ZEROCO2 — Newsletter #3

What is ZEROCO2?

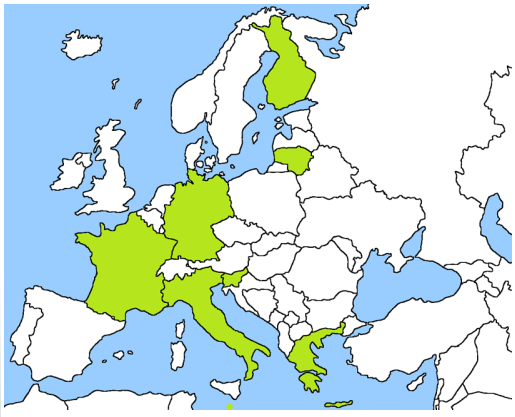
Project Background

The European Directive on energy efficiency (Directive 2012/27/EU) and energy performance of buildings (Directive 2010/31/EU) stipulates that **after 2020, all new buildings must be zero energy buildings and those buildings will also be near zero CO2 emission buildings (NZCO2EB) due to energy use.** Initiated in 2016, the Interreg Europe project ZEROCO2 aims to comply with these directives to create a sustainable energy future for all of Europe. The overall objective of the ZEROCO2 project is to improve regional energy policies with regards to environmental sustainability and mitigation of climate change risk. This Interreg Europe project represents and implements near zero CO2 emission buildings due to energy use, which means that the buildings will not produce CO2 emissions due to their use.

Issues Addressed

The methodology uses an interregional approach that engages and targets policymakers from different European regions to reduce CO2 emissions, while simultaneously accelerating the transition towards sustainable development at local, regional, national and European levels. Through interregional cooperation, regions identify, share and transfer innovative methodologies, technologies, and good practices in developing and implementing NZCO2EB policies—specficially targeting new constructions and retrofitting of existing buildings.

Action Plans



Map of the ZEROCO2 partnership

What is an Action Plan?

Produced by each regional partner, action plans provide details on how the lessons learned from the cooperation will be utilized in order to improve the policy instrument tackled within that region. Action plans specify the nature of the actions to be implemented, their timeframe, the players involved, the costs and funding sources.

Overviews of each partners' action plans can be found on the following page.

European Union
European Regional Development Fund

ZEROCO2
Interreg Europe

ZEROCO2
Interreg Europe

European Union
European Regional Development Fund

What's Inside?

Dates & Events

Continuous LSG meeting

TBA

To stay tuned, visit the ZEROCO2 website and/or follow us on our social media channels (see p.8)

International ZEROCO2 Conference 21st—22nd March 2018 in Ptuj, Slovenia

ZEROCO2 Action Plans - Regional Overviews

Local Energy Agency

LEA Spodje Podravje of Slovenia plans to improve upon climate policies already in place, set up an Advisory Group, whose purpose will be to target the reduction of administrative barriers in the application for grants, and adopt best practices for education relating to user behaviours from a partner region. Further, LEA's action plan includes modifying the Regulation on Energy Performance of Buildings to mandate investment against short payback periods and incentivizes banks and private investors to make the investment available on short term loans.

MAICH

MAICH's action plan spans the years 2018-2022 and includes a detailed outline for: installing energy efficient technologies in buildings in Crete; adopting good practices from other regions; supporting the installation of solar photovoltaic systems in various municipalities in Crete; and, adopting a best practice for information and education from their high-performing partner region, South Ostrobothnia (here, insulation investment, local grid management, heating systems and public education are exemplary).

Molise Region

Detailed in their action plan, the Molise Region of Italy aims to install renewable sources energy production systems for own use associated with interventions, as well as better incentivize the reduction of energy consumption and climate gas emissions of enterprises and productive areas. The Molise Region also plans to implement intelligent energy distribution networks—smart grids—and other interventions strictly concerning the complementary transmission networks, digital communication systems and intelligent monitoring of urban and suburban areas.

Thermopolis

This partner from the South Ostrobothnia Region in Finland will execute its goals by impacting the Regional Strategy of South Ostrobothnia policy instrument. They will do this by helping the regional authority develop and enforce relevant indicators within the Energy and Climate Strategy of South Ostrobothnia and in the Regional Strategy update for 2018-2021. Thermopolis will also attend workshops on the Regional Programme Implementation Plan for 2019-2020, participate in mid-term evaluations of the Regional Strategy, and assist the Seinäjoki University of Applied Science (SeAMK) in developing a platform for building zero CO2 single family homes.

