NetZeroHero

GABROVO, BULGARIA

Emissions domains addressed by the Pilot Activity

- Consumption of non-electricity energy for thermal uses in buildings & facilities
- Consumption of electricity generated for buildings, facilities & infrastructure

Key Terms

District net-zero transformation | Multi-family building renovation | Energy communities | Capacity building for builders | Municipal staff training | District heating | Thermographic surveys

Levers of Change

Data and Digitalisation | Democracy and participation | Financing and funding | Governance and policy | Learning and capabilities | Procurement | Social innovation | Technology/infrastructure

Description of the Pilot Activity

NetZeroHero is transforming the Trendafil 1 district (44 buildings, ~3,000 residents) into a replicable near-zero emission blueprint. The pilot zone covers 30 multi-family residential buildings, 2 kindergartens, a nursery, a school, and several commercial premises. Deep energy renovation models are being implemented alongside photovoltaic systems and high-efficiency heating solutions. Some buildings will be designed to nearly zero-energy standard, others to full energy independence. A strong emphasis is placed on energy communities: groups of citizens, businesses, and institutions that produce, share, and manage energy together. Municipal experts, construction workers, and residents receive dedicated training. Zero-emission scenarios are modelled, community meetings are held, and solutions are tailored to the real needs of the people who live there.

Year One Highlights

In year one energy audits of public and residential buildings were completed, supported by a thermographic drone survey across the pilot zone — enabling systematic identification of heat loss and prioritisation of interventions. A NetZero energy model is being finalised to simulate scenarios, with the first draft NetZero plan completed and public consultations begun. Renovation works commenced on three multi-family residential buildings. Gabrovo's first energy community model for multi-family buildings was developed, establishing a conceptual framework for collective energy management with local owners. Capacity building ran through multiple channels — training for municipal specialists and builders, workshops at the One-Stop-Shop, and on-site sessions at renovation sites. Co-creation workshops engaged 120+ participants, feeding directly into the NetZero plan. District heating and PV feasibility studies were commissioned.

The most significant challenge came from outside the project: national energy efficiency programme delays followed by authorities imposing urgent construction deadlines to protect RRP resources forced accelerated contract signing — excluding the prepared training clauses. The team responded by shifting to voluntary parallel training through on-site sessions, supplier partnerships, and reputational incentives. Voluntary participation has since been increasing. Monitoring equipment procurement was also extended by 3-4 months due to an underdeveloped Bulgarian market for advanced energy monitoring technologies, resolved through expanded supplier search and modular systems.

Innovation Highlights

One main innovation that the pilot has created is a 3D District Energy Model & Calculator. This interactive tool has created a unique 3d digital twin of the pilot area which allows visualization of energy scenarios for all 44 buildings. The model also functions as a dynamic calculator – allowing people to compare different scenarios and see their impact on the district's carbon footprint and energy bills. The model calculates renovation impacts, PV potential, and CO2 reduction for every single entrance. It bridges the gap between complex engineering data and citizen engagement, making the transition transparent and understandable for everyone. Another highlight is the strong community support and citizen engagement – over 80% of surveyed residents indicated they are interested in the new centralized biomass heating system and expressed willingness to co-finance the transition (contributing between €250 and €500).

Twinning with Medijana/Niš (Serbia)

Medijana representatives visited Gabrovo for a two-day programme covering renovation methodologies, the One-Stop-Shop model, and pilot site tours. In return, Medijana shared expertise on modular district heating networks and urban geothermal systems — directly informing Gabrovo's district heating feasibility study.

Funded by the European Union