BUILDSPACE

Funded by the European Union

LATVIAN PILOT

Built Environment Climate Scenarios for the Municipality of Riga, Latvia

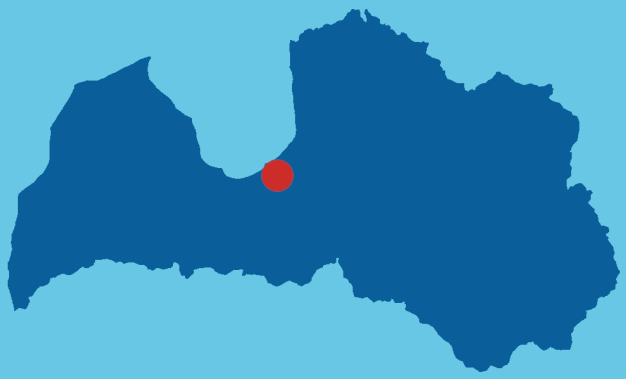
BUILDSPACE brought its innovative digital services into practice through four pilot sites across Europe. Each pilot addressed a different local challenge. The pilots demonstrate how BUILDSPACE solutions can support smarter construction, sustainable energy planning, and better protection of cities against heat and flooding.

CONTEXT & OBJECTIVES

Pilot Overview

Riga, the capital city of Latvia, is located in Northern Europe and experiences a climate characterized by cold winters and mild summers. With around 600,000 residents, it is crucial to improve the city's heating networks, promote residential house renovation, and encourage the acquisition of alternative energy sources.

Location: Riga, Latvia



Challenges:

- Many buildings are poorly insulated and rely on solid fuel
- Inefficient heating networks and high energy costs
- The city needs to align with EU climate neutrality goals.

Opportunities:

- The large number of unrenovated buildings offers significant opportunities for retrofitting (to increase energy efficiency and climate resilience).
- Rapid growth in solar capacity through installation of panels on unused rooftops, especially flat roofs with high potential
- Strategic alignment with Riga's Energy and Climate Action Plan 2030 and the EU 100 Climate-Neutral Cities by 2030 mission.

Strategic Importance

The Riga pilot is strategically important because it acts as a demonstration of how data-driven renovation planning and renewable energy integration can drive a city toward climate neutrality while delivering strong economic, social, and environmental co-benefits.

Pilot Objectives

1. Assess Heating Demand: Utilize data to understand and map areas with high heating demand, providing insights into energy consumption patterns and identifying opportunities for efficiency improvements.

2. Promote Residential House Renovation: Provide a tool that allows individuals to choose various retrofitting strategies for their homes, including cost assessments and evaluating the impact of three climate scenarios on heating demand.

3. Encourage Solar Panel Installation: Promote the use of solar panels as a renewable energy source. For municipal buildings, the goal was to optimize PV installations for self-consumption, given the absence of feed-in tariffs in Latvia.

4. Enhance Urban Climate Resilience: Apply future climate scenarios developed by the IPCC to project energy demand at the building, district, and city levels, considering climate changes over the coming decades.

KEY STAKEHOLDERS

EPU N · T · U · A

CARTIF

RIGA PLANNING REGION

IMPLEMENTATION & LESSONS LEARNT

Phase 1: Preparation & Deployment plan

In the first phase Riga Planning region in close collaboration with Riga Municipality representatives focused on data collection and stakeholder engagement to support its climate neutrality target for 2050.

RĪGAS
PLĀNOŠANAS
REĢIONS

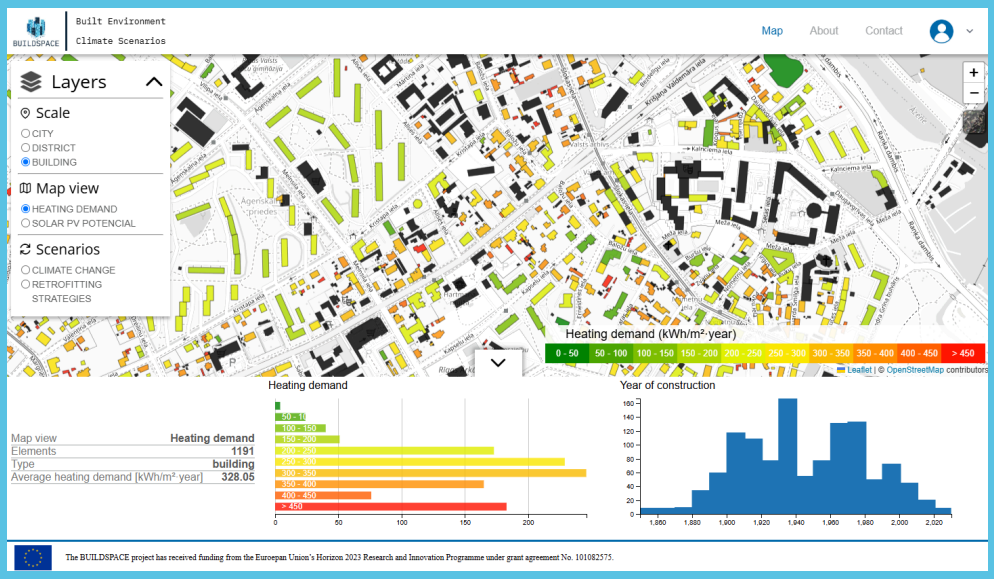
Riga collaborated with NTUA and CARTIF on tool development, while securing essential datasets from local government and the State Land Service, and providing local insights on regulations, heritage restrictions, and cost structures.

