Needs assessment report

Deliverable number: 2.1

Date: 1/03/2024

Version 1

This project has received funding from the European Union's Horizon Europe programme under grant agreement No 101103924. 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 Commission. Neither the European Union nor the granting authority can be held responsible for them.

Name of work package	WP2 Safe & Sustainable Mobility Labs
Dissemination level	PUB
Due delivery date:	29/02/2024
Actual delivery date:	29/02/2024
Lead beneficiary:	FACTUAL
Contributing beneficiaries:	REALLOCATE city representatives
Authors	FACTUAL: Eglantina Dani, Maria Kopp, Tzvetelina Vesselinova
Peer reviewers	Eurocities: Justine Gangneux CERTH: Katerina Touliou

Table of Contents

List of tables

List of figures

List of abbreviations and acronyms

Acronym/abbreviation	Description
SSMLs	Safe & Sustainable Mobility Labs
SUMP	Sustainable Urban Mobility Plan
P+R	Park and Ride
B+R	Bike and Ride
MMV	Micromobility Vehicles
VRU	Vulnerable Road Users
Hi-tech	High Technology
PwD	People with Disabilities
DRT	Demand Responsive Transit
DT	Digital Twin
LED	Light-emitting diode
AI	Artificial Intelligence
GDPR	General Data Protection Regulation

About REALLOCATE

REALLOCATE transforms streets into inclusive, green, safe and future-proof urban spaces, where communities live and thrive. The project enables researchers, mobility experts, urban planners and local citizens to collectively re-imagine our cities and redesign how we move from one place to another.

1 Executive Summary

The report provides a comprehensive overview of 10 cities and 15 Safe & Sustainable Mobility Labs (SSMLs), referred to as pilots of the REALLOCATE project. It details the context, location, objective, and actions of each pilot, with a focus on analysing mobility gaps and needs. Thus, the report reflects Task 2.1's objective of understanding the current conditions within the pilot areas. Community engagement and stakeholder feedback involving public authorities, citizens, community organisations, and associations, was instrumental in identifying needs and defining pilot actions. Co-creation events and workshops have been organised by city representatives, along with guidance from REALLOCATE horizontal partners. The outcomes of these sessions contributed valuable insights into the context and needs of each pilot area.

Furthermore, the pilots are categorised into 5 lead cities and 5 twin cities, all sharing a commitment to pilot innovative interventions. The twinning strategy and needs of each pilot area are illustrated in Figure 1.

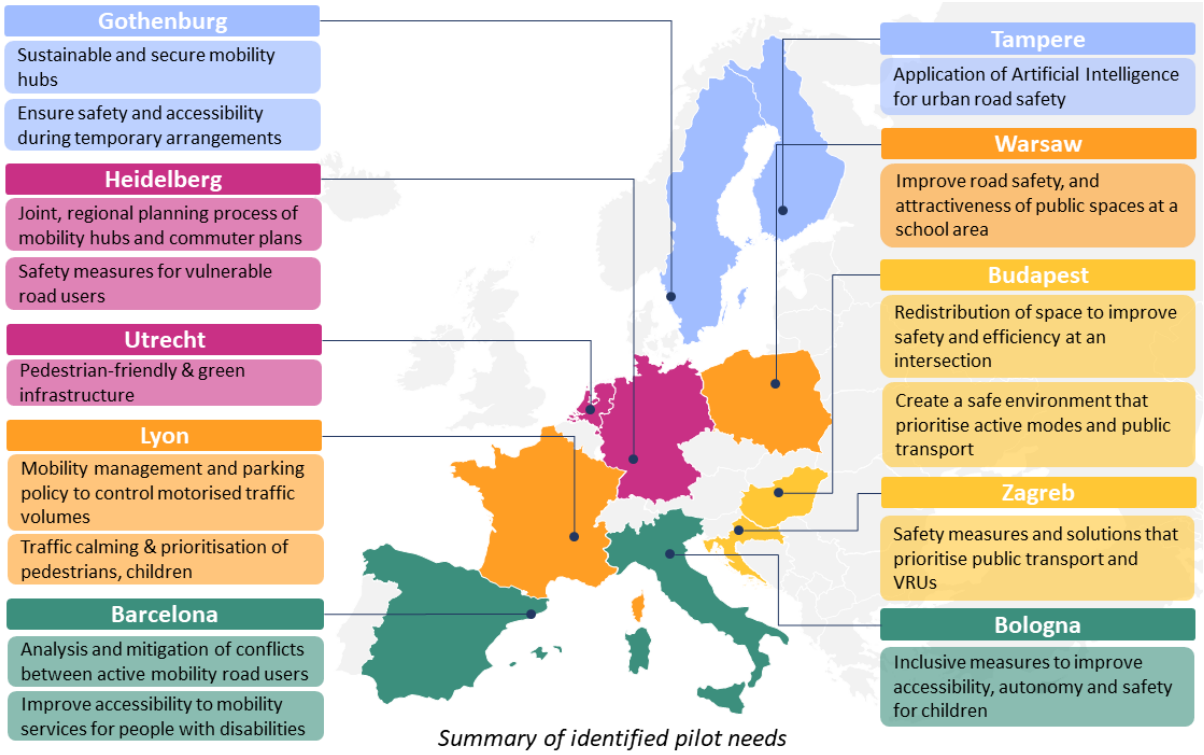

Figure 1: Overview of identified needs per pilot. Colours correspond to the pilot twinning methodology used in the project (Source: own elaboration).

To address those needs and promote safer, more sustainable transportation systems, the REALLOCATE project encompasses a wide array of pilot initiatives across five thematic clusters:

1. Under "**Safe & Sustainable Schools**," cities like Lyon, Utrecht, Warsaw, and Bologna are implementing measures to enhance road safety and sustainability in school areas. Lyon focuses on redesigning public spaces and implementing traffic calming solutions, parking reallocations, and urban greening initiatives. Utrecht aims to safety-proof schools through engagement and co-design with the local communities (children and parents), cyclist behaviour prediction, and infrastructural adaptations. Warsaw is creating a green and safe road to school with road space reallocation initiatives and climate adaptation measures, while Bologna is developing a neutral, safe, and sustainable school district along the Knowledge Path with various enhancement activities that involve the school children of the area.
2. In the category of "**Peri-urban Traffic Reorganisation**," cities such as Gothenburg, Heidelberg, and Budapest are implementing strategies to improve traffic organisation in peri-urban areas. Gothenburg focuses on implementing a Safe System Approach for children's and citizens' active travel in peri-urban areas, while Heidelberg is developing a regional commuter plan for climate neutrality which will involve the city departments, surrounding communities and other stakeholders affected. Budapest is

addressing peri-urban traffic safety through the connection of cycling infrastructure and AI-based traffic modelling.

3. For "**Central Areas Traffic Reorganisation**," Gothenburg and Zagreb are implementing measures to reorganise traffic in central areas. Gothenburg is enhancing seamless travel and citizen engagement in a complex intersection which serves as a multimodal mobility hub with a high mix of transport modes, while Zagreb is implementing holistic solutions at a central traffic corridor, including construction of bicycle paths, prioritisation of public transport, and pedestrian protection measures.
4. In the category of "**Tactical Space Reallocation,**" Heidelberg, Budapest, and Barcelona are implementing tactical public space reallocation initiatives. Heidelberg is focusing on co-creating solutions for low-traffic areas, Budapest is introducing "Healthy Superblocks" to facilitate pedestrian traffic, and Barcelona is analysing and mitigating conflicts between pedestrians, cyclists and other micromobility vehicles (MMV).
5. Finally, under **"Hi-tech for Safety & Accessibility,**" Lyon, Barcelona, and Tampere are implementing high-tech solutions to enhance safety and accessibility. Lyon is focusing on road safety technology and non-pollution parking policies, Barcelona is increasing and integrating public transport accessibility for people with disabilities, and Tampere is utilising AI for increased road safety, space reallocation, and parametric design.

From the analysis of gaps, needs, objectives and actions of each pilot, several opportunities for their implementation have been identified. These resonate across all participating cities in the project. The distinct focus of the REALLOCATE project on facilitating and fostering an exchange of experiences and best practices among these cities creates a rich environment for learning and innovation. Participating cities have the chance for experimental learning which is guided and advised by expertise of horizontal partners of the project. The horizontal partners bring in innovative tools and resources, addressing gaps and needs more effectively, and ensuring the achievement of defined objectives. This collaborative effort is pivotal in achieving the ambitious objectives set for 2030, with a focus on improving safety, sustainability, and accessibility across various city contexts.

In conclusion, the report will serve as the foundation for Deliverable 2.2, detailing the deployment and implementation steps for all the Safe & Sustainable Mobility Labs (SSMLs).

2 Introduction

REALLOCATE transforms streets into inclusive, green, safe and future-proof urban spaces, where communities live and thrive. The project enables researchers, mobility experts, urban planners and local citizens to collectively re-imagine our cities and redesign how we move from one place to another.

REALLOCATE supports the implementation of the EU mission '100 Climate-Neutral and Smart Cities by 2030' in 10 cities. The main objective of this project is to pave the way towards climate-neutral, safe, and smart EU cities through integrated, innovative and inclusive sustainable urban mobility solutions that will address the needs of diverse groups and communities, while rebalancing the street / public space allocation and promoting a modal shift towards more active mobility.

The cities carry out pilots in 15 urban and peri-urban areas (two pilots in each Lead City and one in each Twin City). The solutions developed fall under four different categories/clusters:

- Safe & Sustainable Schools
- Peri-urban Traffic Reorganisation
- Central Areas Traffic Reorganisation
- Tactical Space Reallocation
- Hi-tech for Safety & Accessibility

The pilots form the learning and testing environments for integrated approaches to foster knowledge transfer and collaborative learning to staff in cities through mentoring, capacity building, knowledge exchange, and work shadowing.

The coordination of the pilots, detailed in Work Package (WP) 2 (to which the current deliverable belongs), serves as a cornerstone in interconnecting various dimensions of the REALLOCATE project. The insights derived from the 15 pilots, dedicated to advancing the state of mobility solutions, actively contribute to the objectives of WP3, which focuses on urban design, behavioural, and technological solutions for enhancing the pilot projects. Furthermore, the practical knowledge, gaps and learning needs identified in WP2 are used to align the scope of WP4 with partners' needs and define initiatives for peer learning, capacity building, and twinning.

The continuous data flow from the pilots is also channelled into WP5, which is dedicated to proactive continuous assessment. As we progress, the outcomes of the pilots become integral in maximising impact across the entire project, encompassing communication, dissemination, exploitation, and transferability within WP6.

This report (Deliverable 2.1 of WP2) provides an overview of the project's 10 cities and 15 pilots including its context, location, objectives, and strategic actions. The report sets its focus on the identification of existing gaps and needs of each pilot site. Hereby, gaps and needs summarise areas where existing solutions or services fall short or where there is a clear demand for innovation or improvement. Gaps relate to shortcomings or deficiencies in current practices, infrastructures, designs, technologies, or services, while needs represent the requirements or desires of stakeholders that are yet to be adequately addressed. Identifying and addressing these gaps and needs are crucial for the successful development and implementation of the pilots, as they guide the focus of innovation efforts and ensure that solutions are relevant and impactful. The report also highlights specific objectives set to be accomplished with the implementation of each pilot as well as a preliminary set of actions and solutions. Opportunities that arise from the pilot implementation and participation in REALLOCATE have been identified across all pilots and are summarised in the conclusions (chapter 14). The report will serve as the foundation for Deliverable 2.2, which will detail the deployment and implementation steps for all the SSMLs.

In this context, the REALLOCATE project strives not only to achieve the specific goals outlined in each work package but also to establish a synergistic approach for advancing safe, sustainable, and innovative mobility solutions in the 10 mission cities.

3 Methodology

This assessment aims to address crucial questions that form the foundation of the REALLOCATE project's needs assessment.

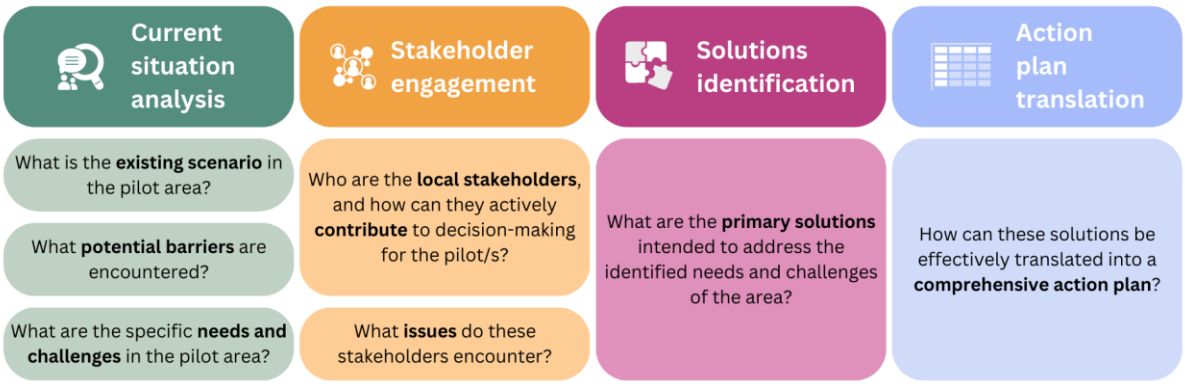

Figure 2: Project's needs assessment (Source: own elaboration)

The key questions summarised in Figure 2 have been the guiding framework for the assessment conducted.

The investigation into these questions involved a series of co-creation events (internal meetings between the city representatives and departments) and workshops with relevant local stakeholders for each city, complemented by the participation of REALLOCATE horizontal partners. A total of 15 co-creation events and 15 workshops took place during the needs assessment process. The cities were provided with guidelines for the **stakeholder identification** (see Appendix 1: Guidelines for stakeholders), the **co-creation processes** (see Appendix 2: Guidelines for co-creation) and **workshops** (see Appendix 3: Guidelines for workshop). These discussions, along with monthly meetings with city representatives and horizontal partners, contributed to synthesising the current context of the pilot areas and planning measures and activities.