Kaunas District

The Municipality of Kaunas in Lithuania has outlined their plan to encourage RES-systems installation in residential houses, especially photovoltaic sun energy plants, and to promote the construction or conversion of standard buildings to zero CO2 emission buildings from private funds through the implementation of Energy Saving Company (ESCO) model. The Kaunas Municipality will also educate and inform residents of Kaunas region about energy saving techniques and financial benefit.

University of Malta

The University of Malta's action plan focuses on providing continuous professional training to architects, engineers and project managers on aspects of design, technologies, life cycle costings and energy performance certification of NZCO2EB. Also described in their action plan is a mandatory minimum renewable energy share in new and existing public buildings to be renovated, revise solar water heating grants to renew interest in solar water heating, and pilot a project to reduce a public housing sector's CO2 emissions by 30% by 2020.

AVITEM

Outlined in the action plan of AVITEM of the Provence Alpes Côte d'Azur (PACA) Region in France is their goal to promote a regulation that integrates the carbon dimension in new buildings and is based on the energy and carbon benchmark, or the E+C- label, currently being tested—which includes advocating for the E+C- label and its results within their S3 Partnership on Sustainable Buildings platform. AVITEM will also support the integration of the carbon dimension into the renovation of existing buildings, remove obstacles to the development of thermal solar energy towards a solar thermal cluster, and disseminate good practices related to low carbon renovation.

All partners have finalised their action plans, which are now ready to be implemented as we move into the next project phase.

ZEROCO2 Good Practices Examples from Partners

A Good Practice (GP) Catalogue—containing innovative GP examples in terms of policy and already existing near zero emission buildings—was developed within the INTERREG EUROPE Project ZEROCO2. The catalogue is designed to provide new, specific ideas that can be transferred among the partners or to regions. The exchange of those examples, also beyond ZEROCO2, will help to improve local, regional or national policies in order to contribute to the competitiveness, sustainability and social cohesion of cities, regions, countries and the European Union as a whole.

Each partner (excluding Communication Manager, EIfl) provided at least two examples of GPs exhibited during project ZEROCO2 in their respective region or country. The Good Practice examples are demonstrated by successful applications to national calls for grants. Below are brief overviews of some GP examples provided by the partners.

LEA Spodnje Podravje

Through their projects on energy renovation of primary schools, kindergartens, health centres and libraries owned by local communities in Slovenia, Local Energy Agency Spodnje Podravje renovated 7 buildings with the total heating surface of 4.408 m^2 (with specific focus on renovating the buildings' windows, façade, attic). Specifically, LEA Spodnje Podravje enabled the renovation of a primary school building (below) originally built in 1980. To reduce overly high energy consumption from heating, the building's envelope (i.e. windows, façade, attic) was renovated, along with its technical systems (i.e. optimization of the heating system, installation of a wood pellet boiler).

Energy renovation of primary school Anica Černejeva Makole (1980)

This is a GP in terms of improving in terms of ensuring environmentally-friendly and energy-efficient spatial conditions for children while improving working conditions for employees. These renovations can be easy transferred into other regions, especially if there is availability of European cohesion fund or other sources.

MAICH (Crete)

The Mediterranean Agronomic Institute of Chania (MAICh) is installing zero CO2 buildings that are not interconnected with the electric grid in Crete, Greece. The renewable systems used are mature, reliable, tested and cost effective.

Small, residential zero CO2 building in Crete

The implementation of these buildings serve as GP examples because the same technologies can be used in other territories with high solar irradiance, satisfactory wind energy resources and availability of solid biomass resources. In other words, Crete provides excellent practical examples of effective, efficient zero CO2 buildings.

The installation of the solar-PV panels on the terraces of the Orthodox Academy of Crete, specifically, is another GP example, as the technology of the solar-PV system used is mature, reliable and cost effective. The solar-PV grid system uses the resources of sunny Crete effectively and efficiently. The pay-back period of the investment has been estimated at 8-10 years. The same technologies can be used in other territories with high solar irradiance, especially those in Mediterranean region.

Installation of Solar-PV panels in the premises of the Orthodox Academy of Crete. The total cost: 70.000 €.

