REPORT ON THE CROSS-DEMO BASELINE COMPARISON

D7.3 – WeGenerate's Cross-Comparison of Demos Baseline Conditions

WeGenerate

PEOPLE-CENTRIC SUSTAINABLE NEIGHBOURHOODS

Co-funded by the European Union

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

DOCUMENT INFORMATION

Report title	REPORT ON THE CROSS-DEMO BASELINE COMPARISON		
Author(s)	Iván Luque, Jordi Macià, Jaume Salom		
Responsible Project Partner	IREC	Contributing Project Partners	NovaSBE, VTT, UTCB, UNIBO, RM3, Cesena, Cascais, Bucharest, Tampere, CRES, FHF

Date of changes to document	Who did the changes
15/10/2024	Iván Luque – draft document structure and contents
04/04/2025	Iván Luque, Jordi Macià, Jaume Salom

Document data:	File Name:	WeGenerate_D7.3_Cross-demo baseline comparison		
	No. of Pages:	109	No. of Annexes:	N/A
	Status:	Final	Dissemination Level:	PUBLIC
Project Title:	Co-creating people-centric sustainable neighbourhoods through urban regeneration	Grant Agreement ID/ Project No.:	101123546	
WP Title	WP7 – Monitoring and Impact Assessment	Deliverable No.:	D7.3	
Due Date:	10/04/2025	Submission Date:	30/04/2025	
Keywords: Comparative baseline, Impact Model, Assessment framework, Sustainable Neighbourhoods, Urban Regeneration, People-centric Design				
Reviewed by:	CVUT	Review Date:	15/04/2024	

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

TABLE OF CONTENTS

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

LIST OF ABBREVIATIONS

Abbreviation	Description
BAPV	Building Applied Photovoltaics
BEMS	Building Energy Monitoring System
BIPV	Building-Integrated Photovoltaics
CEC	Citizen Energy Community
CO2	Carbon Dioxide
DHW	Domestic Hot Water
DQI	Design Quality Indicator
DSO	Distribution System Operators
DUT	Driving Urban Transition
EIC	Expected Impact from the Call
EPBD	Energy Performance of Buildings Directive
EPC	Energy Performance Certificate
EPOV	European Energy Poverty Observatory
EV	Electric Vehicle
FI	Flexibility Index
FTE	Full Time Equivalent
GHG	Greenhouse Gas
H2020	Horizon 2020
HVAC	Heating, Ventilation, and Air Conditioning

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

IAQ	Indoor Air Quality
ICT	Information and Communication Technologies
IEQ	Indoor Environmental Quality
IM	Impact Model
KPIs	Key Performance Indicators
LCA	Life Cycle Assessment
LCC	Life Cycle Cost
LCE	Life Cycle Energy
LED	Light-Emitting Diode
LowEx	Low Exergy
NPV	Net Present Value
NZC	Net Zero Cities
NZEB	Nearly Zero-Energy Building
PED	Positive Energy District
PMV	Predicted Mean Vote
POE	Post Occupancy Evaluation
PPD	Predicted Percentage Dissatisfied
PV	Photovoltaic
PV-T	Photovoltaic-Thermal
RER	Renewable Energy Ratio
RES	Renewable Energy Sources

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

RH	Relative Humidity
SDGs	Sustainable Development Goals
SPEN	Sustainable Plus Energy Neighbourhood
TSP	Total Suspended Particles
V2G	Vehicle-to-Grid
V2H	Vehicle-to-Home
WP	Work Package
ZEN	Zero Emission Neighbourhood

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

ABOUT THE WEGENERATE PROJECT

The Project 'WeGenerate' as signified by its name, seeks to infuse the elements of people and co-creation in the urban regeneration processes. It fully embraces the paradigm shift from building for the people to building with the people. We – cities, citizens, communities, businesses, researchers, and practitioners – take ownership of the urban regeneration processes and co-create together sustainable, people-centric, accessible, and beautiful neighbourhoods.

This project is based on the stories of four neighbourhoods and their communities located in different parts of Europe. Although they are at different stages of development and are facing different urban challenges, they share the same vision of positive change. WeGenerate will help them to reinvent themselves and in the process find new values and opportunities. WeGenerate sets out on a journey to find the right ingredients and recipes for sustainable and inclusive urban regeneration that can create long-lasting positive impacts within the neighbourhoods and beyond.

The process will be highly participatory with close collaboration with the city administrations as well as the citizens, local communities, and businesses. Advanced digital applications (such as Digital Twins, Metaverse and extended reality) will be implemented and experimented with to support decision-making and stimulate citizen engagement. Expertise in Social Science and Humanities is called upon to foster social innovation and participatory actions across the project. In addition to technological and social interventions, the art and cultural dimensions will be drawn on in the co-creation processes. Four sustainable and people-centric neighbourhoods will be realised by the end of the project, the legacy will be upheld through replication by five Fellow Cities and others, who are inspired by the WeGeneration stories.

The Urban Regeneration Model of WeGenerate project aims to drive these cities enhancing urban sustainability, reducing carbon footprints while improving residents' quality of life, by implementing targeted actions and policies addressing built environment, investing in renewable energy, improving mobility, and optimizing resources management.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

EXECUTIVE SUMMARY

Urban regeneration in European cities is at a critical juncture. While sustainability has been a priority since the late 20th century, achieving fair and inclusive green urban transitions requires a holistic vision, integrated planning, and innovative digital tools. The WeGenerate Demos align with EU urban sustainability policies and emphasize inclusiveness, equity, and integrated urban impact assessment frameworks.

This report provides a comparative analysis of Cesena, Cascais, Bucharest, and Tampere Demos across key urban performance indicators (KPIs), including primary energy, socioeconomic conditions, mobility behaviour, urban accessibility, environmental consciousness, safety and security, and greenhouse gas (GHG) emissions. The reported insights highlight strengths and weaknesses in each city, offering specific recommendations for improving sustainability and liveability.

The findings reinforce the importance of integrated, inclusive, and tailored strategy planning in urban regeneration. Cities need to adopt a multi-scalar approach that aligns local actions with EU policy frameworks, ensuring sustainability transitions are both effective and equitable.

The WeGenerate Impact Model, defined in D7.1[1], aims to support this vision on people-centric sustainable neighbourhood transitions by defining the methodological framework for impact assessment composed by a set of KPIs covering main urban domain categories. In regard to KPIs descriptions, D7.1 includes detailed calculation methodologies and definitions of all parameters and type data required for the cross-demo analysis. In addition, D7.2[2] focused on providing the standardised data measurement and processing protocol which suggests general approaches for data monitoring.

In D7.3, a set of 10 KPIs is proposed to articulate the cross-demo comparison at the pre-intervention phase, as part of the baseline data collection and calculation process with the

[1] J. Salom, I. L. Segura and J. Macià, “Deliverable D7.1 - WeGenerate Impact Model for Sustainable Inclusive Neighbourhood (Initial),” Barcelona, 2024.
[2] O. Polyzou, J. Choropoanitis and C. Karytsas, “Deliverable 7.2 - Standardised Data Measurement and Processing Protocol,” 2024.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

aim to assess the evolution comparing to subsequent phases of the project. For this purpose, a data collection package for the pre-intervention phase was produced composed by an overview parameter table linked to specific 10 KPIs calculation excel sheets which integrates D7.1 formulas and guidelines for data collection (see section 1.2 from this report).

As the last step, demos baseline data were collected in separate excel sheets and later compiled in a summary table to allow the production of graphical outputs as well as developing the comparative analysis; this process required and intense coordination between partners to provide consistency to data processing and calculation outcomes. The data collection process conducted by demos is based on various data sources and approaches according to KPIs requirements, such as: statistical databases, local surveys, energy certificates, municipal reports, etc. The complete list of data sources is accordingly detailed in each demo section (please see summary tables of KPIs results).

It is important to highlight potential biases or limitations encountered through the data collection process for the pre-intervention phase in relation to significantly different demo contexts and boundaries, although these are consistent in terms of datasets collection and sources identification. Additionally, data collection followed slightly adjusted methodologies (or different boundaries also in relation with city level data), and these differences have been considered while progressing in the cross-demo baseline comparison. Readers should keep these biases and limitations in mind when interpreting the analysis' outcomes based on obtained KPIs results.

Figure 1 illustrates the overall KPIs outcomes for the baseline conditions of WeGenerate demos. The representation of values is done from a comparative perspective, where the units intervals used to show each KPI result are sized accounting for the maximum value across all demos; in such a way the graphic helps to comparatively outline high, moderate, or low level of performance in each case.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

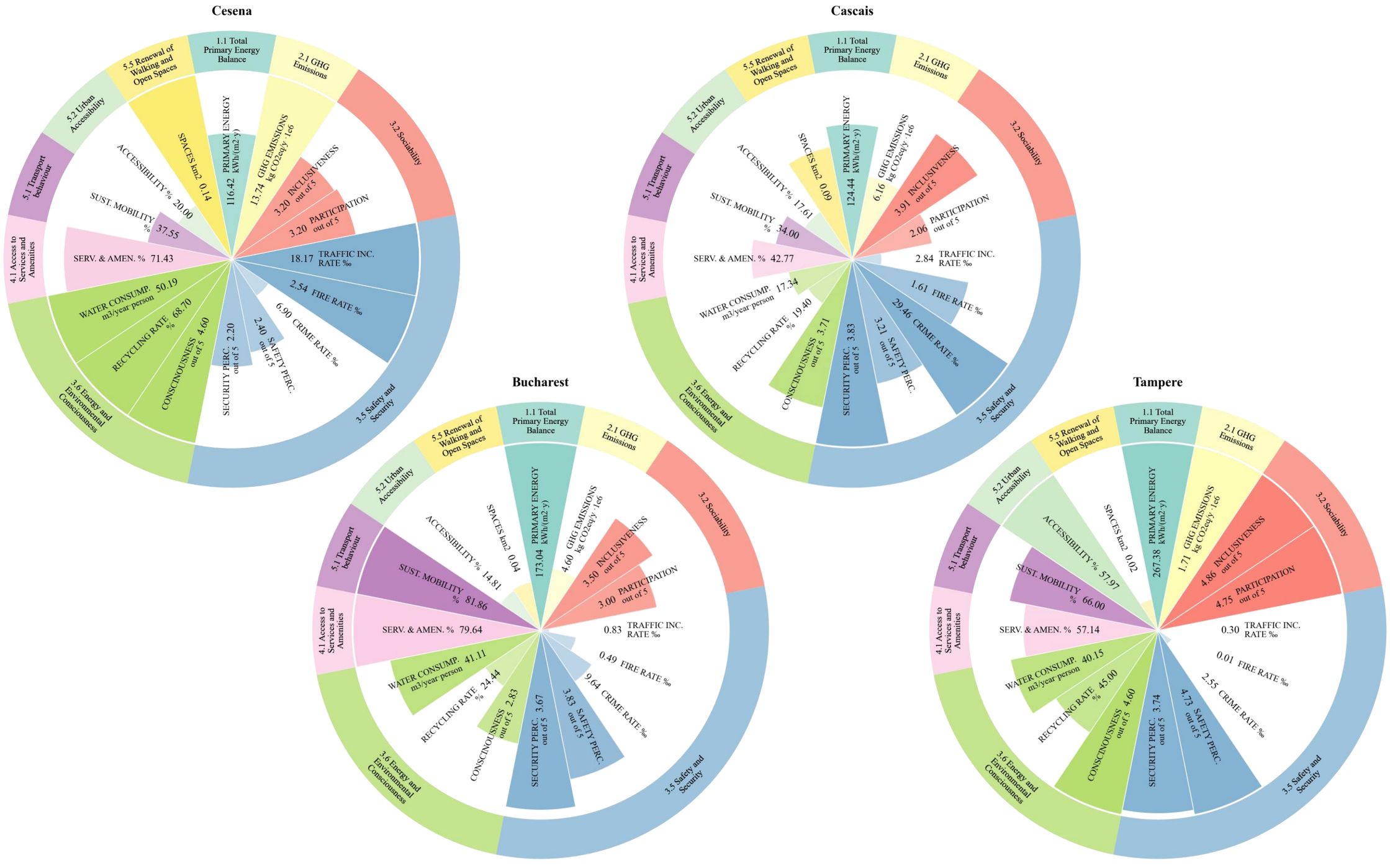

Figure 1. WeGenerate Demos – Radial Graphs including pre-intervention KPIs outcomes

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Comparative Insights

Energy and Environmental Performance

- According to available data, **Cesena demo seems having the lowest primary energy consumption in relation to building stock area** (116.4 kWh/m² per year), primarily due to a significant buildings surface accounted, but also, it suggests a low energy-intensity average profile although, based on age of construction, the energy performance of the building stock could be assumed as not highly efficient. **Regarding the GHG emission KPI results, Cesena Demo counts with the highest absolute** (1.34E+7 $kgCO_2eq$/year). As abovementioned, the energy use in building represents over 90% of total emissions, but when relating it to the built environment area, Cesena Demo remains with the lowest score (26 $kgCO_2eq/m^2$year -buildings-). During the project implementation, Cesena demo will assess integrating more accurate data and estimations by using the digital twin under development.
- **Cascais and Bucharest demos show moderate energy efficiency in the built environment** (124.4 and 173 kWh/m² per year, respectively). **Accounting for total GHG emissions analysis, both demos' outcomes illustrate moderate or low performance** (both calculations, absolute values and per building area), but results suggest there is room for improvements in mobility-related emissions and waste management (both components over 20% of overall GHG emission).
- **Tampere demo shows high energy consumption in buildings**, due to intense building energy demand (267 kWh/m² per year), which reports data of single infrastructure (railway station). Instead, **Tampere demo's total GHG emissions has the lowest absolute result** ($1.71 \cdot 10^6$ $kgCO_2eq/m^2$year), but this remains far higher compared to other demos results when relating it to the building area under analysis (206 $kgCO_2eq/m^2$year -buildings-). Eventually, the selected building stock would be revised to align with other demos as part of a 'live-Impact Model' process.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Transport Behaviour & Accessibility

- In WeGenerate demos, **car dependency seems remaining high for Cesena (62.5 %) and Cascais (66 %), while this is low for Bucharest and Tampere,** showing higher reliance on sustainable mobility modes **(80 % and over 60 % respectively).**
- **Tampere demo offers high accessibility rate (58 %)**, meaning that the urban facilities assessed satisfy all defined universal accessibility criteria checklist, which facilitates citizens movement and urban efficiency, whereas **Bucharest has the lowest score (14.8 %)**, indicating a need for improved accessibility in transport networks and other infrastructures.

Socioeconomic & Social Inclusion

- **Cesena (71.4%) and Tampere (57.1%) demos score the highest in socioeconomic conditions**, which is evaluated through the access to services and amenities KPI, suggesting stronger local economies and social well-being.
- **Cascais demo (42.8%) seems scoring low in socio-economic conditions**, highlighting the need for better access to services and investments, which, eventually, could be due to economic disparities at municipal level across neighbourhoods.
- **Safety and security perception is moderate across all cities**, with Tampere showing the lowest crime rate and Cesena some urban security concerns. Cascais presents a more balanced profile but highlights the need for better access to services and economic investments.

As general insights from cross-demo analysis, the following recommendations are extracted:

Cesena: Prioritizing Building Efficiency & Green Mobility

- Enhance building energy retrofits and renewable energy adoption to mitigate the weight of the buildings' performance (BU) component as part of overall demo GHG emissions.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Expand public transport options and the usage of cycling infrastructure, to enhance accessibility and social inclusiveness, but also to limit GHG emissions, as outlined insights from a comprehensive analysis of mobility and social KPIs.
- Improve urban greening initiatives to offset high emissions, but specially to increase sociability and citizens wellbeing.
- Enhance both safety perception and participatory opportunities through community programs and urban co-design initiatives (although current results are based on limited samples, future data collection processes would mitigate this issue).

Cascais: Renewables Integration, Sustainable Transport & Waste Management

- Cascais exhibits moderate energy consumption but low renewable energy reliance.
- Opportunity to reduce transport emissions by expanding public network and active mobility solutions.
- Exploring option to boost recycling rates and adopt circular economy strategies together with energy efficiency and renewable energy integration would allow for impactful urban regeneration outcomes.
- Support socioeconomic development (e.g., through job creation programs) would benefit social welfare and sustainable behaviour.
- Improve accessibility to urban services and infrastructures would increase inclusiveness and participatory perception.

Bucharest: Enhancing Sustainable Transport & Urban Accessibility

- Invest in urban mobility solutions and nature-based solutions to decrease GHG emissions while enhance environmental consciousness.
- Improve pedestrian and cycling infrastructure for better accessibility.
- Enhance waste management efficiency and Strengthen policies on water and energy efficiency to lower emissions.

Tampere: Addressing Built Environment, Waste Emissions & Socioeconomic goals

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Optimize waste management strategies and energy efficiency by integrating renewable energies in the built environment to reduce emissions.
- Expanding green infrastructure and sustainable mobility initiatives should enhance liveability and sustainable citizens behaviour.
- Addressing socioeconomic disparities with targeted social programs may enhance inclusiveness and participatory perception.
- Maintain leadership in urban accessibility and public transport.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

CONTENTS

1. Intro - Towards people-centric sustainable neighbourhoods

Inclusiveness, integrated planning and digital tools are highlighted as key drivers for the WeGenerate Demos' actions plans. In this context, social cohesion and equity principles together with innovative research and demonstration actions have become the priorities of urban regeneration processes, in alignment with EU policies on urban sustainability.

The idea of environmental sustainability at urban level is already stablished in EU cities since the late 20th century, although ambitious sustainable targets require defining a holistic vision that allows articulating comprehensive strategies which can drive fair and inclusive green urban transitions. As 80 % of the European population live in cities, it is necessary to apply integrated approaches for urban regeneration accounting at adjustable scales which may enable launching successful sustainable policies and incentives at city, district or neighbourhood levels.

As we continue into the 21st century, the traditional laws (indicative or obligatory) regarding environmental issues such as levels of GHG emissions, air pollution, noise, waste management or water quality, have been complemented with long term commitments related to the mitigation of the climate change.

European cities traditionally have a different configuration and structure from the sprawl city models, imported primarily from the United States during the 1950s and the 1980s (adapted from the so-called 'American dream'). It could be highlighted that even European cities have been unable to avoid the cultural dominance of the sprawl urban model. The EU Urban Agendas, the Green Deal, the Bauhaus partnership or other initiatives promoting important urban planning sustainable transformations, whilst being widely accepted on a theoretical basis, have hardly been adopted at large scales or not reached yet many city contexts (medium/small size, industry-based urban economies, etc.)

As a matter of fact, as we enter into the second quarter of the 21st century, one of the main obstacles that the European cities will continue facing would be sustainable energy and

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

climate neutrality transitions. This is interconnected with how to deal with and transforming areas of the cities created during the last few decades.

European urban areas, which used to be seen as a conglomerate of societal problems are now recognised as an asset for transformative change. Urban regeneration presents unique opportunities to revitalise disadvantaged areas and turn them into vibrant, inclusive, and sustainable neighbourhoods where people want to live and put down roots. Nonetheless, the process is not without criticism as urban interventions can sometime bring about adverse consequences such as social exclusion and gentrification. Although urban regeneration is a place-based process, where effective strategies and actions are shaped by specific local context, strengths and weaknesses, successful projects do share some key commonalities. However, there is a lack of large scale and exportable experiments to provide sufficient evidence on the success factors and barriers. Urban regeneration is considered a powerful tool for inclusive and sustainable recovery, better understanding of the process to optimise efforts, maximise synergies and minimise costly mistakes is the need of the hour.

Throughout the application of WeGenerate Impact Model, urban regeneration plans are aimed to drive our demos and fellow-cities towards people-centric sustainable neighbourhoods' transformations.

1.1. Applying the WeGenerate impact model

The WeGenerate project developed a common framework as part of D7.1[3], which brought together key demos' stakeholders and expert partners in the consortium to collaboratively define a comprehensive Impact Model for Sustainable Inclusive Neighbourhoods.

This framework, which aligns with the Sustainable Development Goals (SDGs) and the Impact framework assessment of Built for People (B4P) partnership along with boundary conditions, and specific quantitative and qualitative KPIs, spans the entire sustainability spectrum at the neighbourhood level. It encompasses metrics related to energy, mobility, environment, social

[3] J. Salom, I. L. Segura and J. Macià, "Deliverable D7.1 - WeGenerate Impact Model for Sustainable Inclusive Neighbourhood (Initial)," Barcelona, 2024.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

aspects (such as quality of life and citizen engagement), accessibility, circularity, and digital innovations, ensuring a robust and well-rounded evaluation of urban regeneration processes.

The multidimensional Impact Model (IM) of the WeGenerate project goes beyond conventional evaluations focused solely on environmental, economic, and social parameters. It emphasizes a community-based approach and aims to capture long-term impacts of sustainable transitions in urban regeneration by allowing not only to measure traditional performance indicators but also to assess how effectively urban interventions empower communities, reduce greenhouse gas emissions, and create enduring positive effects at both local and broader scales.

By aligning with EU policies on urban sustainability, WeGenerate reinforces a holistic, multi-level approach that accommodates diverse urban contexts, from large metropolitan areas to smaller, medium size cities.

In the context of People-Centric Sustainable Neighbourhoods, the Impact model is organised through 6 KPIs categories: energy, environment, social inclusion and citizen participation, socio-economics, sustainable mobility, and integrated urban regeneration— aimed at driving urban regeneration projects' assessments from a sustainable, inclusive, and integrated perspective, ensuring a comprehensive evaluation of sustainability interventions. The IM established a set of 20 core KPIs which will be uniformly assessed across all Demos, together with a series of 13 optional indicators to be tailored to specific local contexts. Figure 2 provides an overview of Core KPIs (in bold) and optional indicators.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

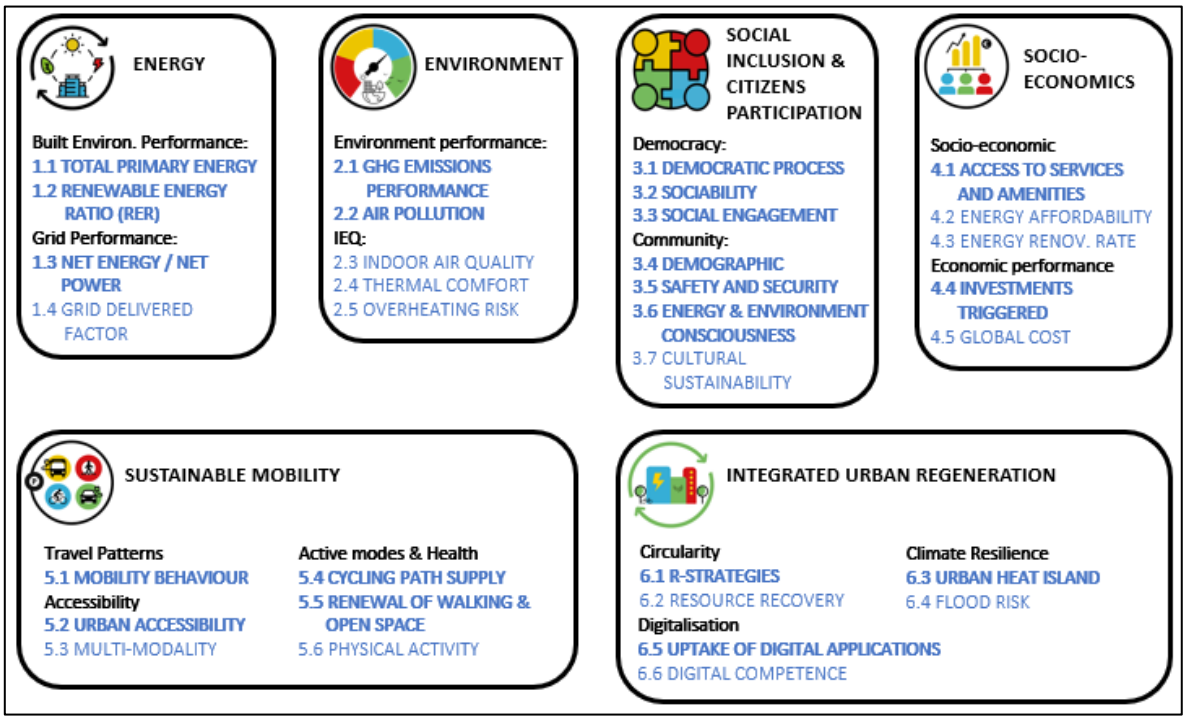

Figure 2. WeGenerate Impact Model – overview scheme including all KPIs by main categories.