Furthermore, during this period, the cities initiated the selection of horizontal partners in the REALLOCATE project. A total of 13 horizontal partners are contributing, encompassing diverse expertise, including nature-based interventions, modelling and transformative governance, among others. The expertise was chosen from a catalogue and pitches made by these partners to the cities. The selected partners have also participated in meetings with the cities to have a better understanding of needs and gaps and thus better support them in effectively implementing the pilots.

In instances where necessary, specific meetings were conducted between city representatives and horizontal partners to gain a deeper understanding of their needs and challenges, supporting them in defining the pilot measures.

The methodology of the assessment is illustrated in the following figure:

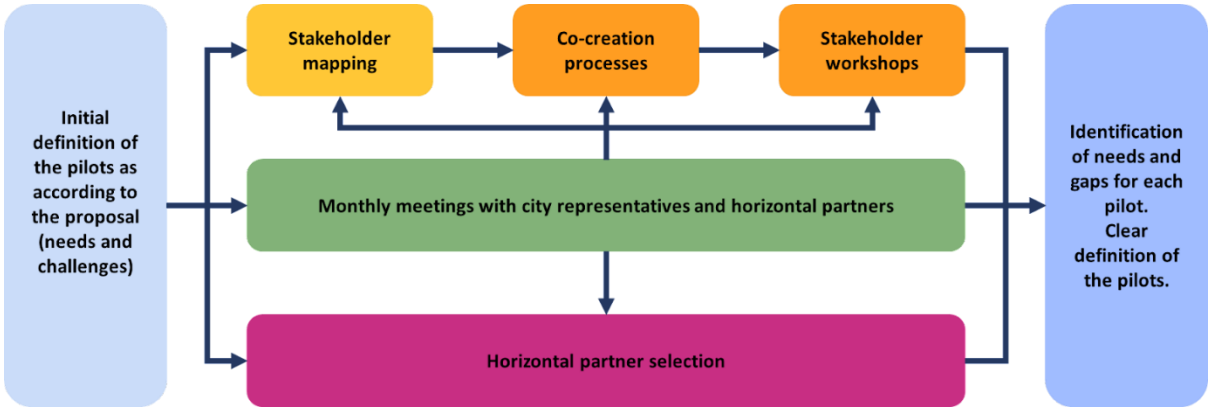

Figure 3: Methodology of the assessment (Source: own elaboration)

THE REALLOCATE PILOTS

The subsequent chapters delineate the comprehensive analysis of the gaps, needs, objectives, actions, stakeholders, and risks associated with each of the 15 pilot initiatives within the REALLOCATE project. Given the distinct emphasis of this deliverable on identifying needs and gaps, a condensed overview is presented in Figure 4, highlighting twinned cities by the same colour.

Pilot	Gaps	Needs	Context
Gothenburg 1	Accessibility Infrastructure	Sustainable and secure mobility hubs, improving access and safety public space especially for children	Peri-urban
Gothenburg 2	Road safety Traffic management	Ensure safety and accessibility during temporary arrangements at intersections and mobility hubs	Urban corridor
Tampere	Road safety Space allocation	Application of Artificial Intelligence (AI) for urban road safety	School area
Heidelberg 1	Accessibility Climate mitigation	Joint, regional planning process of mobility hubs and commuter plans	Regional
Heidelberg 2	Road safety Space allocation	Safety measures for pedestrians, particularly children and older people, as well as for cyclists	Shared space
Utrecht	Road safety Space allocation	Pedestrian-friendly and green infrastructure to enhance traffic safety, biodiversity and air quality	School area
Lyon 1	Road safety Space allocation	Prioritisation of pedestrians, especially children Traffic calming	School area
Lyon 2	Traffic management Climate mitigation	Mobility management and parking policy to control motorised traffic volumes	City center
Warsaw	Road safety Space allocation	Improve road safety, and attractiveness of public spaces	School area
Budapest 1	Road safety Space allocation	Redistribution of space to improve safety and efficiency at an intersection	Peri-urban
Budapest 2	Space allocation Infrastructure	Create a safe environment that prioritise active modes and public transport	Urban road
Zagreb	Road safety Traffic management	Safety measures and solutions that prioritise public transport and VRUs	Corridor
Bologna	Road safety Infrastructure	Inclusive measures to improve accessibility, autonomy and road safety for children in a school area	School area
Barcelona 1	Road safety Infrastructure	Analysis and mitigation of conflicts between active mobility road users in shared spaces	Shared space
Barcelona 2	Accessibility Service availability	Improve accessibility to mobility services for people with disabilities	Urban area

Figure 4: Overview of gaps and needs across the 15 pilot initiatives, highlighting twinned cities in matching colours (Source: own elaboration)

4 Gothenburg

Situated on the west coast of Sweden, Gothenburg serves as the capital of Västra Götaland County and stands as the country's second-largest city. Gothenburg's commitment and efforts to promote sustainable mobility solutions among their inhabitants and visitors becomes evident in their Sustainable Urban Mobility Plan, encompassing the city's long-term vision for sustainable urban transport. The traffic strategy began in fall 2011 at the directive of the municipal executive board. It progressed through various sub-projects, producing essential background reports. These reports formed the basis for the initial version, which underwent consultation in March 2013. The city's plan foresees 'Efficient, safe and sustainable transport for everyone', while aiming for CO_2 emissions reduction by 90% over a period of 20 years starting from 2010.

Within the framework of the REALLOCATE project, Gothenburg will host two pilot initiatives. As a lead city the Gothenburg pilots will be actively collaborating with the twinning city of Tampere.

4.1 Pilot 1 - Safe System Approach for children's active travel in peri-urban areas

4.1.1 Gaps and needs

In Gothenburg's peri urban areas, a significant **gap** arises from the prevalent perception of low traffic safety and inadequate accessibility. **Bergum Gunnilse,** located in the north-east outside of the city Gothenburg has been selected as pilot site for the REALLOCATE project. Bergum-Gunnilse comprises approximately 6,300 inhabitants spread over just 2,200 households. The area is connected to the city by highway and an express bus route. Bergum Gunnilse lacks an identifiable centre, and instead clusters disparate centralities across the area. The hilly terrain further complicates the accessibility of the neighbourhoods.

Key mobility gaps concern insufficient lighting and a lack of pedestrian and bicycle paths. These conditions result in a high dependency on cars among residents, high motorization rates and compromised safety for pedestrians and cyclists, especially impacting school-going children.

Figure 5: Location and images of Bergum Gunnilse (Source:City of Gothenburg, 2024)

Based on these findings, the importance of and **need** for building competence and capacity for the City of Gothenburg and involved partners to develop sustainable and secure mobility hubs for residents outside urban areas was identified. An increased understanding of what residents and especially children in Bergum-Gunnilse mean by traffic safety and security and how that knowledge can be translated into creating the future 15-minute city or village is needed. The city of Gothenburg ultimately seeks to ensure the safety of school commutes and promote the use of sustainable modes of transport among residents.

4.1.2 Objectives and actions

To address identified gaps and needs, the first pilot in Gothenburg will apply the Safe System Approach for children's active travel, with a specific focus on peri-urban areas. The activities follow up a previous project, entitled AHA (**A H**uman **A**pproach to Future Mobility) project, financed by Swedish VINNOVA through the innovation platform Drive Sweden. The AHA project centred around a critical discussion of future mobility solutions and paradigms through participatory design and ethnographic approaches.

The AHA project highlighted the significance of autonomy in child-rearing, emphasising the potential benefits of providing independent mobility for children, while freeing up time and resources for parents. Additionally, a focus on promoting activity and physical exercise as parenting values emerged, highlighting the importance of initiatives that encourage healthier lifestyles. Recognizing diverse perspectives on safety, the AHA project emphasised the need for trust in relationships with neighbours and communities, as well as in services and

systems like public transport. The REALLOCATE project, informed by these key takeaways, aims to implement targeted urban mobility strategies that align with the nuanced values identified in the AHA project, fostering sustainable and family-friendly city environments.

The pilot initiative provides Gothenburg with the **opportunity** for experiential learning, collaboration, innovation and impact. It aims to promote the transition towards more sustainable transportation options, enabling children to travel safely to school, participate in hobbies, and actively move around their community. Rethinking spaces is the major objective of the pilot project in Gothenburg, aiming at:

- Independent and sustainable mobility for children and young people in peri-urban areas;
- Expanding the understanding of safety and traffic safety from various user perspectives with a focus on children outside of densely built-up areas;
- Creating safer, more accessible infrastructure for VRUs and soft mobilities;
- Making infrastructure intelligible and accessible for children and dependant road users;
- Improving access and integration for the most frequented destinations (i.e., access to school and football field difficult and often congested);
- Rethinking connections between neighbouring areas;
- Deeper understanding of the concept “15-minute village”;
- Reduce overall vehicle miles driven.

Actions

- Creating a ‘Virtual mobility hub’ (e.g., database for car-pooling schedule) combined with infrastructure measures (improved lighting; decreased speed limit);
- Expand the understanding of traffic safety and safety solutions from various user perspectives through engagement, dialogue and co-creation with residents;
- Applying the Safe System Approach (considering VRUs, road infrastructure, and vehicles) to transition towards a more sustainable commute;
- Reworking the ‘15-minute city/village’ concept for (semi-)rural, peri urban spaces - replicable to other peri-urban areas and the Archipelago;
- Interactive mapping as a tool for co-creating spaces.

4.1.3 Stakeholders

Table 1: Stakeholders involved in the Gothenburg pilot 1

Local partners involved	Horizontal partners requested	Other stakeholders
Halmstad University SBF: Stadsbyggnadsförvaltningen, Urban Planning Authority SMF: Stadsmiljöförvaltningen, Urban Environment Department Sweco Organisational units within the city of Gothenburg: Urban planning, Urban Environment, Land Development: urban development, traffic, sustainable transport, social sustainability, road safety, accessibility, children's school routes, geographic data and tools, data, analysis and surveys	International Federation of Pedestrians (IFP): Pedestrians and inclusive design DEKRA: Safety auditing Nudgd: Behaviour & choice design Factual: new mobility services	SAFER/Chalmers University: Co-design methods and connection to other projects Swedish Transport Administration: responsibility for the national road through the area Region Västra Götaland: replicability in similar places in the region Västtrafik: public transport authority (regional)

4.1.4 Risks for the implementation of the pilot

In the initial phase of the pilot, the primary challenge is to broaden the understanding of traffic issues, particularly focusing on diverse user perspectives such as children,parents, cyclists, etc. This entails gathering insights from various community members and ensuring their ongoing engagement throughout the project. Phase two involves testing potential solutions that will be provided by the horizontal partners of the project, though challenges such as budget limitations and personnel shortages exist, which potentially can be alleviated by the support from Halmstad University's students. Additionally, navigating jurisdictional constraints over road infrastructure managed by different entities presents a significant challenge for the City of Gothenburg.

4.2 Pilot 2 - Seamless travel, citizen engagement & nudging tools in a complex mobility hub

4.2.1 Gaps and needs

Multimodal hubs aim to facilitate seamless transitions between various modes of transportation for users. However, the complexity of these locations intensifies when construction is underway, resulting in considerable **gaps** for a cohesive and safe traffic environment. The city of Gothenburg identified a lack in the quality of temporary traffic arrangements, which introduce an extra layer of complexity, requiring coordination of traffic flows while maintaining safety for all users.

Navigating through these multimodal hubs during construction therefore **needs** increased attention and adaptability from all involved parties such as citizens, workers and decision makers to ensure a smooth and secure transition between different modes of transportation. This goes along with a need to improve these temporary arrangements to ensure safety and accessibility at these intersections for all users. This is considered crucial for creating a functional and safe transportation environment and promoting sustainable travel for both citizens as well as visitors.

The pilot as part of the REALLOCATE project will be located at the junction at **GGCZ/Korsvägen**, a multi-modal mobility hub, with a high mix of transport (trams, buses, bicycles, cars, e-scooters, etc.) and constant flow of people accessing different city facilities in close proximity to the intersection (commuters, tourists, students, etc.). The junction is currently considered as unsafe, having an additional obstacle bordering the intersection, and is affected by a long-term construction site (Västlänken). Many of the mentioned challenges also arise due to major roadworks.

Figure 6: Junction GGCZ/Korsvägen (City of Gothenburg, 2024)

Factors such as security, safety, and accessibility are often negatively affected during temporary designs, a trend reflected in accident statistics indicating an increase in the number of injured pedestrians and cyclists in connection with roadworks in recent years. Gothenburg believes that by elevating the quality of re-routing for pedestrians and cyclists by better safeguarding their traffic areas in terms of widths, level adjustments, and deviation management can improve the conditions for more sustainable travel. Ensuring safety at these intersections for all users is needed in order to create a functional and secure transport environment but also for promoting increased sustainable travel for all.

Recognising that an increased digitised capability for temporary traffic designs alone is not sufficient for fostering sustainable travel in a place like Korsvägen, the City of Gothenburg also plans to work with co-creation and co-design within this pilot to foster user experience and increase sustainable travel. Engaging with the community ensures that the solutions implemented resonate with the diverse needs and perspectives of the local population, contributing to the creation of a more inclusive and sustainable urban environment.

4.2.2 Objectives and actions

The pilot focuses on improving the quality of temporary traffic arrangements, mainly in regards to traffic flow and traffic safety, especially of vulnerable road users. The results of the pilot are intended to be replicable and applicable to other similar locations with temporary arrangements. The pilot project in Gothenburg also aims to establish methods and generate

public interest in adopting climate-smart mobility behaviours, such as 3D visualisations. The pilot also envisions enhancing the possibilities of offering visitors combined travel options and solutions during climate-smart events. By implementing measures to reduce car usage in central areas, the project has the **opportunity** to alleviate congestion and promote more sustainable commuting options.

