



**Transforming living environment with
smart and scientific solutions: results
from SmartEnCity project in Tartu**

11.05.2022
Uppsala

**TARK TARTU
SMART CITY**



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SMART CITY



Smart city since 1632

- Second-largest city in Estonia
- Research and education centre
- University of Tartu was founded in 1632

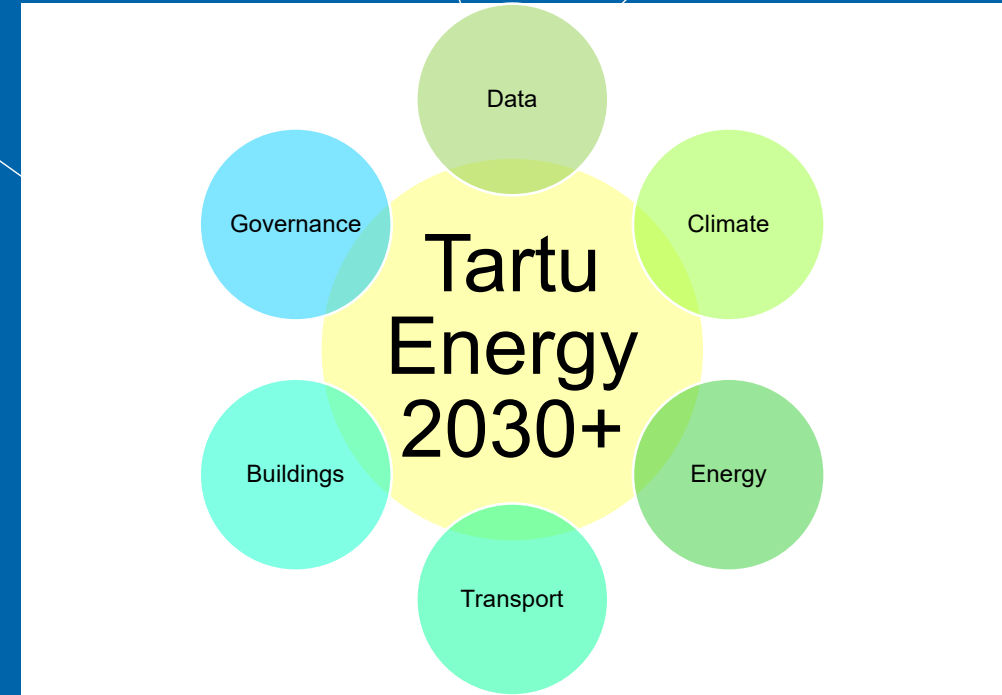
- Almost **100 000** citizens
- 50% are **under 35** years
- About **18 000** students
- Around **15 000** companies
- **3%** of unemployment
- **90%** uses internet
- **98%** holds ID-card



Tartu Energy and Climate Action Plan 2030



- ☐ Climate neutrality at latest by 2050
- ☐ **Participation in EU Mission „100 Climate Neutral Cities by 2030“**



Energy and climate development plan for 2020 - 2030

Methodology: Secap, IUP

Delivery: April 2021

VISION:
Tartu is a smart community with good energy and a green pioneer.

smar+
en
ci+y



Lighthouse project - SmartEnCity



The main idea of the Tartu lighthouse project is to turn hrustsovkas into 'smartovkas' with accompanying innovative solutions in integrated infrastructures, public transport, street lighting and monitoring. **The aim** of the investments is to create a **high-quality living environment** that inspires the pilot area community to make **environmentally aware decisions** and change their **patterns of behaviour**.