In summary, the WeGenerate Impact Model represents a holistic and dynamic approach to urban regeneration. It seeks to transform conventional sustainability assessments by embedding inclusiveness, integrated planning, and digital tools into the evaluation framework, ensuring that urban transformations are equitable, comprehensive, and aligned with long-term climate neutrality and sustainability goals.

1.2. Data Collection and Calculation Tools for KPIs delivery

Throughout the first project implementation period as part of Work Package 7 (WP7) activities, the project has intensively collected baseline data to capture the pre-intervention context and conditions across the Demos. The process is inherently participatory, involving close collaboration with city administrations, local citizens, communities, and research partners. These initial urban assessments are aimed to support action plan design, decision-making processes and foster citizen engagement ensuring that urban regeneration initiatives lead to attractive, resilient, and affordable low-carbon lifestyles and inclusive neighbourhoods.

In D7.3, a set of 10 KPIs is proposed to articulate the cross-demo comparison at the pre-intervention phase, as part of the baseline data collection and calculation process with the

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

aim to assess the evolution comparing to subsequent phases of the project. The baseline KPI set is listed below:

Table 1. List of set of 10 baseline KPIs.

Energy	Total primary energy balance – KPI 1.1
Environment	GHG Emissions Performance – KPI 2.1
Social inclusion and citizen participation	Sociability – KPI 3.2 Demographic Composition – KPI 3.4 Safety and Security – KPI 3.5 Energy-Environment Consciousness - KPI 3.6
Socio-economics	Access to Services and Amenities – KPI 4.1
Sustainable mobility	Transport Behaviour – KPI 5.1 Urban Accessibility – KPI 5.2 Renewal Walking-Open spaces – KPI 5.5

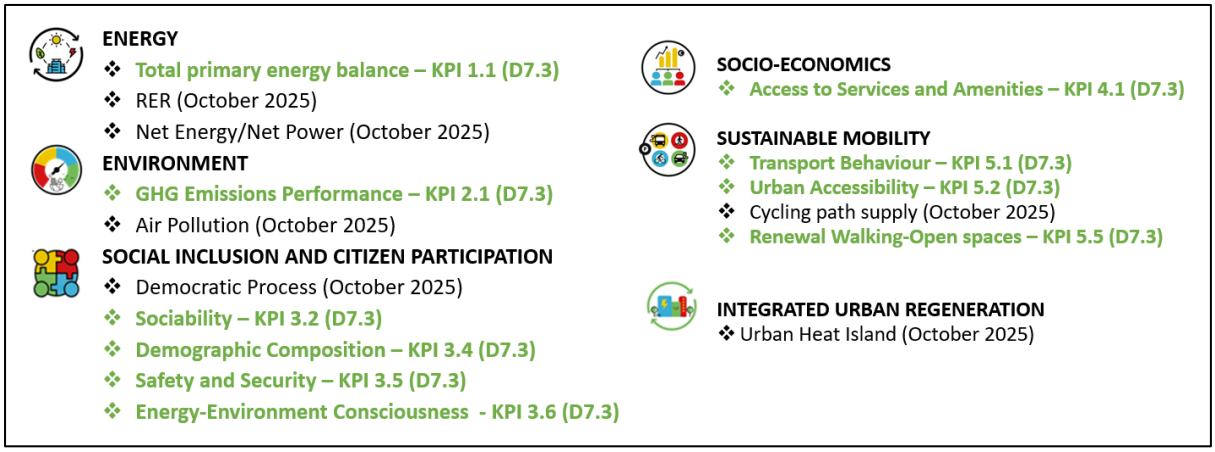

Figure 3. WeGenerate Impact Model – overview of the pre-intervention KPI set.

The demo baseline characterisation phase focused on: (i) completing baseline data provision and ensuring high-quality KPIs calculation process across demo sites; (ii) enhancing digital data collection tools to streamline assessment processes, and (iii) strengthening collaborative efforts among stakeholders to implement scalable, impactful urban regeneration strategies.

The data collection and processing revolved around seven main steps:

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

1. To establish which KPIs are possible to be obtained in the pre-Intervention phase. According to the Impact Model definition (D7.1) and the monitoring protocol (D7.2), a set of 17 KPIs possible to be collected was identified.
2. A narrow prioritization process was developed to define the 10 initial indicators for demos baseline assessment.
3. A Data collection package is produced to support KPIs calculations, which is composed by (i) Overview parameters table (Figure 4) and (ii) standardized excel-based tools (Example in Figure 5), which integrates guidelines for data collection as well as automated formulas for KPIs delivery.
4. Regarding the demos and WP7 coordination process, several bi-lateral meetings and workshops were conducted to open discussions on challenges, by addressing obstacles and streamlining the data collection process.
5. Compiling a summary table with full sets of KPIs from demos to support the production of visualisation graphics through a dedicated python code.
6. Drafting of D7.3 – Structuring the deliverable to align with WeGenerate's overarching impact assessment goals.
7. The finalized D7.3 report is scheduled for submission within the 1st reporting period including the quality review process.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

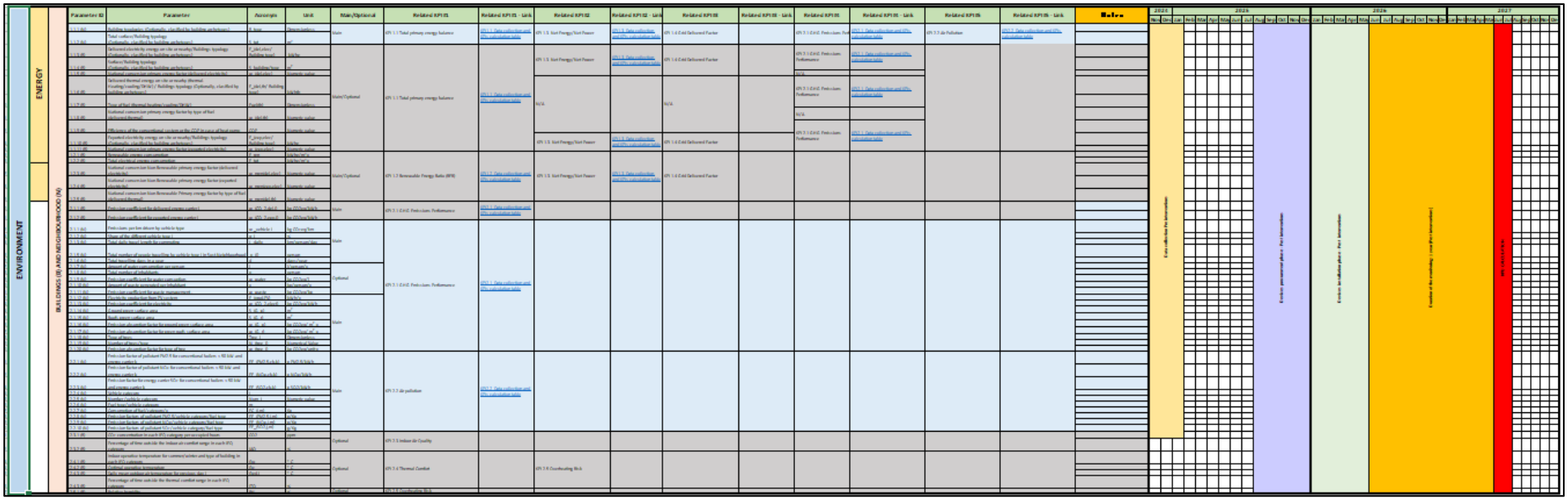

Figure 4. WeGenerate Impact Model – Overview parameters table as part of the Data collection package.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

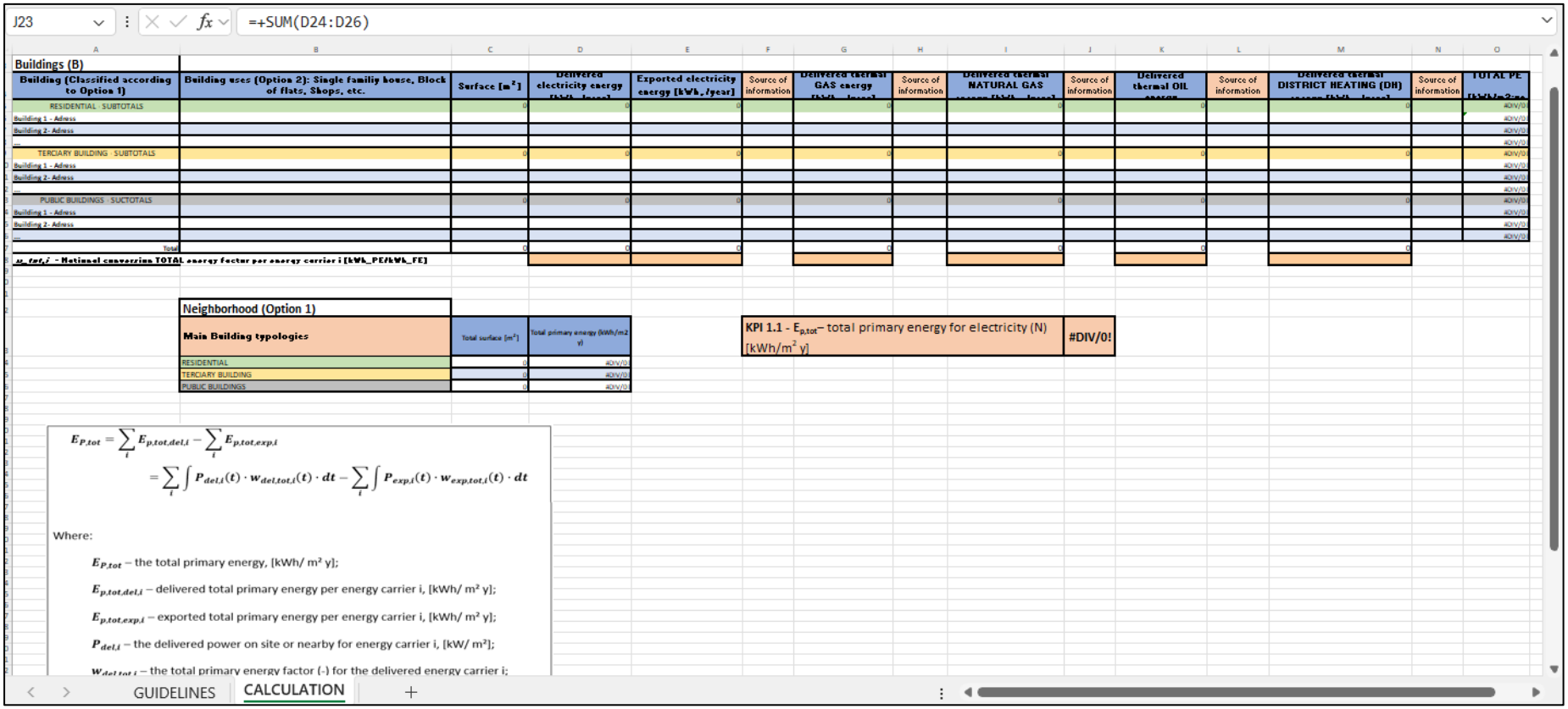

Figure 5. WeGenerate Impact Model –excel-based tool for KPI 1.1 calculation as the Data collection package.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

2. Demo-site summary KPI results

2.1. Cesena Demo

The Italian Demo site is called *Vigne-Railway Station* neighbourhood and is located in the north-eastern Italian city of Cesena. The site area is situated in the north of Cesena city centre and extends across the Ancona-Bologna railway line, the built environment form is mainly composed of medium-high density building fabric with a prevalence of post-war buildings.

The Cesena Demo focuses on reconnecting the 'Vigne' residential neighbourhood and the Cesena railway station district, which are physically divided by railway tracks. As part of the WeGenerate project, it aims to support urban regeneration and Cesena's transition toward climate neutrality by 2050 through impactful interventions.

Key thematic areas include integrated planning, social innovation, energy efficiency, sustainable mobility, and impact assessment. The project's objectives are to:

- Improve connections between the two districts as a city gateway.
- Enhance the quality, accessibility, and usability of public spaces.
- Promote sustainable mobility by influencing travel habits.
- Strengthen social cohesion through participatory engagement.
- Raise awareness of environmental sustainability and energy efficiency.

To achieve these goals, four action packages have been designed, complementing ongoing municipal projects and ensuring a coordinated, long-term impact. Transformation actions included in the demo action plan are summarised in Table 1Table **2**.

*Table **2**. Cesena Demo – Action Plan for Urban Regeneration of Vigne Neighbourhood.*

Regen. Actions	Description of tasks
Action A1	Task A1.1 Develop a regeneration methodology based on the 'Active City' concept, involving key local actors in a participative perspective.
Action A2	Task A2.1 Raise awareness on the active mobility concept - *e.g.,* organisation of workshops/roundtables to favour a mindset change in transport habits.
	Task A2.2 Implement a parking solution for Park & Ride facilities customised for the Cesena Demo.
Action A3	Task A3.1 Experiment small-scale (also temporary) greening intervention through the use of low-impact materials, co-developed with the local community - *e.g.,* co-design workshops with experts.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Regen. Actions	Description of tasks
	Task A3.2 Use of microclimatic simulation to evaluate greening intervention and installation of environmental sensors to monitor outdoor conditions. The ENVI-met (or equivalent) simulations will be carried out in the OFF_LINE Laboratory of UNIBO with an advanced workstation composed of different components (*i.e.* thermal sensors, high-performance computer, etc.) for running the simulation.
	Task A3.3 Develop an urban digital platform (Digital Coffee Room) where all the relevant news, insights and data on environmental, energy and ecological themes are communicated to citizens. Vigne-Railway station Demo will act as an experimental district where a participatory transition process is taking off.
Action A4	Task A4.1 Test the use of the Digital Twin to support decision-making process and users' engagement in the potential building renovation of Vigne Neighbourhood - focus on *INA-Casa* block.

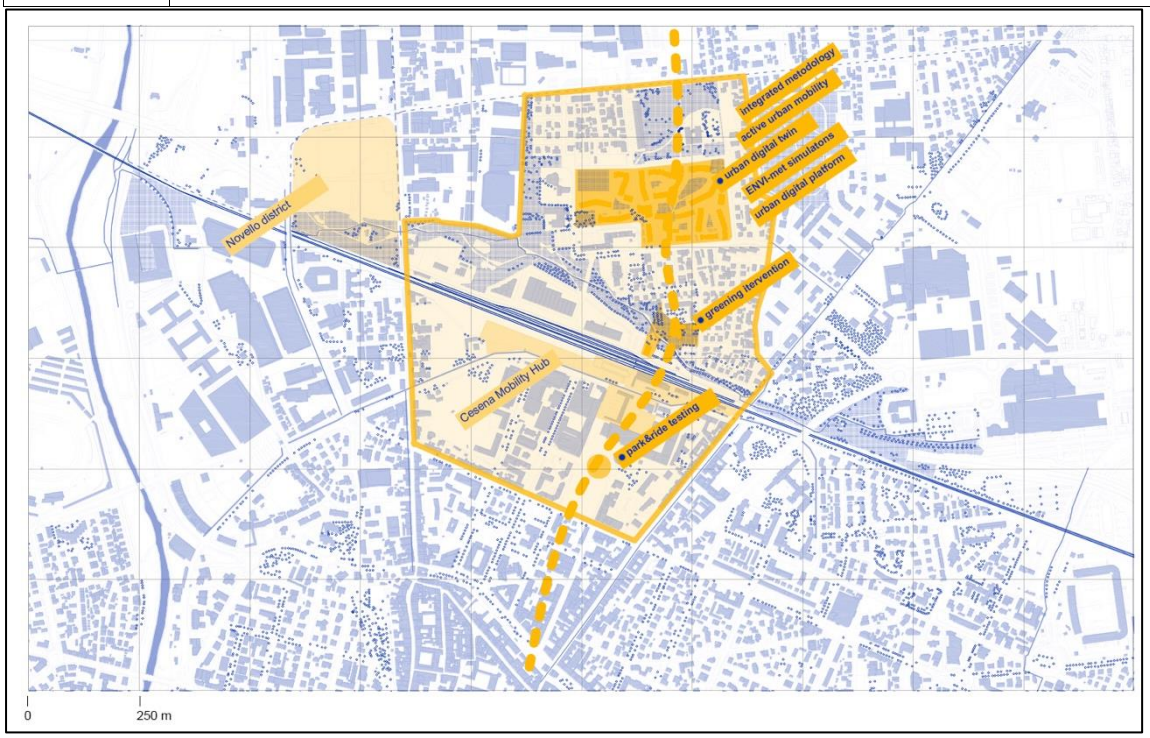

Figure 6. Demo area in Cesena municipality, highlights also include the historic centre, the Savio river and the railway line (graphics: Serena Orlandi, UNIBO – Cartographic base from the Emilia-Romagna region geoportal).

*Table **3**. Cesena Demo – key data of Vigne Neighbourhood.*

Demo – general key data		
Land area	Population	Building stock area
65 ha	2,752 citizens	524,347 m^2

The effective population accounted for the KPI calculations corresponds to the total number of residents living in the Vigne-Railway station area. As the Railway station area has mainly a public use (train/bus stations, schools, tertiary, etc.), results based on population-related parameter can lead to an underestimation of the real number of users in the area.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Pre-intervention KPIs are calculated as part of the initial project implementation as shown in Figure 4

*Table **4**. Cesena Demo – Pre-intervention KPIs – Results and data sources.*

ID	KPI	Result	Source
KPI 1.1.	Total primary Energy [kWh/m^2 year]	**116**	- https://sace.regione.emilia-romagna.it/Login.aspx?ReturnUrl=%2f - https://servizi.comune.cesena.fc.it/mokaApp/apps/CBLGEXT/index.html - https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_consumption_in_households
KPI 2.2	GHG emissions [kgCO_2/m^2·year]	**1.37E+07**	- https://servizi.comune.cesena.fc.it/mokaApp/apps/CCOMPL/index.html?null
KPI 3.2	Sociability - People's perception of the inclusiveness of the community [Likert scale]	**3.2**	- Survey for stakeholder representatives: associations active in the demo area, residents, high school students, citizens.
	Sociability - People's participation in local groups/networks [Likert scale]	**3.2**	

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

<table>
<tr><th>ID</th><th>KPI</th><th>Result</th><th>Source</th></tr>
<tr><td>KPI 3.4</td><td>Demographic Composition
[#, %]</td><td colspan="2">
<table>
<tr><th colspan="2">Age group</th></tr>
<tr><td>Less than 15 years</td><td>322</td></tr>
<tr><td>From 15 to 29 years</td><td>369</td></tr>
<tr><td>From 30 to 49 years</td><td>667</td></tr>
<tr><td>From 50 to 64 years</td><td>609</td></tr>
<tr><td>From 65 to 84 years</td><td>616</td></tr>
<tr><td>85 years or over</td><td>159</td></tr>
<tr><th colspan="2">Gender</th></tr>
<tr><td>Female</td><td>1,400</td></tr>
<tr><td>Male</td><td>1,342</td></tr>
<tr><th colspan="2">Education level</th></tr>
<tr><td>Pre-primary, primary and lower secondary education (levels 0-2)</td><td>1,234</td></tr>
<tr><td>Upper secondary and post-secondary non-tertiary education (levels 3 and 4)</td><td>1,005</td></tr>
<tr><td>First and second stage of tertiary education (levels 5 and 6)</td><td>1,342</td></tr>
<tr><th colspan="2">Nationality</th></tr>
<tr><td>Demo country national</td><td>2,344</td></tr>
<tr><td>Foreign national</td><td>398</td></tr>
<tr><th colspan="2">Employment status</th></tr>
<tr><td>Employed</td><td>1,382</td></tr>
<tr><td>Unemployed</td><td>76</td></tr>
<tr><td>Other</td><td>1,284</td></tr>
</table>
Sources:
- ‘Anagrafe Cesena Municipality’ (reference year 2025). Boundary: Vigne Railway-Station
</td></tr>
</table>

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

ID	KPI	Result	Source
			- http://dati-censimentipermanenti.istat.it/
KPI 3.5	Safety and Security - Traffic incidents rate change [% per thousand population]	**18.17 ‰**	- Survey for stakeholder representatives: associations active in the demo area, residents, high school students, citizens. Data were provided by Cesena Local Police. They refer to the intervention in the Railway area during the year 2024 Data were provided by Cesena Fire Brigate. They refer to the interventions in the Vigne-Railway area during the year 2024 https://gis.unionevallesavio.it/portal/apps/opsdashboard/index.html#/b05804aee852495d840a60b8db978df9 https://servizi.comune.cesena.fc.it/mokaApp/apps/INCSTRA/index.html?null
	Safety and Security - Fire-related incidents rate change [% per thousand population]	**2.54 ‰**	
	Safety and Security - Crime rate [% per thousand population]	**6.90 ‰**	
	Safety and Security - People's perception of safety in the community [Likert scale]	**2.40**	
	Safety and Security - People's perception of security in the community [Likert scale]	**2.20**	
KPI 3.6	Energy and Environmental Consciousness - People's energy and environmental consciousness	**4.6**	- Survey for stakeholder representatives: associations active in the demo area, residents, high school students, citizens. - https://ambiente.regione.emilia-romagna.it/it/rifiuti/informazioni/Iniziative-comunicazione/campagna_rifiuti_9a_edizione - Hera SPA. Reference year 2021
	Energy and Environmental Consciousness - Recycling rate change	**68.70 %**	
	Energy and Environmental Consciousness - Water consumption intensity change [l/year person]	**5.02E+04**	
KPI 4.1	Amenities and Services Access [%, #]	**71,43 %**	- Google maps - Municipal DDBB/maps

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

<table>
<tr><th>ID</th><th>KPI</th><th>Result</th><th>Source</th></tr>
<tr><td></td><td></td><td></td><td>- https://servizi.comune.cesena.fc.it/mokaApp/apps/UVSTECESTHTML5/index.html?null</td></tr>
<tr><td>KPI 5.1</td><td>Transport Behaviour
[%, #]</td><td colspan="2"><table>
<tr><td>Private car (driver or passenger)</td><td>62%</td></tr>
<tr><td>Public transport (bus)</td><td>12%</td></tr>
<tr><td>Public transport (tram, train, underground)</td><td>5%</td></tr>
<tr><td>Bicycle</td><td>3%</td></tr>
<tr><td>Walking</td><td>17%</td></tr>
<tr><td>Shared e-scooter</td><td>0%</td></tr>
</table>Sources:
- Local Survey</td></tr>
<tr><td>KPI 5.2</td><td>Urban Accessibility
[%, #]</td><td>20 %</td><td>- https://servizi.comune.cesena.fc.it/mokaApp/apps/UVSTECESTHTML5/index.html?null</td></tr>
<tr><td>KPI 5.5</td><td>Renewal of Walking and Open spaces
[km^2]</td><td>0.14</td><td>- https://servizi.comune.cesena.fc.it/mokaApp/apps/UVSTECESTHTML5/index.html?null</td></tr>
</table>

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Regarding KPI 1.1 and KPI 2.1 – BU component, the data collection process conducted by Cesena demo is based on the regional database for Energy Certificates and the GIS open map from the Municipality cadastral DDBBs. The data processing approached a reliable assumption to disaggregate the obtained total PE value for the demo building stock by applying a share per energy carrier based on statistical data:

- Residencial Typology. Including the share of energy carriers indicated by Eurostat for Italian households (Energy consumption in households - Statistics Explained; see Table 1).