The actions within the pilots intend to work on two ways that both increase sustainable travel in complex places like Korsvägen and utilise the digital twin as an enabler.

- Through the digital twin of the City of Gothenburg, enhance the capability to digitise the city's temporary traffic design process in order to create a more safe and sustainable travel. The project plans to introduce deviation reporting from third-party suppliers and the introduction of data-driven decision support.
- Through co-creation with citizens design and gain insights on how a potential future sustainable travel within the area could increase through new innovative ways including nudging and other methods. The insights could then be visualised within the digital twin or other tools. By combining citizen co-creation, digital visualisation, and a collaborative approach, the development of Korsvägen can be more inclusive, responsive, and reflective of the community's aspirations and needs.
- Utilise Gothenburg's digital twin and visualisations as tools to proactively communicate about the future of Korsvägen and how transportation aligns with the established goals. Target groups – bigger Companies and stakeholders within the area.

4.2.3 Stakeholders

Table 2: Stakeholders involved in the Gothenburg pilot 2

Local partners involved	Horizontal partners requested	Other stakeholders
Gothenburg & Co. (stakeholder representative, event management coordination) BRG: Business region Gothernburg (stakeholder representative)	Barcelona Supercomputing Center: AI, urban data science, data visualisation Nudgd: Behaviour and choice design IFP: Pedestrians and inclusive design IFP: Sidewalk scanner UCD: Citizen science, co-creation, stakeholder engagement	Case managers/inspectors, IT-strategists Builders, contractors Other event and business stakeholders Citizens and interest groups

Universerum (Visualisation dome, citizen engagement arena) Traffic Gothenburg (Traffic information)	CERTH: Modelling and artificial intelligence Cerema: Traffic calming; Cerema: Safe system approach DEKRA: Safety auditing	

4.2.4 Risks for the implementation of the pilot

Aligning with local partners who have allocated dedicated funds for the pilot initiative is crucial, potentially requiring adjustments to the plan while emphasising clear communication and collaboration. Challenges in sustainable mobility design include technical hurdles in data collection and system integration, as well as financial constraints. Implementing digitization and e-services faces obstacles such as the preference for open-source code and city data ownership. Engaging interest groups and stakeholders effectively is challenging due to gaps in capabilities among participating partners, necessitating early involvement of experts in citizen engagement. Overcoming complexities in stakeholder engagement is essential for integrating digital twins, AI analysis, and establishing a collaborative vision for the future.

5 Heidelberg

Heidelberg is situated in the German state of Baden-Württemberg in south-west Germany and comprises around 162.000 inhabitants. Serving as a hub for culture, education, and innovation, Heidelberg is home to Germany's oldest university, attracting a diverse population and divergent mobility needs.

The new Sustainable Urban Mobility Plan (SUMP) of Heidelberg, also entitled “Climate Mobility Plan”, currently being developed signifies a paradigm shift by embracing major changes aligned with global sustainability goals. Climate mitigation (SDG 13) takes the lead as the primary goal, converging with objectives of creating a sustainable city (SDG 11), promoting health (SDG 3), and fostering industry, innovation, and infrastructure (SDG 9). The SUMP envisions serving as a transport strategy for the city, providing a trajectory until 2035 towards climate neutrality by 2040.

The plan delineates five key measures:

- changes in motor types and the development of emission factors;
- the implementation of emission related price structures in tandem with the development of alternative transport options;

- the establishment of Cycle Highways into the region coupled with enhancements to the city's cycle network;
- the expansion of the tram, cable car, and bus networks;
- strategies aimed at reducing and slowing down car traffic, encompassing speed limit regulations and calming measures in various districts;

Within the REALLOCATE project two pilot projects will be implemented within the city. For the twinning process the city of Heidelberg will be working in close collaboration with the city of Utrecht.

5.1 Pilot 1 - Regional commuter plan for climate neutrality

5.1.1 Gaps and needs

In Heidelberg, approximately 28% of the city's total CO_2 emissions are attributed to transportation, with the largest share of CO_2 emissions in Heidelberg stemming from commuters. According to the commuter's report 2020, two thirds of working commuters use cars. With the city's population on the rise, there is a potential for further emission growth, posing a challenge to meeting climate goals. To address this, the city is focusing on encouraging a collective shift in transportation modes among residents, with a particular emphasis on the daily work commute. Public transport modes currently **lack** to present a viable and attractive alternative to car usage, requiring improvements in travel times and convenience, especially on a regional basis.

In order to reach the city's CO2 mitigation goals planning processes **need** to go beyond the city boundaries. This requires a better understanding and communication between different cities and municipalities on mobility issues. Within the pilot project the city is therefore taking a regional approach working on sustainable mobility management and cooperation with 29 adjoining communities in the Rhein-Neckar-Kreis.

5.1.2 Objectives and actions

Detecting commuting as a major contributor to current transport emissions, the first pilot intervention in Heidelberg intends to develop a regional commuter plan with interventions for climate neutrality. The initiative aims to advance innovation on mobility hubs with Park and Ride (P+R) but also Bike and Ride (B+R), and nudge improvements in regional bus service and on the regional tram network such as express services. To measure the impacts, Heidelberg's new traffic model, numerous traffic counting stations and parking observatory

will be implemented. The exact location of the pilot still needs to be determined during the process.

Actions

- Initiate a planning process with adjoining communities (through participation) to induce a modal shift towards public transport and cycling.
    - Discussing a mutual approach based on Heidelberg's past studies and SUMP (in progress) as well as the needs of local municipalities
    - Jointly derive detailed actions in Heidelberg and surrounding communities
    - Suggested interventions based on past studies of Heidelberg are mobility hubs in the region, space reallocation to improve regional bus services into Heidelberg and accompanying long distance cycle lanes (currently in planning outside the REALLOCATE project)
- Jointly agree on interventions in the region and within Heidelberg to improve accessibility of sustainable mobility options for commuters.
- Potentially expanding public transport in the region.

5.1.3 Stakeholders

Table 3: Stakeholders involved in the Heidelberg pilot 1

Local partners involved	Horizontal partners requested	Other stakeholders
City of Heidelberg: • Deputy Mayor • Office of City Development • Office of Mobility 29 mayors of surrounding communities	Fraunhofer: sustainable urban mobility planning, SUMP Fraunhofer: transport economics & business models BSC: AI, urban data science, data visualisation	Rhein-Neckar-Kreis (county), Verkehrsverbund Rhein-Neckar (public transit integrator), Rhein-Neckar-Verkehr (public transport operator), Verband Region Rhein-Neckar (regional spatial planning association), Nachbarschaftsverband (informal dialogue forum Heidelberg and direct neighbours)

5.1.4 Risks for the implementation of the pilot

Pilot 1 faces challenges in establishing cooperation with neighbouring communities, especially concerning long-term measures like bus line changes, which involve lengthy

tendering processes. Planning mobility hubs, particularly for commuters around rail lines, presents a major hurdle requiring engineering and planning support for effective coordination. Coordinating with adjoining municipalities, especially within the REALLOCATE project involving stakeholders from 29 cities, adds complexity, while preemptively determining interventions may not align with participants' preferences, highlighting the need for a collaborative planning process that balances direction with stakeholder input to foster a successful modal shift in commuter traffic.

5.2 Pilot 2 - Contextual & tactical public space reallocation

5.2.1 Gaps and needs

In Heidelberg, many streets are marked as homezone streets (Spielstraßen), which implies a space intended to be safer and more vibrant within the urban landscape. However, the actual conditions of many such streets often fall short of meeting these expected standards. The pilot will focus on the streets **Bergheimer Straße, Blumenstraße, Kleingemünder Straße, Maaßstraße, Neuenheimer Markt**.

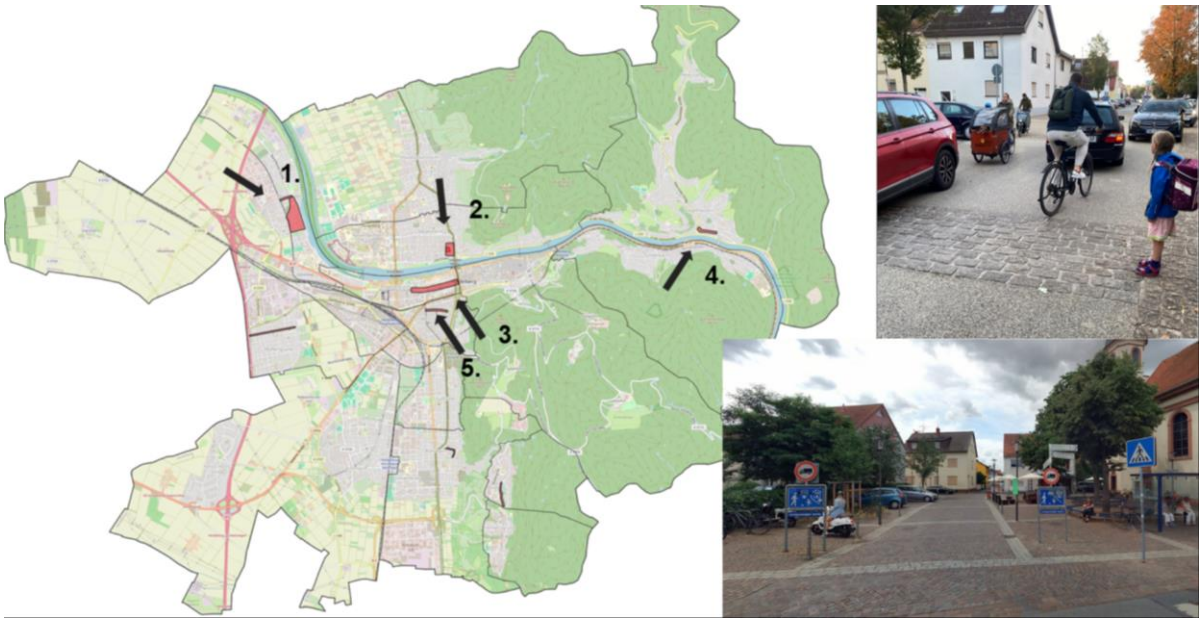

Figure 7: Location of pilot streets Kleingemünder Straße, Maaßstraße, Neuenheimer Markt, Bergheimer Straße and Blumenstraße (City of Heidelberg, 2024)

Detected challenges and **gaps** across the pilot streets include issues with speeding cars, dangerous entry and exit points, and narrow streets. The lack of green spaces, benches, and amenities contributes to a sense of emptiness. Graffiti, littering, and inadequate waste management impact the visual appearance of the area. Additionally, there's a general lack of space for recreational activities and insufficient signage to enhance safety.

These challenges translate into the **need** to enhance safety measures for pedestrians, particularly children and older people, as well as for cyclists. As the urban context and design vary among the selected pilot areas, safety measures need to be tailored to the specific area, avoiding a 'one size fits all' approach to ensure effectiveness.

5.2.2 Objectives and actions

The pilot initiative in Heidelberg aims to enhance safety, liveliness, and connectivity in urban spaces. It focuses on improving both objective and subjective safety, particularly for vulnerable groups like children and older people. The pilot initiative in Heidelberg offers **opportunities** to enhance public spaces and their perception, create vibrant environments, and improve pedestrian and cycle connections. Anticipated outcomes include a significant reduction in traffic accidents, positive climate effects, improved traffic routing, and strengthened local businesses.

Actions

- Tactical elements: parklets, green infrastructure, street markings, speed bumps, gastronomy, signages etc.
- Identification of accident black spots
- Traffic behaviour management: one-way streets, traffic and speed restrictions, information etc.

5.2.3 Stakeholders

Table 4: Stakeholders involved in the Heidelberg pilot 2

Local partners involved	**Horizontal partners requested**
7 different city-offices, e.g. urban planning, landscape and forest Leadership-level Residents Trade associations: requirements of commerce Board of people with disabilities: access in the public space Representatives for needs of children	Fraunhofer: sustainable urban mobility planning, SUMP Arup: street space reallocation design Nudgd: behaviour & choice design

5.2.4 Risks for the implementation of the pilot

The reallocation of space to prioritise pedestrians and cyclists in the selected areas might involve a reduction of parking spaces, potentially leading to resistance from local residents. Also, challenges emerge with interfacing private spaces on some of the selected pilot streets. For the Bergheimer Straße, a major city road, conflicting interests and plans of city departments might impede the success of the planned interventions. Additionally, there's a risk of imposing a "one size fits all" approach on diverse urban landscapes. Lastly, detailed traffic codes and technical rules might limit the flexibility of interventions.

6 Lyon

Located in east-central France, Lyon is a major metropolitan area with a historical and cultural significance. Covering an area of approximately 1,000 square kilometres, the city has a population of over half a million inhabitants. A change in urban planning practices, transportation infrastructure, and policies aim towards the decarbonisation of the transport sector and creating a more pedestrian- and cyclist-friendly city.

The Sustainable Urban Mobility Plan (SUMP) in Lyon envisions a transformative shift towards more efficient, inclusive, and environmentally friendly transportation systems. A central focus is on enhancing public transport facilities through both the creation of new lines and the optimization of existing ones. The city's mobility plan includes a Bicycle Masterplan introducing cycle superhighways, and a Pedestrian Masterplan to address missing sidewalks.

The SUMP's modal share objectives for 2030 outline ambitious targets, including a reduction in car traffic from 44% to 35%, an increase in walking share from 34% to 35%, an enhancement of public transport share from 19% to 22%, and a significant rise in cycling share from 2% to 8%. Simultaneously, environmental goals aim for an 85% reduction in NOX, a 60% decrease in PM10, and a 35% cut in greenhouse gas emissions.