ZEROCO2 Good Practices Examples from Partners

Molise Region

The Molise Region of Italy exemplifies GP examples through their use of low enthalpy geothermal heat pumps for heat generation, specifically in a school gym in Malfalda. To reduce CO2 emissions, the ZEROCO2 partner has implemented a low enthalpy geothermal plant, which is

A school in the Malfalda Municipality using high energy efficiency practices

composed by the installation of vertical geothermal probe combined with high efficiency heat pumps that supply energy to the building with very low emission of CO2—resulting in a CO2 emissions reduction of about 30%. This is considered the best way to enhance the efficiency of the heat plants given the exogenous factors.

Thermopolis

Thermopolis demonstrates GPs namely through their push to create and implement climate strategy within several small municipalities with limited resources in Finland. In 2012, a joint climate strategy co-written by Thermopolis, the energy agency of South Ostrobothnia, for 8 municipalities was officially accepted in each of the participating municipalities. Each municipality formed energy efficiency teams, which continue to meet and implement strategy regularly, and developed voluntary energy efficiency agreements with the national government. Thermopolis has used their expertise to implement GPs and energy-saving techniques across Finland.

Solar collectors integrated into the roof of a school in Lapua. FP7, Concerto Photo by Pauli Kortesoja

Kaunas District

From 2015 to 2017, a German-Lithuanian cooperation project was dedicated to energy-efficient redevelopment of urban areas in the Kaunas District of Lituania. The energetic refurbishment of the Lithuanian housing stock is a key aspect for sustainable urban development. Under this project, urban area de-

velopment is an integrated concepts of energy efficiency in 6 relevant sectors: Buildings; Land use; Density; Infrastructures; Mobility; and Open spaces. This pilot project and 2 other pilot projects in different municipalities are the initial step in the program, after which it will be implemented in other regions. This program serves as an excellent GP example, as it is suitable to transfer not only to other regions but also to other countries.

University of Malta

One GP example coming out of Malta is the construction of a solar photovoltaic communal farm scheme. Communal PV farms operated by private contractors ensure reliability and optimal operation of the PV systems. The scheme is a win-win proposal for the 3 parties involved: the government, to achieve the RE target; private contractors, for job creation in green markets; and finally, the general public, to achieve a lower carbon footprint.

Fiddien Water Reservoir after installing solar PV system

AVITEM (PACA)

The Provence Alpes Côte d'Azur (PACA) Region in France has successfully rehabilitated social housing to reach low energy building objectives. The Region contributed over 60 M € in 4 years for the rehabilitation of 30.000 houses—this corresponds to roughly 10% of the regional social real estate. After the project, energy standards have increased, passing from C+ to B. The tenants' behavior regarding energy efficiency was actively impacted. Due to this successful practice, the program was renewed for a 3rd phase, which began in 2017.

Good Practices provide new and specific ideas that can be transferred among the partners or to regions, and show that real change—in the areas of sustainability and social cohesion of cities, regions, countries and the European Union as a whole—is possible.

Another (stylish) GP example of energy renovation of schools in Slovenia

Market Needs Reviews

Market Needs Reviews—some of which have been provided by the Green Angel Syndicate in collaboration with the partners, while others have been provided by the partners themselves—explore the viability of and need for zero CO2 buildings in each partner region. The grounds for these reviews are based on publically available data and conclusions drawn from certain seminars attended by Green Angel Syndicate members.

The Market Needs Reviews for the ZEROCO2 partner regions are outlined below and on the following page.

MAICH

MAICH's market needs report has been produced as a result of a desk research exercise and a seminar in Chania in Greece, during which the potential impact of financial tools for energy efficiency in Chania was discussed. The Green Angel Syndicate concluded that, in relation to energy efficiency in public buildings in Crete, ''very little is happening'', and that public policy does not encourage investment in energy efficient public buildings; in fact, the main European public source is still not available in Crete even 3 years after the programme should have opened, and there are almost no policy measures in place to help energy efficient projects gain access to private sector funding. According to the Green Angel Syndicate, the Net Metering System could be improved, as there is high potential for wind and solar energies in Crete but far fewer installations in place than many parts of Europe with less potential—this is because there are far from adequate policy incentives to encourage energy efficiency, even though such measures would reduce running costs during the current economic downturn. Further, the relationship between banks and the public sector is not clear, as the banks most likely do not lend enough money to the public sector to invest in renewable energy and energy-efficient technology. All in all, the Green Angel Syndicate suggests that, in the context of ZEROCO2, Greek policies must adapt to allow greater ''independence of action'' and ''encourage the development of funding mechanisms for commercially viable initiatives in public buildings through the private sector''.