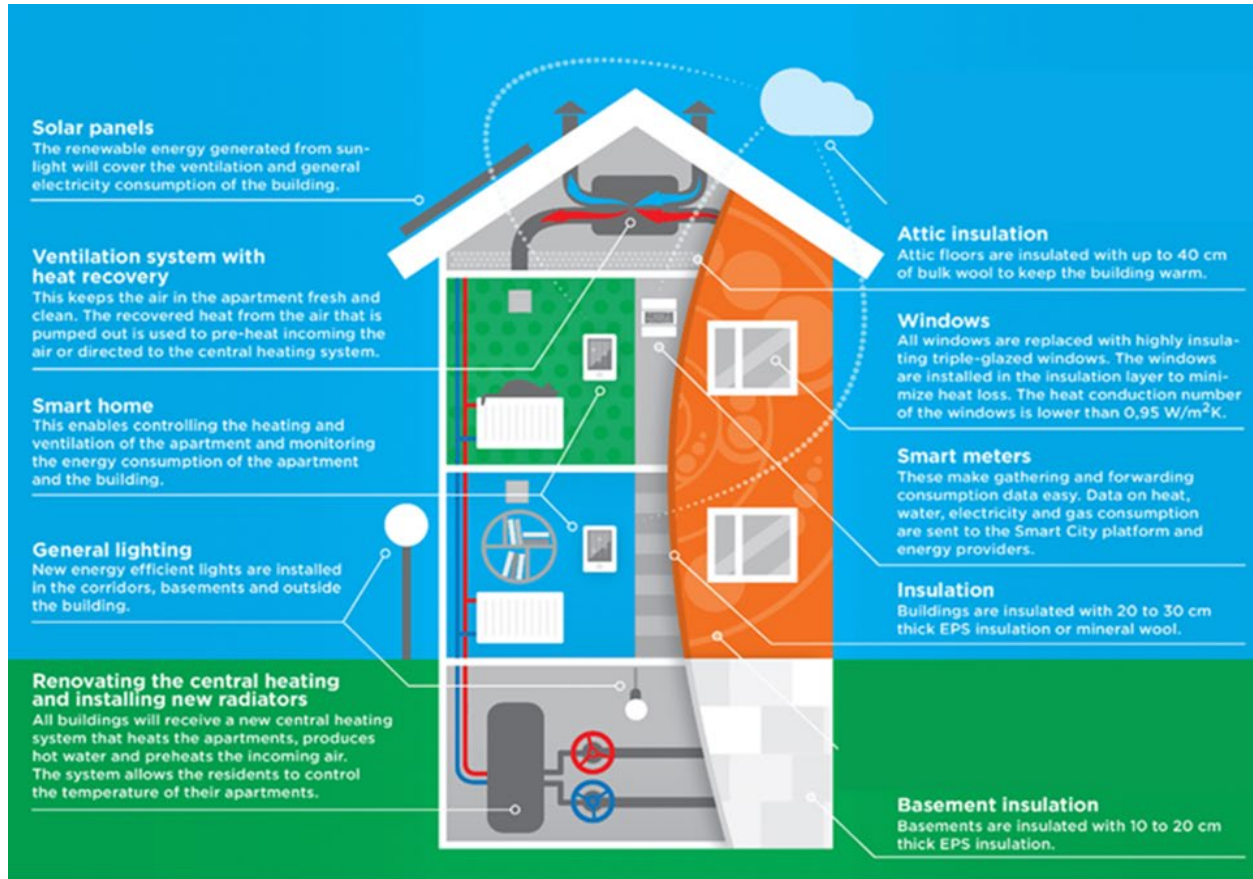
Before...



about **270 kWh per m²** annually



Smart buildings and smart home systems



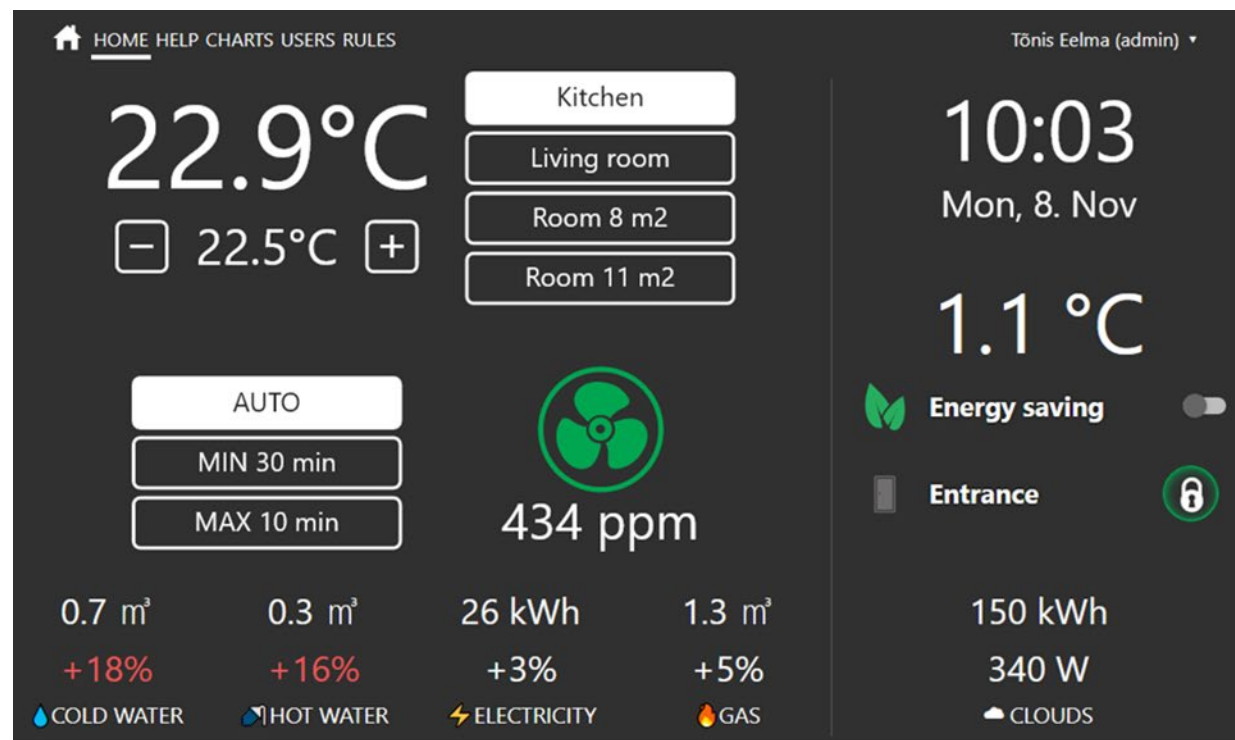
The **objective of the retrofitting** plan was to drastically reduce the energy usage of the demo area hrustsovkas. The average energy consumption of these buildings was before the retrofitting about **270 kWh per m²** annually and the target level is **90**, reducing energy consumption by more than **66%**.

