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The Energy Improvement District Strategy for the Wieniawa District



The Strategy has been developed for the needs of the Municipality of Lublin as part of the „AREA 21 – Baltic Smart City Areas in the 21st Century” project

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Introduction

The concept of the Energy Improvement District (EID), as part of the “AREA 21 – Baltic Smart City Areas in the 21st Century” project, promotes a cooperative development model with an emphasis on the bottom-up initiatives, in its assumptions. The concept makes it easier to combine competences, ideas and joint activities between public and private entities, in order to develop and implement a joint strategy. The strategy is setting directions and actions aimed at improving energy efficiency in the Wieniawa District.

The newly-developed EID approach will include specific challenges and needs of the European cities. It will be implemented as a framework in selected areas of cities taking part in the project, and thus be an opportunity to engage administrators of public real estate and citizens, as owners of buildings or users, to initiate activities to increase energy efficiency. The concept, which promotes actions in the field of building networks and reaching a consensus, makes it easier to identify tailored solutions, pilot new projects and establish informal cooperation and formalized partnerships on district level.

A. Background Information

The Strategy of the Energy Improvement District (EID) is a document with the strategic objective is to develop a cooperation model of various stakeholders groups in undertaking energy efficiency improvement measures and counteracting climate change. The EID Strategy is focused on the district as an administrative unit, in which various stakeholders may find a common platform for cooperation in implementing activities and achieving assumed goals.

The document was developed during AREA21 Project indicating districts as grounds for local community to take the climate challenges and actions for energy efficiency together. The project promotes inclusion of property owners in energy planning process as end-users, supports new forms of cooperation between stakeholders and promotes new technologies of energy monitoring.

The EID Strategy comes with Wieniawa District description including structure and forms of building property ownership in that area. It diagnoses problems and key challenges for energy efficiency improvement and draws attention to opportunities. The strategy indicates general and detailed goals leading to implementation of Wieniawa as an EID vision. Moreover, the document contains SWOT analysis and action plan.

Three local stakeholder workshops were conducted during the AREA 21 project becoming a platform for information and experience exchange on district energy needs and technical issues. Workshops were also a common ground for stakeholders good practice interchange.

Stakeholder engagement constitutes as the initial point of the process of encouraging behaviour change, which is a necessary complement to the technical activities included in the EID Strategy.

The participation of interested parties is important for a variety of reasons:

- The participation of various stakeholder groups in the process of creating the policy makes it more democratic,
- The decisions made with the participation of many stakeholders are based on more extensive knowledge,
- A wide consensus influences a greater acceptance, quality, efficiency and credibility improvement of the Strategy,
- Active participation in energy planning and creating the Strategy ensures its long-term acceptance and support of activities included in it, leading to, among others, reducing emissions.

Stakeholders connected to the Wieniawa district are:

Lubelskie Przedsiębiorstwo Energetyki Ciepłej S.A., [EN: District Heating Company in Lublin], Polska Grupa Energetyczna Dystrybucja S.A. [EN.: Polish Energy Group Distribution S.A.], Wieniawa District Council, two kindergartens, primary school and high school, Complex of Chemical and Food Industry Schools, school dormitory, the Labyrinth Gallery, University

of Life Sciences, Statistical Office in Lublin, military hospital, two housing associations and the „tu obok” Foundation.

Besides supporting Wieniawa EID Strategy development the workshops were about to increase awareness of stakeholders on their substantial role in energy planning on a district level. During a first meeting stakeholders were presented with concept and assumptions of the AREA21 project and discussed its strategic goals. On following meetings, energy efficiency objectives were identified leading to an action plan development. Actions and measures possible to undertake cooperatively were identified in order to facilitate cooperation.

Gathering stakeholders at the same time allowed specifying some initiatives and actions, such as cooperation of District Heating Company in Lublin and Marshal Office of Lubelskie Voivodeship with organizing annual picnics for resident of the district. Moreover, officials from the City Hall declared to help with infra-red tests for buildings managed by housing associations. Knowledge about heat flow through partitions (thermal bridges, etc.) will be helpful to plan effective thermo-modernization. All stakeholders agreed that cooperation is the best way to achieve significant goals. Joint definition of the objectives of the EID strategy with which stakeholders identify themselves will increase the chances of implementing the planned activities. Everyone also agreed that they need a time to prepare financial and human resources, which is why they decided that the implementation of the activities would be finalised by 2027. Summarizing, engagement of stakeholders and regular meeting of them is an invaluable input for EID Strategy.

B. Local context

B.1 Territorial and functional characteristic of Wieniawa District.