The SUMP identifies five measures:

- A welcoming and inclusive public space for active modes: Prioritising spaces for pedestrians, cyclists, and other non-motorized modes.
- Efficient and attractive public transport: Ensuring public transport is an appealing and efficient choice for commuters.
- Regulated and reasoned automobile mobility: Implementing measures to manage and reduce private vehicle usage.

- Encourage and support behaviour changes: Promoting a cultural shift towards sustainable and shared mobility options.
- Integrated freight transport: Streamlining freight movements to minimise environmental impact.

Within the REALLOCATE project, the city of Lyon will be implementing two pilots, one of children's safety and one focussing on parking policies. Lyon will twin with the pilot site in Warsaw.

6.1 Pilot 1 - Public space redesigning and enhancing road safety in the schools' surroundings

6.1.1 Gaps and needs

In 2022, France recorded 4,500 pedestrian accidents on crosswalks, as reported by the National Interministerial Road Safety Observatory. 75% of these accidents involved collisions with cars or trucks.[1] The city of Lyon has also been organised around cars for the last 60 years, resulting in significant **deficiencies** in road safety, as well as adverse effects on heat island dynamics and air quality.

The city of Lyon therefore identified the **need** to put emphasis on the prioritisation of pedestrians in urban traffic, with a specific focus on children. Since summer 2020, Lyon started developments aiming to calm the city, let children reclaim the space around their school, and allow them to circulate safely near schools. Children's Streets (rue des enfants) have been created with the objective of improving children's safety as well as well-being, decreasing heat island effect and improving air quality. In line with that political, city-wide approach of children's streets, the first pilot in Lyon aims to apply safety measures for achieving VisionZero in four school areas in the **'Presqu'île' district**, namely:

- Dargent Middle School (street closure works completed in 2023, new works underway)
- Condé school group (works planned for 2025)
- Etienne Dolet - St Sacrement school (consultation in progress, works planned for summer 2024)
- 1 site to be defined for the development of a School Mobility Plan (Innovative experimentation: "Go on my own to school").

[1] https://www.lyon.fr/mobilites/la-ville-apaisee/la-securite-toujours-la-priorite

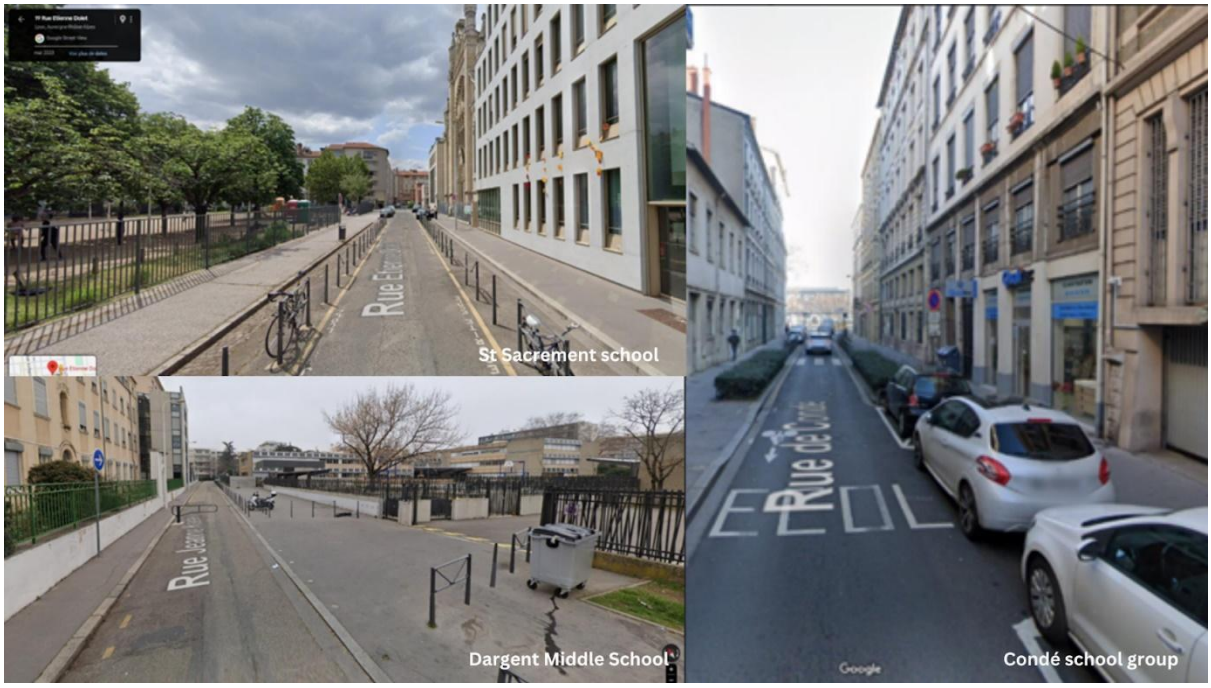

Figure 8: Etienne Dolet - St Sacrement school, Dargent Middle School, Condé school group (Source: Métropole de Lyon,2024)

6.1.2 Objectives and actions

The city of Lyon aims to test the comparative performance of public space reallocation between modes and safety solutions in schools' surroundings towards VisionZero. The intervention at the pilot sites should support the following objectives:

- Reclaiming and increasing safety in the areas around schools and colleges
- Better sharing of public space
- Calmer roads
- Increased modal shift and active modes in general
- A city at children's level

Actions

The pilot action concentrates on redesigning public streets to improve traffic safety around four selected schools in Lyon, concerning a zone of approximately 500m in each case. The pilot focuses on speed management, as well as pedestrian, cyclist and e-scooter infrastructures.

- Realise a quantitative and qualitative assessment (speed measures, pedestrian, cyclists and e-scooter numbers, pollution levels etc.).
- Complete a mobility plan for a school with innovative actions and assessment.

- Traffic Calming Solutions: Speed Limits, Car-Free Zones, Superblocks
- Parking Reallocations: Remove on-street car parking spaces or convert them into bike-sharing docks near schools.
- Urban Greening Initiatives: Introduce green infrastructure such as trees, shrubs, and greenery in the school area to improve air quality, aesthetics, and comfort for pedestrians and cyclists.
- Awareness raising measures among middle school students by the road safety association and policy guidelines on public space design for pedestrians, street design, safer school areas, bicycle lanes, etc.

6.1.3 Stakeholders

Table 5: Stakeholders involved in the Lyon pilot 1

Local partners involved	Horizontal partners requested	Other stakeholders
Transportation department (SYTRAL) Starts authorities (RGC, ABF, SDMIS) Departments within the municipality (DMU, Education, DBNV, Eclairage, among others) Local Media and Communication outlets Departments within Metropole (DIEM, DPEB, Education, Subdivisions, Landscape design) Policymakers (COPIL, ' Rue des Enfants', COPIL 'Abord des collèges')	UCD: nature-based street interventions DEKRA: circularity, lifecycle, carbon footprint assessment Cerema: traffic calming Cerema: space reallocation policy and planning IFP: pedestrians and inclusive design Factual: mobility tools & innovation management Nudgd: behaviour & choice design UCD: citizen science,co-creation, stakeholder engagement	Lyon directly in charge of road improvements and assessments Schools (head teachers, teaching teams) Parents associations + pupils and teenagers Local residents & neighbourhood associations Shopkeepers and local business owners Environmental and Sustainability organisations (Atmo AURA, acoucite) Pedestrians and cycling advocacy group

6.1.4 Risks for the implementation of the pilot

One significant challenge is the lack of comprehensive "before" data, hindering accurate measurement and assessment of pilot action impacts. Existing data on air pollution and

accident rates may be outdated or incomplete, complicating conclusive insights. Ensuring sustained school involvement poses another critical challenge, necessitating alignment with various stakeholders including administrators, teachers, parents, and students, and significant human resources for mobility plan development. Interactions with co-piloting organisations and user acceptance of measures, particularly among car drivers, also present challenges to project execution.

6.2 Pilot 2 - Parking policy and accidents data analysis to address road safety issues

6.2.1 Gaps and needs

Lyon is undergoing a transition towards promoting active travel and seeks to explore innovative road safety solutions. Existing **gaps** include issues with road safety, air quality, and pollution, largely stemming from high levels of motorised traffic and the dominance of heavy and polluting vehicle types. The city identified a **need** to manage motorised traffic volumes, ensure compliance with speed limits, and restrict and discourage the use of heavy and polluting vehicles. The incorporation of certain vehicle attributes such as weight and type of energy into parking policies is seen as an opportunity to control and limit the use of motorised vehicle fleets within the city. For the formulation and implementation of a new parking policy based on vehicle attributes, a comprehensive data analysis of accidents and mobility patterns is needed. The pilot measures are anticipated to be implemented in Lyon's **city centre**.

6.2.2 Objectives and actions

The city of Lyon will focus on developing a new parking pricing policy. With the following actions as part of the pilot project the city aims to reduce the risks for users, raise awareness and reduce the carbon footprint related to urban traffic.

Actions

- Focus on a strong diagnosis of the current state to evaluate existing issues, including data from licence plates from national databases (vehicle characteristics: weight, energy, CO_2 emissions). Definition of the criteria to identify population eligible for

solidarity and family pricing. Accidentology assessment (based on police report: weight of the vehicle involved in accidents). Air pollution assessment.

- Detection of road safety hazards, including risks expected by growing cyclists and e-scooters.
- Implementation of new parking policy (automatic number plate recognition, ANPR). Modify parking policies in tandem with a parking tariff tool, taking into account the weight and fuel type of vehicles. This coordinated approach aims to incentivize responsible parking practices and aligns with broader efforts to improve road safety and sustainability.
- Establish a Digital Twin system to simulate user interactions on the streets, incorporating various safety solutions. Integrate this simulation into the decision-making process for effective urban planning.

6.2.3 Stakeholders

Table 6: Stakeholders involved in the Lyon pilot 2

Local partners involved	Horizontal partners requested	Other stakeholders
Governmental and Regulatory Authorities: • Departments within the municipality (DMU, DSITN, DAJ, Police, etc…) • Departments within Metropole (DIEM) • Health care organisation (Hospital and Rescue) • Local Media and Communication outlets Policymakers (Vision Zéro; COPIL Stationnement)	Cerema: space reallocation policy and planning, safe system approach Cerema: Safe system approach Barcelona Supercomputing Center: AI, urban data science, data visualisation	LAET: Laboratoire Aménagement Économie Transports Vianova Users association (pedestrians, disabled, cyclists, bikes and cars associations) Local business owners Buildings and public works companies Chambers of commerce, Chamber of crafted job

6.2.4 Risks for the implementation of the pilot

The introduction of a new parking policy may encounter resistance from affected car users, necessitating a deep understanding of user interests and benefits of the proposed solution. The allocation of resources, particularly human resources from both project partners and external stakeholders, poses a challenge for the city of Lyon. Compliance with the General

Data Protection Regulation (GDPR) is essential to protect individual privacy, while accessing relevant data sources like the Vehicle Registration System (France and EU) may also prove challenging. Additionally, legal issues may arise during the implementation of new measures and approaches within the city as part of the pilot initiative.

7 Budapest

Budapest located in the north central part of Hungary is home to approximately 1.7 million residents. The city recently adopted its SUMP in October 2023. Primary goals as defined in the plan are to serve mobility needs of a sustainable and resilient city, to create a safe and integrated transport system, and to foster cooperative regional connections. An integral aspect of the SUMP is the achievement of a 40% reduction in CO2 emissions over a 15-year period, contributing to climate mitigation efforts. To realise these goals, the SUMP outlines five effective measures.

- Improve public transport with attractive vehicles and services
- Promote the use of electric or low-emission vehicles
- Develop the cycling and walking infrastructure
- Promote the use of carsharing and carpool systems
- Emission-reducing traffic control, designation of low-emission zones, associated with implementation of related infrastructure like (P+R)

Within the REALLOCATE project, Budapest will implement two pilots twinning with the city of Zagreb.

7.1 Pilot 1 - Peri-urban traffic safety

7.1.1 Gaps and needs

Citizens' needs, urban planning patterns and transport planning differentiate between inner city locations and areas in the outer parts of the city. The latter are less dense and have a different rhythm of service availability (less mobility hubs), while these areas are often the most vulnerable to traffic safety.

For the first pilot in Budapest, District IV located at the border of the city, has been selected as pilot location. Specifically, the interventions will focus on the **intersection of Fóti Street with Megyeri Street, as well as the stretch of Fóti Street between Baross Street and Váci Street**.