A small, zero CO2 emissions commercial building in Crete, Greece that is not interconnected with the electric grid

Molise Region

The Molise Region of Italy has conducted a Market Needs Review, finding that there are currently many, mostly national, incentives (i.e. tax deductions or Ecobonuses) for energy efficiency in plants and buildings. According to the report, ''despite the bureaucratic process and the conditions to be met to access to active funding, many Molisans have had access to these loans and have carried out energy efficiency improvements to their buildings, contributing to the achievement by the Molise Region of the targets set by Europe before the deadlines imposed''. Thus, the ZEROCO2 project will be applicable in the Molise Region, as this project will help extend these carbon reduction techniques to both private and public buildings and plants throughout the territory. To conclude the Market Needs Review, ''it can be said that, alongside the measures currently present at national level, the planning action put in place by the Molise Region and the incentives allocated in the 'Sustainable Energy' sector strongly push in the direction of the ever wider spread of NZCO2EB projects, fundamental principle of the ZEROCO2 concept''.

Remodelled school gym the municipal school of Ripalimosani (Molise Region) utilizing low enthalpy heat pumps

Thermopolis Ltd.

The Market Needs Review by the Green Angel Syndicate in collaboration with Thermopolis suggests that the market needs and conditions are far less severe in the South Ostrobothnia Region in Finland as in other partner regions. Finland as a whole is relatively advanced and progressive in their approach to zero CO2 public buildings, and there are already rather sufficient funding mechanisms—such as Business Finland, Energy Aid, and ERDF—and programmes in place to encourage RDI and public education connected with renewable energy and energy efficiency. However, cohesion amongst these funding mechanisms is necessary, and measures should be taken to improve the Regional Strategy (e.g. include energy indicators). The market needs report also encourages the Finish re-

Market Needs Reviews—Regional Snapshots

gion to rid of oil heating in public buildings, solve technical problems surrounding RES (e.g. battery/storage issues), and develop specific zero CO2 targets in Finland. There is also a growing concern of air quality issues and humidity within already existing zero energy buildings

Kaunas District Municipality

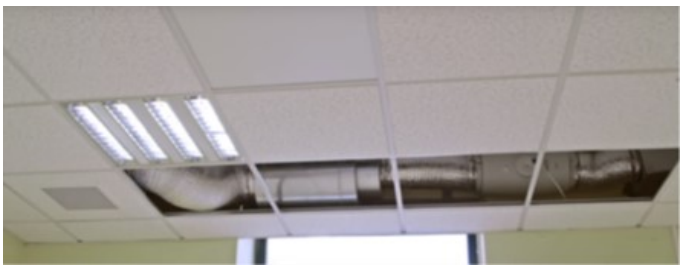
The Market Needs Review for the Kaunas District Municipality in Lithuania provides an overview of the current measures—including state and municipal finding schemes—for improving energy efficiency in public and private buildings in the region. Given the current funding instruments in place in Kaunas, the market needs report suggests that various instruments are offered to both the owners of private homes and multi-apartment buildings to implement low carbon technologies. In addition, the renovation of multi-apartment buildings is planned and executed quite sufficiently at both on the national and municipality levels. But although there are correct instruments and measures in place for carbon reduction and RES uptake in the Kaunas District Municipality, it would be more beneficial to integrate RES equipment in residential buildings using the current funding instruments. The focus of RES uptake should also shift toward buildings in the public or corporate sectors.

Building of Kaunas District Municipal Administration renovated in 2016 after an energy audit

Roof-mounted solar PV system at a school in Malta

Malta

The Market Needs Review for Malta was conducted by the University of Malta in collaboration with their two main stakeholders, The Energy and Water Agency and the Building Regulation Office. The report can be summarised by a comprehensive list of market needs to enable the transition of public buildings to NZCO2EB. This includes the needs for reduced bureaucracy, targeted support schemes towards specific sectors, and the upgrade of grants and schemes (by targeting them towards most effective energy efficiency measures;). The report also highlights Malta's need to increase public acceptance and good use of Energy Performance Certificates (and their accompanying recommendation reports), provide incentives, tax rebates or schemes to allow public building / housing sector with shaded or non-existent rooftops to achieve low operational CO2 levels. Further, the Maltese islands must streamline Energy Performance Contracting, develop schemes targeted towards the public housing sector, and introduce minimum requirements for RES energy share for new buildings and renovations. Of course, this all should be accompanied by efforts to increase public awareness of carbon emissions and to improve technical expertise surrounding zero CO2 buildings.