The Wieniawa District is located in the central part of Lublin - the biggest city in Eastern Poland with around 330 000 citizens. The Wieniawa District occupies an area of 2.2 km² (which constitutes as 1.5 % of the whole area of the City of Lublin) and has about 12000 residents and 3000 temporary residents. Wieniawa is one of the 27 districts of the city. In Wieniawa District there are 423 residential buildings, 17 office buildings, 34 commercial buildings, 9 industrial buildings, 71 educational and science buildings, 5 hospital and health care facilities and 332 other buildings (including garages). Ownership: 27% publicly owned buildings, 73% privately owned buildings.

The Statue of the Wieniawa District, adopted by the Resolution of the City Council of Lublin dated 19 February 2009, is the legal basis for the functioning of the district, regarding the statue of the Wieniawa District. The District is an auxiliary unit of the City, while the District Council is its legislative and control body. The District Board is the executive body of the District.

The functional and spatial structure of the Wieniawa District is shown on the illustration Figure no. 1.

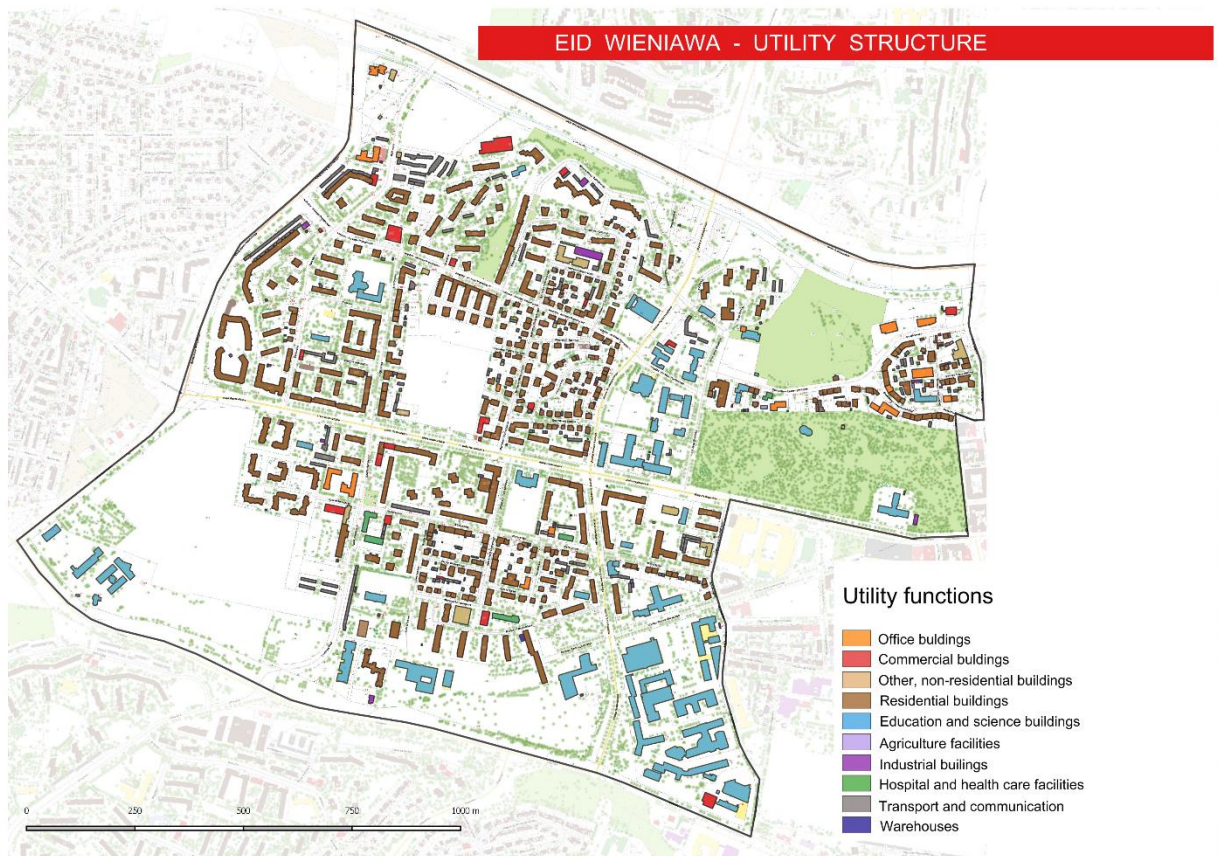


Figure 1. Functional and spatial structure of the Wieniawa District.

The average age of residential buildings is approximately 50 years. The majority of the buildings were erected in the period of 1961–1999. In Wieniawa District, most buildings are from 8 to 15 meters high. The highest buildings are 11-storey residential buildings located in groups of 3 to 5 buildings.