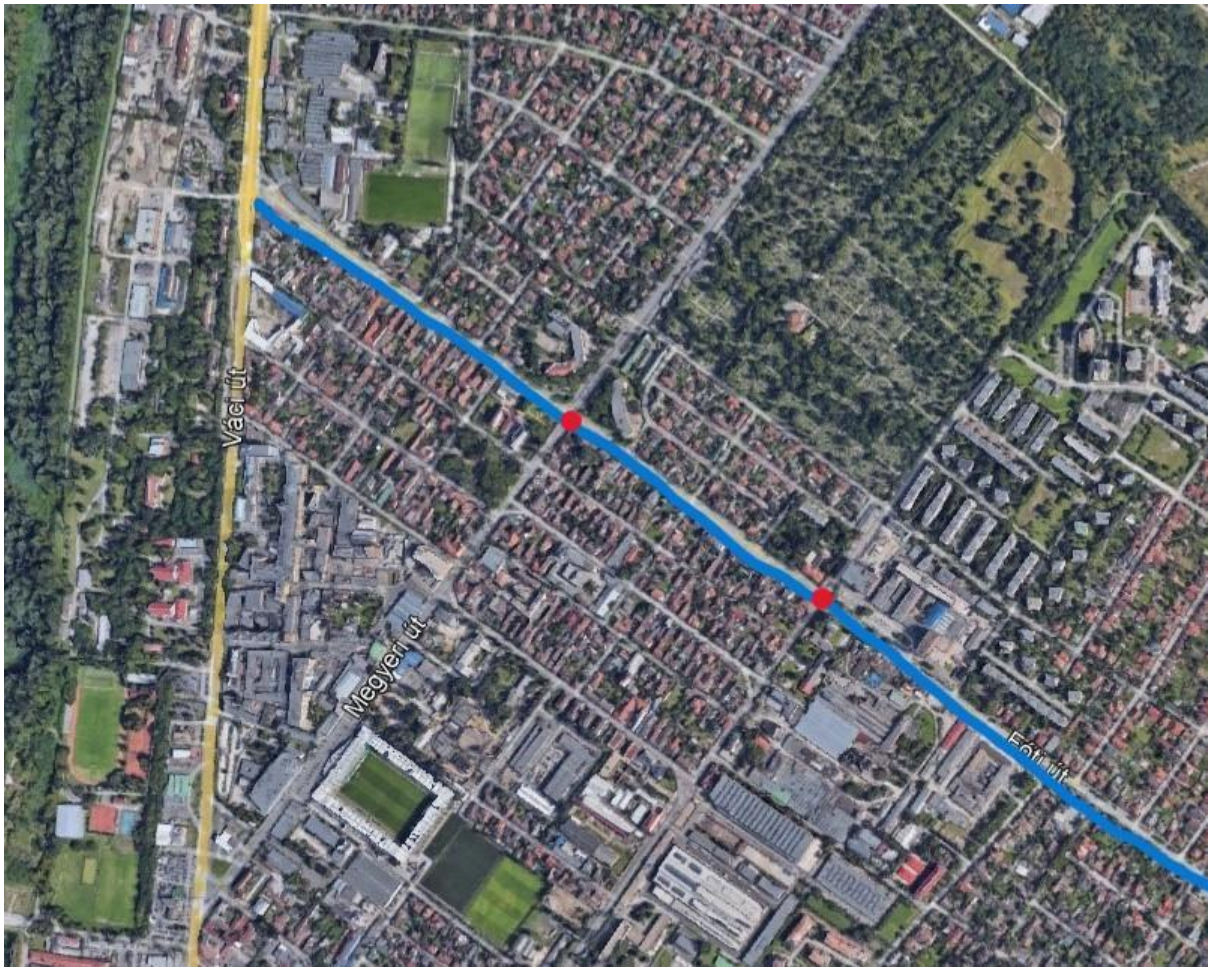

Figure 9: Location of pilot, Fóti St & Megyeri St, Fóti St & Baross St (Source: Google maps, 2024)

The selected area is characterised by oversized, wide roads with up to four lanes. While hosting little traffic most of the day, there is frequent congestion at peak times.

Key challenges and **gaps** include safety issues stemming from speeding, illegal parking, and heavy traffic. Access to the cemetery is hindered by incomplete pavement and a lack of connectivity from bus stops. There is also an overabundance of parking and lanes on Fóti road, exacerbated by events at the nearby stadium. The absence of shared micro-mobility services is notable. Moreover, bus stops are distant from schools, necessitating children to cross busy main roads, posing safety risks. Addressing these concerns is vital for enhancing transportation safety and efficiency in the area.

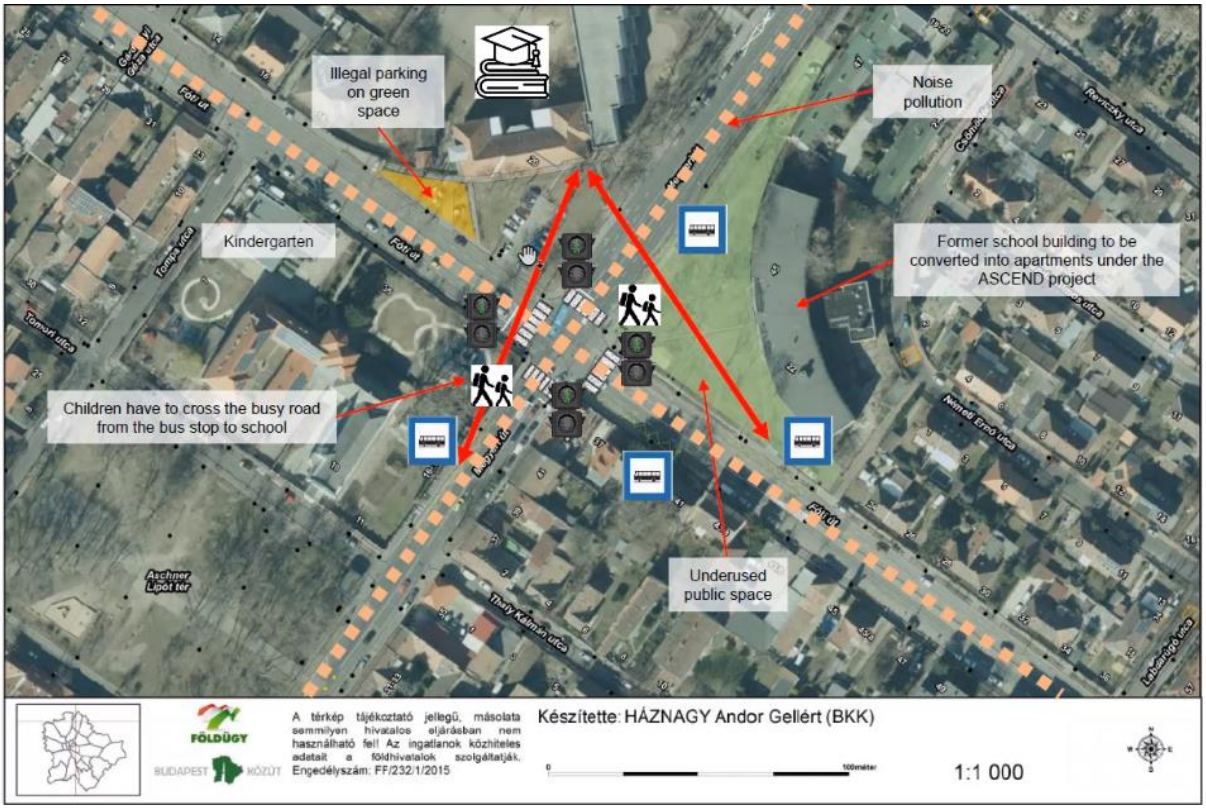

Figure 10: Challenges identified in the pilot area (Source: Budapesti Közlekedési Központ,2024)

Improving the space distribution at the intersection, contributing to its safety and efficiency, has been identified as a major **need**. To ease congestion and provide better access, it's vital to designate parking spaces specifically for teachers at the school. Recognizing the dynamic nature of traffic patterns, stakeholders emphasise the importance of dynamic interventions, proposing different rules during peak and off-peak hours to optimise traffic flow and minimise congestion. Furthermore, the servicing of a building slated for renovation under the ASCEND project needs to be taken into account during the transportation planning.

7.1.2 Objectives and actions

In harmony with the upcoming Cycle Traffic Network Plan, the pilot will focus on traffic calming that can be used in the periurban stress points of the city, to create safer and more controlled intersections, especially for VRUs. Another important aim of the pilot is to create a safer environment for the nearby schools. The pilot project offers an **opportunity** to increase public awareness, particularly regarding socio-psychological issues such as speeding and parking in green spaces, and test the implementation of dynamic interventions during peak hours.

Actions

- Connecting the missing cycling infrastructure (between Baross st. and Vaci st.).

- AI-based traffic modelling and measurements (Air quality and noise monitoring, traffic survey, speed measuring, public space usage etc.).
- Reallocating the intersection's lanes, nearby parking spaces and curbs (drop-off zone for the school, Kiss and Ride (K+R), micromobility point combined with last mile city logistics solutions).

The activities identified for the Budapest pilot align with the current initiatives of the ASCEND project. Within the framework of the ASCEND project, a package point and a mobility station will be built. The police will furthermore operate a speedometer that will be implemented at the intersection as part of the ASCEND project. These initiatives can strengthen the functions of the area and complement activities planned within the REALLOCATE project.

7.1.3 Stakeholders

Table 7: Stakeholders involved in the Budapest pilot 1

Local partners involved	Horizontal partners requested
Budapest Public Road - Planning and implementation Municipality of District IV. - Local municipality Elementary School on Megyeri Road - Insights suggestions throughout the project	Barcelona Supercomputing Center (BSC): AI, urban data science, data visualisation Arup: urban design for streets and intersections Arup: street space reallocation design International Federation of Pedestrians (IFP): sidewalk scanner and pedestrian-oriented tools International Federation of Pedestrians (IFP): pedestrians and inclusive design European Cyclists' Federation (ECF): cycling policy International Federation of Pedestrians (IFP), European Cyclists' Federation (ECF), University College Dublin (UCD): urban road safety overview Ertico: digital tools & new mobility services

7.1.4 Risks for the implementation of the pilot

Implementing the pilot project in Budapest entails various risks and challenges that must be carefully addressed. Deep-seated social habits could impede the adoption of changes, potentially slowing progress. Political uncertainties stemming from the upcoming local government elections may affect decision-making and project continuity. Limited resources, both financial and human, present challenges that require efficient allocation. Lengthy tendering and procurement processes may further delay implementation, necessitating streamlined procedures. Additionally, operating in an unstable market with fluctuating EUR/HUF exchange rates introduces financial uncertainties

7.2 Pilot 2 - Introducing 'Healthy Superblocks'

7.2.1 Gaps and needs

Budapest is contending with a substantial stock of older and diesel-powered vehicles, contributing significantly to air pollution emissions. The city is actively seeking solutions to decrease car traffic on a city-wide level, with numerous districts expressing interest in exploring the feasibility of implementing 'superblocks.'

Investigating the opportunities to adopt ‘healthy superblocks’ in the city of Budapest, District VIII has been selected as a pilot location, specifically **Baross Street between Kálvin Square and the Ring road**.

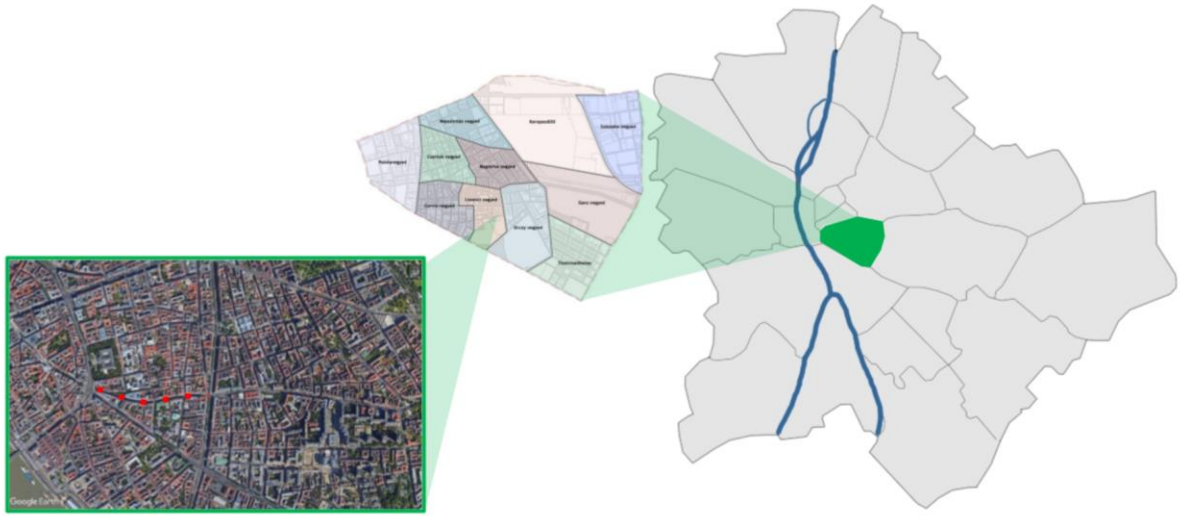

Figure 11: Location of pilot, Baross Street in District VIII (Source: Budapest municipality, 2024)

Several challenges and **gaps** have been identified for the pilot area. District VIII is characterised by an ageing population, as families are moving out of the district because of the small flats. Public spaces are often untidy, with ground floors being dominated by empty shops, high demand for parking and difficulties with loading. This leads to logistical problems, congestion and on street parking.While district VIII is one of the most densely populated areas of the city, there is a lack of green space. Public transport coverage is insufficient, especially on narrow streets where buses cannot operate. Additionally, construction related traffic passing through the area is putting a strain on roads and infrastructure, sometimes leading to damage. Looking at Baross Street, similar gaps and deficiencies arise, including frequent traffic jams, no developed cycling infrastructure, poor walking experience due to narrow sidewalks, insufficient micromobility parking spaces, lack of green spaces while counting with oversized traffic lanes and parking spaces.

