

Lublin

Norwegian Climate for Lublin. Rational use of energy in the Lublin's "heat island" area



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Description of the municipality

Lublin is the second largest city of the Małopolska Region. It is located in the south-eastern part of Poland and counts approx. 340 000 inhabitants. It is a fast developing university and cultural center, with many festivals and cultural events organized each year.

WWW: <http://www.lublin.eu/>

Description of the overall idea for innovation

Identified problem: Over 60% of the city area is supplied with district heating. The heat is produced together with electricity in two municipal co-generation plants. In the summer there is an overproduction of heat, which may be used to generate chilled water for air conditioning. Moreover, city's geographical characteristics results in the occurrence of the "urban heat island" effect, which leads to the increased demand for cooling of the buildings over the summer period. Main objective of the innovative project: using excessive heat from co-generation plants to provide cooling in a 12-storey office building belonging to the Municipality of Lublin. Currently the building uses standard air conditioners, which consume significant amounts of electricity, the availability of which is reduced during the heat waves. Most of the air conditioners used contain substances depleting ozone layer and will have to be replaced with other devices. A solution to the above-mentioned problem will be to implement in the building the new cooling system based on the installation of the absorption water chiller using warm water from the municipal heating network.

Using excessive heat from the network to provide cooling will result in the improvement of the building's energy efficiency, optimization of the Lublin's energy system, reduction of CO₂ and other pollutants emissions to the atmosphere and the reduction of the amount of waste produced in the process of energy generation in municipal CHP plants. Increasing the use of the existing CHPs in the summer will allow the manufacturer and the heat supplier to increase their energy efficiency.

Innovative cooling system implemented in the office building will contribute to the city's adaptation to climate change and to ensuring protection of public health. The building will be an example of the rational use of energy and an inspiration for the managers and users of other buildings supplied with district heating. Currently production of chilled water from the excessive district heat is in its preliminary phase in several European cities, while in Poland there are only some first experiences available.

Description of the micro-project

The micro-project consists in the development of the functional programme, which will specify Lublin's requirements and expectations regarding the use of district heat to provide cooling in the office building located at the 14 Wieniawska street. The document will describe technical, economic, material, functional and architectonic requirements. It will be a basis for the calculation of the costs of planned design and construction works, costs of the offer and preparation of the

technical design. The functional programme will be also used to prepare further project documentation necessary to apply for co-financing of the investment, as well as to develop public procurement procedures aiming at selecting the contractor that will implement it. Thanks to the financial, economic and environmental analyses it will be possible to evaluate potential effects of the investment in terms of financial savings, energy savings and CO2 emission reduction.

Planned results/outputs of the micro-project

1. Participation in conferences, seminars, courses, meetings and workshops organised in Poland in order to obtain knowledge about modern technologies used in district cooling;
2. Study visit in Norway and following visit of Norwegian experts in Poland in order to exchange experience and establish cooperation;
3. Development of the functional programme and preliminary feasibility study, i.e. the documentation necessary to prepare and implement the overall innovative project. Following best practices and instructions on the development of the project's preliminary documentation, which are based on the previous investment projects co-financed from the EEA funds, the programme and the study will include inter alia:
 - description and implementation plan of the investment, analysis of the demand and of alternative options,
 - analysis of the environmental impact of the project and its environmental effect,
 - financial and economic analysis of the project (balance of costs and benefits),
 - risk assessment and sensitivity analysis of the project,
 - analysis of socio-economic costs and benefits, including assessment of the cost effectiveness of achieving planned environmental effect.
4. Information and promotional activities addressed at project's target groups and stakeholders.

Expected role of the Norwegian

Planned study visits will help to establish necessary knowledge base and to transfer effective Norwegian solutions to Lublin. Preliminary analysis showed that similar solutions (in terms of character and scale) have been implemented in Trondheim, Oslo, Akershus, Sandvika and Hamar (e.g. at the St Olav's University Hospital and Statoil Hydro Research Centre in Trondheim, University Hospital in Akershus).

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