Tertiary and public typologies. Using the data source from the EOB (EU Building Stock Observatory - Database; Domain: Energy / Subject: Final Energy / County: Italy). This is a generic share for all buildings, but these typologies are less representative in the demo area.

The radial graph on the next page shows all KPI values grouped by category and compared to demos results averages:

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

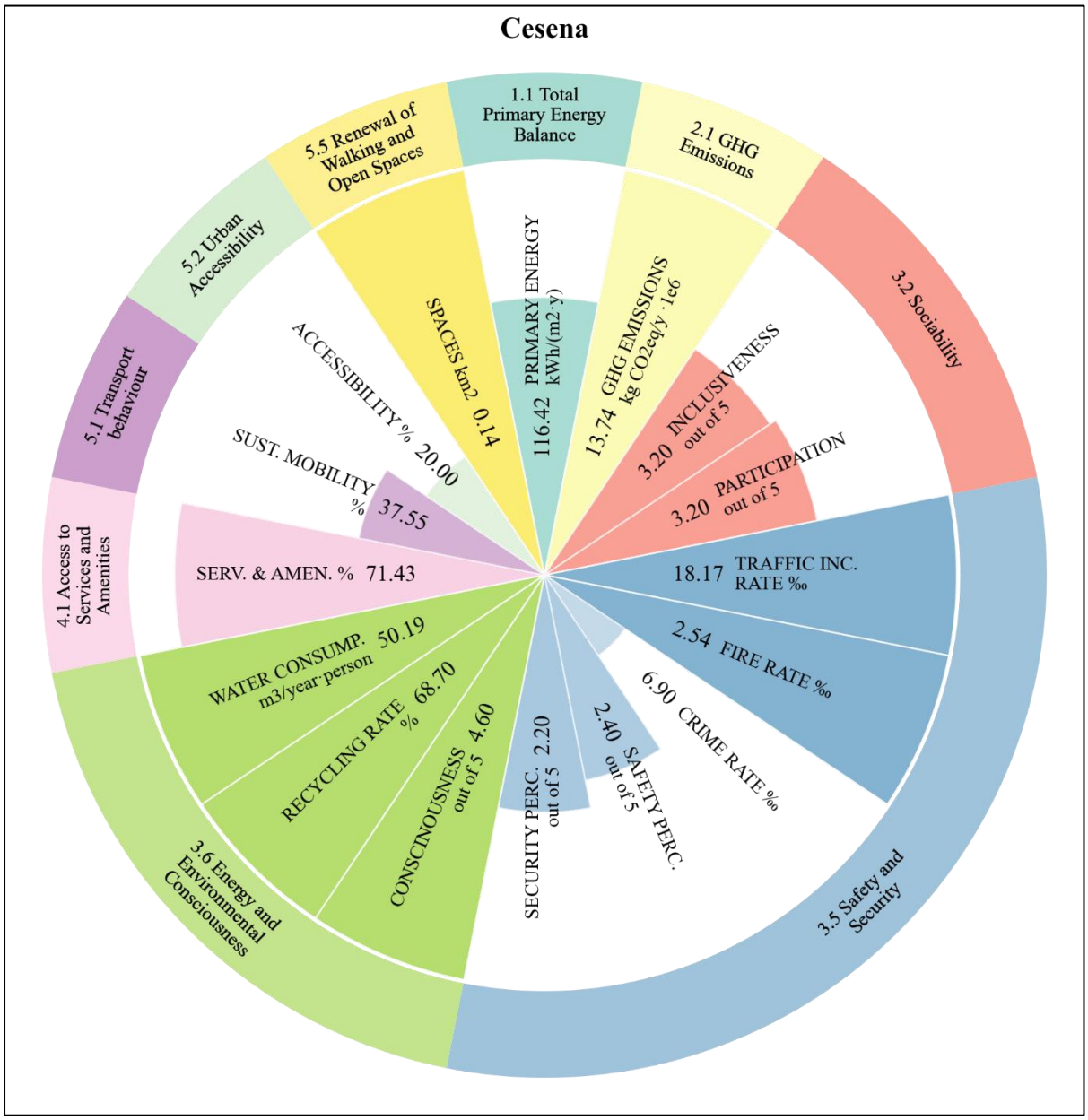

Figure 7. Cesena Demo – Radial Graph including pre-intervention KPI outcomes.

Figure 7 illustrates the overall KPI outcomes for the baseline conditions of the Cesena Demo. The representation of values is delivered from a comparative perspective, where the unit intervals used to show each KPI are reflecting the maximum value across all demos. The radial graphic representation helps to show high, moderate, or low levels of performance for all KPIs.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

2.2. Cascais Demo

The Portuguese demo case is called *Alcabideche* neighbourhood and is located in the central-western Portuguese city of Cascais. *Alcabideche* is a diverse urban centre (outlined in blue), comprising various communities, including the social neighbourhood called "Bairro de Alcabideche" (outlined in green), schools, a sports centre, a municipal swimming pool, and cultural venues.

The Municipality of Cascais aligns with the EU's commitment to climate neutrality by 2050 and a 55% reduction in net greenhouse gas emissions by 2030. A key strategy involves promoting renewable energy production and electrification across various industries. Special emphasis is placed on public-private partnerships for energy communities, particularly in social housing areas, to combat energy poverty and contribute to the EU Solar Energy Strategy.

The Alcabideche neighbourhood is the focus of the Cascais demo aimed at mitigating energy poverty and improving building comfort through energy communities. This involves:

- Conducting a social, technical, and economic analysis to assess building conditions, energy flows, and energy poverty levels.
- Developing a regeneration model for Socially Inclusive Decarbonization, including the installation of photovoltaic systems on rooftops of five municipal buildings (two with batteries, three without batteries) and three EV chargers.
- Engaging citizens through participatory planning, governance models, and digital applications. A Digital Twin will be implemented to integrate data on buildings, energy production, consumption, and flows, enabling better decision-making and citizen engagement. This will be complemented by local awareness workshops to promote social equality and cognitive change.

The project benefits from collaboration with the four key clusters (Social Innovation, Integrated Planning, Sustainable Mobility, and Energy in the Built Environment) and coordination with other EU projects to address challenges and enhance impact.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

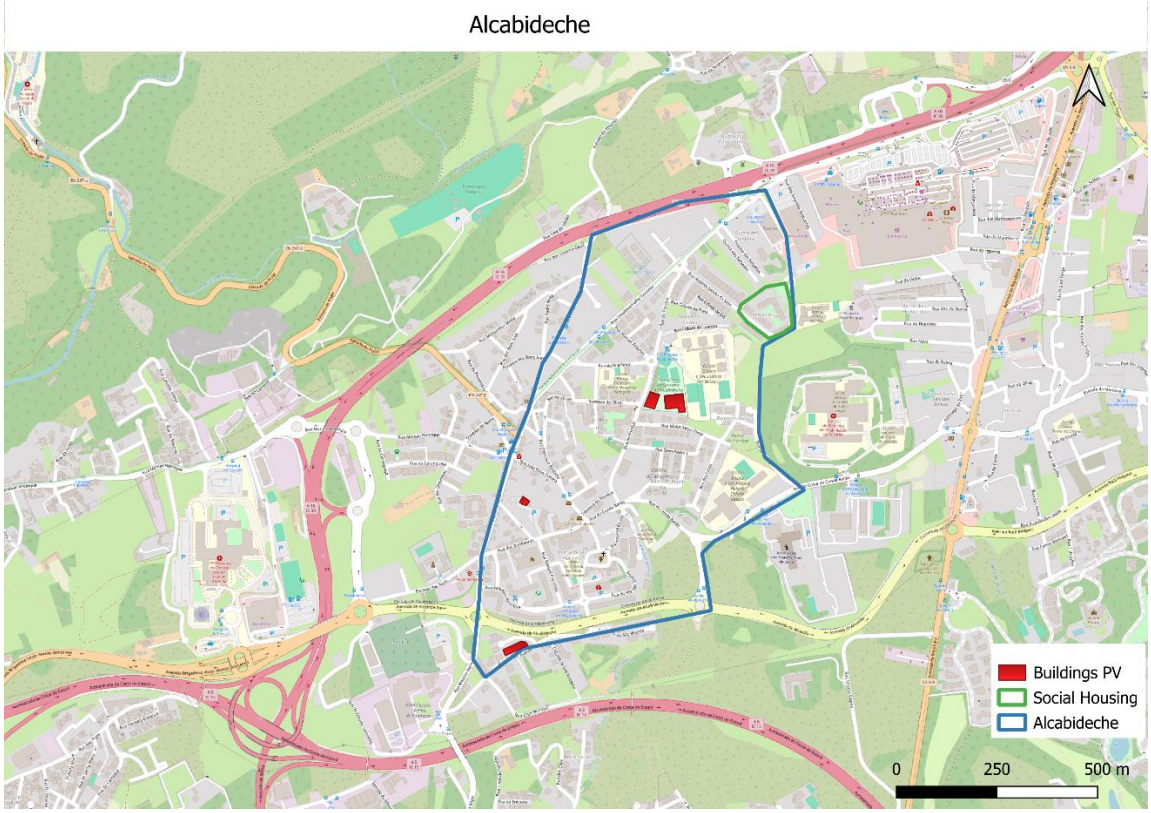

*Figure **8** – Cascais Demo – map of the Alcabideche Neighbourhood*

Adopting the name "Social neighbourhood as an Active Energy Community", the main objective of this demo is to promote an urban regeneration model through the integration of the energy communities involving citizens and local stakeholders. In order to achieve this, different locations have been identified for the installation of the energy communities.

*Table **5**. Cascais Demo – key data of Alcabideche Neighbourhood.*

Demo – general key data		
Land area	Population	Building stock area
40 ha	2,800 citizens	205,351 m^2

As part of the WeGenerate approach, Demo planned actions are revised and implementation roadmap is set up as an initial step of the project development as indicted in **Table 6**.

*Table **6**. Cascais Demo –Action Plan for Urban Regeneration of Alcabideche Neighbourhood.*

Regen. Actions	**Description of tasks**
A1 - Contextualization planning, impact assessment of the intervention measures	Task A1.1 - Assess the energy use and provide a set of retrofitting solutions
	Task A1.2 - Evaluation of the related ongoing actions in Cascais and planning of the actions to be taken within the framework of the project

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Regen. Actions	Description of tasks
A2 - Evaluation of energy poverty level, of the built environment quality and indoor comfort conditions	Task A2.1 - Characterization of the population involved, and evaluation of energy poverty and energy literacy level.
	Task A2.2 - Evaluation of the residents' transportation needs to connect with mobility policies and evaluate where the EV chargers will be more useful
	Task A2.3 - Development of a framework for urban regeneration with input from the Innovation Hub
A3 - Implement an active citizen energy community with a customised smart energy metering and management platform that allows the sharing of energy between 'prosumers', working as an urban energy lab	Task A3.1 - Assessment of Cascais' Global Horizontal Irradiation in the ground and in building rooftops
	Task A3.2 - Evaluation of the potential capacity to be installed in the 5 municipal buildings and of the percentage of excess energy that can be shared with the social housing buildings
	Task 3.3 - Planning of the energy community according to existing policies and regulations
	Task 3.4 - Inauguration of the first PV systems giving information to the residents about how an energy community works, how they can join and what they can benefit from it
	Task 3.5 - Recruiting members for the REC
	Task 3.6 - Ask for the permits to create the REC to the responsible authorities (DGEG) and receive the response (4 months waiting period)
	Task 3.7 – Installation of batteries in 2 higher capacity PV systems and of 3 EV chargers in the most useful locations
A4 - Develop and test the use of Digital Twin in assessing the potential of creating a citizen energy community in the neighbourhood	Task A4.1 - Development of a 3D model of the neighbourhood buildings to incorporate in the Digital Twin
	Task A4.2 - Integration of the production and consumption data in the Digital Twin
	Task A4.3 - Development of an App or web based platform to be used by citizens and inform them of the potential and benefits of being part of an energy community in Cascais
A5 - Promoting campaigns for awareness raising and capacity building of citizens about multi-benefits of sustainable, inclusive and accessible neighbourhoods	Task A5.1. Developing an information campaign before the creation of the energy community, presenting their benefits. Engaging with project stakeholders with a first presentation of the project followed by bilateral meetings (T.A.5.1.1). Targeting specific intervenient that can reach out to and help on spreading the message to the rest of the community and creating a neighbourhood tutor that is the contact point with social housing residents (T.A.5.1.2) Information campaign targeted to social housing residents, through available digital tools, flyer distribution and face-to-face events (A5.1.3)

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Regen. Actions	Description of tasks
	Task A5.2 - Developing workshops for co-creation with the different groups of citizens involved in the project
	Task A5.3 - Education and awareness campaigns: creating an environment that facilitates households living in energy poverty to adopt and sustain energy-saving practices. This involves enhancing energy literacy through community programmes and fostering social networks that promote collective action.
A6 - Replicate the regeneration model towards all social neighbourhoods in Cascais as well as the Lisbon Metropolitan Area in collaboration with other 17 municipalities	Task A6.1 - Writing of a "Good Practices Manual" to be used as a guide for the replication in other neighbourhoods (with the description of obstacles and how they were overcome)
	Task A6.2 - Characterization of the different social neighbourhoods in Cascais and the Lisbon Metropolitan Area, and Identify social neighbourhoods with similar characteristics to Alcabideche

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Pre-intervention KPIs are calculated as part of the initial project implementation as shown in Figure 7.

Table 7. Cascais Demo – Pre-intervention KPIs – Results and data sources.

ID	KPI	Result	Sources
KPI 1.1.	Total primary Energy [kWh/m^2 year]	**124**	- Energy Certificates - https://www.dgeg.gov.pt/pt/estatistica/energia/eletricidade/consumo-por-municipio-e-tipo-de-consumidor/ - https://www.dgeg.gov.pt/pt/estatistica/energia/gas-natural/consumos/ - EMAC DDBB - Alcabideche Parish DDBBs
KPI 2.2	GHG emissions [kgCO_2/m^2 year]	**6.16E+06**	- Data from Census 2011 (%) - CELE 2013-2020 - https://apambiente.pt/sites/default/files/_Clima/CELE/Tabelas_Fatores_Calculo/tabela_PCI_FE_FO_2013.pdf - https://www.ersar.pt/pt/setor/factos-e-numeros#k=#l=2070 - https://apambiente.pt/sites/default/files/_Clima/Inventarios/FE_GEE_Eletricidade_2024_final.pdf - EMAC DDBBs - Local Waste Management DDBBs - https://www.isa.ulisboa.pt/ceabn/uploads/docs/projectos/lxtree/Lx-Tree_RELATORIO_SERVICOS_ECOSSISTEMA_CEABN_ISA_NOV2022.pdf

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

ID	KPI	Result	Sources
			- https://www.cm-almada.pt/viver/intervencao-ambiental-clima-e-sustentabilidade/arvores/grevillea-robusta-grevilea-0 - https://mytree.itreetools.org/ - https://repositorio.unifesp.br/server/api/core/bitstreams/cc703dcf-750a-4506-a025-db3fcc7fb206/content - https://florestas.pt/saiba-mais/qual-a-capacidade-de-sequestro-de-carbono-das-especies-florestais/ - https://www.sciencedirect.com/science/article/pii/S0306261914003626 -
KPI 3.2	Sociability - People's perception of the inclusiveness of the community [Likert scale]	**3.91**	- Survey for stakeholder representatives: associations active in the demo area, residents, high school students, citizens.
	Sociability - People's participation in local groups/networks [Likert scale]	**2.06**	

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

<table>
<tr><th>ID</th><th>KPI</th><th>Result</th><th>Sources</th></tr>
<tr><td>KPI 3.4</td><td>Demographic Composition
[#, %]</td><td colspan="2">
<table>
<tr><th colspan="2">Age group</th></tr>
<tr><td>Less than 15 years</td><td>424</td></tr>
<tr><td>From 15 to 29 years</td><td>480</td></tr>
<tr><td>From 30 to 49 years</td><td>742</td></tr>
<tr><td>From 50 to 64 years</td><td>586</td></tr>
<tr><td>From 65 to 84 years</td><td>491</td></tr>
<tr><td>85 years or over</td><td>76</td></tr>
<tr><th colspan="2">Gender</th></tr>
<tr><td>Female</td><td>1,465</td></tr>
<tr><td>Male</td><td>1,335</td></tr>
<tr><th colspan="2">Education level</th></tr>
<tr><td>Pre-primary, primary and lower secondary education (levels 0-2)</td><td>1,556</td></tr>
<tr><td>Upper secondary and post-secondary non-tertiary education (levels 3 and 4)</td><td>679</td></tr>
<tr><td>First and second stage of tertiary education (levels 5 and 6)</td><td>565</td></tr>
<tr><th colspan="2">Nationality</th></tr>
<tr><td>Demo country national</td><td>2,516</td></tr>
<tr><td>Foreign national</td><td>284</td></tr>
<tr><th colspan="2">Employment status</th></tr>
<tr><td>Employed</td><td>1,177</td></tr>
<tr><td>Unemployed</td><td>118</td></tr>
<tr><td>Other</td><td>1,505</td></tr>
</table>
</td></tr>
</table>

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

ID	KPI	Result	Sources
		Sources: - Alcabideche Parish DDBBs - Census 2021 https://tabulador.ine.pt/indicador/?id=0011609	
KPI 3.5	Safety and Security - Traffic incidents rate change [% per thousand population]	**2.84 ‰**	- Survey for stakeholder representatives: associations active in the demo area, residents, high school students, citizens. - Cascais municipal level - Data from 2022 - At Parish Level - 71 (Bombeiros de Alcabideche)
	Safety and Security - Fire-related incidents rate change [% per thousand population]	**1.61 ‰**	
	Safety and Security - Crime rate [% per thousand population]	**29.49 ‰**	
	Safety and Security - People's perception of safety in the community [Likert scale]	**3.21**	

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

<table>
<tr><th>ID</th><th>KPI</th><th>Result</th><th>Sources</th></tr>
<tr><td></td><td>Safety and Security - People’s perception of security in the community [Likert scale]</td><td>3.83</td><td></td></tr>
<tr><td rowspan="3">KPI 3.6</td><td>Energy and Environmental Consciousness - People's energy and environmental consciousness</td><td>3.71</td><td rowspan="3">- Questionnaire survey to stakeholder representatives: active association in the demo area, residents, students, regular citizens
- EMAC (2024), municipal level</td></tr>
<tr><td>Energy and Environmental Consciousness - Recycling rate change</td><td>19.40 %</td></tr>
<tr><td>Energy and Environmental Consciousness - Water consumption intensity change [l/year person]</td><td>1.73E+04</td></tr>
<tr><td>KPI 4.1</td><td>Amenities and Services Access [%, #]</td><td>42.77 %</td><td>- Alcabideche QGIS map
- Open DDBBs at local level</td></tr>
<tr><td>KPI 5.1</td><td>Transport Behaviour [%, #]</td><td colspan="2"><table><tr><td>Private car (driver or passenger)</td><td>66%</td></tr><tr><td>Public transport (bus)</td><td>20%</td></tr></table></td></tr>
</table>

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

<table>
<tr><th>ID</th><th>KPI</th><th>Result</th><th>Sources</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>Public transport (tram, train, underground)</td><td>0%</td></tr>
<tr><td>Bicycle</td><td>2%</td></tr>
<tr><td>Walking</td><td>11%</td></tr>
<tr><td>Shared e-scooter</td><td>1%</td></tr>
</table>
Sources:
- https://www.cascais.pt/sites/default/files/anexos/gerais/new/pedu_cascais_1.pdf
</td><td></td></tr>
<tr><td>KPI 5.2</td><td>Urban Accessibility
[%, #]</td><td>18%</td><td>- Alcabideche QGIS map
- https://data.cascais.pt/geral/mobilidade</td></tr>
<tr><td>KPI 5.5</td><td>Renewal of Walking and Open spaces
[km^2]</td><td>0.09</td><td>- Alcabideche QGIS map</td></tr>
</table>

The radial graph on the next page shows all KPI values grouped by category and compared to demos results averages:

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

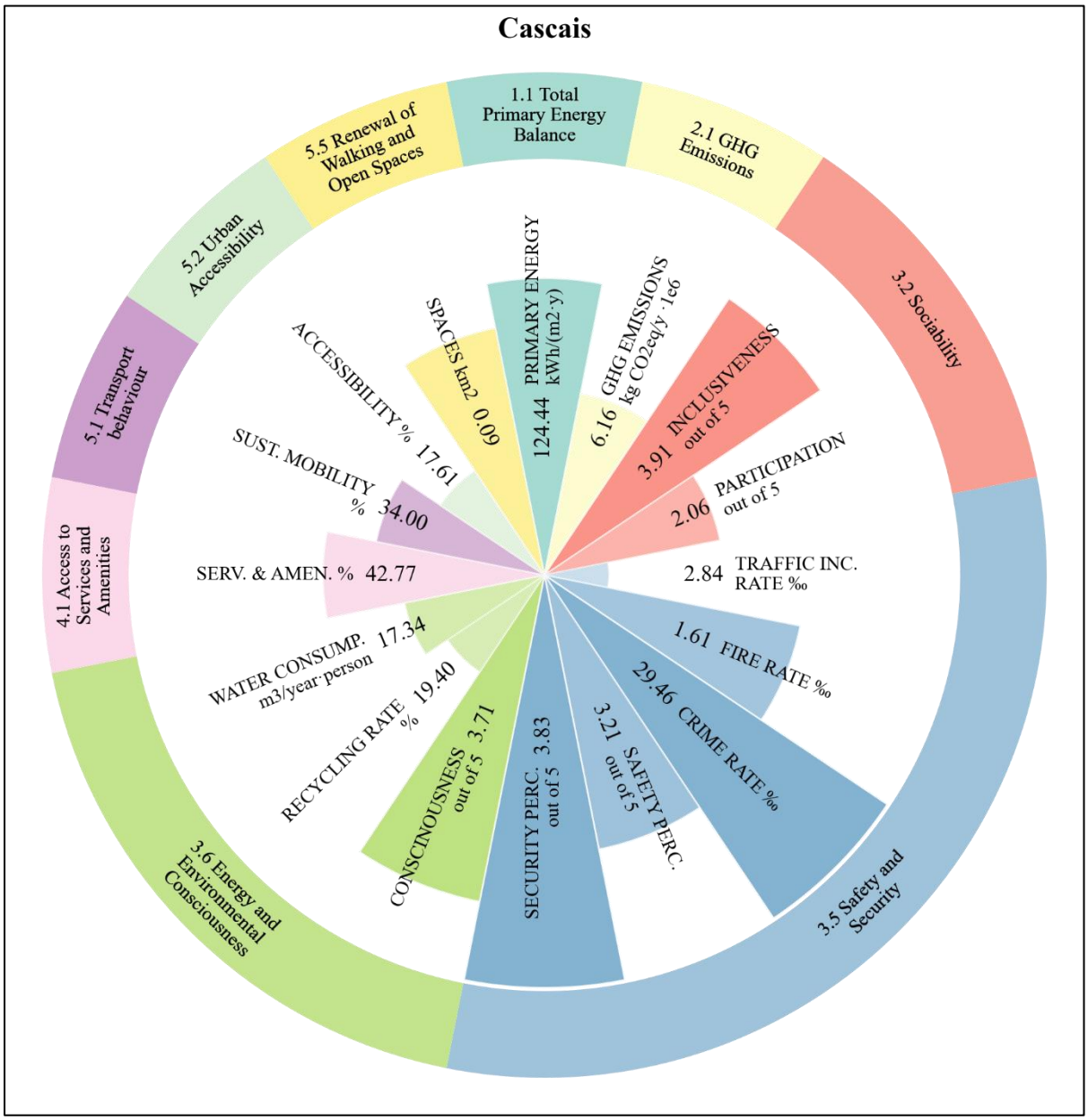

Figure 9. Cascais Demo – Radial Graph including pre-intervention KPI outcomes.