Smart home system



The system and devices were installed to all **18 buildings** and each of the **691 apartments**.

Smart Home System



The role of the University of Tartu



- **SmartEnCity Regeneration Strategy**
- **Citizen Engagement Strategies**
 - Policy & Regulation
 - Standards
 - Integrated Planning
- **Tartu LightHouse Deployment**
 - Citizen engagement actions
 - District integrated intervention
- **Monitoring and Evaluation**
 - Evaluation: Overall performance assessment
 - D7.9 Data collection approach
- **Replication to Followers and Smart Cities Network**
 - Smart Cities Scenarios Definition through Foresight Methodology
- **Exploitation, Dissemination & Communication**
 - Exploitation & Market Deployment Support
 - Technology and market supervision activities

Methodologies

Surveys

Monitoring

Social innovation

Engagement

Citizen engagement actions



- Weekly engagement work group meetings
- Biannual public events for pilot area residents
- Representing SmartEnCity at various public events (sTARTup Day, Smart City for the Citizens, Planning Conference etc.)
- In the framework of the new Sustainable Energy Action Plan 2030, organizing the so-called Engagement Roundtable
- Local SECN Network Smart Cities Club
- Smart home trainings for pilot area residents

Social innovation and engagement



Citizen engagement & social innovation – ambassador program

Social innovation experiment on training **smart house ambassadors**: various topics such as indoor climate, home expenses, sustainable renovation, waste and sustainable development, smart home, reconstruction and legal aspects of apartment owners.