B.2 Reference to existing and upcoming local climate, energy, environmental and spatial policies relevant to the development of the area

There are no strategic documents regarding energy and climate for the Wieniawa District. The existing documents concern the whole city.

The Study of Conditions and Directions of Spatial Development of the City Lublin - resolution of the Lublin City Council No. 283 / VIII / 2019 of July 1, 2019. The document was developed for the whole city. The study indicates the directions of spatial development of the city, taking into account the specific features of individual regions, including districts (infrastructure, location, etc.).

The Low-Carbon Economy Plan for the City of Lublin

Low-Carbon Economy Plan was adopted on 23rd of December 2015 and updated on 18th May of 2017 by Lublin City Council.

Strategic objective: Raising the level and quality of life of the Lublin community, implementing the European Union's energy and climate policy and improving air quality in the city.

Specific aims, which will be achieved after the delivery of tasks planned until the year of 2022:

- decrease of energy consumption in the Municipality of Lublin by 9.41% relatively to the base year of 2008,
- decrease of carbon dioxide emissions by 23.44% relatively to the base year of 2008,
- increase in energy consumption from RES from 2.8% to 17.48% relatively to the base year of 2008,
- decrease of dust emission to the air (according to the Air Protection Programme aims for the Lublin Agglomeration).

Low Carbon Economy Plan (which is a Polish version of Sustainable Economy Action Plan) indicates goals for the whole Lublin City that can be also apply to Wieniawa District. Document shows how to evaluate actions such as increase in energy consumption from RES or overall decrease of energy consumption, being a great source for Wieniawa stakeholders to apply some of the ideas to the EID Strategy.

The City of Lublin Power Engineering Audit was developed in 2011. The Audit came forward with the analysis of the residential development in Lublin. The city was divided into power engineering zones in relation to the dominant thermal power source in residential buildings: the red zone in which coal is the main source of thermal power, the yellow one in which the municipal heat distribution network is the source of thermal power in buildings and the green one in which natural gas prevails. The Wieniawa District has been included in the yellow zone, in which the district heating network has a dominant role in heat supply. The buildings representative for each zone underwent a thorough analysis and the resulting figures were representative of the city as a whole, mapping energy consumption and possible savings in each zone. Such resulting figures facilitate project and investment planning for the purpose of improvement of energy efficiency, including thermal power.

Lublin City Adaptation Plan for climate change by 2030 - Resolution No. 322 / IX / 2019 of the Lublin City Council of September 5, 2019. The purpose of the document is to increase the city's resistance to climatic phenomena of changing climatic conditions. It identified the main climate threats to the city, which allowed assessing the city's sensitivity to climatic factors. Adaptation measures beneficial for the city, quality of life and safety of residents were chosen for selected sectors and urban areas. The Adaptation Plan sets out activities in the field of:

- using heating network system and energy produced from renewable energy sources in public buildings,
- improving energy efficiency,
- modernization of lighting in public areas.

Air Protection Programme for the zone – Lublin agglomeration

Lublin has updated the „Air Protection Programme for the zone – Lublin agglomeration” due to exceedance of the acceptable level of PM10, particularly including PM2,5. It was adopted by Resolution of the Lubelskie Regional Governance dated 20 November 2017.

The main purpose of preparing and implementing documents is to improve the living conditions of residents, increase civilization standards and better quality of life in the city, by improving air quality, which is fully in line with the objectives set out in the Strategy of the Energy Improvement District for the Wieniawa District. Wieniawa District, being a part of Lublin agglomeration, is also responsible for reaching indicated levels of PM10 and PM2.5 in Air Protection Programme. EID Strategy may be a part of implementing this policy.

B.3 Energy efficiency potentials

The majority of building in the Wieniawa District was built in the years of 1961 -1999, while only a small part of the buildings (especially big collective housing buildings) have undergone modernization to meet the contemporary energy standards. The district has a well-developed heating network system. Climatic conditions and the installation potential in the district provide a possibility of producing renewable energy. There is no exact data about energy consumption, conditions of buildings and heating systems in the district and it is necessary to develop a system, which could help to collect these data.

What distinguishes the district from other districts is a huge number of buildings managed by housing associations, as well as public buildings. It is easier to introduce new actions at the public than private level, and that is the main reason why Wieniawa District could be a pilot area in City of Lublin.