Figure 9 illustrates the overall KPI outcomes for the baseline conditions of Cascais Demo. The representation of values is delivered from a comparative perspective, where the unit intervals used to show each KPI result are reflecting the maximum value across all demos. The radial graphic representation helps to show high, moderate, or low levels of performance for all KPIs.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

2.3. Bucharest Demo

The Romanian demo case is called *Open Campus for Neighbourhood and Climate* neighbourhood and is located in District 2 of the Romanian capital city of Bucharest. The demo site has a mix of uses, such as residential building blocks with single-family apartments, public schools and the UTCB campus, retail stores, and small businesses. It is characterised by a built environment composed of mixed architecture, including multi-family residential buildings from the communist era, the UTCB campus, and residential single-housing units from different periods.

The Action Plan and Implementation Roadmap for Bucharest demo outlines a comprehensive strategy for urban regeneration with a focus on sustainability, inclusivity, and innovation. Aligned with the EU's Mission 100 Climate-Neutral and Smart Cities, the initiative aims to make District 2 a model for sustainable urban transformation.

Key objectives and strategies:

- Transformation of the university campus to an open, green, and community-integrated space by encouraging public engagement through connecting the academic sphere with the local community.
- Integration of energy efficient & renewable energy solutions such as photovoltaic systems and ground-water heat pumps and the creation of an energy-sharing platform to establish a localized microgrid. Also, use digital twin for energy monitoring and predictive analysis.
- Sustainable mobility action will be developed to reduce private car reliance and to improve bike lanes, install EV charging stations and expanded walkways.
- Community engagement & economic revitalization by involving residents and stakeholders through educational programs and consultations to redesign public spaces for cultural and recreational activities.
- Building retrofitting & climate resilience to improve energy efficiency and seismic resilience by implementing high-performance measures as well as to address urban heat island effects and air quality deterioration.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

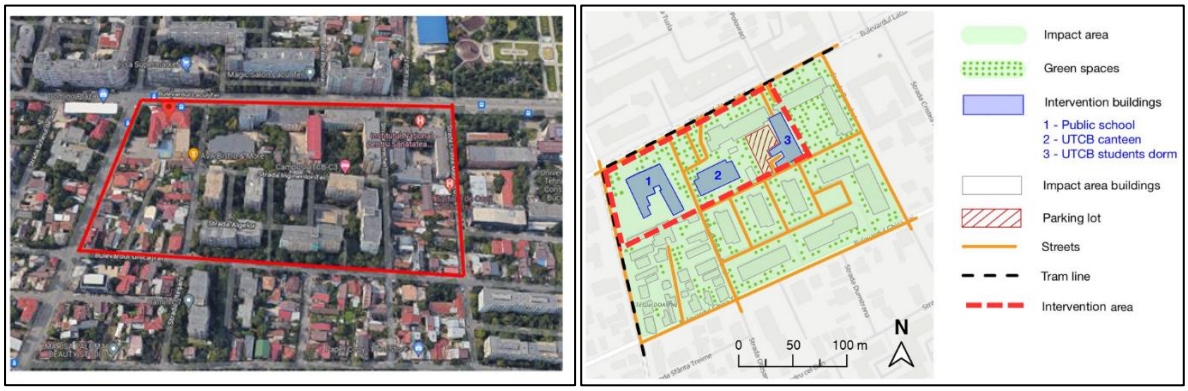

Figure 10. Bucharest Demo – Open Campus for Neighbourhood and Climate in the 2nd District in Bucharest.

Table 8. Bucharest demo– key data of Alcabideche Neighbourhood.

Demo – general key data		
Land area	Population	Building stock area
3 ha	3,630 citizens	72,647 m^2

As part of the WeGenerate approach, Demo planned actions are revised and implementation roadmap is set up as an initial step of the project development as indicted in Table 9.

Table 9. Bucharest Demo – Revised Action for Urban Regeneration of the 'Open Campus' Neighbourhood.

Regen. Actions	Description of tasks
A1 Develop a co-designed deep retrofit solution for the local student canteen and energy smart building environment through urban sharing ecosystems.	Task A1.1 Student Engagement for Canteen Retrofit Concept: Organize workshops and interactive sessions to involve students in shaping the canteen's retrofit design.
	Task A1.2 Review of the Technical Project of the Canteen: Examine existing technical plans to ensure alignment with deep retrofit requirements, including energy efficiency and sustainability goals.
	Task A1.3 Data Collection: Gather relevant data (e.g., baseline energy use, building conditions) to inform the retrofit design and monitor subsequent performance.
A2 Smart and sustainable regeneration of local community public spaces within and outside the university campus.	Task A2.1 Co-Design Activities with UTCB Students: Collaborate with student groups to identify improvements and sustainable design ideas for public spaces on campus.
	Task A2.2 Engagement Activities with Students, Residents and School Children: Conduct outreach and community sessions and activities, incorporating diverse perspectives into the regeneration plans. Synergy with NBS EduWorld project
	Task A2.3 WeGenerate Requirements for UrbanWise Project: Define and document the specific needs for WeGenerate's impact area, ensuring synergy with UrbanWise project objectives.
	Task A2.4 Co-supervision (WeGenerate, UrbanWise and Campus Verde projects) of implementation activities: Oversee the physical transformation of selected public spaces, ensuring fidelity to the co-designed plans and sustainability criteria.
A3 Develop a sharing platform (Shared Energy Centre) for sharing the energy produced in the	Task A3.1 Shared Energy Centre Technical Solution Design: Involve technical and research teams in designing the Shared Energy Centre's technical framework and operation model.
	Task A3.2 Terms of Reference (ToR) Drafting and Bid Preparation: Prepare the functional and technical specifications, followed by bid documentation for potential contractors.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Regen. Actions	Description of tasks
campus with the neighbourhood.	Task A3.3 Implementation Activities and Installation of the ESC Systems: Install and integrate the necessary infrastructure for energy generation, storage and distribution in the intervention area.
A4 Digital Twin Development and Testing for Assessing the Potential of GHG Emission Reduction and the Creation of an Energy Community in the Neighbourhood	Task A4.1 Stakeholder Engagement: Identify and involve private and public entities and community members to define requirements and gather user feedback for the DT design.
	Task A4.2 Neighbourhood 3D Model Design: Create a digital 3D model covering key buildings and urban features to serve as the foundation for the Digital Twin.
	Task A4.3 Sensors Network Design and Installation: Plan and deploy sensors for real-time data collection (e.g., energy use, environmental conditions) feeding into the Digital Twin.
	Task A4.4 Building Energy Simulations: Use simulation tools (e.g., IES VE) to explore different building-level efficiency scenarios, integrating Fraunhofer data for larger-scale analyses.
	Task A4.5 Simulation of energy systems in the intervention and impact areas
	Task A4.6 Urban Environment Simulations: Employ environmental modeling (e.g., ENVI-met) to assess neighbourhood-level conditions and incorporate findings into the Digital Twin.
	Task A4.7 Development of DT platform, ToR and Tender: Finalize the platform's technical specifications, draft the Terms of Reference and launch the procurement process for advanced system components.
	Task A4.8 Monitoring Activities with DT: Continuously collect and analyse sensor data to refine performance, track GHG reduction potential and other indicators.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Pre-intervention KPIs are calculated as part of the initial project implementation as shown in Table 10.

Table 10. Bucharest Demo – Pre-intervention KPIs – Results and data sources.

ID	KPI	Result	Source
KPI 1.1.	Total primary Energy [kWh/m^2·year]	**173**	- SNRTL - Energy Audits - CPE archetype buildings
KPI 2.2	GHG emissions [kgCO_2/m^2·year]	**4.60E+06**	- Municipal DDBBs - District 2 Cadastre - CAD archetype buildings - https://legislatie.just.ro/
KPI 3.2	Sociability - People's perception of the inclusiveness of the community [Likert scale]	**3.5**	Survey for stakeholder representatives: associations active in the demo area, residents, high school students, citizens.
	Sociability - People's participation in local groups/networks [Likert scale]	**3**	

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

<table>
<tr><th>ID</th><th>KPI</th><th>Result</th></tr>
<tr><td>KPI 3.4</td><td>Demographic Composition
[#, %]</td><td>
<table>
<tr><th colspan="2">Age group</th></tr>
<tr><td>Less than 15 years</td><td>462</td></tr>
<tr><td>From 15 to 29 years</td><td>442</td></tr>
<tr><td>From 30 to 49 years</td><td>1,241</td></tr>
<tr><td>From 50 to 64 years</td><td>687</td></tr>
<tr><td>From 65 to 84 years</td><td>698</td></tr>
<tr><td>85 years or over</td><td>101</td></tr>
<tr><th colspan="2">Gender</th></tr>
<tr><td>Female</td><td>1,957</td></tr>
<tr><td>Male</td><td>1,673</td></tr>
<tr><th colspan="2">Education level</th></tr>
<tr><td>Pre-primary, primary and lower secondary education (levels 0-2)</td><td>436</td></tr>
<tr><td>Upper secondary and post-secondary non-tertiary education (levels 3 and 4)</td><td>1,873</td></tr>
<tr><td>First and second stage of tertiary education (levels 5 and 6)</td><td>1,274</td></tr>
<tr><th colspan="2">Nationality</th></tr>
<tr><td>Demo country national</td><td>3,556</td></tr>
<tr><td>Foreign national</td><td>74</td></tr>
<tr><th colspan="2">Employment status</th></tr>
<tr><td>Employed</td><td>2,301</td></tr>
<tr><td>Unemployed</td><td>20</td></tr>
<tr><td>Other</td><td>1,309</td></tr>
</table>
</td></tr>
</table>

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

ID	KPI	Result	
		Sources: - Municipal DDBBs - District 2 Cadastre - http://statistici.insse.ro - https://insse.ro https://www.recensamantromania.ro	
KPI 3.5	Safety and Security - Traffic incidents rate change [% per thousand population]	**0.83 ‰**	- Survey for stakeholder representatives: associations active in the demo area, residents, high school students, citizens. National Statistics (INSSE) 2023 TRN104F - https://isubif.ro
	Safety and Security - Fire-related incidents rate change [% per thousand population]	**0.49 ‰**	
	Safety and Security - Crime rate [% per thousand population]	**9.64 ‰**	
	Safety and Security - People's perception of safety in the community [Likert scale]	**3.83**	
	Safety and Security - People's perception of security in the community [Likert scale]	**3.67**	

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

<table>
<tr><th>ID</th><th>KPI</th><th colspan="2">Result</th></tr>
<tr><td rowspan="3">KPI 3.6</td><td>Energy and Environmental Consciousness - People's energy and environmental consciousness</td><td>2.83</td><td rowspan="3">- Survey for stakeholder representatives: associations active in the demo area, residents, high school students, citizens.District 2 Internal Data 2024
- National Statistics (INSSE) 2023</td></tr>
<tr><td>Energy and Environmental Consciousness - Recycling rate change</td><td>24.44 %</td></tr>
<tr><td>Energy and Environmental Consciousness - Water consumption intensity change [l/year ·person]</td><td>4.11E+04</td></tr>
<tr><td>KPI 4.1</td><td>Amenities and Services Access
[%, #]</td><td>79.64 %</td><td>- Municipal DDBBs
- District 2 Cadastre</td></tr>
<tr><td>KPI 5.1</td><td>Transport Behaviour
[%, #]</td><td colspan="2"><table>
<tr><td>Private car (driver or passenger)</td><td>18 %</td></tr>
<tr><td>Public transport (bus)</td><td>21 %</td></tr>
<tr><td>Public transport (tram, train, underground)</td><td>21 %</td></tr>
<tr><td>Bicycle</td><td>5 %</td></tr>
<tr><td>Walking</td><td>28 %</td></tr>
<tr><td>Shared e-scooter</td><td>8 %</td></tr>
</table></td></tr>
</table>

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

ID	KPI	Result	
		Sources: - Municipal DDBBs	
KPI 5.2	Urban Accessibility [%, #]	**15 %**	- STB (Bucharest Transport Society) - Local DDBBs, field survey
KPI 5.5	Renewal of Walking and Open spaces [km^2]	**0.04**	- Demo site CAD

The radial graph on the next page shows all KPI values grouped by category and compared to demos results averages:

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

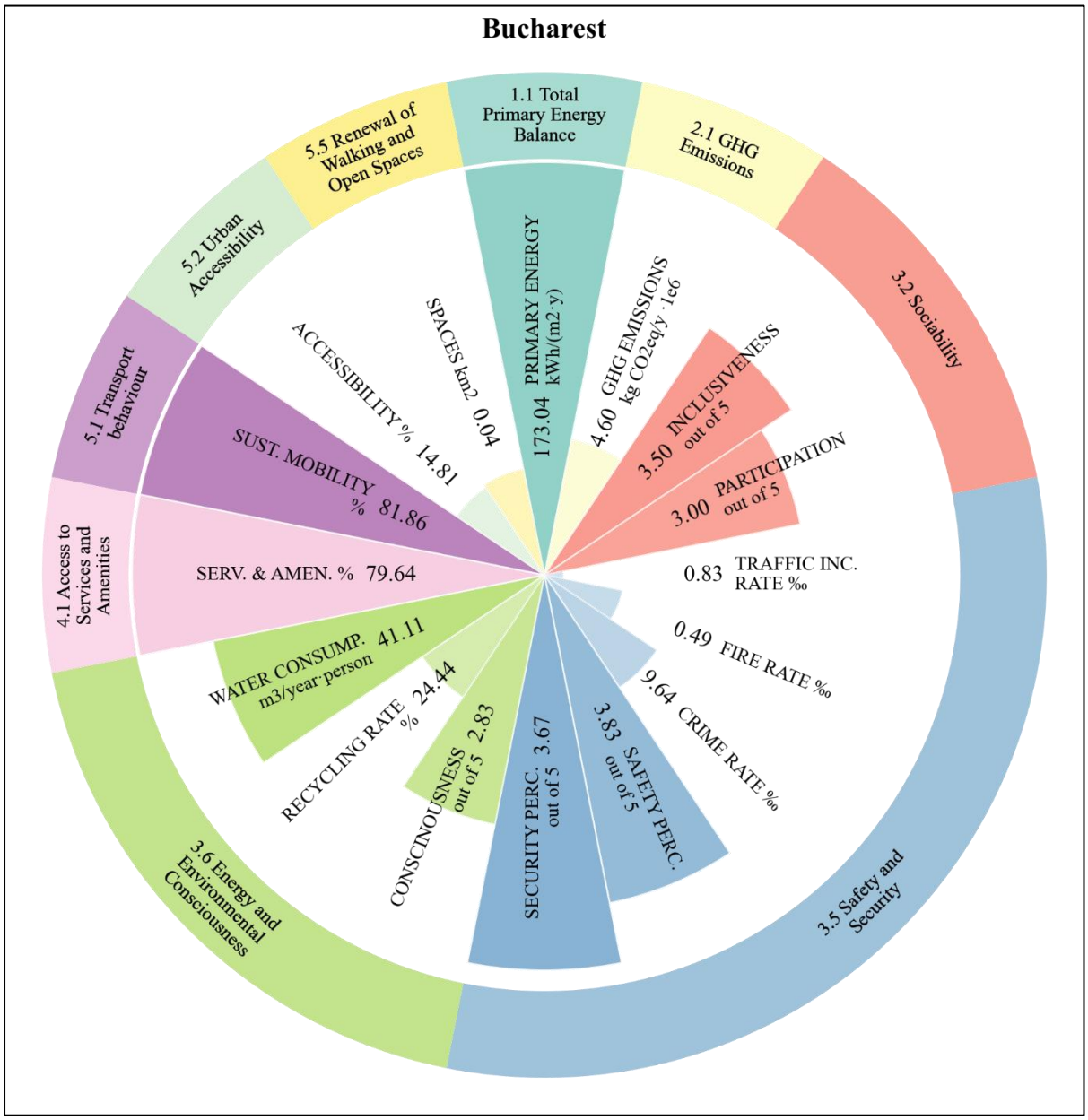

Figure 11. Bucharest Demo – Radial Graph including pre-intervention KPI outcomes.

Figure 11 illustrates the overall KPI outcomes for the baseline conditions of Bucharest Demo. The representation of values is delivered from a comparative perspective, where the unit intervals used to show each KPI result are reflecting the maximum value across all demos. The radial graphic representation helps to show high, moderate, or low levels of performance for all KPIs.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

2.4.Tampere Demo

The Finnish demo case focuses on revitalizing *Tampere's City Centre*, a mixed-use area with residential, commercial, educational, and cultural facilities. The project aims to benefit a diverse population including residents, businesses and visitors; the inner city population is around 41,000 inhabitants; the selected demo area has 2,811 residents.

The urban regeneration model envisioned by Tampere is guided by a shift from mobility focused on speed to "accessibility", i. e. how many people can safely and comfortably reach the area. Social inclusivity and climate neutrality are city priorities. By addressing disparities in walkability experiences aims to enhance both aspects at the demo level. WeGenerate Tampere demo integrates diverse experiences to create a more inclusive, accessible and liveable city for all seasons and age groups.

Figure 12. Tampere Demo – City Centre Neighbourhood.

Table 11. Tampere Demo - key data of Alcabideche Neighbourhood.

Demo – general key data		
Land area	Population	Building stock area
6 ha	2,811 citizens	8,855 m^2

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

The selected demonstration sites aim to enhance the city's attractiveness:

- Station Area Green Public Space – A developing area suitable for testing digital tools and urban experiments before reconstruction.
- Central Square (Keskustori) & Laikunlava Open-Air Stage – Historic spaces lacking a strong identity targeted for revitalization through tactical urbanism.
- Culture District – A conceptual area integrating cultural, commercial and historical spaces to strengthen identity and improve walkability using digital tools.

The overall goal is to enhance the city centre's liveliness through experimentation, technology and tactical urbanism.

As part of the WeGenerate approach, the Demo planned actions are revised and implementation roadmap is set up as an initial phase of the project implementation as indicated in Table 12.

*Table **12**. Tampere Demo –Action Plan for Urban Regeneration of the City Centre Neighbourhood.*

Demo Sites	Framework	Regener. Actions
Station Area Green Public Space	Tampere City Strategy	A1. Towards the metaverse – creation and utilization of digital twins
Central Square incl. Laikunlava open-air stage	Data-Driven City for Citizens development programme	A2. Engagement of citizens in co-creation of a walkable and safe city centre
Culture Walk at Culture District	Sustainable Urban Mobility Plan	A3. Use digital twins to simulate safety and CO2 emission levels related to people flows and to support the walkability
	Roadmap for Carbon-Neutral Tampere 2030	A4. Measure well-being and life satisfaction, domains of Environmental, Socio-economic and Safety-related well-being factors
	Tampere Metaverse Vision 2040	A5. Economic incentives and campaigns for residents to increase walkability and reduce their own carbon footprint based on simulation results from the digital twin.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Pre-intervention KPIs are calculated as part of the initial project implementation as shown in Table 13.

Table 13. Tampere Demo – Pre-intervention KPIs – Results and data sources.

ID	**Title**	**Result**	**Source**
KPI 1.1.	Total primary Energy [kWh/m^2·year]	267	- Energiateollisuus 2025: https://energia.fi/wp-content/uploads/2025/01/Sahkovuosi-2024_20250115.pdf - Statistic Finland 2024, energy import and export, quantity PxWeb - Select table - Regional open DDBB: en_GB - Open Data Tampere
KPI 2.2	GHG emissions [kgCO_2/m^2·year]	1.71E+06	
KPI 3.2	Sociability - People's perception of the inclusiveness of the community [Likert scale]	4.86	- Well-being survey of Tampere 2023 - Strategic Project Development team's DigiTwin user test workshops (3 events in 2024)
	Sociability - People's participation in local groups/networks [Likert scale]	4.75	

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

<table>
<tr><th>ID</th><th>Title</th><th>Result</th></tr>
<tr><td>KPI 3.4</td><td>Demographic Composition
[#, %]</td><td>
<table>
<tr><th colspan="2">Age group</th></tr>
<tr><td>Less than 15 years</td><td>190</td></tr>
<tr><td>From 15 to 29 years</td><td>1,048</td></tr>
<tr><td>From 30 to 49 years</td><td>663</td></tr>
<tr><td>From 50 to 64 years</td><td>471</td></tr>
<tr><td>From 65 to 84 years</td><td>181</td></tr>
<tr><td>85 years or over</td><td>259</td></tr>
<tr><th colspan="2">Gender</th></tr>
<tr><td>Female</td><td>1,487</td></tr>
<tr><td>Male</td><td>1,325</td></tr>
<tr><th colspan="2">Education level</th></tr>
<tr><td>Pre-primary, primary and lower secondary education (levels 0-2)</td><td>508</td></tr>
<tr><td>Upper secondary and post-secondary non-tertiary education (levels 3 and 4)</td><td>1,181</td></tr>
<tr><td>First and second stage of tertiary education (levels 5 and 6)</td><td>1,122</td></tr>
<tr><th colspan="2">Nationality</th></tr>
<tr><td>Demo country national</td><td>2,632</td></tr>
</table>
</td></tr>
</table>

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

<table>
<tr><th>ID</th><th>Title</th><th>Result</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>Foreign national</td><td>179</td></tr>
<tr><td colspan="2">Employment status</td></tr>
<tr><td>Employed</td><td>1,507</td></tr>
<tr><td>Unemployed</td><td>137</td></tr>
<tr><td>Other</td><td>1,168</td></tr>
</table>

Sources:
- Statistics Finland’s free-of-charge statistical databases, Paavo 2023 (Open data by postal code area), Table – Population structure 2023, viewed 30.1.2025
- Tampereen keskustan seurantajärjestelmä (2023) / City of Tampere database for tracking changes in statistics in the city centre
- Statistics Finland’s free-of-charge statistical databases, Paavo 2023 (Open data by postal code area), Table – Households´ disposable monetary income 2023, viewed 30.1.2025.
- Statistics by area in Tampere, City of Tampere 2024
https://app.powerbi.com/view?r=eyJrIjoiMDc4MTkxM2YtZmVkMy00ZWE0LWIxMjMtNjVjMTU2N2M0M2E1IiwidCI6ImRkZTVkYzEyLWJkM2MtNGMwNi04NWNjLTM0MzYxZWZlOWFkNCIsImMiOjl9
</td></tr>
</table>

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

ID	Title	Result	
		- Statistics Finland (2023) 11rh -- Citizenship according to sex by municipality, 1990-2023 - Statistics Finland 2022 with help from the Knowledge management unit in Tampere - *KELA, Finnish social security authority 2023* *https://raportit.kela.fi/ibi_apps/WFServlet?IBIF_ex=NIT100AL*	
KPI 3.5	Safety and Security - Traffic incidents rate change [% per thousand population]	0.30 ‰	- Well-being survey of Tampere 2023 - Statistics on road traffic accidents, Statistics Finland, Whole city, 2024 - Emergence service College. Tilastokeskus, Offences and infractions, 2023, Tampere city PxWeb - Select table - Sense of Security survey, City of Tampere, 2024
	Safety and Security - Fire-related incidents rate change [% per thousand population]	0.01 ‰	
	Safety and Security - Crime rate [% per thousand population]	2.55 ‰	
	Safety and Security - People's perception of safety in the community [Likert scale]	4.73	
	Safety and Security - People's perception of security in the community [Likert scale]	3.74	
KPI 3.6	Energy and Environmental Consciousness - People's energy and environmental consciousness	4.6	- Energiavirasto / energy authority 2023 - Statistics Finland, 2021