Social innovation and engagement

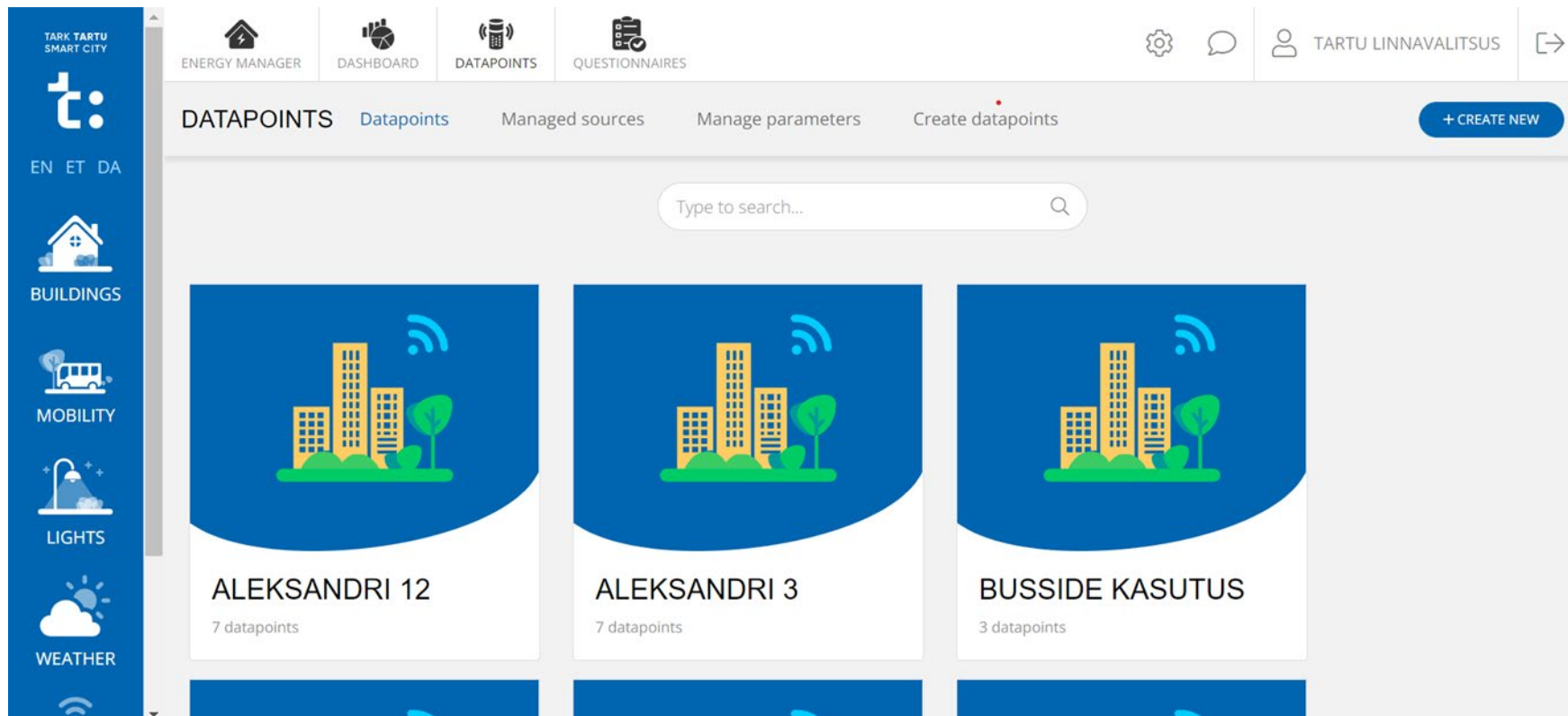
Smart House Resident Handbook



Data management and monitoring



CIOP is the main tool for **monitoring Tartu's activities** and interventions in the project. Data on all main activities are collected here and the calculation of project indicators is partly based on this application. The maximum amount of data is **collected automatically** (sensors, APIs). However, some data must also be entered into the system manually.

