

Background information on the Greenpeace lighthouse project in Ukraine - a demonstration of sustainable heating in bigger multi-family buildings in Trostyanets, Ukraine

Greenpeace and the City of Trostyanets in Sumy Region, Ukraine, are working together on the implementation of the City's Masterplan for a green reconstruction and development since 2023¹. The overall goal is to increase the energy resilience of the city and its inhabitants and to support a sustainable way of reconstruction and energy use.

This two year-project shall demonstrate how solar panels and heat pump installations can become reality on the 113 multifamily residential houses in the city and shall further support the development of a subsidy scheme for changing the energy generation systems in the residential sector in Ukraine to renewable energy. Whereas there are already demonstration projects for public buildings, this is new for the private residential building sector and huge multi-family buildings.

The project

The project was designed between Greenpeace, the City of Trostyanets and their partners from iC consulenten Ukraine (iC) and CES clean energy solutions GesmbH (CES) in March 2024.

The pilot residential building has five floors, basement and unheated attic. The building has a heated area of about 2,500 m². There are 60 apartments for about 150 residents. After suffering heavy damages during the Russian occupation in spring 2022, the building required capital renovation works. These works for reconstruction and thermal insulation have been realized with the support of a Government program through the Service for Restoration and Development of Infrastructure in Sumy Oblast. Construction works started at the end of 2023 and are planned to be finalized until the end of 2024. With the City of Trostyanets and Service for Restoration it was agreed in spring 2024 that the heating supply for the building will be based on sustainable energy sources and set up by this Greenpeace project.

The heating system

This project is one of the first approaches to use geothermal heat in bigger multi-family residential buildings in the country. Two different types of heating sources are used in the project, such as air and ground-sourced heat pumps (ASHP and GSHP). The heat pump equipment can use low potential energy

¹ https://ic-consulenten.com.ua/wp-content/uploads/2023/04/master_plan_trostianets_short_en_public.pdf
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sources to provide heating / cooling and domestic hot water (DHW). The approach contains a combination of ASHP and GSHP. The main part of demand will be covered by the heat pumps. The five water tanks are used as a thermal storage for both systems (heating and DHW) separately. Each system has several tanks with a total volume of about 2,000 l (for heating and DHW separately). All tanks have additional electrical heating elements with power of 60 kW and 20 kW for heating and DHW systems, respectively. The DHW system also has a heat exchanger with max capacity of 218 kW for covering peak loads. To increase the efficiency of the heat pump system, a roof-based solar power plant should be part of the approach, which aims to partially cover the electricity consumption of the heat pump for DHW. The capacity of solar panels is determined based on the consumption of the heat pump compressor in the “summer” mode. The costs for the whole project implementation will be around 218.000 €.

The City of Trostyanets

Trostyanets is a city of about 20.000 inhabitants in the oblast Sumy in north east Ukraine. The city is only 35 km away from the Russian border and close to the frontline. During the Russian invasion of Ukraine, the city suffered major damages to its infrastructure. The mayor of the city is Yuriy Bova who initiated the strategy of a sustainable reconstruction of the city.

Project Partners

There are several partners of the project that helped to shape the idea or to make it happen at the end by financial support or consultancy on the implementation.

Green Planet Energy is the biggest financial supporter of the implementation of the heating concept in the selected building (with 100.000 €) and was a big supporter with deep expertise on the general technical approach.

<https://green-planet-energy.de/genossenschaft/ueber-uns>

The Environment Foundation Greenpeace supported the project from the beginning with financing the feasibility study for the project and also supporting the project implementation of the heating system (with 60.000 €).

<https://www.umweltstiftung-greenpeace.de/en/203/>

iC consulenten Ukraine & CES clean energy solutions (Kyiv/Vienna) were partners since the initial phase of the project, laid the base for the reconstruction strategy with their “Masterplan” for the City and also supported the implementation of the heating system with consultancy. <https://ic-consulenten.com.ua/>, <https://ic-ces.at/en/>

Sahara is the selected contractor for the implementation of the heating system.

https://caxapa.ua/en/kompaniya-pro_kompaniyu