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

<table>
<tr><th>ID</th><th>Title</th><th colspan="2">Result</th></tr>
<tr><td rowspan="2"></td><td>Energy and Environmental Consciousness - Recycling rate change</td><td>45%</td><td rowspan="2"></td></tr>
<tr><td>Energy and Environmental Consciousness - Water consumption intensity change [l/year ·person]</td><td>4.01E+04</td></tr>
<tr><td>KPI 4.1</td><td>Amenities and Services Access
[%, #]</td><td>58 %</td><td>- Tampere City Centre Vitality calculating report 2024 / Tampereen keskustan kaupallinen elinvoima – raportti, elinvoimalaskenta 2024
- Tampereen keskustan seurantajärjestelmä (2023) / City of Tampere database for tracking changes in statistics in the city centre</td></tr>
<tr><td>KPI 5.1</td><td>Transport Behaviour
[%, #]</td><td colspan="2">
<table>
<tr><td>Private car (driver or passenger)</td><td>34 %</td></tr>
<tr><td>Public transport (bus)</td><td>22 %</td></tr>
<tr><td>Public transport (tram, train, underground)</td><td>22 %</td></tr>
<tr><td>Bicycle</td><td>6 %</td></tr>
<tr><td>Walking</td><td>15 %</td></tr>
<tr><td>Shared e-scooter</td><td>1 %</td></tr>
</table>
Sources:
</td></tr>
</table>

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

ID	Title	Result	
		- Tampereen keskustan asiointitutkimus 2024 - LIIKENTEEN KEHITYS TAMPEREELLA VUONNA 2023 Liikennemääräraportti - https://tampereenilo.fi/liikkuminen-ja-vapaa-aika/	
KPI 5.2	Urban Accessibility [%, #]	58%	- Nysse, 2025 - VR, 2025
KPI 5.5	Renewal of Walking and Open spaces [km2]	0.02	- Calculation tool: https://www.mapdevelopers.com/area_finder.php

The radial graph on the next page shows all KPI values grouped by category and compared to demos results averages:

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

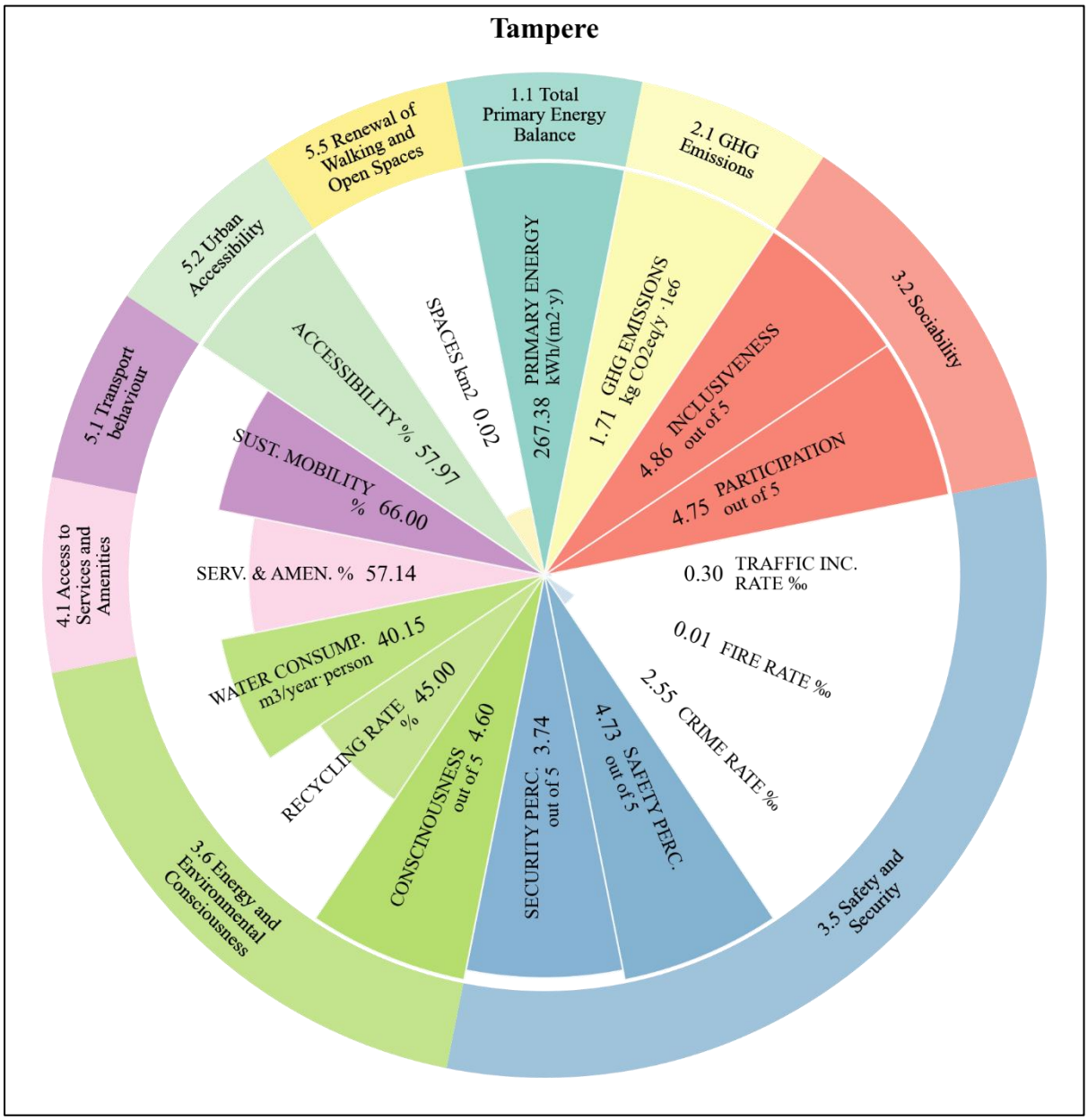

Figure 13. Tampere Demo – Radial Graph including pre-intervention KPI outcomes.

Figure 13 illustrates the overall KPI outcomes for the baseline conditions of Tampere Demo. The representation of values is delivered from a comparative perspective, where the unit intervals used to show each KPI result reflect the maximum value across all demos. The radial graphic representation helps to show high, moderate, or low levels of performance for all KPIs.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

3. Cross-Demo Baseline Comparison

As general approach to run cross-Demo analysis, differences between the demo areas, the quality of the data and the multiple data sources are accounted for when analysing and comparing KPI outcomes, interpreting possible causes and drafting recommendations.

3.1. Energy category

3.1.1. Total primary energy balance – KPI 1.1

The following section focuses on the analysis of the demos baseline conditions to allow comparing how different boundaries and socio-economic contexts determine neighbourhood energy performance. The current assessment is developed from the angle of the primary energy balance of demo areas' building stock. The following Table 14 summarises the results obtained through the data collection and KPI calculation process:

*Table **14**. Total Primary Energy Balance KPI 11 – results across 4 demos*

ID	Name	Units	Cesena	Cascais	Bucharest	Tampere
1 – Energy						
Total building surfaces (m^2)			**524,347.22**	**205,351.34**	**72,647.74**	**8,255.50**
KPI1.1	Total Primary Energy Balance	kWh/(m^2·y)	116.4	124.4	173.0	267.4

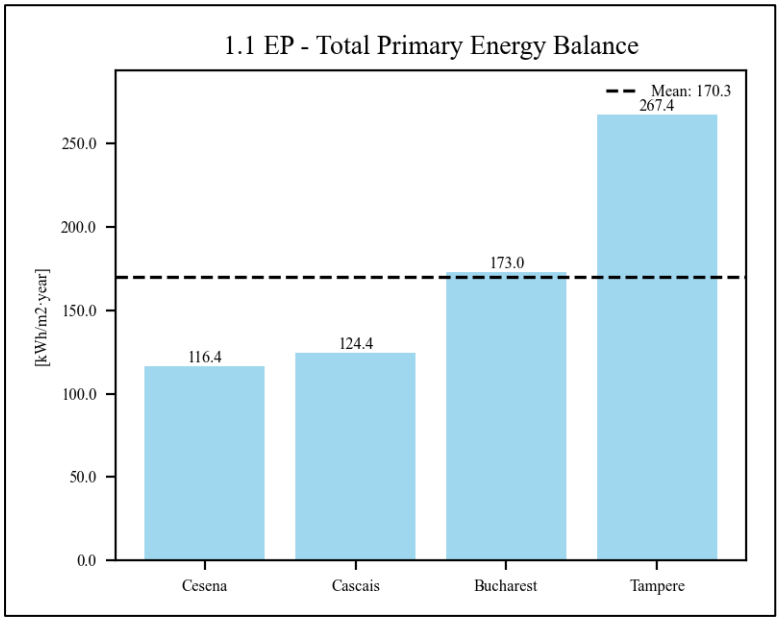

Figure 14. KPI 1.1 Total Primary Energy Balance compared for the 4 demo-sites.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

The graph presents the Total Primary Energy Balance across four WeGenerate demo sites: Cesena, Cascais, Bucharest, and Tampere. It highlights the variation in energy consumption (kWh/m²-year) across demos providing insights into the energy efficiency strategies implemented in each city.

In general, the total primary energy per m^2 in Tampere is due to the demo boundary conditions, heating intensity and low total surfaces included in the analysis (mainly railway station building).

The results obtained from the data collection process in Cesena, Cascais and Bucharest demos are consistent, yet they illustrate differences based on their specific energy intensity profiles. The highest energy consumption in Bucharest demo is due to the demand intensity in the heating season, although the demo site features high urban compacity and high-rise multifamily buildings with lower total surfaces. This is in contrast with the Cesena and Cascais demos that have lower urban compacity and are composed by single houses and/or medium-size multifamily buildings with larger building surfaces.

The Total Primary Energy Balance graph and table illustrate the energy performance of four demo sites: Cesena, Cascais, Bucharest, and Tampere. The different context and boundaries (total demo area, population and building stock surface) helps interpreting energy balance across demos.

Cesena Demo - Energy Performance:

- 116 kWh/m²·year, representing the lowest result across the four demos, although the cause is due to low-intensity energy demand rather that efficient energy performance of the building stock.
- Largest demo area (650,000 m²) with a substantial built environment (524,347.22 m²), meaning that lower energy intensity demand profiles benefit a large-scale urban setting.

- Insights:
  - The assessment of the energy performance in buildings and potential renovation scenarios will support further large-scale retrofitting strategies.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Actions focusing on Integration of microclimatic urban simulations, participatory engagement and digital platforms will optimize buildings energy use as complementary outcomes.
- Cesena building stock shows moderate energy intensity demand per square meter, aligning well with its urban regeneration goals and climate neutrality ambitions.

Cascais Demo - Energy Performance:

- 124 kWh/m²·year, slightly higher than Cesena demo which suggests a higher demand intensity due to residential building typology predominance. When comparing Bucharest and Cascais, results seem aligned with demo contexts and boundaries. While Cascais building stock is mostly composed by single family homes (the total building surfaces over 200,000 m^2), the energy consumption for heating is not as high as compared to Bucharest (173 kWh/m^2y) even though that the population and total primary energy consumption when it comes to buildings is similar in both demos.
- Demo area: 400,000 m² with a built environment of 205,351.34 m².

- Insights:
  - Focus on renewable energy production, social housing energy communities, and electrification.
  - Installation of photovoltaic systems, energy governance models and digital engagement tools.
  - The Alcabideche neighbourhood demo effectively integrates solar energy strategies and social inclusion, contributing to lower energy consumption.

Bucharest Demo - Energy Performance:

- 173 kWh/m²·year, still below the average, but higher than Cesena and Cascais.
- Smallest demo area (30,000 m²) with a built environment of 72,647.74 m².

- Insights:

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Climate conditions with colder winters and hotter summers, leading to higher energy demand for heating and cooling.
- As large-scale energy retrofits and efficiency strategies are still in early stages, energy performance may not yet be optimized.
- While performing better than the average, additional building renovations, renewable energy integration and mobility changes could help to reduce energy consumption even further.

Tampere Demo - Energy Performance:

- 476 kWh/m²·year, significantly above the mean.
- Deviation: +253.7%, indicating the highest energy consumption.
- Demo area: 60,000 m², but with a much smaller built environment

- Insights:
  - Cold climate conditions drive higher heating energy demand.
  - Tampere's demo site is highly urbanized with a mix of residential, commercial, and cultural buildings.
  - While the digital twin and smart mobility initiatives aim to optimize urban sustainability, energy consumption remains high.
  - The high energy demand is largely climate-driven, but future interventions could focus on enhancing building energy performance, integrating renewables and improving heating efficiency.

Highlights:

- Cesena and Cascais lead in energy efficiency, with large demo areas benefiting from integrated sustainability strategies.
- Bucharest shows higher consumption due to the heating season demand but has a room for improvement in deep retrofits programmes and renewable energy integration in the built environment.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Tampere has the highest energy demand likely due to harsh winters and heating requirements, but its digital transformation efforts could drive future energy efficiency improvements.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

3.2. Environment category

3.2.1. GHG Emissions Performance – KPI 2.1

The following section focuses on the analysis of the demos baseline conditions to allow comparing how different boundaries and socio-economic contexts determine neighbourhood energy GHG emissions performance. The current assessment is developed from the angle of the GHG emission performance of demo areas which includes: (i) Building use stage, (ii) Mobility Use stage, (iii) Water consumption, (iv) Waste management, (v) Renewables, (vi) Green surfaces and (vii) Offset from Trees.

Table 15 summarises the results obtained through the data collection and KPI calculation process:

Table 15. GHG Emission Performance KPI 2.1 – results across 4 demos.

ID	Name	Units	Cesena	Cascais	Bucharest	Tampere
2 – Environment						
Environmental Performance						
KPI2.1 – Absolute Values	GHG Emissions Performance	kg CO_2eq/y	**1.37E+07**	**6.16E+06**	**4.60E+06**	**1.71E+06**
	GHG - Building Use stage (BU)	kg CO_2eq/y	1.24E+07	2.55E+06	2.47E+06	3.27E+05
	GHG - Mobility Use stage (MU)	kg CO_2eq/y	8.42E+05	1.99E+06	1.08E+06	4.94E+05
	GHG - Water Consumption (WC)	kg CO_2eq/y	4.54E+04	1.59E+05	4.91E+04	3.71E+04
	GHG - Waste Management (WS)	kg CO_2eq/y	6.56E+05	1.54E+06	1.03E+06	8.26E+05
	GHG - Renewables Use stage (RESU)	kg CO_2eq/y	1.18E+05	2.00E+04	0.00E+00	0.00E+00
	GHG - Green Surfaces (UG)	kg CO_2eq/y	9.83E+04	5.16E+04	9.95E+03	2.10E+04
	GHG - Emission offset Trees (UT)	kg CO_2eq/y	1.62E+04	5.25E+03	5.00E+03	3.92E+02
KPI2.1 -per m^2 building area-	GHG Emissions Performance	kgCO_2eq/y m^2 -buildings-	**26.20**	**30.02**	**63.37**	**206.61**
	GHG - Building Use stage (BU)	kgCO_2eq/y m^2 -buildings-	23.70	12.44	33.94	100.00
	GHG - Mobility Use stage (MU)	kgCO_2eq/y m^2 -buildings-	1.61	9.68	14.81	59.81

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

	GHG - Water Consumption (WC)	$kgCO_2eq/y\ m^2$ -buildings-	0.09	0.78	0.68	4.50
	GHG - Waste Management (WS)	$kgCO_2eq/y\ m^2$ -buildings-	1.25	7.50	14.15	100.11
	GHG - Renewables Use stage (RESU)	$kgCO_2eq/y\ m^2$ -buildings-	0.23	0.10	0.00	0.00
	GHG - Green Surfaces (UG)	$kgCO_2eq/y\ m^2$ -buildings-	0.19	0.25	0.14	2.55
	GHG - Emission offset Trees (UT)	$kgCO_2eq/y\ m^2$ -buildings-	0.03	0.03	0.07	0.05

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

The following graphs present GHG emissions across the four demo sites (Cesena, Cascais, Bucharest, and Tampere), showing both absolute values (top chart) and proportional breakdowns (bottom chart).

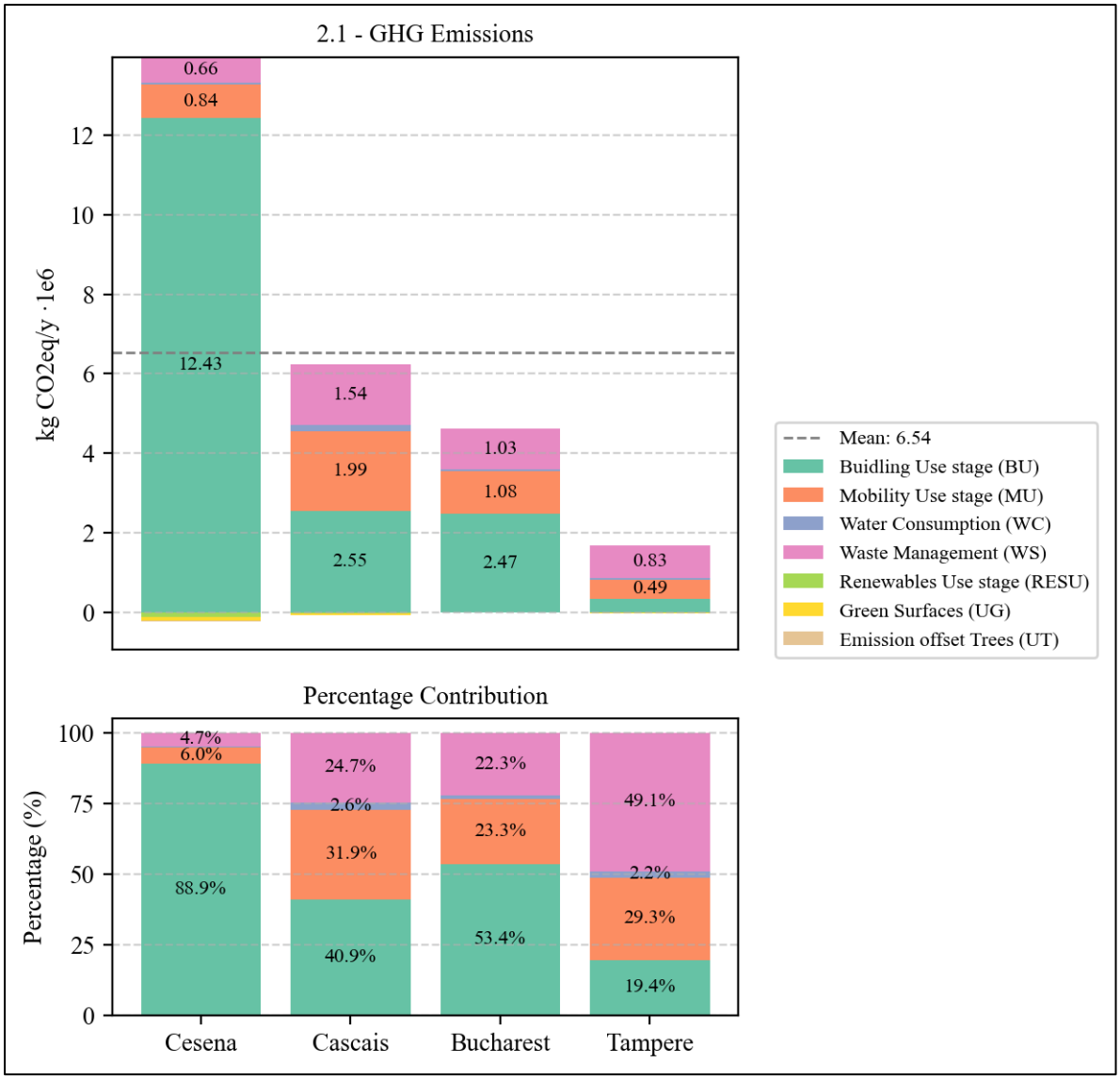

Figure 15. GHG emissions – Absolute Values and Proportional Breakdown.

In general, the result obtained from Cesena demo reflect a large demo area mainly constituted by residential building typologies. On the contrary, Tampere demo includes a large infrastructure (railway station) with a high energy consumption profile.

Regarding the results from Bucharest and Cascais demos, these could be interpreted differently accounting for their baseline conditions: Bucharest demo is defined as a compact urban-area, mainly composed by multifamily buildings (over 70.000 m^2 of building surfaces).

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

This suggests Bucharest having a better energy efficiency due to centralized heating systems, although the demo has higher energy- demand due climate and cultural contexts. There is a notable difference between the building surfaces (Cascais over 200.000 m^2), however, the estimated GHG emissions are similar in both demos.

GHG Emissions – Absolute values

Cesena demo – The highest emissions (1.37E+07 $kgCO_2eq/m^2year$)

- In absolute values, Cesena has the highest GHG emissions, more than triple the average.
- Building Use (BU) dominates (over 90 %), contributing significantly to its carbon footprint.
- Mobility Use (MU) (6 %) and Waste management (WS) (4.7 %) are secondary contributors and remain relatively low.
- The minor emission contributions are from Water consumption (WS), but also emission offset components -Renewables (RESU) Green Surfaces (UG) and Trees offset (UT)- represent a minor GHG reduction, suggesting a lower integration of sustainable mitigation strategies.

Cascais demo – Mid-range emissions (6.16E+06 $kgCO_2eq/m^2year$)

- Building Use (BU) accounts for 40.9 % of emissions.
- Mobility Use (MU) is the second largest source (~31.9 %), highlighting transport-related emissions.
- Waste Management (WS) (24.7 %) is notably high, suggesting inefficiencies in waste handling.
- Green Surfaces (UG) and Emission offset Trees (UT) contribute minimally, indicating limited carbon sequestration initiatives.

Bucharest demo – Lower emissions (4.60E+06 $kgCO_2eq/m^2year$)

- Building Use (BU) still dominates (53.4 %), but at a lower level than Cascais.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Mobility Use (MU) (23.3 %) is substantial, reinforcing the need for low-carbon transport solutions.
- Water Consumption (WC) and Waste Management (WS) (~24 %) are more prominent than in Cesena, suggesting Bucharest has a different emissions profile, possibly due to urban infrastructure differences.

Tampere demo – The lowest emissions (1.71E+06 $kgCO_2eq/m^2year$)

- Building Use (BU) (19.4 %) is the lowest among all sites.
- Waste Management (WS) contributes almost half (49.1 %), making it the most significant emission source.
- Mobility Use (MU) (29.3 %) is also notable, aligning with climate-related transport challenges in Scandinavian cities.
- Green Surfaces (UG) and Emission offset Trees (UT) (2.2 %) help mitigate emissions, suggesting better integration of carbon offsetting solutions compared to other sites.

Aiming at comparing GHG emission, results have been normalized by total building surfaces in each demo; this helps interpreting the values from an overall GHG emission balance perspective, but also how the various components perform/contribute differently across demos.

GHG Emissions – Absolute values – Proportional breakdown

- Cesena demo seems being driven by building energy use (~90 %), implying that energy efficiency retrofitting could drastically reduce its emissions.
- Cascais and Bucharest demos show a stronger influence from mobility (31.9 % and 23.3 %, respectively), highlighting the need for sustainable transport initiatives.
- In addition to the potential revision of the BU component, Tampere demo stands out with high waste-related emissions (49.1 %) suggesting that improving waste management strategies (e.g., recycling, circular economy policies) could significantly lower its carbon footprint.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Highlights:

- Cesena demo has the opportunity to focus on energy-efficient buildings, as its emissions are tied to the Building Use stage (BU). Investing in decision-supporting tools facilitating the use of renewables and insulation upgrades can be the key solutions.
- Cascais demo could target waste reduction and sustainable mobility policies, given that waste (24.7 %) and mobility (31.9 %) are the key contributors.
- Bucharest demo emissions are more balanced, but transport-related emissions remain a concern. Improving public transport and active mobility infrastructure would help.
- Tampere demo could focus on waste reduction strategies, since almost half of its emissions come from mobility and waste management, but also buildings energy efficiency could be explored to reduce the energy demand. Expanding recycling programs and adopting circular economy principles is recommended.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

GHG Emissions – Total emissions per building area

These graphs present GHG emissions across the four demo sites (Cesena, Cascais, Bucharest, and Tampere), showing both normalised values per building area (top chart) and proportional breakdowns (bottom chart).