B.4 Key challenges to energy efficiency¹

Stakeholders taking part in the project agreeably selected the most important problem areas affecting the Wieniawa District. The problems concern infrastructural and systemic issues, as well as social issues. The most important challenges include:

- poor technical condition of buildings and lack of financial resources planned for renovations and modernizations,
- low social awareness of the district residents regarding the rational use of system heat,
- lack of knowledge of residents on the principles of rational use of energy or failure to comply with the above despite annual awareness-raising actions,
- significant share of tenants in the total number of inhabitants (e.g. students) who pay no rent for heat consumption and pay no interest in the rational use of energy,
- owners of private tenement houses do not always care about their property, and tenants have no influence on it,
- lack of knowledge about the number of buildings subjected to thermal improvement in the district and changes in residents' habits in buildings subjected to thermal improvement.

¹ "Habits use of heating and electricity": Survey report for the Lublin City Hall, 2019

The above results came from a conducted study in the district, as well as local workshops. They constitute the basis for determining further actions and objectives of the EID Strategy.

C. Vision

Stakeholders, taking part in the workshops, agreeably formulated a vision for the development of the Wieniawa District, which is the improvement of the living conditions of the inhabitants along with the economic development of the Wieniawa District, assuming low-emission activities. Buildings localised within the district will be refurbished and thermal insulated. In addition, some energy will be generated by renewable energy sources. People living there will be fully aware of rational energy consumption to help them actively join energy planning in Wieniawa District. The timeline, which is directly connected to the new financial perspective of the European Union, has been set from **2020 – 2027**. Since the Low-Carbon Economy Plan for the City of Lublin is crucial for the planned actions, the year of its implementation is set as reference year (2008).

D. Goals to achieve the vision

Three strategic goals leading to Wieniawa District vision fulfilment were established in the EID Strategy. These goals should be achieved by 2027.

Theme 1: Energy efficiency

Goal 1: Reduction of final energy consumption by 15% until 2027

Theme 2: Renewable energy sources

Goal 2: Increase of renewable energy production by 50%

Theme 3: Education

Goal 3: Increase in ecological awareness of the residents of the district

E. SWOT Analysis

For the needs of the Strategy, with the use of all stakeholders gathered in the local workshops within the extent of the programme, the most important strengths and weaknesses as well as opportunities and threats to the delivery of the vision, were diagnosed. The conclusions were listed in the table.

<p style="text-align: center;">STRENGTHS (Facilitate the achievement of the EID goal)</p>	<p style="text-align: center;">WEAKNESSES (Hinder the achievement of the EID goal)</p>
<ol style="list-style-type: none"> 1. Non-governmental organisations undertaking actions in the district, 2. A great number of older residents very interested in lowering the bliss/costs of energy, 3. Very well conditions of insolation (>1000 kWh/m², 1600-1800 h) in comparison to the rest of the country. 	<ol style="list-style-type: none"> 1. Inhomogeneous ownership structure with various user groups, 2. Divergent goals of stakeholders, competition for funds rather than cooperation, 3. A high percentage of temporary residents (tenants), 4. A great area, great amount of data to collect and process, 5. An administratively designated area, not related, functionally heterogeneous.
<p style="text-align: center;">OPPORTUNITIES (Facilitate the achievement of the EID goal)</p>	<p style="text-align: center;">THREATS (Hinder the achievement of the EID goal)</p>
<ol style="list-style-type: none"> 1. Increasing interest in the subject of energy, raises awareness and knowledge of the residents, 2. Increasing opportunities of acquiring energy from renewable sources, 3. Engaging the residents in the city co-decision processes: civil budget, green budget, civic panel, recent elections to district councils and referendum, 4. Good cooperation with the heating energy distributor, 5. Detailed knowledge about the habits and attitudes, of the residents, towards saving energy, described basing on the research conducted – a basis for educational activities. 	<ol style="list-style-type: none"> 1. General reluctance of the residents to cooperate with the city, 2. Frequent changes of the regulations and energy costs, 3. Limited financial means of the residents, housing associations and cooperatives, 4. Lack of/insufficient amount/availability of the co-financing programmes for investments in the district, 5. Lack of experience in energy planning on the level of administrative districts, 6. Little interest, of the users, in IT tools (according to research results) and a lack of ready-made solutions, 7. Limited options to build new facilities due to exhausted space.

F. Definition of EID Specific Objectives

After consider of all diagnosed strengths, weaknesses, opportunities and threats, all stakeholders selected specific objectives for the Wieniawa district:

Goal 1: Reduction of final energy consumption by 15% until 2027.

Objective 1.1: Thermal improvement activities.

Objective 1.2: Reduction of energy consumption from non-renewable sources.

Goal 2: Increase of renewable energy production by 50%.

Objective 2.1: Setup of photovoltaic installations on buildings, including residential and public buildings.

Objective 2.2: Support for entities and institutions in co-financing investment projects.

Goal 3: Increase in ecological awareness of the residents of the district.

Objective 3.1: The Wieniawa District being a great example for others.