES

192.9

GWh/y

ENERGY SAVINGS

23

GWh/y

MEASURES TO BE FINANCED AND SECTORS

Famalicão has a long history of energy cooperatives, dating back to 1930. Capitalizing on the City's history, and in line with the Paris Agreement, Famalicão developed a roadmap for carbon neutrality before 2030, creating a baseline for the promotion of equal access to sustainable energy, as well as for the creation of community-based renewable energy production and a sound electrical mobility network.

Through the creation of a Municipal Energy Efficiency Fund (which would aggregate the current program "Casa Feliz" for disadvantaged households), the city aims to invest in the installation of energy-efficient equipment in 10000 households, which would represent a total of 23 GWh/y in energy savings.

In addition, the project aims to install 120 MW of photo-voltaic solar energy, representing a total generation of 193 GWh/year and a reduction of 53733 tCO2eq/y in CO2 emissions.

Finally, the project will invest in an expanded electrical mobility network, promoting intermodality in the city.

TARGETED SECTORS

Residential buildings

Portugal

MUNICIPALITY

Vila Nova de Gaia

INVESTMENT SIZE

186.5

MILLION €

RENEWABLE ENERGIES

209

GWh/y

ENERGY SAVINGS

59

GWh/y

MEASURES TO BE FINANCED AND SECTORS

The investment project will be focused on two main topics: electrical mobility and renewable energy production through a community-based approach. As such, the following technical measures will be financed:

1.Implementation of Urban Renewable Energy Communities and the installation of 130 MW of photovoltaic solar energy, representing a total generation of 209 GWh per year. This will strengthen the transition to fully renewable-based energy production in the city.

2.Investing in electric mobility innovative solution in the Municipality, by creating intermodal spaces with 1000 charging stations across several key locations and ideally powered by the energy communities

These measures aim to reduce 68172 tCO2e emissions.

With community-based energy production, the development of innovative smart grids is also considered in the project. As such, it is imperative to assess the conversion models for future energy distribution and power needs, including the foresight for electric mobility.

TARGETED SECTORS

Sustainable urban mobility

Portugal

MUNICIPALITY

Porto

INVESTMENT SIZE

162.6

MILLION €

RENEWABLE ENERGIES

31.9

GWh/y

ENERGY SAVINGS

85.1

GWh/y

MEASURES TO BE FINANCED AND SECTORS

Porto, within its vision for climate neutrality and under SECAP 2030 identified the following key measures (non-exhaustive):

1.Public buildings renovation: EE in public buildings and facilities.

2.Street lighting: Remote management system in the city SL (26000 LED fixtures);

3.Social housing renovation: EE in buildings reducing energy poverty.

4.Porto solar: 2 MW of self-consumption (SC) in schools and municipal buildings.

5.Renewable energy communities: 6 MW of PV for SC in social housing.

6.Water facilities PV: Installation of 1.8 MWp of PV for SC in water reservoirs.

7.Municipal fleet: renovate the fleet with electrical vehicles, through a renting system.

8.Bicycle path: Improve the city cycling paths foreseen in SEAP, removing 4600 people from private vehicles.

9.EV charger installation (100).

TARGETED SECTORS

Public Buildings

Portugal

MUNICIPALITY

Guarda

INVESTMENT SIZE

55

MILLION €

RENEWABLE ENERGIES

151

GWh/y

ENERGY SAVINGS

436.1

GWh/y

MEASURES TO BE FINANCED AND SECTORS

The intended measures on this investment concept to be financed are the creation of a district heating network for the five municipalities in the application. This district heating shall be powered by a combined heat and power (CHP) plant.

The combined heat and power shall be a 50 MW plant that will have a cogeneration ratio for electricity of 5:1 and can also self-sustain the electricity needed for the plant. Also, such a system shall be powered by the existent biomass and bio-waste from the region. Such a system will allow not only to increase efficiency in the heating systems but also to replace old wood combustion at households that have very low efficiency.

Furthermore, such a district heating system, has the capacity, later on, to be adapted for a district heating and cooling system. This can be important for a preliminary evaluation and to understand if it would be feasible to have this improvement in the future.