BMS and Demand controlled ventilation using CO2 sensors installed in the classrooms in Malta

Photo taken at the site of the Ferme Grand Site Sainte-Victoire, a 19th century farm that has been completely rehabilitated with ecological materials and very low energy consumption

PACA Region

The market review for the Provence Alpes Côte d'Azur (PACA) Region in France was produced as an outcome of

Comprehensive energy renovation of Audiberti high school in Antibes, France

bilateral meetings with regional and local stakeholders in the region. In the meetings, the stakeholders explored the current status and quality of energy efficiency projects in public buildings in the PACA Region, paying particular attention to the current public funding measures available to support these projects. To summarize the results of the review, ''in order to tackle the complexity of energy and carbon approaches, it is crucial to make available a full technical and financial support mechanisms for the contracting authorities, from the design until the equipment management phases, whose experience shows it is often ineffective.'' The PACA Region requires the emergence of new skills and expertise to shift toward a track that does foresee reaching energy transition objectives.

Local Energy Agency Spodnje Podravje

Created in collaboration with the Green Angel Syndicate, the Market Needs Review of Ptuj and the Spodnje Podravje Region in Slovenia suggests that energy efficiency upgrades to public buildings is happening—but not quickly enough. As there is a tendency to rely on private sector energy companies for funding, the market requires more dynamic and cohesive public funding policies and measures in order to tap into and incentivize private sector funding. More so, it should be wider known in Ptuji that investment in green technologies, whether privately or publically sourced, will be profitable and generate new income. Put simply by the market report, ''the energy companies could replace one source of income – energy consumption —with another —energy savings.'' All in all, the market in Ptuj and Slovenia as a whole needs policy change to encourage ''commercially viable, revenue generating, self-sustaining projects'' that will benefit investors—and the environment.

These Market Needs Reviews have been created to provide scope and insight to ZEROCO2 partners as they develop the optimal methods of implementing zero CO2 public buildings in their regions.

Upcoming Events: International ZEROCO2 Conference

You are cordially invited to take part in the **International ZEROCO2 Conference in Ptuj, Slovenia on 21st – 22nd March, 2018!**

The International ZEROCO2 Conference will serve as an opportunity to bring together organisations from the public and private sector across the EU that are dedicated to the creation of zero and near zero emission buildings with the transition to low-carbon economy. The conference is intended to create a space for discussion over shared challenges surrounding the reduction of CO2 emissions in the built environment. ZEROCO2 is hosting this conference to improve the way we go about shaping policy to reflect the need for zero emission buildings, specifically emphasising the greening the building sector, environmental sustainability and mitigation of climate change risk.

The conference will be conducted in English and is free of charge. On the following page, you will find details on how to register. See you in Ptuj!

ZEROCO2 — Newsletter #3

International ZEROCO2 Conference Details

You can find more information, including registration, here:
https://www.interregeurope.eu/zeroco2/

Registration:
https://docs.google.com/forms/d/e/1FAIpQLScqFR0sqfGj4o6Y6nWoI4427NwmufkfR8lGAwiMBTwOsLjo-Q/viewform?usp=sf_link

The conference will be conducted in English and is free of charge. We hope to see you in Ptuj!

Project partner information

Partner	Country	Contact
Local Energy Agency Spodnje Podravje	Slovenia	Tea Potocnik - tea.potocnik@lea-ptuj.si *www.lea-ptuj.si*
Mediterranean Agronomic Institute of Chania	Greece	Ioannis Vourdoubas - vourdoubas@chania.teicrete.gr *http://www.maich.gr/*
Molise Region	Italy	Alessia Finori - zeroco2@mail.regione.molise.it *http://www3.regione.molise.it*
Municipality of Kaunas District	Lithuania	Ieva Kripiene - ieva.kripiene@krs.lt *www.krs.lt*
University of Malta	Malta	Charless Yousif - charles.yousif@um.edu.mt *http://www.um.edu.mt/*
European Institute for Innovation	Germany	Benjamin Daumiller -,b.daumiller@eifi.eu *www.eifi.eu*
Thermopolis LTD.	Finland	Lea Hämäläinen - lea.hamalainen@thermopolis.fi *http://www.thermopolis.fi/*
Agency for Sustainable Mediterranean Cities and Territories	France	Léonard Lévêque - l.leveque@avitem.org *www.avitem.org*

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https://www.linkedin.com/groups/8538366

Contact:

Tea Potocnik—Lead Project Partner

tea.potocnik@lea-ptuj.si

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