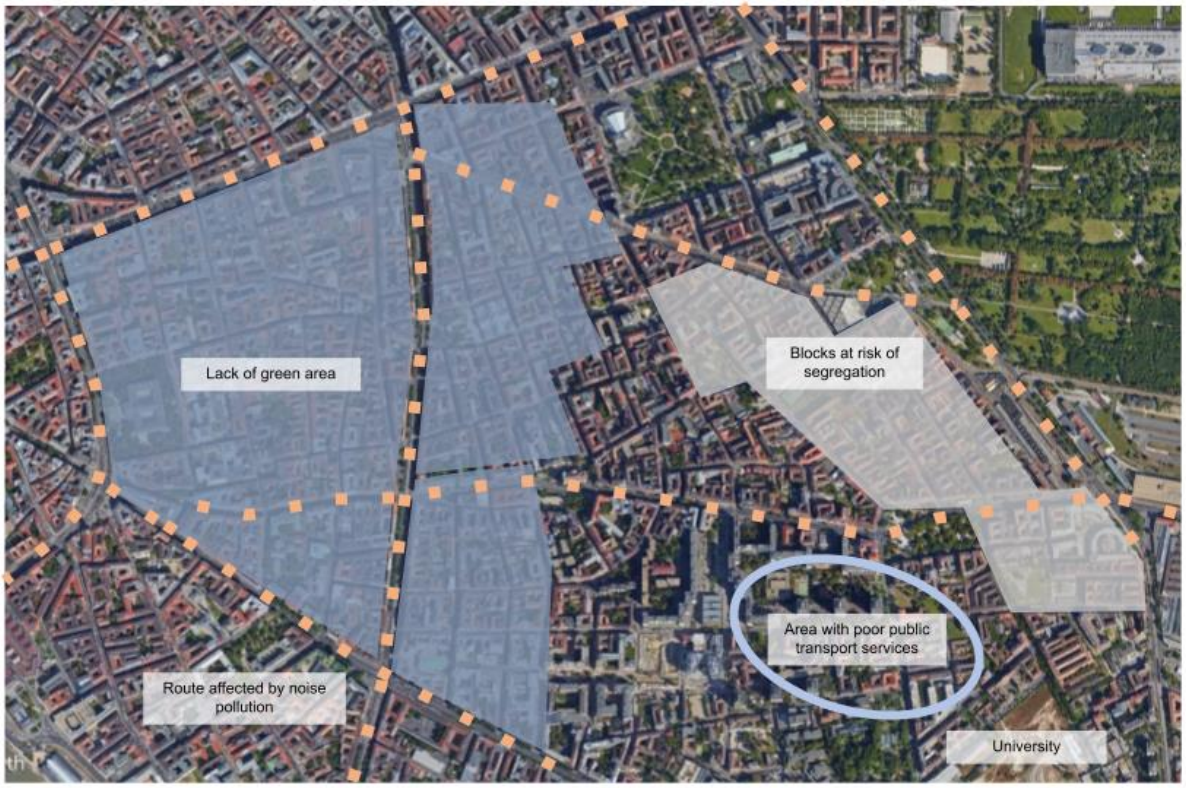

Figure 12: Challenges and gaps identified at the pilot location (Source: Budapest municipality, 2024)

Stakeholders emphasise the **need** for creating a family-friendly environment, prioritising safety, attractiveness, and peacefulness. The '15-minute city' has been identified as a desirable concept for the district, ensuring that essential services and amenities are within easy reach to foster convenience and connectivity. There is a strong emphasis on developing a climate-friendly neighbourhood, integrating sustainability measures to mitigate environmental impact and promote sustainable commitment among residents. Therefore, the mobility needs and habits of people living in the district need to be well understood, also taking into account low-income households and underrepresented communities.

7.2.2 Objectives and actions

The city of Budapest is initiating a project to test the first 'Healthy Superblocks' in District VIII. This initiative aims to reorganise the traffic system to improve the infrastructure and accessibility for active modes of transportation, such as walking and cycling, to public and green spaces, services, and ensure safe mobility for VRUs in this low-income and densely built area. Drawing from concepts like 'Superblocks' in Barcelona and 'Healthy Streets' in London, this implementation will adapt these models to fit the unique social, financial, and demographic context of Eastern Europe. By merging these concepts, Budapest seeks to set an example for other cities in the region. The objective is to create a safe environment through public space interventions that prioritise active modes and public transport while

enhancing the attractiveness, convenience, and accessibility of major facilities for various user groups, including children, low-income households, and older citizens.

Actions

- Traffic data analysis
- Sidewalk widening
- Street furniture, resting places, benches
- Implementation of greenery along Baross Street
- Narrowing of traffic lanes
- Improving the walking experience
- Continuous cycling facility
- Speed reduction and calming with physical elements
- Construction of a logistics loading bays
- Parking space reduction
- Construction of a bus shelter
- Education and awareness-raising

The district is currently implementing various interventions aimed at urban development and regeneration of public spaces, such as tree planting and the creation of split streets resembling low-traffic zones. The REALLOCATE project complements these ongoing efforts in District VIII and has the **opportunity** to accelerate the implementation of change.

7.2.3 Stakeholders

Table 8: Stakeholders involved in the Budapest pilot 2

Local partners involved	Horizontal partners requested
Budapest Public Road – Planning and implementation Municipality of District VIII. – Local municipality RÉV8 - district urban planning company	IFP: sidewalk scanner and pedestrian-oriented tools IFP: pedestrians and inclusive design Arup: street space reallocation design Demos: regenerative infrastructures Cerema: space reallocation policy and planning IFP, ECF, UCD: urban road safety overview

	Nudgd: behaviour & choice design

7.2.4 Risks for the implementation of the pilot

Implementing the pilot project faces several risks, including deeply ingrained social habits, upcoming local government elections introducing political uncertainties, resource constraints in both budget and human resources, lengthy procurement processes, and navigating an unstable market with fluctuating EUR/HUF exchange rates. Given the complexity of District VIII due its urban density and diverse residents structure including families, older people, and low-income households, the contextualisation and adaptation of existing concepts might pose a challenge in pilot implementation.

8 Barcelona

Barcelona is located in the north-eastern region of Catalonia, Spain with a population of approximately 1.6 million residents. Barcelona is a hub for culture, creativity, and innovation, attracting millions of visitors each year.

The SUMP of Barcelona, adopted in December 2022 operates in five major areas: safe mobility, sustainable mobility, healthy mobility, equitable mobility, and intelligent mobility. It promotes travel through sustainable modes, including public transport and non-polluting active modes such as walking and cycling, as well as personal mobility vehicles (PMVs). Additionally, it addresses the usage conditions of motorised vehicles.

Barcelona's SUMP aims to achieve an 80% sustainable modal split by 2024. Key strategies include:

- Walking: Prioritising pedestrian safety by accelerating accident reduction rates, strengthening the gender perspective, and improving traffic light signalling.
- Public transport: expanding complementary routes in the bus network, and setting new accessibility standards for public transport stops.
- Cycling and other personal mobility vehicles: improving traffic light signalling for cyclists, integrating the city’s cycling network with the regional network, upgrading bicycle parking in safety aspects as well as extending shared mobility services.
- Motorised private vehicles: Implementing low emission zones and complementing measures, enforcing citywide 30km/h speed limits, and integrating the plan’s measures with the city’s parking strategy.

As part of the REALLOCATE project, Barcelona will host the implementation of two pilots aimed at promoting active mobility and providing accessible transport services for people with disabilities. For the twinning process, Barcelona will collaborate with the city of Bologna.

8.1 Pilot 1 - Pedestrians, cyclists and MMV in shared spaces: A holistic design approach

8.1.1 Gaps and needs

Shared spaces generally present significant challenges due to the coexistence of pedestrians, cyclists, and other micromobility vehicles, which can lead to conflicts and safety hazards, particularly impacting vulnerable populations such as older citizens or individuals with disabilities. While pedestrians and cyclists are often grouped into "active modes," their differing characteristics in terms of speed and trajectory pose difficulties in sharing spaces, resulting in frequent tensions that affect the overall mobility experience. A notable **gap** exists in understanding and addressing these tensions and addressing user perceptions of safety and belonging, including physical, functional, social and pedagogical design approaches.

Therefore, there is a crucial **need** to comprehend the relationships between different road users in shared spaces to develop effective strategies for conflict analysis and avoidance. The first pilot in Barcelona focuses on analysing and mitigating conflicts between active mobility road users, targeting **various urban typologies of shared spaces** prioritising pedestrians:

- Green axis (Consell de Cent)
- Single level streets in old areas of the city
- Open Streets (temporarily closed to cars)
- Parc de les Glòries

These selected typologies serve as focal points to study the key factors influencing the relationships and potential conflicts between pedestrians, cyclists, and micro mobility vehicle users. For implementation actions, specific locations still need to be selected and will be specified in D2.2. As understood from the description, the pilot site and measures have been changed from what was initially outlined in the Grant Agreement to better align with the city’s objectives and change in strategy during the last year.

Figure 13: Example of urban clusters in Barcelona designed for pedestrian cyclists use (Source: Barcelona City Council, 2024)

8.1.2 Objectives and actions

The aim of the pilot is to study and minimise conflicts between different road users, mainly between cyclists and pedestrians in shared spaces with pedestrian priority. By designing urban spaces that avoid conflicts between different road users, active mobility can be promoted while improving the mobility experience of vulnerable groups such as older people or people with disabilities.

Actions

- Quantitative and qualitative analysis and study on pedestrian-cyclist relationships in shared spaces with special emphasis on different street design typologies: Study of the typology of shared spaces, Traffic counting, User surveys on perceived safety & belonging, Analysis of accident data, Safety audit of shared spaces, Benchmarking in terms of communication and education about mobility behavioural changes, Analysis of current legislation regarding pedestrians, cyclists and MMV in shared spaces
- Development of a guide of recommendations of design criteria to improve relations between pedestrians, cyclists & MMV in shared spaces
- Methodology of an awareness campaign for citizens / stakeholders (to be defined and specified in D2.2)
- Proposal of changes to specific Regulations or Road signs

- Cyclist-pedestrian conflict evaluation of interventions, such as the spatial redesign at Parc de les Glories or temporary open streets events or the (to be defined and specified in D2.2)

8.1.3 Stakeholders

Table 9: Stakeholders involved in the Barcelona pilot 1

Local partners involved	Horizontal partners requested	Other stakeholders
Urban Strategy department Advisors: • Mobility department • Local Police department • Public space conflict management department • Other Barcelona City Council departments (IMPD, ASPB, ...)	Factual: mobility tools & innovation management UCD: citizen science, co-creation, stakeholder engagement, urban road safety overview IFP: pedestrians and inclusive design ECF: cycling policy BSC: urban data science, data visualisation Nudgd: behaviour & choice design Demos: transformative governance Dekra: safety auditing IFP, ECF, UCD: Urban road safety overview	Barcelona Metropolitan Area Bicing BACC & Cyclists Associations Catalunya Camina & Pedestrians Associations Ecom & Disabled Associations College of Psychologists of Catalunya

8.1.4 Risks for the implementation of the pilot

Implementing the pilot project in Barcelona poses challenges, including securing necessary funding and resources, changing ingrained transportation habits, and addressing the multidimensional nature of the problem involving diverse stakeholders. Balancing the interests of various groups, including people with disabilities, the elderly, cyclists, e-scooter riders, and motorists, requires a nuanced approach that considers diverse perspectives and experiences.

8.2 Pilot 2 - Increased and integrated public transport accessibility system for people with disabilities

8.2.1 Gaps and needs

The IMPD (Institut de Persones amb Discapacitat) in Barcelona is currently organising a door-to-door shuttle service for people with disabilities. This service is operating with a taxi and bus fleet and is operated by a combination of stakeholders, including UPC, Moventia, AMB and AMB informacio. This existing service faces various **gaps** and challenges, most importantly regarding the demand and destinations. The service is booked by telephone and email on a first-come, first-served basis at least 48 hours in advance. With approximately 50,000 calls monthly, there is a very high demand for the service, exceeding the supply of the service already. In terms of destination, more than 25% of journeys are linked to medical facilities, which ideally should be served by alternate door-to-door services dedicated to these trip purposes. Additionally, the service organisation is being made manually between the involved stakeholders, adding complexity and resource consumption. The adapted taxi fleet is limited and not sufficient in terms of vehicles, and staff regarding the existing demand. Also, the service requires 48-hour advance notice and opening hours for reservations are limited from Monday to Friday, limiting the users flexibility and not allowing for emergency cases.

This leads to a **need** to increase capacity of the service, optimise the use of vehicles and its environmental impact, improve its quality, taking into account the workflow behind. The improvement of the availability and quality of service ultimately has the potential to respond to user needs that are not covered by other mobility options, such as people with disabilities.

The pilot will focus on its research nature.The exact location of the pilot still needs to be defined, with options ranging from limiting service to specific city areas like Sant Martí to providing citywide coverage. The availability of historical data and data collected during the project's initial phase was identified as an opportunity to better define the precise implementation area and scope.

Figure 14: Sant Martí, potential pilot area (Source: Google maps, 2024)

8.2.2 Objectives and actions

The aim of the pilot is to improve accessibility for people with disabilities residing in urban areas. The pilot's primary objectives revolve around improving, optimising, and complementing existing services to better serve the current user group. Moreover, by transitioning from predominantly single-occupancy vehicles (taxi service) to shared transportation, the pilot is an **opportunity** to minimise the environmental impact while identifying areas for service improvement.

Specific objectives include:

- Reducing pollution within the city by minimising individual trips;
- Increasing the availability and quality of the existing service;
- Optimising service delivery through improvement in applications and workflows to alleviate staff shortages.

Actions

- Analysis of the service (data analysis of service provided during previous years, cost analysis, impact analysis).
- Description of relevant factors and agents that must be taken into account when drafting a proposal of shared mobility.
- Benchmarking (experiences on shared mobility, with a focus on special needs).

- Conclusions with an integrated approach: trips organization, agents' roles and interests, available resources, legal framework, environmental impact).
- Use-case drafting and deployment plan. The local partner, Nemi, will provide the technology for the use-case drafting and deployment plan.
- The local partner, Nemi, will provide the technology for the service implementation
- The use-case proposal should be effective to reduce reservation time, improve navigation or user information/communication. The Nemi application will be adapted to the demand and user needs. This might involve automation of the booking process, or parts of the process.
- Workshops with PwD: Directly involve People with Disabilities (PwD) in participatory workshops to identify and eliminate barriers. Collaboratively develop specifications for vehicles and transport stops based on their unique needs.
- Technical Enhancements: Match making and profiling of users in order to better answer their needs (e.g. people using wheelchairs).