TARGETED SECTORS

District heating

Portugal

MUNICIPALITY

Guimarães

INVESTMENT SIZE

114.5

MILLION €

RENEWABLE ENERGIES

80

GWh/y

ENERGY SAVINGS

43.1

GWh/y

MEASURES TO BE FINANCED AND SECTORS

Guimarães aims to create a solid investment project to build an interconnected and energy-efficient city, focusing on community-based renewable energy, electric mobility and energy poverty. As such, the following technical measures will be financed:

1.Installation of 20000 LED lights and implementation of smart grids in key points of the public lightning network, which will allow for a more efficient public lighting system uniformly across the Municipality

2.Development of Renewable Energy Communities (RECs) in 5 industrial parks and social housing neighbourhoods, installing 50MW of PV solar power

3.Installation of 500 electric mobility charging stations across the RECs and the ECO Pathway of 50km, as well as an integrated management system.

4.Implementation of EE measures and technologies in social housing neighbourhoods, aiming to improve buildings efficiency, while improving living conditions of those in more adverse contexts, covering 7000 households, and consisting of thermal.

TARGETED SECTORS

Sustainable urban mobilitys

Portugal

MUNICIPALITY

Braga

INVESTMENT SIZE
165.4
MILLION €

RENEWABLE ENERGIES
164
GWh/y

ENERGY SAVINGS
0
GWh/y

MEASURES TO BE FINANCED AND SECTORS

In Braga, the following measures would be financed:

1.Collection and processing of aerial image data for the calculation of solar energy, considering factors such as roof inclination, orientation, and sunlight blocking by other buildings.

2.Development of a solar map to evaluate and calculate the solar potential of buildings, where it is possible to carry out various investment simulations according to consumption, hourly occupation and the panel ideal location.

3.Evaluation and identification of the best buildings where a combination of solar panels and bio-roofs would be viable. This would consider the receiving solar energy, the inclination of the roof and its area. Bio-roofs not only promote biodiversity and reduce the surrounding temperature, but they also increase the solar panel's efficiency by preventing overheating.

4.Publication of the results in an intuitive and easy to access platform, allowing the constituents to easily consult their building's Bio-Solar potential, as well as tools to test any solar investment in their homes.

TARGETED SECTORS

Building integrated renewables

MUNICIPALITY

Sintra

INVESTMENT SIZE
160.5
MILLION €

RENEWABLE ENERGIES
275
GWh/y

ENERGY SAVINGS
44
GWh/y

MEASURES TO BE FINANCED AND SECTORS

Based on audits and smart metering of municipal buildings, a model will be created for the characterization and integrated optimization of energy uses. This model will produce several fundable intervention proposals, whose individual implementation contributes to the global objective of carbon neutrality and energy self-sufficiency in each intervention building.

Different interventions will be considered, to be defined according to the characteristics of each building and open to any opportunities for funding that are available, such as energy efficiency and renewable production using different energy sources (solar, biomass, hydrogen, others), with possible creation of energy communities;

The project will leverage interventions that simultaneously promote a more circular economy, either through the reuse and/or use of water, or through the use of biomass resulting from forest management in the municipality (if applicable), water efficiency and/ or reuse, for example.

TARGETED SECTORS

Public Buildings

Slovenia

MUNICIPALITY

Velenje

INVESTMENT SIZE

36.5

MILLION €

RENEWABLE ENERGIES

60

GWh/y

ENERGY SAVINGS

10

GWh/y

MEASURES TO BE FINANCED AND SECTORS

In Velenje, there will be the renovation and optimization of District Heating network (pipelines) and upgrading it to a smart distribution system. There will also be the replacement of coal-based heat generation with an alternative energy source. The project envisages the installation of either one or a combination of Solar Thermal, Solar PV, Biomass or geothermal energy sources. It also envisages the installation of t high-voltage (HV) -electrode boilers and a heat storage tank.
The study should address the gradual transition and connectivity of dispersed energy sources, all of which lead to a common goal of 100% replacement of existing coal resources. The feasibility study should be based on existing documents and be carried out in the phase of preparation of basic investment documentation together with the certification of technologies for heat production from RES and economic justification according to the technological needs of the system.

TARGETED SECTORS

District heating

Spain

MUNICIPALITY

Lleida

INVESTMENT SIZE

363.8

MILLION €

RENEWABLE ENERGIES

69.2

GWh/y

ENERGY SAVINGS

135.7

GWh/y

MEASURES TO BE FINANCED AND SECTORS

In Lleida, the investment concept will delve into the refurbishment of the most inefficient neighbourhoods' areas. It will concern envelop and climatisation installations. Measures that would be foreseen are the following:

1.Enhancement heating and cooling systems, on existing climate installations

2.Implementation of low-cost energy-saving measures in neighbourhood communities (LED, remote energy management, programmers…)

3.Photovoltaic installations in multi-family buildings to achieve collective electricity self-consumption.