A **key challenge** in this initial phase has been balancing climate ambitions with cultural heritage preservation, particularly in protected areas like the UNESCO-listed Old Town, where strict rules complicate the integration of renewable technologies.

Phase 2: Implementation & Execution

In the second phase the focus moved from initial data collection to data processing and analysis, led by the technical partners.
Riga Municipality played a key role in reviewing project outputs, consulting on local context, and providing additional datasets that emerged as essential during development.

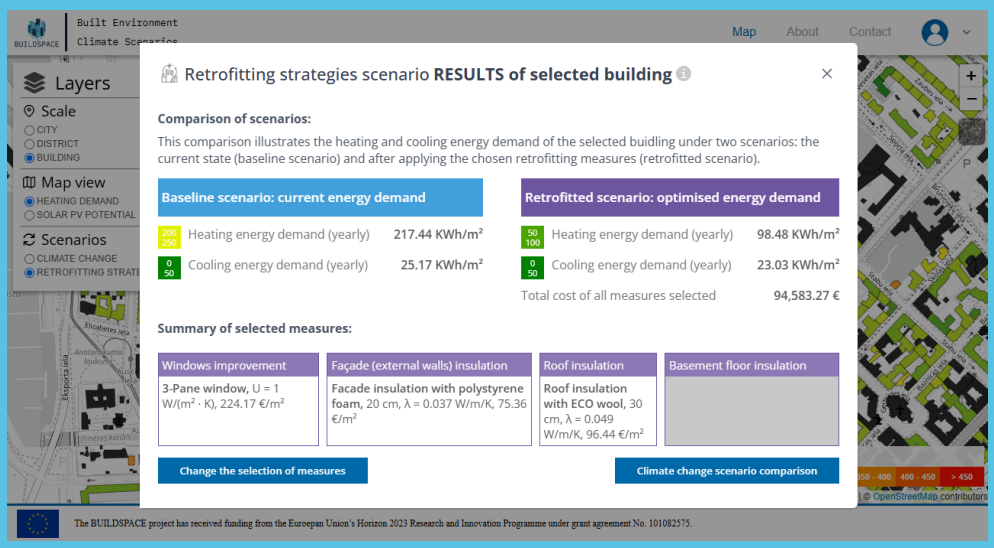
This phase centred on creating the energy demand map of the buildings in the city, together with the solar map, with continuous and iterative collaboration between the municipality and technical partners. The process underscored the value of close coordination, regular communication and integrating local expertise to ensure the tools were well adapted to Riga's specific needs and urban context.



Phase 3: Completion

In the final phase, the Pilot received access to the complete application of the Built Environment Climate Scenarios service. The tool includes:

1. Heating energy demand maps for the residential building stock
2. Future climate scenarios (SSP245, SSP370, SSP585) for 2030, 2040 and 2050
3. Retrofitting strategies module, allowing users to apply different passive measures and compare the results
4. Solar PV potential assessment at building level, PV Production (MWh/Year)



Key Lessons & Recommendations

Built Environment Climate Scenarios

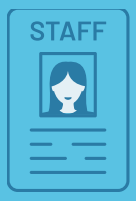
Whenever possible, use official cadastre data instead of crowdsourced alternatives like OSM, as it ensures higher accuracy and reliability. For international projects, municipalities should plan for translation and adaptation of national-language datasets to make them usable and understandable for external stakeholders and systems.

Investigate data availability in advance, especially in regions where high-resolution DSM data may not be accessible, before planning activities that rely on it.

Check in advance whether comparable orthophoto data is available for the target area.

Download and store publicly available datasets in advance to reduce costs and ensure readiness for analysis.
Be aware that access to additional data services or custom datasets may incur extra expenses.

Collect district heating data for public buildings manually when centralized data services are not available and engage directly with building managers or service providers to obtain accurate information.



Form a multidisciplinary team including geospatial specialists, data managers, a technical contact, and a local coordinator. Add staff with experience in climate planning, reporting, and data visualization for added value.

Technical requirements for end-user to receive service

In order to use the Built Environment Climate Scenarios application the only requirements are connection to internet and a browser.

Results, Performance & Future Outlook

There are new activities planned and additional financial programs for multifamily buildings, private owners, and public buildings. This service will become an integral part of the city's efforts towards climate neutrality, supporting the broader goal of creating a sustainable and resilient urban environment. Riga can make significant strides towards its climate neutrality goals by combining efforts to improve energy efficiency and promote solar power. The service's ability to provide actionable insights and facilitate informed decision-making will be key to driving tangible improvements in both energy efficiency and renewable energy adoption across the city.

A few words from Riga Planning Region

Our experience with BUILDSPACE services in Riga has been **extremely positive**.

One of the most valuable outcomes was **the Built Environment Climate Scenarios tool**, which lets us visualise and analyse building energy demand under different climate scenarios and test various retrofitting strategies. This provides clear insights into the most effective and cost-efficient approaches to improving energy performance.

The tool, **together with the Solar PV Potential Map** published on the GEO RĪGA geoportal, **has become a powerful asset for energy planning and citizen engagement**. These solutions are now supporting Riga's long-term climate and energy goals, helping to guide investment decisions and inspire further sustainability initiatives such as exploring green roofs on non-PV rooftops.

We highly recommend the Built Environment Climate Scenarios service to any city or organisation seeking practical, data-driven tools for planning energy-efficient, climate-resilient buildings.

Funded by the European Union. Views and opinions express are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Union Agency for the Space Programme. Neither the European Union nor the granting authorities can be held responsible for them.