



Build4GreenIST

Green and Carbon Neutral Building Transition Guide – Istanbul Model

ISTANBUL, TÜRKIYE

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 Focus Areas

Urban transformation | Net-zero energy | Co-creation | Digital twin | Building emissions | Energy monitoring | Risk-informed retrofiting

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

Build4GreenIST – is a comprehensive roadmap that supports stakeholders, public institutions and citizens in making Istanbul's buildings more resilient to climate change and more efficient in their use of resources. Recognising that 64% of Istanbul's greenhouse gas emissions originate from stationary energy in buildings, the project transforms the city's urgent earthquake-related urban transformation into a strategic opportunity for achieving carbon neutrality. The Guide consists of six core modules- Green Buildings, Renewable Energy, Green Finance, Legal Framework, Sustainable Urban/Land Use Planning/Design, and Participatory Transition.

The project establishes a scalable framework that can be adapted by other urban centres, while positioning Türkiye to advance its transition toward sustainable and climate-resilient urban development.

Impact & Results

Energy Modeling Framework were developed to map Istanbul's building emissions and simulate carbon-neutral transition scenarios for urban renewal. The potential impacts of various scenario-based sustainable energy systems on buildings have been modelled. Economic analyses have also been carried out for these systems. Advanced simulations indicated that the full package of passive design, high-efficiency heat pumps, mechanical ventilation, battery storage, and renewable integration could reduce energy use by up to 67% and greenhouse gas emissions by 47%.

A notable innovation is the 'GreenIST' mobile application, which uses IoT sensors and AI-powered personalised prompts to encourage real-time energy awareness and behavioural change. By aligning local development with the European Green Deal and the SDGs, Build4GreenIST establishes a scalable, data-driven model for sustainable urban transformation.

Innovation Highlights

The AI-supported GreenIST App delivered verified net annualized savings of ~20.2% and 0.254 tonnes CO₂ avoided per sample across 75 apartments between May and September 2024. Users interacting with at least 3 nudges per week saw the biggest impact with 12-20% savings compared to baseline, with the most significant reductions observed in HVAC adjustments during unoccupied periods. Temperature setpoints saw a measurable change (typically 1-1.5°C lower at night) --- demonstrating that behavioural interventions backed by technology can drive real, measurable reductions.

Twinning with Mytilene (Greece)

They were paired with the city of Mytilene to discuss the feasibility of the project through mutual visits. The team also visited cities in the B40 Balkan Cities Network (Sarajevo, Zagreb, Izmir, Muğla) to carry out peer-to-peer learning activities.