4.Large photovoltaics installations, on industry and service sectors covers, and public available soils.

5.Installation of domestic electric charging points for sustainable mobility

6.Integral management systems for local community production-consumption-storage balance throughout smart grid technology development.

TARGETED SECTORS

Residential buildings

Spain

MUNICIPALITY

Pamplona

INVESTMENT SIZE

448.7

MILLION €

RENEWABLE ENERGIES

116.8

GWh/y

ENERGY SAVINGS

191.2

GWh/y

MEASURES TO BE FINANCED AND SECTORS

Under the Energy Transition and Climate Change Strategy (ETEyCC2030), Pamplona will replicate successful models for RES integration in buildings to build Positive Energy Districts (PEDs) triggered by local energy communities based on energy efficiency, local renewable energy generation embedded in Smart Districts, energy flexibility and sustainable mobility.

Solar energy communities and biomass district heating will be the main sources for electricity and heating in PEDs. Internal mobility will be reduced and EV infrastructure will be implemented based on PV generation.

PEDs are included in the 2030 Urban Agenda, which includes the ETEyCC2030, ensuring energy aspects are integrated into urban planning.

One-stop-shops will be set up in the PEDs after the experience of the EFIDistrict project to ensure the involvement of citizens, business and public sector for the uptake of innovative mixed financial schemes, being the Municipality the driver and multiplier of local energy investments.

TARGETED SECTORS

Building integrated renewables

Spain

MUNICIPALITY

Concello de As Pontes de García Rodríguez

INVESTMENT SIZE

485.3

MILLION €

RENEWABLE ENERGIES

13.3

GWh/y

ENERGY SAVINGS

4.98

GWh/y

MEASURES TO BE FINANCED AND SECTORS

This investment concept will be about renewable electricity generation, using solar photovoltaic, low wind and small hydro technologies. All energy resources are available within the municipality. For photovoltaic energy, the roofs of municipal buildings, industrial buildings and residential buildings are used. The other measures are as follows:

Energy storage: Lithium batteries, micro-hydro pumped storage power plants.

Green hydrogen generation: through surplus renewable electricity. Possibility of injecting surpluses into the natural gas grid.

Promotion of electric mobility: Installation of recharging points. Mobile applications to activate and pay for vehicle charging with renewable energy.

Demand management: Smart distribution network. Block-chain and mobile applications to know the generation and consumption status of each CLER participant.

Renewable thermal generation: Biomass district heating. Promotion of local energy crops that will function as CO2 capture.

TARGETED SECTORS

Smart Grids

Spain

MUNICIPALITY

Logroño, La Rioja

INVESTMENT SIZE
115.86
MILLION €

RENEWABLE ENERGIES
132
GWh/y

ENERGY SAVINGS
340
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The concept will finance PV installations on suitable public parking areas and municipal and residential rooftops within the city. The aim is to consume as much generated solar power as possible at a local level for 1) cooling and heating in residential communities and municipal buildings and 2) powering (public and private) electric vehicles.

This significantly extended solar power generation enables the implementation of a smart grid management system together with demand-side response measures. This investment guarantees adequate management of demand and supply and the maximization of local clean electricity consumption.

Charging of electric vehicles will be incorporated with incentives (e.g. free charging during peak sunshine hours), contributing to the stability of the grid.

The transformation of the mobility sector and a shift towards consuming clean electricity will come after supporting the purchase of electric vehicles for both citizens and the city.

TARGETED SECTORS

Sustainable urban mobility

Spain

MUNICIPALITY

Consell Comarcal Osona (public entity)

INVESTMENT SIZE
817.6
MILLION €

RENEWABLE ENERGIES
715
GWh/y

ENERGY SAVINGS
754
GWh/y

MEASURES TO BE FINANCED AND SECTORS

The project aims to reduce 40% of GHG emissions (baseline year 2019) through these measures.

-Heat (52% GHG emissions reduction) achieved via district heating systems fed by forest biomass, small geothermal systems for single houses and buildings, standard house energy rehabilitation, hydrogen from PV power to supply industrial high-temperature heat, and biogas obtained from farms.

- Electricity (64% GHG emissions reduction) through PV farms and residential roofs, and industrial energy efficiency actions.

- Mobility (20 % GHG emissions reduction) via incentives to electric mobility, charging stations.