The activities aim to contribute to the development of accessible information and booking services that inform users about the accessibility levels available in each layer of the transport system and the Demand Responsive Transport (DRT) service complementing fixed public transport routes.

8.2.3 Stakeholders

Table 10: Stakeholders involved in the Barcelona pilot 2

Local partners involved	Horizontal partners requested	Other stakeholders
IMPD: The Municipal Institute for People with Disabilities Nemi: Digital platform for managing Demand-Responsive bus services.	BSC: AI, urban data science, data visualisation Cerema: space reallocation policy and planning Factual: Mobility tools & innovation management Nudgd: Behaviour & choice design	UPC: Universitat Politècnica de Catalunya AMB: Àrea Metropolitana de Barcelona AMB informació - Mobilitat Moventia: operator of the current service available Further partners, such as local associations representing people with disabilities and users themselves are foreseen to be consulted during the project. These supporting entities still

		need to be defined throughout the planning phase.

8.2.4 Risks for the implementation of the pilot

Implementing a service for people with disabilities entails challenges including user resistance to shared vehicles, diverse user needs, and complexities in service integration. Addressing individual needs, managing route planning, and adapting to new service expectations are key considerations. Operational challenges like fleet availability, digital accessibility, and administrative complexities also require careful management. Transitioning from point-to-point to door-to-door services in two phases adds further complexity, demanding meticulous planning for user convenience.

9 Tampere

Tampere, situated in southern Finland, is the country's third-largest city. Recently awarded a prestigious SUMP award in 2022, Tampere aims to be a carbon-neutral city by 2030, hosting a sustainable community of 300,000 inhabitants by 2040.

With about half of Tampere residents utilising cars for their trips in the early 2020s, Tampere endeavours to shift the focus from private car journeys to more eco-friendly modes of transport. The SUMP of Tampere, adopted in April 2021, reinforces and demonstrates the objectives set for mobility in the local master plan, the Carbon Neutral Tampere 2030 roadmap and other of the city’s development plans. The plan aims at making mobility an integral part in planning, with resources dedicated towards sustainable mobility and mobility management. The SUMP calls for the development and implementation of cross-administrative impact assessment of mobility projects and plans by evaluating the impacts of chosen mobility solutions on the efficiency of use of space, on the environment, on different user groups, on the modal share and safety perceptions. It also envisions creating more detailed zone-specific mobility objectives serving as the starting points for mobility plans. For example, the target for sustainable modes of transport users should be higher in the pedestrian zones and the intensive public transport zone.

Within the REALLOCATE project, Tampere will be implementing one pilot in a peri urban area using AI technology. Tampere will twin with the city of Gothenburg.

9.1 Pilot - AI for increased road safety, space reallocation & parametric design

9.1.1 Gaps and needs

Situated to the south of Tampere city centre, **Vuores** was selected as location for the pilot initiative. Vuores spans the territories of both Tampere and Lempäälä and is positioned in proximity to the Helsinki-bound motorway. The peri urban area is connected to the Tampere city centre through the 300-metre-long Särkijärvi bridge, making the distance between a mere 7–10 kilometres. Public transport in Vuores is currently facilitated by buses, with preparations to accommodate a future tramway system. Tampere City Transport's bus lines 5, 33, and 35 offer regular services between Tampere and Vuores, operating 2-6 times per hour. Additionally, Vuores has connectivity to the ring roads within the Tampere Central Region.

A key principle in Vuores is ensuring that the public transport services provided are easily accessible via all modes of transportation. The area within Vuores has been designed to be cyclist-friendly, featuring an extensive pedestrian and bicycle network that offers secure and enjoyable routes for running errands, commuting, and engaging in outdoor activities. This commitment to multi-modal accessibility enhances overall connectivity and convenience for residents and visitors alike.

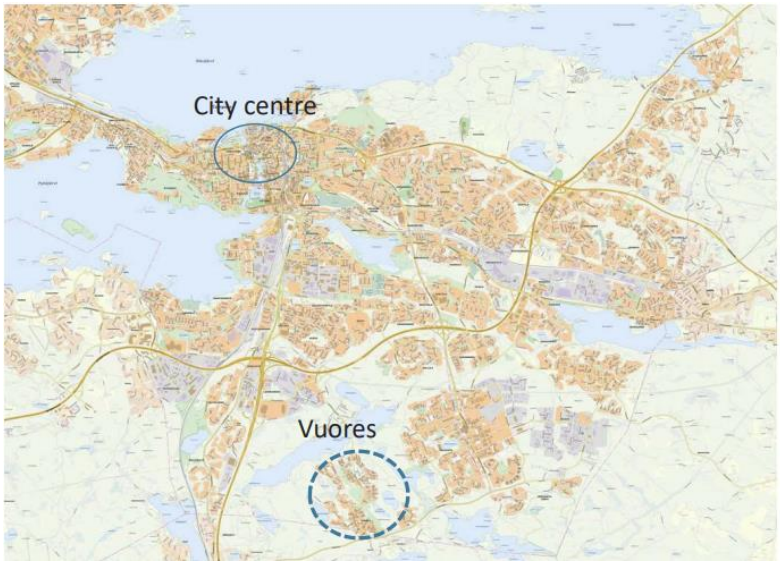

Figure 15: Location of Vuores (Source: Municipality of Tampere)

Despite its commendable features, Vuores identified a **need** to manage its unprecedented growth rate. As of the beginning of 2022, the population reached approximately 7,000 residents, and the city is projected to accommodate around 14,000 residents upon its

anticipated completion around 2025. Balancing the surge in population with the preservation of green spaces, ensuring infrastructure scalability, and sustaining a sense of community amid urban expansion are key challenges for the ongoing development of Vuores.

As it stands, the walk and cycle routes in Vuores face certain **gaps** that need attention and improvement. One of the primary concerns is associated with the collector street (connecting local street with arterial roads), Vuoreksen puistokatu, which acts as a dividing line within the residential area. The traffic volume on Vuoreksen puistokatu is approximately 7000 vehicles per day, and this poses several issues. Firstly, the speed of vehicles approaching the intersection has become a noteworthy problem. The high speeds may compromise the safety of pedestrians and cyclists navigating the area.

Moreover, the presence of Vulnerable Road Users (VRUs) adds another layer of complexity. On one side of the street, there is a daycare facility, emphasising the **need** for enhanced safety measures to protect children and caregivers. Additionally, on the opposite side, the street borders residential areas, indicating the necessity for pedestrian-friendly infrastructure.

The pilot programme in Vuores specifically focuses on three areas around schools and children daycare facilities:

Isokuusi School and Daycare:

- School capacity: 160 students
- Daycare capacity: 150 children

Vuores School and Daycare:

- School capacity: 800 students
- Daycare capacity: 120 children

Puistokoulu School and Daycare:

- School capacity details: around 80 pupils with disabilities

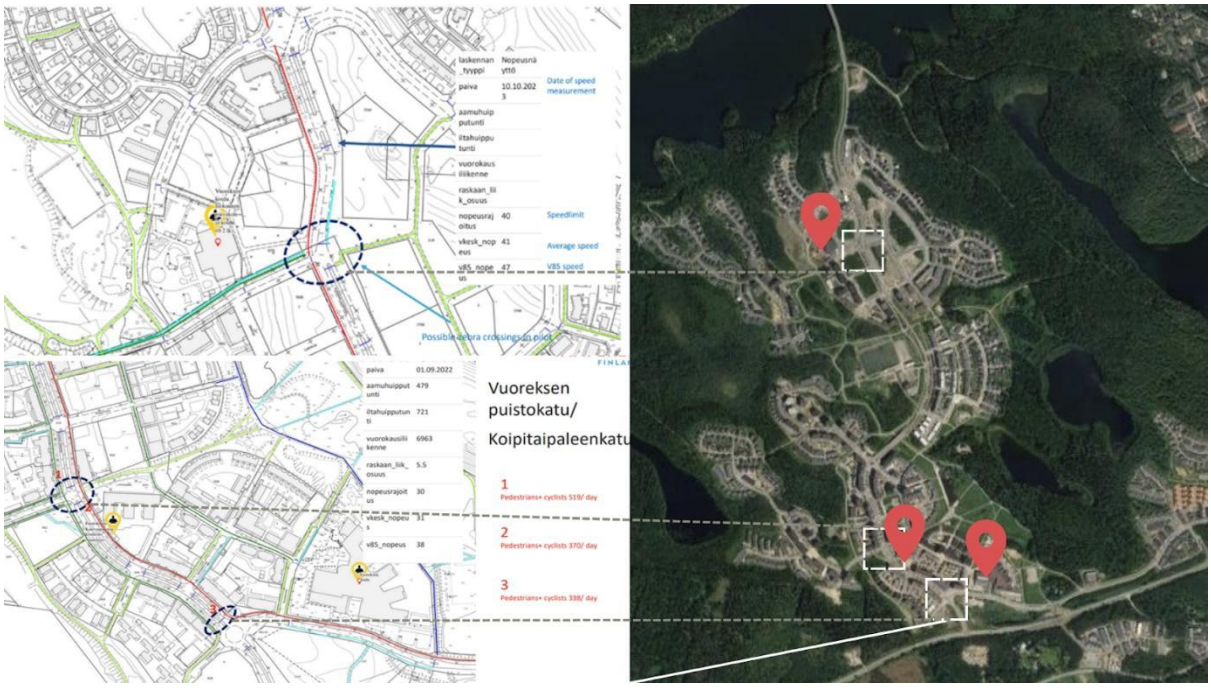

Figure 16: Location of the three intersections for implementing AI technology (Source: Municipality of Tampere)

9.1.2 Objectives and actions

This project aims to showcase the application of Artificial Intelligence (AI) in enhancing urban road safety and preventing accidents, particularly to avoid conflicts between vehicles and vulnerable road users. The approach involves leveraging parametric design principles and reallocating urban spaces strategically. For that, surveillance cameras for data collection and conflict identification will be installed.

Successful initial tests conducted in the city centre showcase the potential of this pilot expanding the scope to suburban and school areas. By implementing AI-driven solutions, Tampere identified the **opportunity** to further empower its residents to use sustainable modes of transportation.

Actions

By systematically implementing the following actions, Tampere aims to enhance road safety, leverage AI technology for better urban planning, and actively involve citizens in creating secure environments, particularly around schools.

1. Data collection and analysis:
    - Conduct a thorough assessment to identify hazardous spots within Tampere, focusing on areas prone to road safety issues.
    - Collect relevant data from city repositories, including traffic patterns, accident history, and other pertinent information.

- Analyse historical data to discern patterns, trends, and potential contributing factors to road safety challenges.

2. Installation of surveillance cameras and algorithm development:
    - Surveillance cameras will be installed at strategic locations. The image stream of all cameras is analysed in real time on one server. VTT develops algorithms that can be used to identify near-miss situations and safety hazards (harsh braking, harsh cornering). Tampere Internet of Things (IoT) platform will enhance data processing and decision-making.
3. Citizen engagement and road space reallocation:
    - Engage citizens in the process by seeking their input on road safety concerns. Campaigns and surveys with children, parents and residents are being planned.
    - Implement local road space reallocation initiatives using tactical urbanism approaches, supported by visualisation tools such as Virtual Reality (VR). These efforts aim to create safer environments, especially in proximity to schools.
4. Data monitoring and implementation of solutions:
    - Implement traffic calming speed reduction measures and other data-driven solutions to promote safe and sustainable mobility. This may involve adjusting traffic flow patterns or introducing targeted interventions based on the insights derived from the AI-driven analysis.
    - Continuously monitor the collected data to stay informed about traffic dynamics and safety performance.

9.1.3 Stakeholders

Table 11: Stakeholders involved in the Tampere pilot

Local partners involved	Horizontal partners requested
Local associations Schools and association of parents Inhabitants of chosen residential area Internal stakeholders (other departments of city) VTT	DEKRA: safety auditing CERTH: modelling and artificial intelligence - AI BSC: AI, urban data science, data visualisation CEREMA: safe system approach

9.1.4 Risks for the implementation of the pilot

The Tampere pilot implementation encounters budgetary and personnel challenges. Budget constraints, especially related to surveillance camera installation, may exceed projections, straining financial resources. Additionally, a shortage of traffic management expertise could impede the pilot's objectives, needing strategic planning and support to ensure successful execution.

10 Utrecht

Located in the centre of the Netherlands, Utrecht holds a prominent position as one of the country's oldest and most vibrant cities. In July 2021 the city adopted its SUMP defining five key strategies for transport climate mitigation. Firstly, integrated planning practices should contribute to avoiding unnecessary travel, especially by individual car transport. Distances to the main amenities of daily life should be kept short, so that remaining mobility needs can be fulfilled by walking/cycling/public transport. Secondly, effective mobility management should be implemented to stimulate inhabitants, visitors and (employees of) companies to travel less, travel in a more sustainable way and travel on less congested routes and times. The third measure focuses on mobility networks, ensuring their integrity, efficiency and comfortability of use with no missing links, such as walking and cycling infrastructure, and a comprehensive public transport system. The fourth measure envisions smart parking and parking pricing adjustments by redefining the number of available parking spots, e.g. for housing developments but also for companies, events, the inner city, among others. The last measure concentrates on smart traffic flow. This measure fosters integral traffic management which aims to improve the traffic flow (e.g., lower but constant speeds, less stopping).

Utrecht is one of the twinning cities within the REALLOCATE project, implementing a pilot initiative related to traffic safety around school areas.

10.1 Pilot - Safety-proofing schools in vulnerable neighbourhoods

10.1.1 Gaps and needs

The pilot interventions for the pilot in Utrecht will involve two school areas, firstly **De Kaleidoskoop in Kanaleneiland neighbourhood and Marcusschool in Overvecht neighbourhood**.