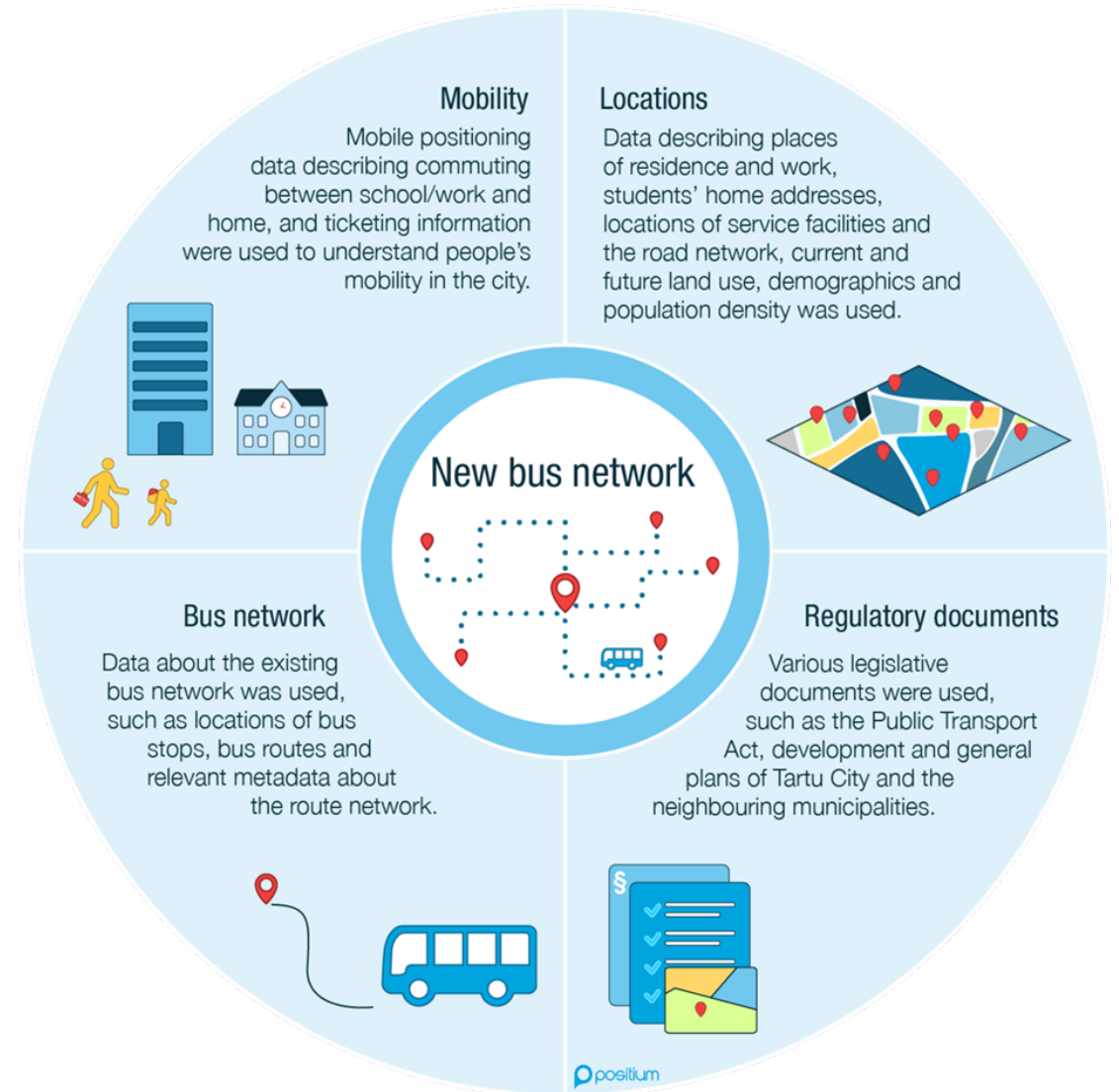
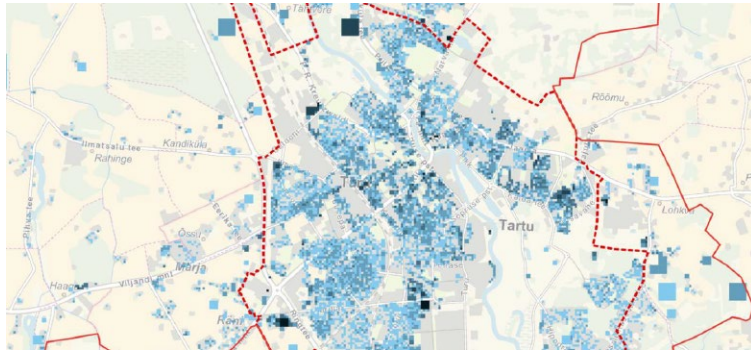


Monitoring

Fertile ground for new activities and projects...



Data driven planning – new bus network



Data driven planning – modal split calculation tool



UNIVERSITY OF TARTU Institute of Computer Science | Interreg Baltic Sea Region | EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND | SUVA

Home | 28.02.2022 | Home icon | Info icon

District analysis | Matrices

ECO MODALITIES LAST 7D **42.62%**

ACTIVE MOBILITY LAST 7D **29.96%**

PUBLIC TRANSPORT LAST 7D **12.65%**

43713 VEHICLES ENTERED | 39528 VEHICLES EXITED

Modality Type: All | Show selected district as: Origin | Destination

Showing All trips where Kesklinna is the origin. Arrows' thickness and color represents number of trips.

Daily Modal Split

- Bike: 1.27%
- Vehicle: 55.23%
- Bus: 14.27%
- Pedestrian: 29.23%

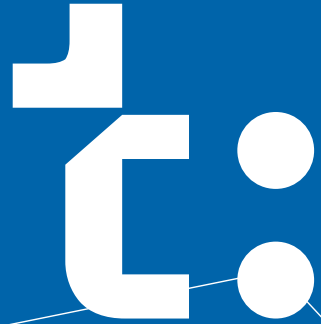
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Project - OpenLab

Climate neutrality is the European Union's goal for 2050. One of the most important activities to achieve this goal is the renovation of existing buildings and neighborhoods into climate-neutral areas. Experiment and develop new technologies for building renovation and energy production to transform Europe's three neighborhoods into climate-neutral neighborhoods. Renovation of 9-storey apartment buildings in the Mõisavahe area. Objective **3 house; 280 apartments; 20,000 m² net area**. Technologies: renovation of **prefabricated panels**; production and **storage of renewable electricity, storage of thermal energy**, charging of electric vehicles, **grid flexibility services**.



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Thank you for your
attention!

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