TARGETED SECTORS

Building integrated renewables

Spain

MUNICIPALITY

Rivas Vaciamadrid

INVESTMENT SIZE
71.3
MILLION €

RENEWABLE ENERGIES
23.4
GWh/y

ENERGY SAVINGS
24.5
GWh/y

MEASURES TO BE FINANCED AND SECTORS

Rivas GEC is the tool to move on towards the positive district concept. The project aims to increase increase the share of renewables consumed, as well as impact the overall town energy efficiency. PV generation and energy storage assets will be installed in public, residential and industrial buildings. In public buildings, energy efficiency measures will be put in place (i.e. envelope retrofitting, replacement of HVAC assets), adding also a layer of intelligence (i.e. sensors, actuators, BMS, etc.). Likewise, a community battery will be installed to provide flexibility and enable the community to participate in the Spanish ancillary services market. Actions on urban mobility will be also deployed: EV charging points will be installed, new new fleet of EV/HEV buses, etc. Together with an aggregation management platform to handle the assets and optimise the community performance, a retailer in the form of a cooperative will be promoted by the municipality to act as a market agent on behalf of the Rivas GEC.

TARGETED SECTORS

Residential buildings

MUNICIPALITY

Alcorcón

INVESTMENT SIZE
169.3
MILLION €

RENEWABLE ENERGIES
121
GWh/y

ENERGY SAVINGS
83.9
GWh/y

MEASURES TO BE FINANCED AND SECTORS

REC-A will become the springboard to propel the energy transition across the municipality. Through PV and ESS assets installed in public, residential and industrial building, the project will increase the share of renewables consumed and the energy efficiency of the municipality. PV and ESS assets will be installed in public, residential and industrial buildings. In public buildings, energy efficiency measures will be put in place (i.e. envelope retrofitting, replacement of HVAC assets), adding also a layer of intelligence (i.e. sensors, actuators, BMS, etc.). Likewise, energy efficiency measures and PV retrofitting in the industry will take place, after removing asbestos presence on rooftops. Besides, a community battery will be installed to provide flexibility and enable the community to participate in the Spanish ancillary services market. Actions on urban mobility will be also deployed: EV charging points, new EV/HEV float, etc. Also, logistic centres will be created to facilitate charging infrastructure towards 100% electric “last mile” delivery.

TARGETED SECTORS

Residential buildings

Sweden

MUNICIPALITY

Järfälla

INVESTMENT SIZE

204

MILLION €

RENEWABLE ENERGIES

1.5

GWh/y

ENERGY SAVINGS

678.8

GWh/y

MEASURES TO BE FINANCED AND SECTORS

The activities implemented will create a common investment concept for two municipalities aiming for the organisations to be fossil-free and creating deep energy reductions. The investment concepts will cover areas pointed out as crucial to reaching local and regional targets on energy and climate.

Measures aiming for the transition of the local municipalities (known at this point):

1.Improved energy efficiency in public building stock (aiming for 30 % energy reduction)

2.Improved energy efficiency in the public housing company (aiming for 20 % energy reduction)

3.Integration of small-scale renewables in the building stock (aiming for an installed capacity of 1500 kW)

4.Conversion of municipal vehicle fleets to renewable fuels (aiming for fossil-free vehicle fleets)

Actions will also target the society at large and create changes on a system level including the creation of an infrastructure for fast charging of heavy transports and accessibility to electric cars for passenger transports.

TARGETED SECTORS

Sustainable urban mobility

United Kingdom

MUNICIPALITY

Durham County Council

INVESTMENT SIZE

62

MILLION €

RENEWABLE ENERGIES

9.7

GWh/y

ENERGY SAVINGS

9.5

GWh/y

MEASURES TO BE FINANCED AND SECTORS

The technological measures will be Solar PV, installed on lightweight car port structures over parking spaces, battery storage, with EV charging cabling and points, building or grid connections where needed. Green Infrastructure to enhance biodiversity will be added (feasibility study already conducted).

At the scale proposed, and for County Durham, c. 12.8 MWp of solar PV would be installed over 8762 parking bays, with 77MWh of battery storage and 434 EV charging points. The latter alone would double capacity in the County.

A local authority does not typically work on projects of this size, and must increase the capacity to do so – the investment concept is the next step to do this. Durham has many car parks, with lower levels of sustainable transport use than the regional and national average. Durham County Council is committed to upscaling as demonstrated in the CERP and through the enhanced governance arrangements.

TARGETED SECTORS

Innovative energy infrastructure