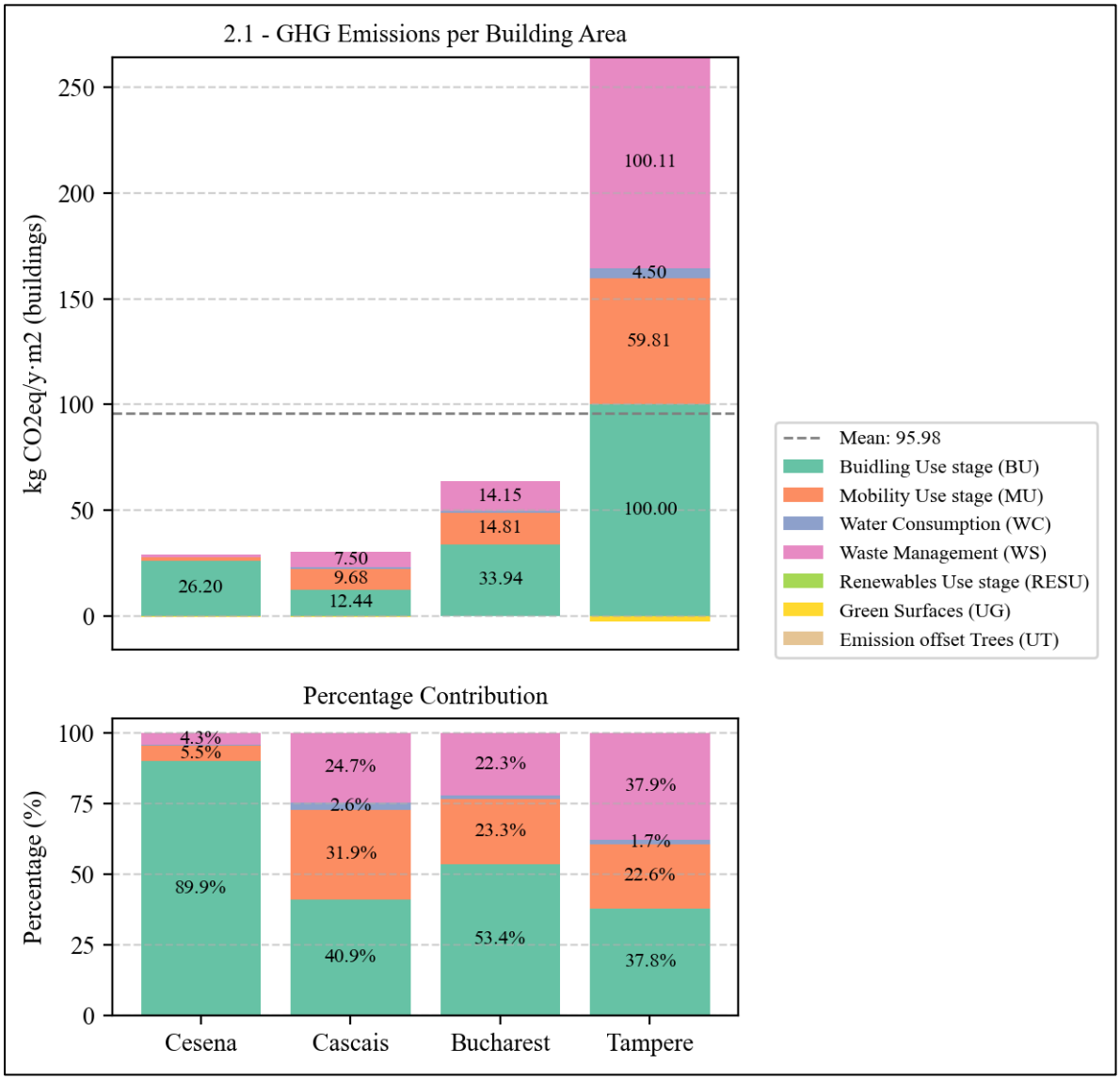

Figure 16. GHG emissions – total emissions per building area and proportional breakdown.

- Cesena demo has the lowest emissions (26.20 kg CO2eq/m²·year), with the largest contributor being Building Use Stage (BU) at 23.70 kg.
- Cascais demo follows with 30 kg CO2eq/m²·year, where BU accounts for 12.44 kg, while Mobility Use (MU) is higher at 9.68 kg compared to Cesena.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Bucharest demo has 63.9 kg CO2eq/m²·year, which is over twice the emissions of Cascais. BU (33.94 kg) remains dominant, but Mobility Use (MU) (14.81 kg) and Waste Management (WS) (14.15 kg) increase significantly.
- Tampere demo shows the highest at 206.61 kg CO2eq/m²·year, over 2 times the mean value (95.98 kg). BU (100 kg), WS (100.11 kg), and MU (59.81 kg) contribute significantly.

GHG Emissions – Total emissions per building area – Proportional breakdown

- Cesena demo: BU dominates (89.9 %), MU (5.5 %) and WS (4.3 %) being minimal.
- Cascais demo: More balanced distribution with BU at 40.9 %, MU at 31.9 %, and WS at 24.7 %,indicating a more even spread across all categories.
- Bucharest demo: BU still leads (53.4 %), but MU (23.3 %) and WS (22.3 %) are significant contributors.
- Tampere demo: The only city where BU (37.8 %) is not the dominant factor, as WS contributes the most (37.9 %), followed by MU (22.6 %).

Highlights

- Building Use Stage (BU) dominates in most cases, but Waste Management (WS) surpasses it in Tampere.
- Mobility emissions are proportionally higher in Cascais and Bucharest demos, likely due to employment and commuting trends.
- Tampere demo's emissions seem high, but the demo boundaries represent a major infrastructure with high energy demand that is significantly higher compared to other demos.
- Cesena demo has the lowest emissions per square meter of the building area and the simplest distribution, with BU accounting for almost 90 % of emissions.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

3.3.SOCIAL INCLUSION AND CITIZEN PARTICIPATION CATEGORY

3.3.1. Sociability – KPI 3.2

The following section focuses on the analysis of the demos baseline conditions to allow comparing how different boundaries and socio-economic contexts determine sociability aspects in the four demos.

Error! Reference source not found. summarises the results obtained through the data c ollection and KPI calculation process.

Table 16. Sociability KPI 3.2 – results across 4 demos

ID	Name	Units	Cesena	Cascais	Bucharest	Tampere
3 – Social Inclusion and Citizen Participation						
Democracy						
KPI3.2 - Sociability	People's perception of the inclusiveness of the community	Likert scale	3.20	3.91	3.5	4.86
	People's participation in local groups/networks	Likert scale	3.20	2.06	3	4.75

The KPI 3.2 focuses on the assessment of social participation level at demo neighbourhoods through two indicators: (i) People's perception of the inclusiveness of the community, and (ii) People's participation in local groups/networks.

During the pre-intervention phase, with the aim to enable comparing KPIs outcomes based on reliable baseline data, surveys of demos population were conducted with key stakeholder representatives and population groups; but also, when possible, city statistics were extrapolated to reflect the demos boundaries.

The data sources were defined accordingly to demos stakeholder networks and the available DDBB, in particular:

Cesena: Key stakeholders surveys, limited population survey.

- Cascais: Population survey, extensive representation through large campaign.

Bucharest: Key stakeholders surveys, limited population survey.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Tampere: Population survey combined with large campaign data as well as limited number of responses collected through participatory actions.

The Figure 17 presents social data across the four demo sites focusing on two qualitative indicators, both scored on a 5-point scale, providing insights into community engagement and social cohesion in each location.

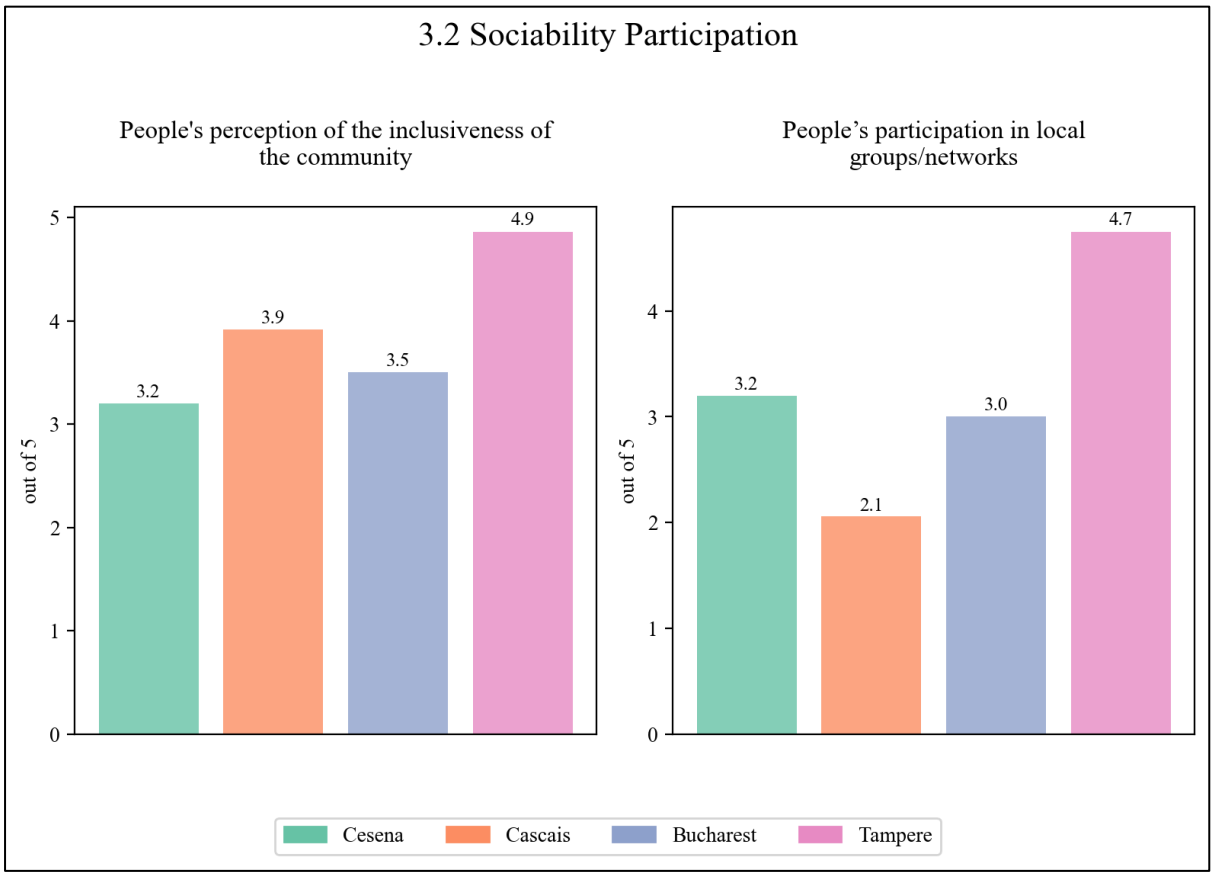

Figure 17. Sociability KPI, composed by the community perception of the inclusiveness and the participation in local networks.

People's Perception of Community Inclusiveness

- Tampere demo (4.9) has the highest perception of inclusiveness, suggesting a strong sense of community and effective efforts to promote social equity.
- Cascais demo (3.9) follows, indicating a fairly positive perception, likely influenced by its social housing retrofitting programs and participatory planning initiatives.
- Bucharest demo (3.5) shows moderate inclusiveness perceptions which aligns with the engagement strategy focus and effort for participatory co-design as part of Bucharest demo action plan.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Cesena demo (3.2) scores slightly lower, despite its strong urban regeneration initiatives, suggesting room for improvement in fostering a more inclusive community. This perception in Cesena can be related to the fact that the railway area is not perceived as an inclusive urban context.

Insight: The strongest sense of inclusiveness seems to be perceived in the Tampere demo, while the Cesena demo may address more targeted social engagement efforts as already envisioned within their existing action plan.

People's Participation in Local Groups/Networks

- Tampere demo (4.7) also seems leading in this indicator, suggesting high community engagement and participation in local initiatives.
- Cesena demo (3.2) also performs well, aligning with its participatory engagement strategies within the WeGenerate project.
- Bucharest demo (3.0) scores slightly lower, indicating moderate involvement of citizens in local networks, which aligns with the ambitious demo engagement strategy plan
- Cascais demo (2.1) scores the lowest, despite its efforts in social housing and energy communities, suggesting potential barriers to engagement or the need for further community-building initiatives.

Insight: While the Tampere demo seems exceling in participation, Cascais demo results suggest the need for strengthening these aspects, pointing to a possible gap between community initiatives and active citizen engagement.

Highlights and opportunities.

- Cesena demo: Strengthen social engagement strategies to align urban regeneration with community participation.
- Cascais demo: Focus on bridging the gap between inclusiveness perception and actual engagement, possibly through more participatory workshops.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Bucharest demo: Encourage greater participation in community networks to reinforce social cohesion.
- Tampere demo: Leverage its strong social participation to further advance sustainability and energy efficiency measures.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

3.3.2. Demographic Composition – KPI 3.4

The following section focuses on the analysis of the demos baseline conditions to allow comparing how different boundaries and socio-economic contexts could eventually affect the demographic compositions in each demo.

Table 17 summarises the results obtained through the data collection and KPI calculation process:

Table 17. Demographic composition KPI 3.3 – results across 4 demos

ID	Name	Units		Cesena	Cascais	Bucharest	Tampere
3 – Social Inclusion and Citizen Participation							
Community							
KPI3.4 - Demographic composition	Demographic Composition	#	Age group				
			Less than 15 years	322	424	462	190
			From 15 to 29 years	369	480	442	1,049
			From 30 to 49 years	667	742	1241	664
			From 50 to 64 years	609	586	687	471
			From 65 to 84 years	616	491	698	178
			85 years or over	159	76	101	259
			Gender				
			Female	1,400	1,465	1,957	1,487
			Male	1,342	1,335	1,673	1,324
			Education level				
			Pre-primary, primary and lower secondary education	1,234	1,556	436	508
			Upper secondary and post-secondary education	1,005	679	1873	1,181
			First and second stage of tertiary education	1,342	565	1274	1,122
			Nationality				
			Demo country national	2,344	2,516	3556	2,620
			Foreign national	398	284	74	191
			Employment status				
			Employed	1,382	1,177	2301	2,577
			Unemployed	76	118	20	234
			Other	1,284	1,505	1309	0

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

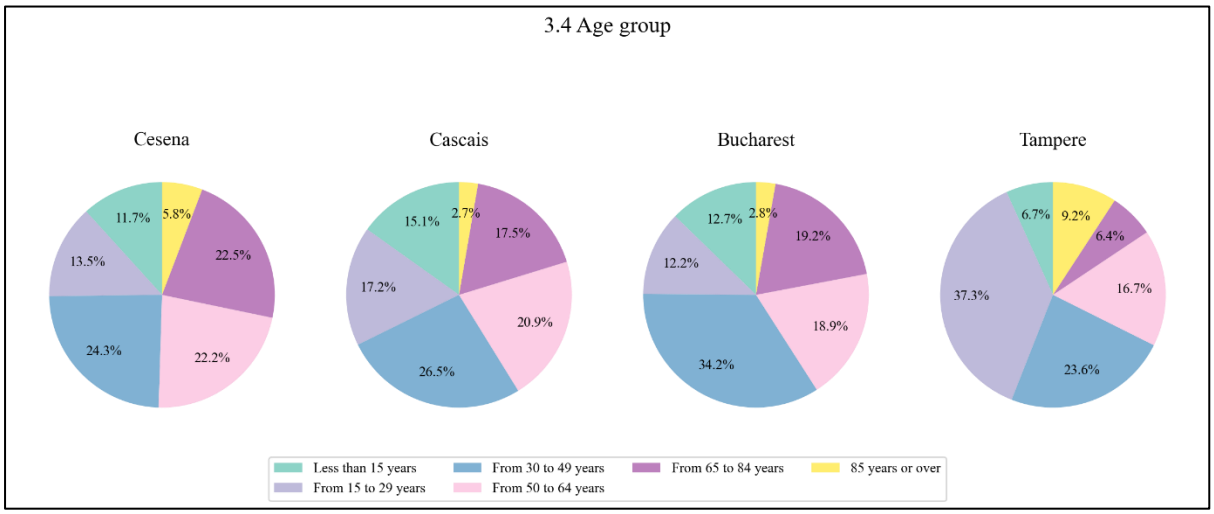

Figure 18. Demographic composition KPI – age group distribution across the four demos.

Age Group Distribution:

- Each pie chart shows the demo population dataset categorized into six age groups.
- The largest age group varies across charts, with remarkable differences in the proportions of younger and older populations.
- While the Tampere demo shows the highest percentage of the younger population, the Cesena demo has a bigger proportion of the older population, and the Bucharest demo illustrates a higher proportion of the middle aged population.
- The share of individuals aged 85 years or over is consistently the smallest across all datasets; middle-aged and working-age groups show varying distribution across the demos.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

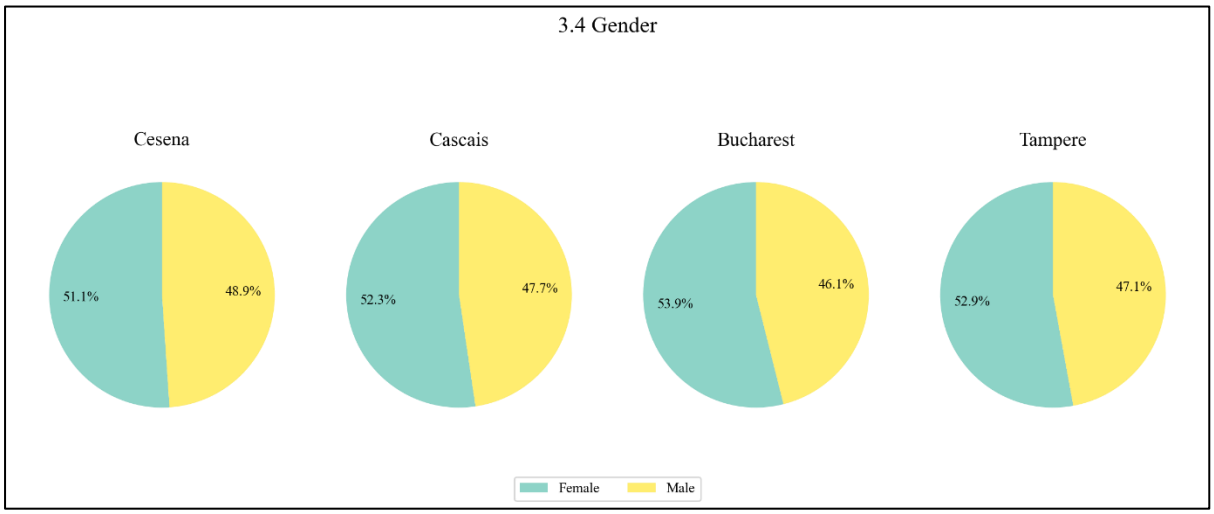

Figure 19. Demographic composition KPI – gender distribution across the four demos.

Gender Distribution:

- Each chart presents a proportion of males and females. The female population percentage is slightly higher in all demo datasets.
- The variation in gender proportions is minor but follows a consistent trend.

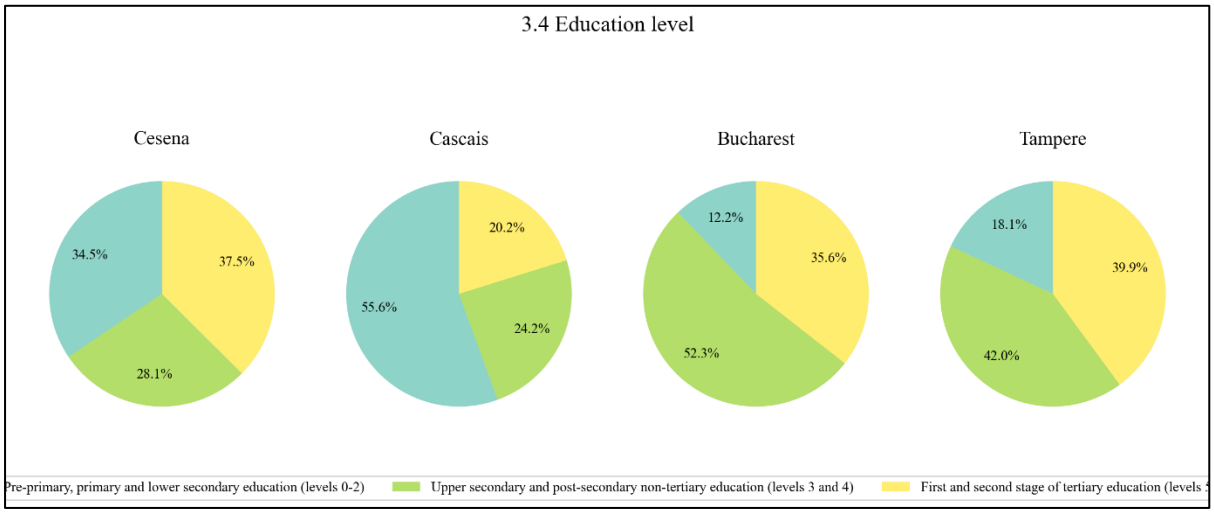

Figure 20. Demographic composition KPI – education level distribution across the four demos.

Education Level Distribution:

- The charts show the population divided into three levels by education.
- The share of individuals with higher education (tertiary level) differs across the datasets, with the Tampere demo having the highest proportion.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- The graphs show varying proportions relative to primary and secondary education; Cesena and Bucharest demos, respectively, illustrate higher proportions of those.

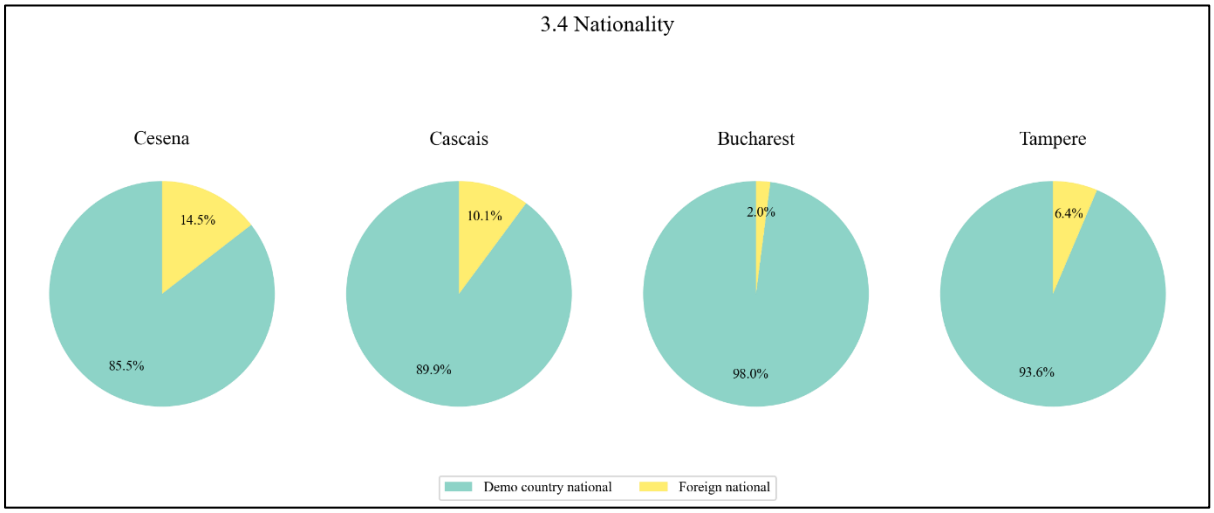

Figure 21. Demographic composition KPI – nationality distribution across the four demos.

