



MODENT

Modelling Energy Transition Pathways in Miskolc & Pécs

PÉCS AND MISKOLC, HUNGARY

Emissions domains addressed by the Pilot Activity



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



Multi-sector waste management & disposal



Land use (agriculture, forestry & other land uses)



Consumption of electricity generated for buildings, facilities & infrastructure



All vehicles & transport (mobile energy)

Key Terms

Energy transition modelling | Digital monitoring systems | Climate Neutrality Platform | Building energy audits | Solar feasibility | Microgrids | Energy cooperatives | Citizen engagement | Green surface offsetting | Circular economy | Transport modal shift

Levers of Change

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

Description of the Pilot Activity

Two Hungarian cities — Pécs (population 140,000) and Miskolc (population 155,000) — are jointly building the modelling, data, and governance infrastructure needed for energy transition. Rather than implementing a single intervention, the project creates the tools and institutional architecture that enable data-driven decision-making: digital monitoring systems for emissions and energy, feasibility studies for solar, microgrids, and energy storage, mobility surveys, circular economy assessments, and a Climate Neutrality Platform convening the 26 signatories of Pécs's Climate City Contract.

Year One Highlights

Pécs and Miskolc spent Year 1 building the institutional and technical foundations for energy transition rather than delivering quick wins.

In Pécs, ten multi-apartment buildings in the Györi-kapu action area were surveyed using aerial imaging, with solar feasibility studies completed for all ten and five assessed for building automation, microgrids, and energy storage. Fifty households enrolled in an 18-month energy efficiency pilot, receiving energy certificates, real-time consumption monitoring, and training on behavioural change. A digital climate monitoring platform was developed to manage energy data across residential buildings, with role-based access for both residents and administrators. The City Council approved a new climate governance structure — a Mayor's Climate Advisory Group, Climate Protection Steering Committee, and dedicated project development unit.

In Miskolc, over 600 citizens were surveyed on transport habits to measure behavioural change. In Pécs, 400+ employees were surveyed on commuting willingness. Four spatial analyses were completed covering land use, urban heat islands, rainwater management, and solar potential. Five community green space workshops engaged over 150 residents in birdhouse installation, composting, community tree planting, and urban water retention.

Innovation Highlights

The digital monitoring system treats energy data as a shared civic resource: residents have their own access and dashboards, not just administrators. The Pécs Climate Platform functions as a standing multi-stakeholder governance body — not a one-off consultation — bringing together 26 signatories across sectors. The city's offsetting strategy approaches carbon sequestration as a land-use planning tool, projecting 12,000 tonnes of annual absorption through quantified afforestation planning.

Twinning with Szombathely

Pécs and Miskolc are twinned with Szombathely, a fellow Hungarian city (population 75,000). The first visit focused on energy management systems (Szombathely shared experiences with SCADA and laser scanner mapping tools) and achieved results (CO₂ decrease, cost savings). The shared Hungarian context — similar regulatory environment, energy market structures, municipal capacities — makes knowledge transfer more directly applicable than many international twinning relationships.