Nationality:

- The majority in each group are nationals of the demo country, with foreign nationals making up a relatively small percentage.
- The Bucharest pie chart shows the lowest proportion of foreign nationals (2.0 %), while the Cesena Demo has the highest (14.5 %).
- This data may indicate patterns in migration, residency, or citizenship status among different groups.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

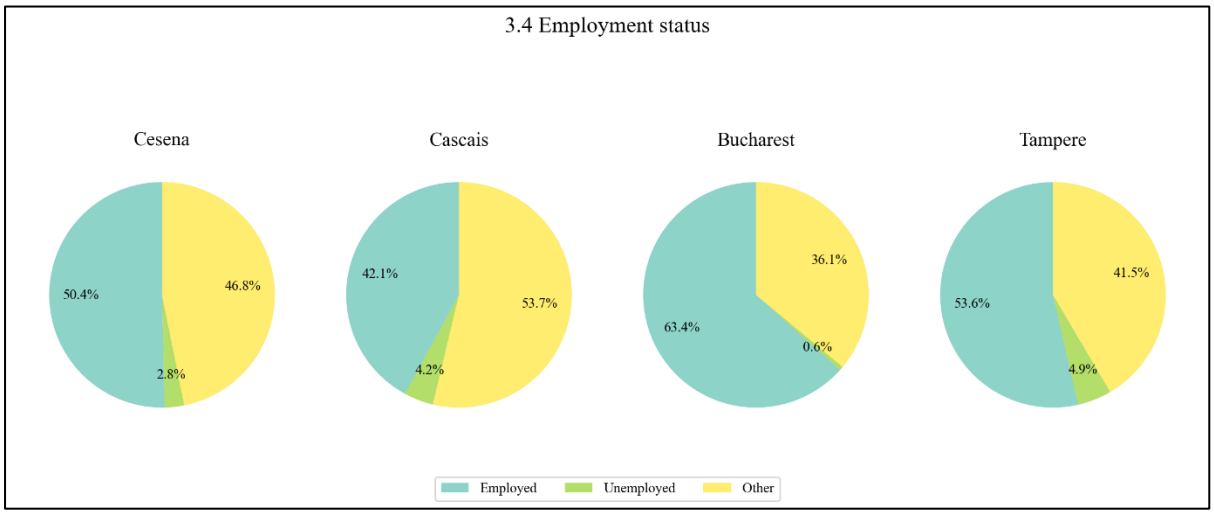

Figure 22. Demographic composition KPI – employment status distribution across the four demos.

Employment Status:

- The proportions of employed, unemployed, and other categories vary across groups. The differences suggest causing factors such as economic conditions, educational background or industry variations.
- The Bucharest demo pie chart shows a significantly higher employment rate (63.4 %) compared to the others, but also the unemployed group is slightly higher in the Tampere demo (4.9 %) followed closely by the Cascais demo (4.9 %).

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

3.3.3. Safety and Security – KPI 3.5

The following section focuses on the analysis of the demos baseline conditions to allow comparing how different boundaries and socio-economic contexts determine safety and security aspects in each demo.

Table 18 summarises the results obtained through the data collection and KPI calculation process:

Table 18. Safety and Security KPI 3.5 – results across 4 demos.

ID	***Name***	***Units***	***Cesena***	***Cascais***	***Bucharest***	***Tampere***
3 – Social Inclusion and Citizen Participation						
Community						
KPI3.5 - Safety and Security	Safety and Security - Traffic incidents rate	‰	18.17	2.84	0.83	0.30
	Safety and Security - Fire-related incidents rate	‰	2.54	1.61	0.49	0.01
	Safety and Security - Crime rate	‰	6.90	29.46	9.64	2.55
	People's perception of safety in the community	Likert scale	2.40	3.21	3.83	4.73
	People's perception of security in the community	Likert scale	2.20	3.83	3.67	3.74

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

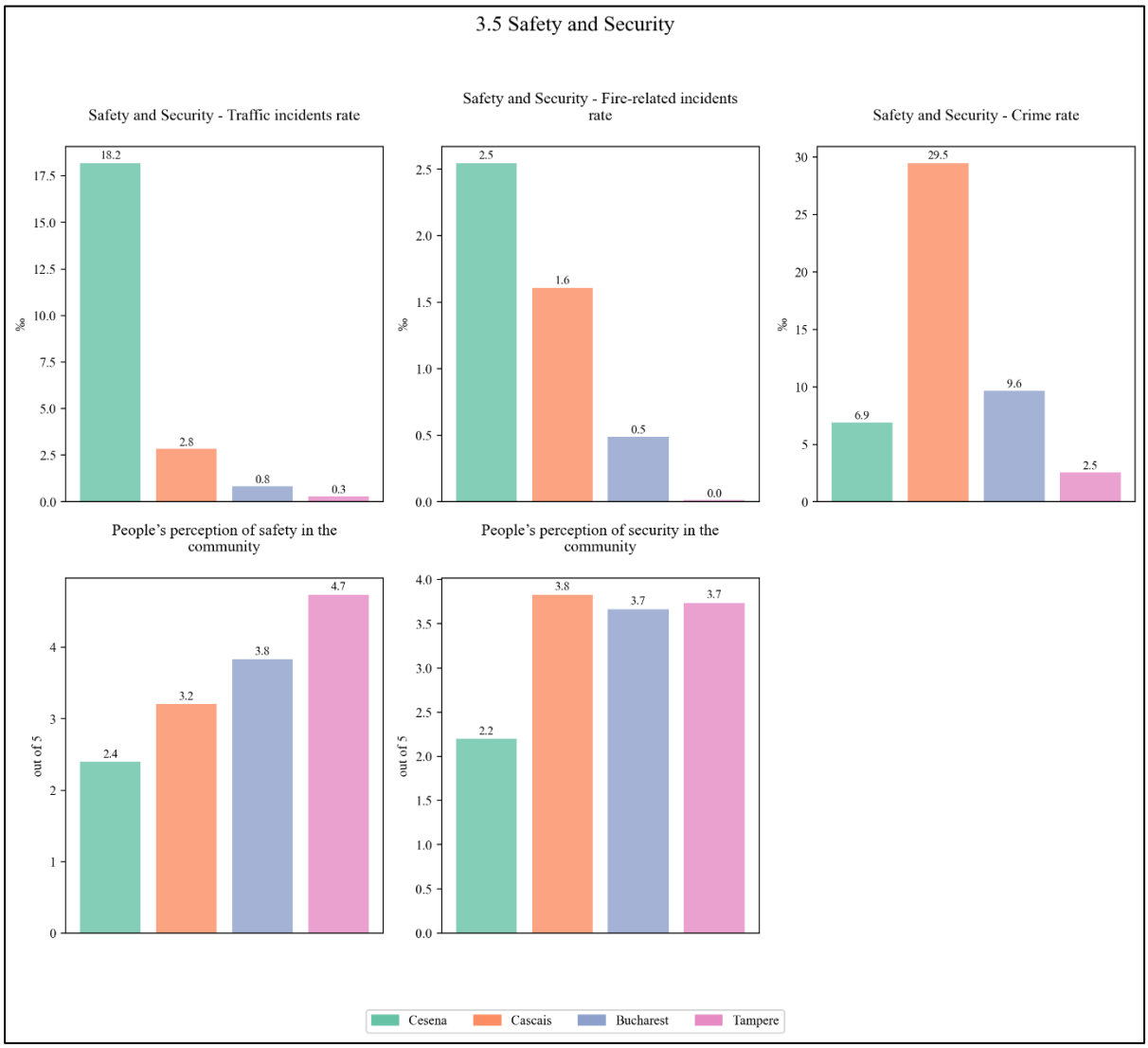

Figure 23. Safety and Security KPI – composed by 5 indicators on safety and security rates and perception across the four demos.

Figure 23 presents safety and security indicators across the four demo sites—Cesena, Cascais, Bucharest, and Tampere:

1. Traffic incidents rate (% per 1,000 people).
2. Fire-related incidents rate (% per 1,000 people).
3. Crime rate (% per 1,000 people).
4. People's perception of safety in the community (on a 5-point scale).
5. People's perception of security in the community (on a 5-point scale).

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Safety Indicators (Traffic, Fire, and Crime Incidents Rates)

- Cesena demo has the highest traffic and fire-related incidents rate, slightly above the other cities. This could be attributed to urban density, mobility challenges, and road infrastructure issues, but also to methodology of data collection that includes also minor domestic incidents within the reported data.
- Cascais demo has a higher crime rate, while other cities have negligible reported crime incidents. Despite its strong urban planning and social innovation efforts, this suggests persistent security concerns that might stem from socio-economic factors.
- Bucharest and Tampere demos report very low or negligible safety incidents across all categories, suggesting well-managed infrastructure and public safety measures.

Key Insight: Cesena demo results suggest opportunities to strengthen traffic and fire safety policies, while Cascais safety conditions, affecting residents' security perceptions, may require focused mitigation actions. In addition, this KPI may require being reviewed to include more detailed requirements on collected data.

People's Perception of Safety and Security

- Tampere demo scores the highest in both safety (4.7) and security (3.7), reinforcing its low incident rates and strong social cohesion.
- Cascais and Bucharest demos report moderate perceptions of safety and security, likely influenced by Cascais' crime rate and Bucharest's urban regeneration projects improving safety measures.
- Cesena demo scores the lowest in both categories (2.4 for safety, 2.2 for security), aligning with its higher traffic and fire-related incidents. This perception in Cesena can be related to the fact that in general railway stations surroundings are not perceived as the safest.

Key Insight: Tampere demo is perceived as the safest and most secure, while Cesena struggles with both actual and perceived safety issues.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Highlights

- Cesena demo: Opportunities to revise and to strengthen road safety measures, fire prevention strategies, and social programs to enhance public confidence and security perception.
- Cascais demo: Mitigating crime rates through social programs, and/or stronger law enforcement engagement.
- Bucharest demo: Maintain a steady approach to urban security while enhancing community engagement for safety improvements.
- Tampere demo: Leverage its strong safety and social cohesion to further its sustainable and energy-efficient urban development goals.

3.3.4. Energy and Environmental Consciousness – KPI 3.6

The following section focuses on the analysis of the demos baseline conditions to allow comparing how different boundaries and socio-economic contexts determine safety and security aspects in each neighbourhood.

Table 19 summarises the results obtained through the data collection and KPI calculation process:

Table 19. Energy and Environmental Consciousness KPI 3.6 – results across 4 demos

ID	***Name***	***Units***	***Cesena***	***Cascais***	***Bucharest***	***Tampere***
3 – Social Inclusion and Citizen Participation						
Community						
KPI3.6 - Energy and Environmental Consciousness	People's energy and environmental consciousness	Likert scale	4.6	3.71	2.83	4.6
	Recycling rate	%	68.70	19.40	24.44	45
	Water consumption intensity	m^3/year ·person	50.2	17.3	41.1	40.1

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

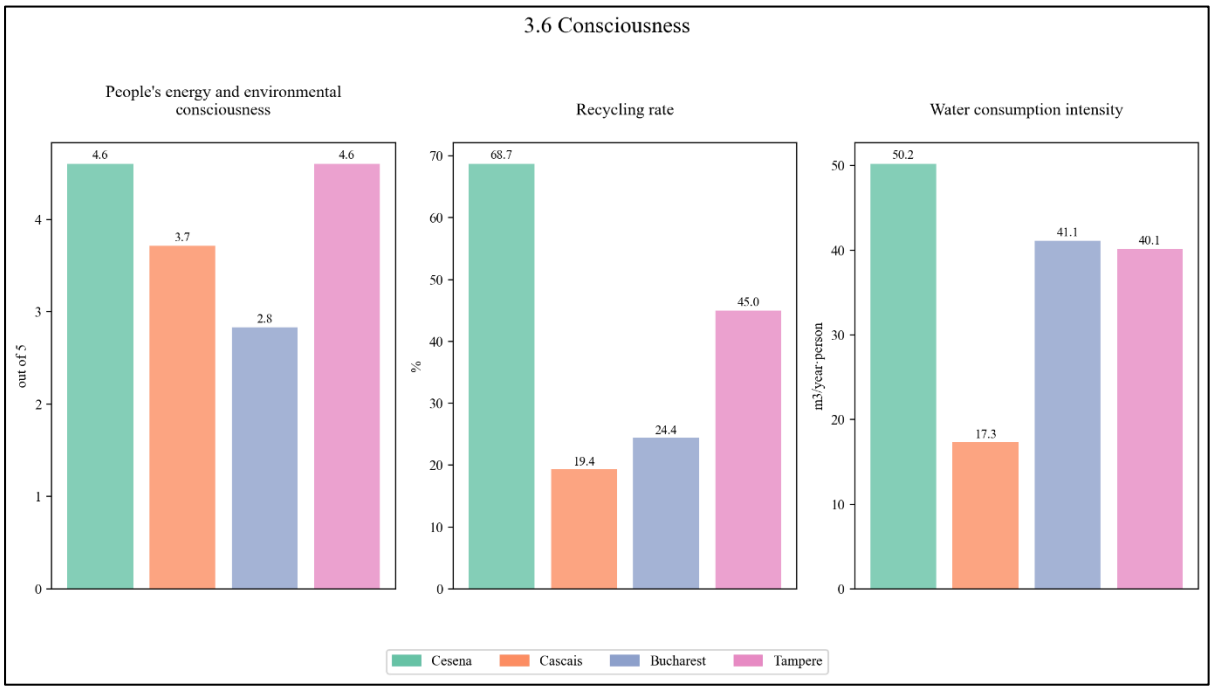

Figure 24. Safety and Security KPI – composed by 5 indicators on safety and security rates and perception across the four demos.

Figure 24 evaluates environmental awareness and resources consumption across the four demo sites based on: (i) People's energy and environmental consciousness (on a 5-point scale); (ii) Recycling rate (%); Water consumption intensity (m^3/year person).

Energy and Environmental Awareness

- Tampere and Cesena demos seem leading in environmental consciousness (4.6), indicating strong sustainability awareness efforts.
- Cascais demo follows at 3.7, while Bucharest has the lowest score (2.8), suggesting room for improvement in environmental education and awareness campaigns.

Insight: Tampere and Cesena demos results suggest strong environmental engagement, aligning with their urban regeneration and sustainability projects.

Recycling Rate

- Cesena demo has the highest recycling rate (68.7 %), reflecting effective waste management policies.
- Tampere demo follows with 45.0 %, indicating a moderate but solid recycling culture.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Cascais demo (19.4 %) and Bucharest demo (24.4 %) lag behind, suggesting a need for stronger recycling incentives and public engagement strategies.

Insight: Cesena leads in waste management, while Cascais and Bucharest need improvement in recycling infrastructure.

Water Consumption Intensity

- Cesena has the highest water consumption (50 m^3/person), potentially due to lifestyle habits, industrial activity, or local water availability.
- Tampere and Bucharest have moderate consumption, while Cascais (17 m^3/person) is the most water-efficient.

Insight: Cesena's high water consumption suggests a need for conservation strategies, while Cascais demonstrates better water management.

Highlights

- Cesena: Strengthen water efficiency programs to reduce water consumption, despite its strong recycling performance.
- Cascais: Improve recycling practices and environmental engagement while maintaining moderate water consumption.
- Bucharest: Enhance awareness campaigns on resources efficiency and recycling.
- Tampere: Implement water conservation and resource efficiency strategies given its high resource use despite strong sustainability awareness.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

3.4.Socio-economic category

3.4.1. Access to Services and Amenities – KPI 4.1

The following section focuses on the analysis of the demos baseline conditions to allow comparing how different boundaries and socio-economic contexts impact the access to services and amenities in each demo.

Table 20 summarises the results obtained through the data collection and KPI calculation process:

Table 20. *Access to Service and Amenities KPI 4.1 – results across 4 demos*

ID	Name	Units	Cesena	Cascais	Bucharest	Tampere
4 – Socio-Economics						
Socio-economic						
KPI4.1	Access to services and Amenities	%	71.43	42.77	79.64	57.14

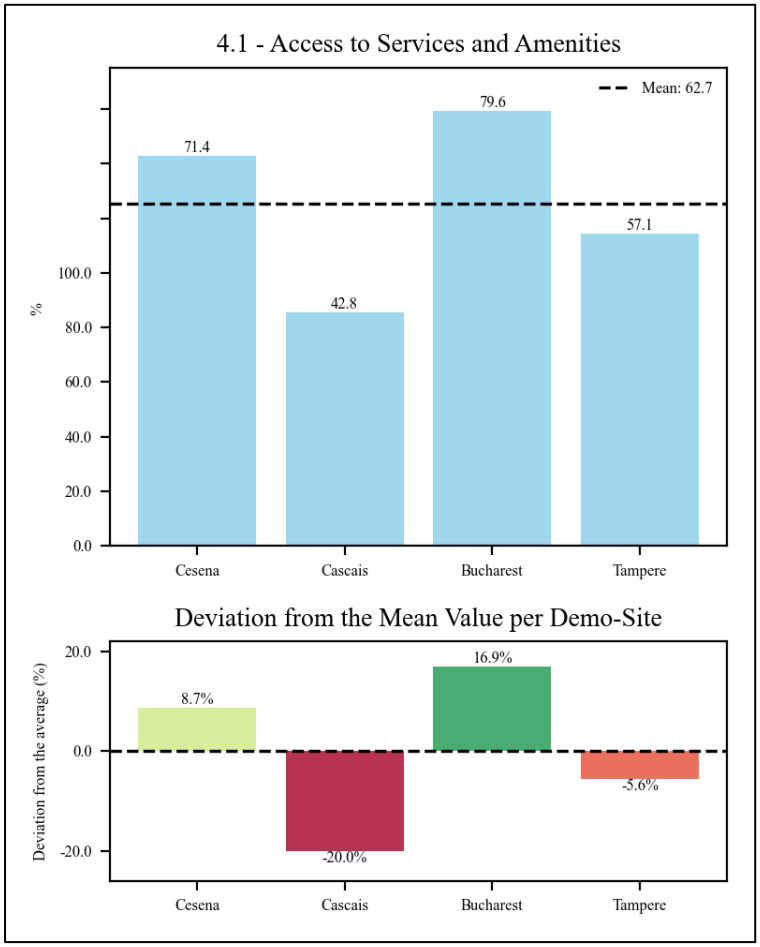

Figure 25. Access to Services and Amenities KPI –percentage and deviation of serviced population in demo area

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Figure 25illustrates access to services and amenities across the four demo sites. It also presents the deviation of each site from the average value (62.7 %). The following observations can be extracted:

- Bucharest leads in socioeconomic indicators.
    - With the value of 79.6 %, Bucharest stands out as the highest performer, exceeding the average by 16.9 %.
    - This aligns with Bucharest's performance in other social aspects, such as its moderate participation in sociability metrics and strong perception of security.
- Cesena demo shows a good socioeconomic strength through accessible services and amenities.
    - At 71.4 %, Cesena is 8.7 % above the average.
    - This is in line with its urban renewal efforts in the Vigne-Railway Station Neighbourhood aimed at enhancing accessibility, social inclusion and energy efficiency.
- Cascais demo suggests challenges to provide high access to services and amenities.
    - With only 42.8 %, Cascais demo is below the average (-20.0 % deviation).
    - This is consistent with efforts to combat energy poverty in the Alcabideche neighbourhood through renewable energy communities and social inclusion programs.
    - Cascais also ranked low in community participation (2.1 in local networks) and perceived safety (3.2), suggesting broader social challenges.
- Tampere demo seems slightly below average, which could possibly lead to revision of its urban plans. Revision of baseline data could provide further insights.
    - Tampere registers 57.1 %, with a small deviation of -5.6 % from the average.
    - Despite its moderate socioeconomic performance, Tampere excelled in sociability participation (4.9 in community inclusiveness, 4.7 in network participation) and safety perception (4.7), indicating strong community engagement despite economic disparities.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Highlights:

The socioeconomic analysis through the KPI - Access to services and amenities aligns well with the previous findings. Bucharest and Cesena demos appear to have more stable socioeconomic conditions, whereas Cascais demo faces significant challenges despite its sustainability efforts.

Tampere demo shows a balanced approach, leveraging strong community participation despite moderate socio-economic disparities. Future interventions, particularly in Cascais, could focus on economic resilience, circularity, and deeper integration of social policies alongside its energy initiatives.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

3.5.SUSTAINABLE MOBILITY CATEGORY

3.5.1. Transport Behaviour – KPI 5.1

The following section focuses on the analysis of the demos baseline conditions to allow comparing how different boundaries and socio-economic contexts affect the transport behaviour regarding the share of transport mode in the four neighbourhoods analysed.

Table 21 summarises the results obtained through the data collection and KPI calculation process:

Table 21. *Transport Behaviour KPI 5.1 – results across 4 demos*

ID	Name	Units		Cesena	Cascais	Bucharest	Tampere
5 – Sustainable Mobility							
Travel patterns							
KPI5.1	Transport Behaviour	%	Private car (driver or passenger)	62 %	66 %	18 %	34 %
			Public transport (bus)	12 %	20 %	21 %	22 %
			Public transport (tram, train, underground)	5 %	0 %	21 %	22 %
			Bicycle	3 %	2%	5 %	6 %
			Walking	17 %	11 %	28 %	15 %
			Shared e-scooter	0 %	1 %	8 %	1 %

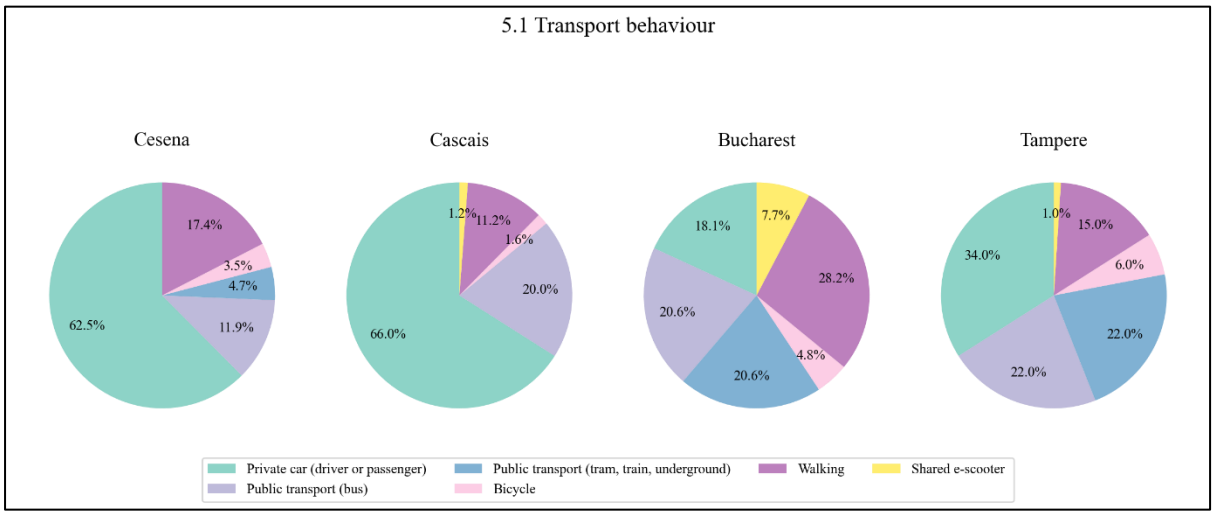

Figure 26. Transport Behaviour KPI5.1 –percentage of the share of transport modes in 4 demo areas

Figure 26 shows modal split across the four demo sites categorizing the usage of different transport modes including private cars, public transport, bicycles, walking, shared e-scooters and other modes. The following observations can be derived:

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

High Private Car Usage in Cascais and Cesena

- Cascais (66.0 %) and Cesena (62.5 %) have the highest dependency on private cars.
- This correlates with Cascais' lower socioeconomic performance (-20 % deviation from the average in KPI4.1 - Access to services and amenities) and its urban layout, where reliance on cars may be necessary due to inadequate public transport infrastructure.
- Cesena, despite a stronger socioeconomic performance (+8.7 % above the average), also has limited alternative transport modes adoption, possibly due to cultural habits or a lack of strong sustainable mobility incentives.

Balanced Transport Modal Split in Bucharest and Tampere

- Bucharest has a more balanced modal split with 20.6 % of people using public transport (train/tram/metro) and 28.2 % walking, reducing the reliance on private cars (only 20.6 %).
- Tampere follows a similar pattern, with only 34.0 % of people using private cars while public transport and walking account for 44 % combined (22 % each).
- This aligns with higher sociability participation in Tampere, where people engage more in local networks (4.7) and perceive their communities as more inclusive (4.9)—suggesting that better walkability and transit access contribute to stronger social connections.

Low Bicycle and Shared Mobility Adoption

- Bicycle use is minimal across all sites, with only 4.8 % in Bucharest and 4.7 % in Cesena, suggesting a lack of cycling infrastructure or cultural preference for other modes.
- Shared e-scooters appear in Bucharest (0.7 %) and Tampere (0.7 %), but their adoption is not significant.

Public Transport Usage and Energy Performance Correlation

- Bucharest and Tampere, where public transport is more widely used (about 44 % modal share Tampere and about41 % in Bucharest), also show lower primary energy balances per square meter than Cascais.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Cascais, with high private car usage (66 %) also had a relatively high Total Primary Energy Balance (124 kWh/m²·y) suggesting that increased car dependency impacts energy consumption.

Social and Environmental Implications

- Tampere, which ranks the highest in community inclusiveness, safety perception and environmental consciousness, also has the most diverse transport modal split, balancing public, private, and active transport (walking, cycling, and e-scooters).
- Cesena, while strong in socioeconomic indicators, shows low alternative mobility adoption, potentially affecting its long-term sustainability goals.
- Cascais, with high car dependency and lower social engagement, may benefit significantly from improving public transport and active mobility infrastructures.

Highlights:

- Cascais and Cesena need more investments in public transport and cycling promotional campaigns to reduce car dependency and improve urban sustainability.
- Bucharest and Tampere have more balanced mobility systems, which contribute to lower crime rates, higher sociability and stronger energy efficiency.
- Policies encouraging shared mobility and active transport could improve health, social engagement and sustainability, particularly in Cascais and Cesena.

3.5.2. Urban Accessibility – KPI 5.2

The following section focuses on the analysis of the demos baseline conditions to allow comparing how different boundaries and socio-economic contexts determine the urban accessibility KPI, which assesses the level of satisfaction in demos regarding the universal accessibility criteria.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Table 22 summarises the results obtained through the data collection and KPI calculation process:

Table 22. *Urban Accessibility KPI 5.2 – results across 4 demos*

ID	Name	Units	Cesena	Cascais	Bucharest	Tampere
5 – Sustainable Mobility						
Accessibility						
KPI5.2	Urban Accessibility	%	20.0 %	17.6 %	14.8 %	58.0 %

Figure 27 shows the urban accessibility levels across the four demo sites through the assessment of universal accessibility criteria across demo infrastructure and urban features, with the average of 22.0 % accessibility.

Each site's deviation from the average highlights its relative strength or weakness in accessibility. The following conclusions can be drawn:

- Tampere demonstrates the highest accessibility (30.4 % above the average), significantly exceeding the average value. This suggests well-developed urban infrastructure, efficient public services and strong connectivity across the city.
- While Cesena is close to the average (-7.6 %), its accessibility is still slightly low. This could indicate some limitations in urban infrastructure or connectivity gaps in specific areas.
- Cascais has moderate accessibility score (-10 %) suggesting potential challenges in reaching urban services conveniently. Possible factors include urban sprawl, reliance on private cars or insufficient infrastructure in certain areas.
- Bucharest has the lowest accessibility rating (-12.8 %) indicating challenges in urban infrastructure, connectivity or availability of services. This could mean longer travel times, fewer public transport options or inadequate urban planning.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

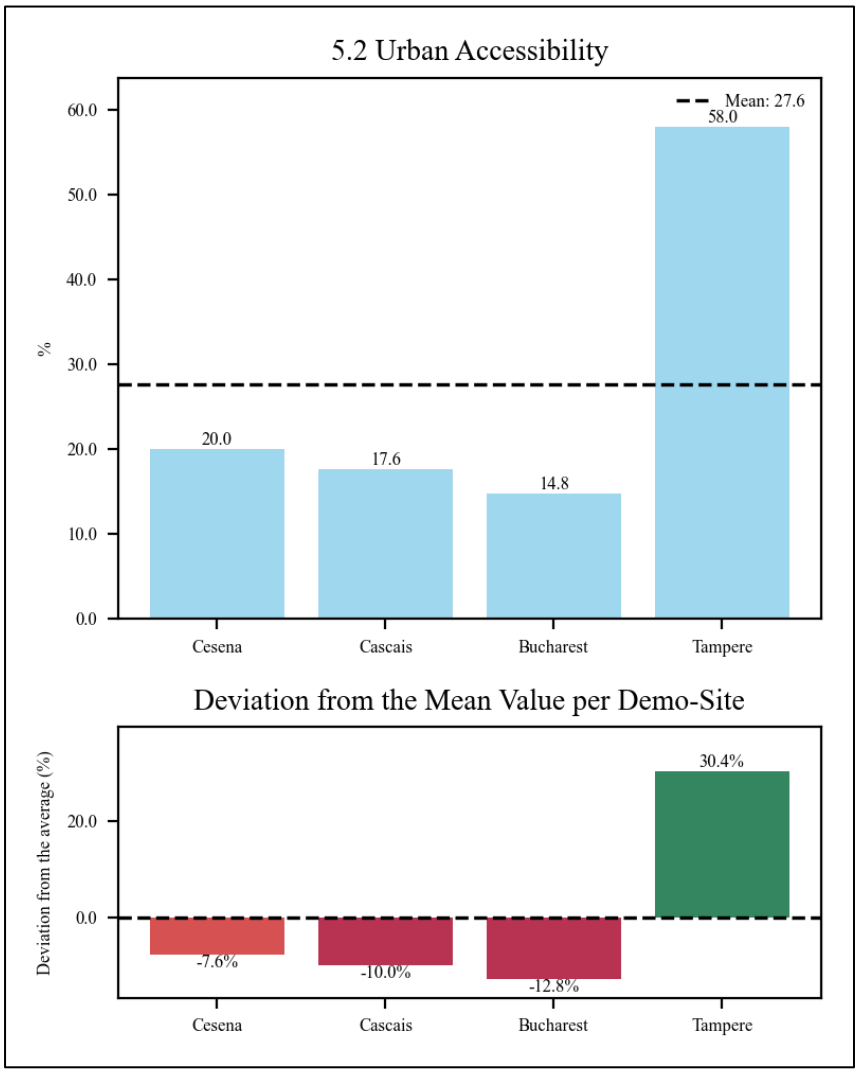

Figure 27. Urban Accessibility KPI5.2 –percentage of satisfaction of the urban accessibility criteria within the 4 demo areas.

Highlights:

- Tampere excels in urban accessibility likely benefiting from well-structured city planning and transport networks.
- Cesena and Cascais show room for improvement possibly due to localized infrastructure gaps.
- Bucharest faces significant accessibility challenges suggesting the need for improvements in urban mobility and infrastructure planning.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

3.5.3. Renewal of Walking and Open spaces – KPI 5.5

The following section focuses on the analysis of the demos baseline conditions to allow comparing how different boundaries and socio-economic contexts determine the availability of walking and open spaces in each demo.

Table 23 summarises the results obtained through the data collection and KPI calculation process:

Table 23. *Walking and Open Spaces KPI 5.5 – results across 4 demos*

ID	***Name***	***Units***	***Cesena***	***Cascais***	***Bucharest***	***Tampere***
5 – Sustainable Mobility						
Active modes & health						
KPI5.5	Walking and Open Spaces	km^2	0.140	0.085	0.037	0.023

Figure 28 shows urban areas dedicated to walking and open spaces across the four demo sites in km², reflecting the total land area dedicated to public open spaces. The variation among the cities highlights differences in urban planning strategies, land use priorities and population density.

- Cesena demo has the largest amount of open space, aligning with its extensive demo area and sustainability focus.
- Cascais demo follows with a significant proportion of open space, which aligns with its integrated planning efforts and commitment to social inclusion and energy efficiency.
- Bucharest and Tampere have comparatively smaller open space areas, possibly due to higher urban density or land-use constraints.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

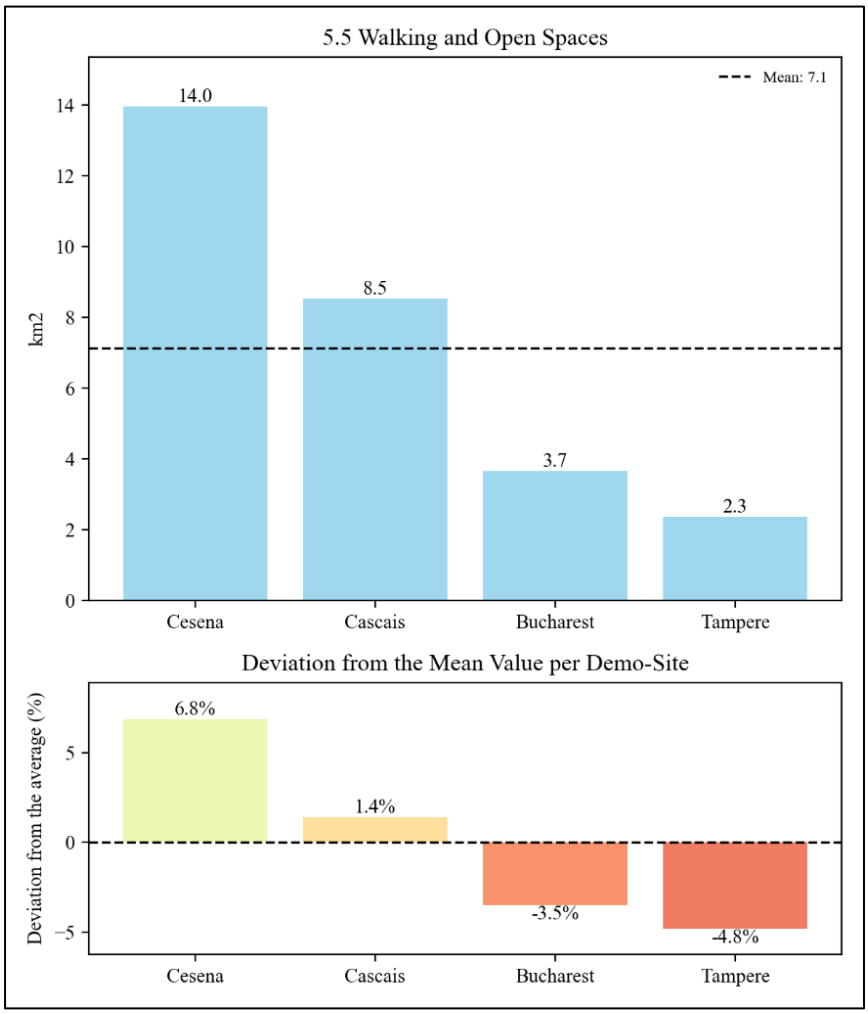

Figure 28. Walking and Open Spaces KPI5.5 –urban areas within the 4 demo areas.

These differences suggest that Cesena and Cascais demos prioritize open public spaces as part of their urban development strategies while Bucharest and Tampere demos may face spatial limitations or different urbanization approaches.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

CONCLUSIONS

This analysis consolidates insights on energy performance, sociability, safety, sustainability, transportation, accessibility, socioeconomic conditions and greenhouse gas (GHG) emissions across Cesena, Cascais, Bucharest and Tampere. Each city's strengths and weaknesses highlight key areas for tailored urban improvement strategies. The Figure 29 summarise KPIs comparison across the 4 demos:

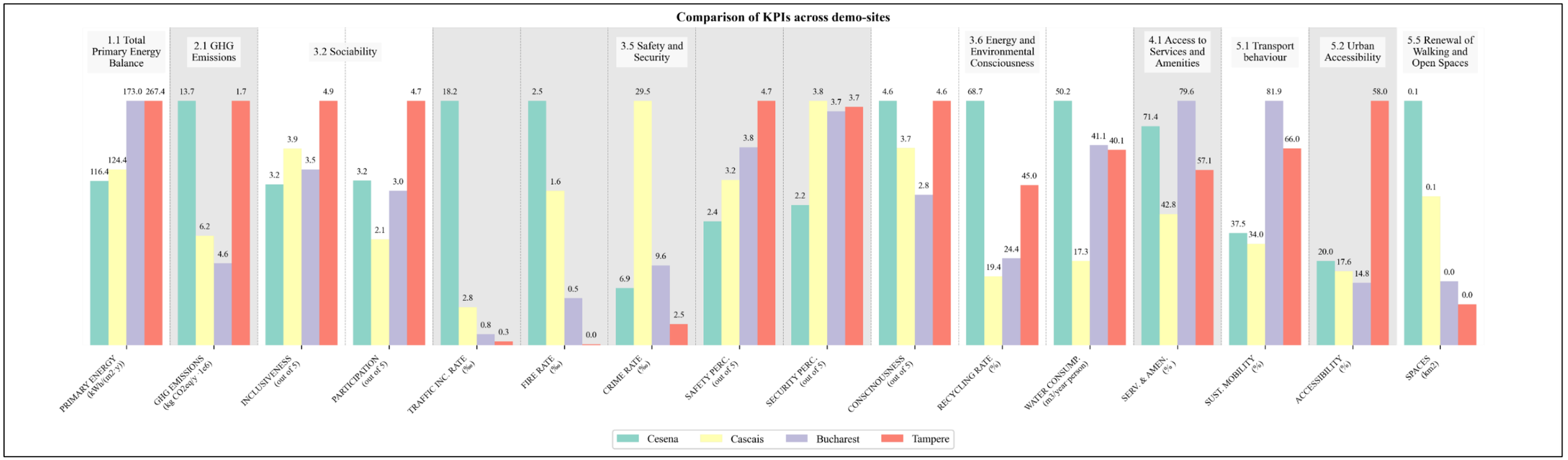

Figure 29. Overview of KPIs comparison across demos

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Cesena: High Energy Use, Car Dependency & Building-Related Emissions

Strengths:

- Moderate urban accessibility (20 %) suggests reasonable mobility infrastructure, but room for improvement in alignment with the defined action plan.
- Moderate socioeconomic performance (71.4 %), above the mean.
- Medium EP performance in building sector (116 kWh/m² year) indicating low demand in line with prevalent residential typology.
- From the preliminary survey results, a strong environmental consciousness emerged (4.6/5).

Challenges:

- Highest GHG emissions (1.37 $kgCO_2eq/m^2year$), mainly from building energy use (over 90 %).
- High car dependency (62.5 %) with low use of public transport and bicycles.
- Relatively low perception of safety (2.4/5).
- High water consumption and low urban accessibility indicating inefficiencies and potential areas for improving sustainable resources use and enhancing urban liveability.

Highlights:

- Further improving buildings energy efficiency through retrofitting and renewables to support large scale strategies.
- Expand public transport options and active mobility to reduce car reliance.
- Urban greening initiatives to offset emissions in line with defined action plan.
- Improve safety perception through urban design and community programs.

Cascais: High Waste & Transport Emissions, Moderate Energy Efficiency

Strengths:

- Moderate GHG emissions (6.16E+06 $kgCO_2eq/m^2year$), but more balanced across sectors.

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Public transport usage is relatively high (20 % bus, 11.2 % train).
- Decent safety (3.2/5) & security (3.8/5) perception.
- Good energy efficiency (124 kWh/m² year), below the average.

Challenges:

- Lowest socioeconomic performance (42.8 %), below the average.
- Significant transport-related emissions (31.9 %) and waste emissions (24.7 %).
- Recycling rate is low (19.4 %), possible inefficiencies in waste management.
- Moderate urban accessibility (17.6 %), below the average.

Highlights:

- Boost waste management initiatives (higher recycling rates, circular economy).
- Expand sustainable mobility solutions (cycling infrastructure, electric buses).
- Address economic disparities through job opportunities and social programs.

Bucharest: Balanced Emissions, but Transport & Accessibility

Strengths:

- GHG emissions (4.60E+06 $kgCO_2eq/m^2year$) are moderate and more evenly distributed.
- Diverse transport use: 20.6 % public transport, 20.6 % walking.
- Crime rate is relatively low, supporting urban security.
- Moderate energy consumption (173 kWh/m² year), indicating good efficiency.

Challenges:

- Below-average urban accessibility (14.8 %), limiting ease of movement.
- High reliance on mobility emissions (23.3 %), stressing transport inefficiencies.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Waste management & water consumption emissions (over 24 %) indicate inefficiencies.
- Low GHG emission offset contributions, showing opportunities to increase urban greening solutions and renewable energies integration.

Highlights:

- Urban green infrastructure and renewables integration to offset GHG emissions.
- Expand public transport network to reduce car dependency.
- Improve pedestrian infrastructure to support active mobility.
- Strengthen waste and water efficiency policies to optimize urban resource use.

Tampere: Leading in Inclusiveness, but High Energy Demand and Waste Emissions

Strengths:

- Balanced modal split (34 % cars, 22 % public transport, 22 % walking).
- Best urban accessibility (58 %), well above the average.
- High socioeconomic performance (57 %), though slightly below the average.
- Low crime rate and good safety perception are great assets for social inclusiveness.

Challenges:

- Lowest absolute GHG emissions (1.71E+06 $kgCO_2eq/m^2year$) due to low building stock surface and despite high energy consumption of buildings.
- Waste-related emissions are disproportionately high (49.1 %).
- Socioeconomic score is slightly below the average.
- High building energy demand (267 kWh/m^2 year). Although, this value could be revised by accounting for the residential building stock in the demo areas, to align the context assessment with other demos.

Highlights:

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

- Enhance waste management efficiency (improve recycling, circular economy).
- Expand green initiatives and active mobility to offset emissions.
- Address socioeconomic gaps through inclusive policies.
- Enhance environmental consciousness and participation for inclusive urban regeneration.

Strategic Priorities addressed in Action Plans

Each city demonstrates distinct urban strengths and challenges, which are addressed in targeted action plans. Each city faces unique challenges and opportunities in achieving sustainability.

The following priorities, extracted from the analysis of the KPIs set of baseline conditions in WeGenerate demos, aim to align with demos' action plans and implementation processes to support impactful transformations:

- **Cesena demo**: Focus on building energy efficiency and promotion of sustainable transport to reduce emissions.
- **Cascais demo**: Improve waste management and expand sustainable transport options to tackle key emission sources.
- **Bucharest demo**: Enhance urban greening, accessibility and public transport to improve sustainability.
- **Tampere demo**: Optimize walkable and open spaces, waste management and socioeconomic policies while maintaining strong social inclusiveness and sustainable mobility performance. Additionally, assess the built environment performance.

Next steps

A continuous coordination between Demos and WP7 partners will be set according to the data collection and processing plan (see Figure 4, it proposes a calendar for the different phases of the monitoring phases to the final KPI analysis reporting-) .

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

In order to complete the set of 10 pre-intervention KPIs for the deliverable D7.3 ‘Cross-demo baseline comparison’, it was proposed to postpone covering additional 5 pre-intervention KPIs (as indicated in the Figure 3). The current approach is to coordinate the cross-demo baseline assessment as a live process along 2025, to allow a comprehensive baseline characterisation for a robust final impact assessment (pre & post interventions comparison).

As the last step of the process (M47), we foresee drafting of the Deliverable ‘D7.5 – Overall Project and Cross-Demo Impact Assessment’ which will include: (i) cross-demo comparison in the post-intervention phase as well as (ii) demos’ impact assessment (pre-post comparison).

Figure 30 shows an example of a mock up time series that will be produced during the final cross-demo impact assessment.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

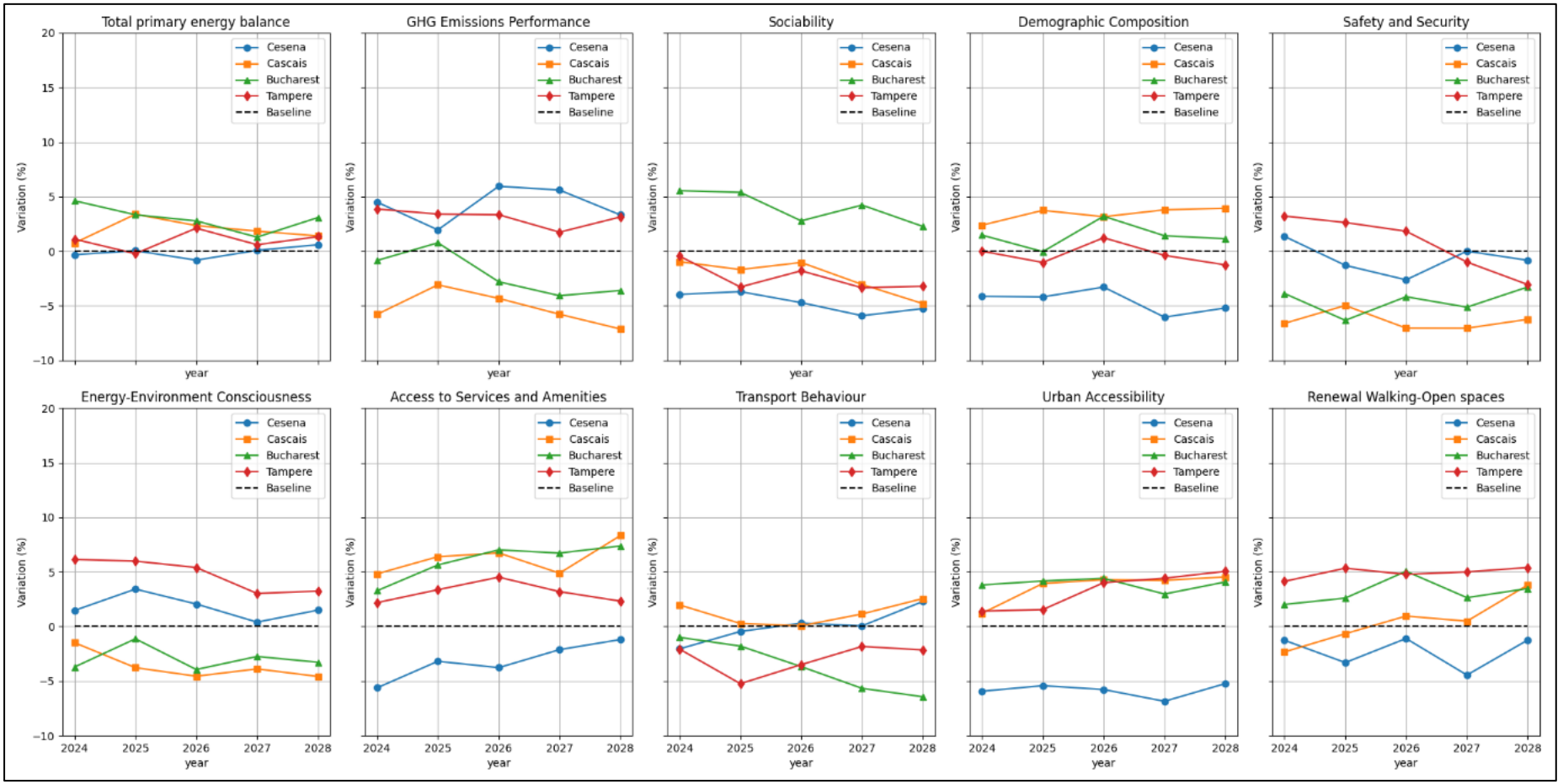

Figure 30. Example of global comparison of time evolution for 10 KPIs in all demo-sites.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

LIST OF FIGURES

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

LIST OF TABLES

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

ACKNOWLEDGEMENTS AND DISCLAIMER

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101123546.

This deliverable contains information that reflects only the authors' views, and the European Commission is not responsible for any use that may be made of the information it contains.

PARTNERS LOGOS

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.