Both neighbourhoods, The Kanaleneiland and Overvecht were constructed in the 1960s, and designed with a predominant focus on accommodating cars. Characterised by wide streets, ample parking space, and limited accessible greenery, these areas face challenges and **gaps** in fostering a safe and sustainable urban environment. Within these neighbourhoods, the two school areas have been identified as particularly unsafe.

According to Utrecht's 'Mobiliteitsmonitor' (Mobility Monitor), city-wide traffic safety satisfaction averages 63%. However, Kanaleneiland and Overvecht report lower rates at 41% and 45% respectively. Kanaleneiland is also experiencing the highest frequency of annoyance from traffic fumes, affecting 22% of residents.

Inhabitants in both neighbourhoods often suffer from unsafe parking and experience dangerous traffic behaviour. Thus, the neighbourhoods of Kanaleneiland and Overvecht have levels of walking and cycling that are generally considered low, compared to other neighbourhoods in Utrecht.

Figure 17: School areas of De Kaleidoskoop in Kanaleneiland neighbourhood and Marcusschool in Overvecht neighbourhood (Source: Municipality of Utrecht, 2024)

Both schools have a comparable urban design, featuring some greenery like trees and grass, yet the surrounding areas are predominantly mineralized with asphalt and tiling, lacking shading. This setup exacerbates weather conditions, potentially leading to floods or the urban heat island effect. The existing greenery is limited and fails to promote local biodiversity. Both schools have sidewalks ranging from 2 to 3.5 metres wide. However, these are often used for parking. Sloped corners and tactile paving enhance accessibility, particularly at intersections, for individuals with visibility impairments.

Figure 18: Sidewalk parking at De Kaleidoskoop(Source: Municipality of Utrecht, 2024)

The **needs** identified include improved traffic management and pollution reduction measures to enhance safety and air quality, initiatives to increase green infrastructure and promote

biodiversity, and the implementation of pedestrian-friendly infrastructure to encourage active transportation and ensure safe mobility for residents.

10.1.2 Objectives and actions

The pilot objective is to enhance the perception of safety along school routes and surrounding areas; encourage active mobility; enhance air quality; and mitigate noise pollution.

The municipality has identified numerous goals across various domains where the SSML can seize **opportunities** for positive impact. These include:

- Improving traffic safety and perception in neighbourhoods.
- Boosting the adoption of sustainable modes such as walking and cycling.
- Addressing climate adaptation and enhancing neighbourhood resilience against extreme weather.
- Promoting local biodiversity.
- Establishing an accessible and inclusive public space.

Actions

This comprehensive action plan integrates data collection, technological solutions, community engagement, and experimentation to address safety concerns and enhance the overall mobility experience in the Kanaleneiland and Overvecht neighbourhoods, with a specific focus on school routes.

- Setting a baseline with input from street users collected from interviews with parents, walks with children and recording of children's bike rides.
- Engagement with schools to collect data on accidents, conflicts between pedestrians, cyclists and e-scooters.
- Participation and co-design with schools, parents and children (e.g. using VR technology or 3D digital boards for children) to solve bottlenecks on school routes and test user interactions.
- Cyclist and e-scooter behaviour prediction and simulation by customising 3D applications based on gaming technology.
- The use of 2D & 3D technology for visualisations and simulation, including a Digital Twin (DT), and electronic projections.
- Experimenting with infrastructural adaptations (e.g. reduced parking space, speed limit decrease to 30km/h, nature-based solutions.

- Large-scale interventions, at first simulated in DT and then envisioned in 3D.
- Behavioural measures (e.g. training, using crossing guards, 'velotheque' as flexible and affordable e-bike / cargo-bike sharing on a needs basis).

10.1.3 Stakeholders

Table 12: Stakeholders involved in the Utrecht pilot

Local partners involved	**Horizontal partners requested**
Gemeente Utrecht SportUtrecht: SportUtrecht is an association that aims at sports and movement or (active) mobility in Utrecht. They have social objectives aimed at allowing as many people to participate through sports as possible. Veilig Verkeer Nederland (VNN): The mission statement of VVN is 'everyone safely on the road'. The approach focuses on education, influencing behaviour and activation, based on the idea that everyone can contribute to increased road safety. The main goal for VVN in the SSML is thus increasing traffic and road safety, and making sure all relevant stakeholders get a chance to participate and contribute to this.	UCD: Nature based street interventions DEKRA: circularity, lifecycle, carbon footprint assessment CERTH: modelling and artificial intelligence BSC: AI, urban data science, data visualisation Arup: urban design for streets and intersections and street space reallocation design Arup: Street space reallocation design IFP: sidewalk scanner and pedestrian-oriented tools Nudgd: behaviour & choice design

Other stakeholders and partners	**De Kaleidoskoop**	**De Marcusschool**
Digital Innovation Advisor Cycling policy advisor Pedestrian policy advisor Policy advisor on mobility research Communications advisors District traffic advisor Overvecht District traffic advisor Kanaleneiland Project leader Amazonekwartier (a project in which public space will be redesigned, which will	School management Teacher(s) Parents' advisory board Pupils Housing corporation Bo-Ex (main office is located directly opposite De Kaleidoskoop) Other local businesses in the surroundings of the school DOCK, non-profit organisation that positions itself as a connector in the neighbourhood, that has social objectives. Operates	School management Teacher(s) Parents' advisory board Pupils DOCK, non-profit organisation that positions itself as a connector in the neighbourhood, that has social objectives. Operates one neighbourhood centre in the vicinity of the school: Buurtcentrum De Boog

include the area around the Marcusschool. Project leaders school zones/school routes Neighborhood teams for both Overvecht and Kanaleneiland	two neighbourhood centers in the vicinity of the school: Buurtcentrum Hart van Noord and BuurtThuis	

10.1.4 Risks for the implementation of the pilot

The Utrecht pilot faces challenges primarily in stakeholder engagement and mediation, especially concerning local businesses advocating for accessibility by car. Engaging businesses early is crucial to balance mobility changes with maintaining attractiveness. Involving schools, parents, and pupils also presents challenges, requiring early engagement, clear communication, and strategies aligned with their needs and goals.

11 Warsaw

Warsaw stands as the vibrant capital city of Poland and one of the largest cities in the country. With a strategic location on the Vistula River, Warsaw is a pivotal cultural and economic centre, counting a total of 1.7 million inhabitants and an additional 8.3 million tourists annually.

Warsaw's SUMP was adopted recently in November 2023. It has defined several goals, namely improving traffic safety for all users, reducing the impact of transport on the environment and climate, improving access to public transport, prioritising sustainable spatial development, implementing traffic calming initiatives and developing and enhancing active mobility within the city and region.

Within the REALLOCATE project, the pilot implemented in Warsaw concentrates on creating greener and safer roads around school areas, twinning with the city of Lyon.

11.1 Pilot - Warsaw's green & safe road to school

11.1.1 Gaps and needs

Existing **gaps** and challenges in Warsaw are stemming from its substantial motorization rate, exceeding 630 cars per 1000 inhabitants. The high motorization rate in Warsaw has led to

congestion issues, impeded traffic flow and inefficient transportation. The high traffic volume contributes to increased air and noise pollution and adversely impacts the overall quality of life for residents. Managing and alleviating congestion emerges as a critical need for urban planners and policymakers in Warsaw. Furthermore, the high traffic volumes impact the road safety perception, especially for Vulnerable Road Users (VRUs), with a particular emphasis on children.

The pilot's location is in the **area around primary school no 303 on Koncertowa 4 and a second school building on Koncertowa 8, as well as kindergarten no 52 on Koncertowa 8 and sport facilities on Koncertowa 4**. The area was selected on the basis of a spatial analysis based on traffic accident data, traffic volume measurements, an analysis of air quality in the school areas located in Warsaw, and reports from the local community.

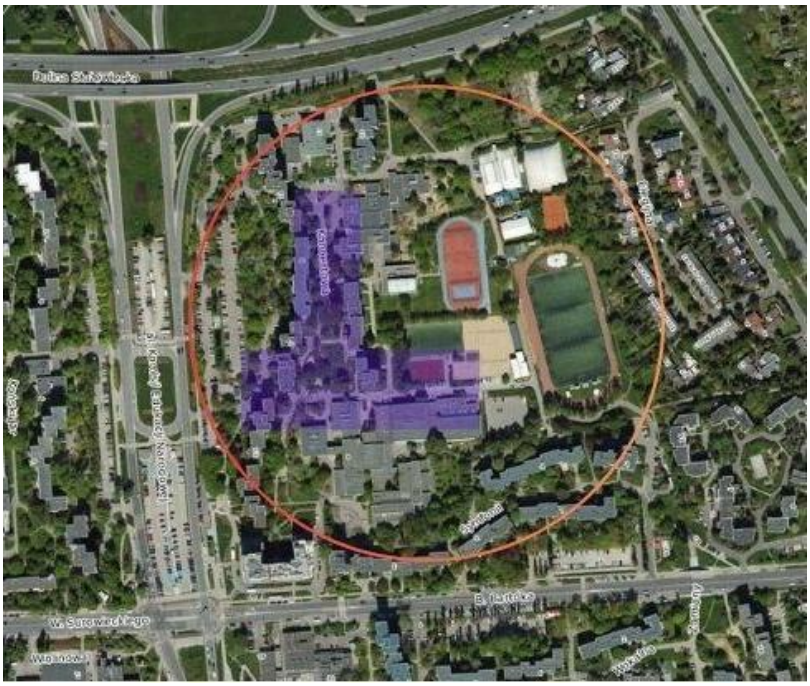

Figure 19: Location of pilot (Source: ZDM – Public Roads Authority in Warsaw, 2024)

In the area near primary school no. 303, there is a clear **need** to address the imbalance between pedestrian and vehicular traffic. A total of 350 pedestrians and 85 cars per hour at the morning peak, and 279 pedestrians and 98 vehicles during the afternoon peak (5-6 p.m.), highlight the existing **gaps** in infrastructure and traffic management. Despite the dominance of pedestrians in the area, the appearance and concentration of cars do not leave sufficient space for pedestrians. The high number of cars, both parked and driving through the area, poses challenges for community interactions, safety, and overall quality of life. Nearby sports facilities furthermore lead to heightened traffic during afternoon hours, and the morning influx of parents giving lifts to their children.

A **need** to adapt the public space according to the needs of pedestrians and other vulnerable road users has been identified to improve safety, attractiveness of urban spaces and sustainable modes of transport.

11.1.2 Objectives and actions

The pilot in Warsaw focuses on public space allocation around a school area. Reallocating public space in favour of pedestrians, aims at making the space safer, more attractive and lively for pedestrians and other VRUs including cyclists and children.The city of Warsaw envisions to calm traffic in the area, change current mobility habits, and seize the **opportunity** to develop a replicable model of space reallocation that might be applicable to other school surroundings.

Actions

Through this comprehensive action plan, the initiative aims not only to improve road safety but also to create a collaborative and sustainable environment that aligns with the needs and preferences of the local community, particularly focusing on the safety and well-being of children.

- Implement road space reallocation initiatives based on community input and safety recommendations.
- Introduce climate adaptation measures, such as LED public lighting, to enhance both actual and perceived safety in the area.
- Co-development of safety measures: facilitate a participatory process involving the community to co-develop safety measures.
- Citizens science with the school and local community (place audits, climate data, measurements and mock-ups) coupled with sensor-derived traffic data.
- Children's traffic behaviour survey and monitoring (through walking interviews with voluntary children & parents): Conduct a comprehensive survey on children's traffic behaviour. Utilise walking interviews with voluntary children and parents to monitor movement patterns and gather valuable insights.
- Monitor the impact of implemented measures on road safety, environmental quality, and community vitality.

11.1.3 Stakeholders

Table 13: Stakeholders involved in the Warsaw pilot

Local partners involved	Horizontal partners requested	Other stakeholders
Construction and Housing Cooperative STOKŁOSY Ursynów District Office of the Capital City of Warsaw Management of Local Primary School (no. 303, Koncertowa street)	Fraunhofer: sustainable urban mobility planning, SUMP Arup: street space reallocation design IFP: pedestrians and inclusive design DEKRA: safety auditing UCD: citizen science, co-creation, stakeholder engagement	Public Transport Authority in Warsaw Local Primary School (no. 303, Koncertowa street) Local kindergarten Representation of resident Local businesses

11.1.4 Risks for the implementation of the pilot

In the Warsaw pilot, potential risks include challenges in achieving social acceptance due to varying community opinions, the risk of stakeholder disappointment and indecision, conflicting priorities among stakeholders, and concerns about the accuracy of data collected from materials lacking proper certificates.

12 Zagreb

Zagreb is the capital of Croatia. In terms of population, it is also the largest city in the country. The city has an estimated population of 769,944 in 2021. The metropolitan area has a much larger population that exceeds 1 million people and is the largest in the country. The city maintains a robust public transport system with buses, trams, a funicular, and suburban trains efficiently catering to the needs of its diverse population. While private car ownership has seen an uptake, Zagreb is also committed to sustainability, offering more than 200 km of bicycle trails with ongoing efforts to expand the network.

In the budget of the City of Zagreb for 2024, funds are provided for the development of SUMP. The completion of SUMP is expected in 2025. Currently, Zagreb has a mobility masterplan in place, which was adopted in March 2016. The city's strategic mobility projects and programmes focus on the modernisation of public transport, prioritising public transport in intersection management, energy-efficiency and car use rationalisation measures, integration of public transport systems into a single tariff union (bus and tram network, regional train), better use of existing railway infrastructure by providing improved service and

building new stops, introduction of a light rail system and the completion of the bicycle network within the city and in the region. The city is planning to reduce CO2 emissions by 20% over a period of 10 years. To mitigate climate impacts by transport five key measures have been identified. The first one focuses on zero-emission vehicle fleets. The second one is the development of infrastructure for environmentally friendly vehicles and public transport. Third measure is about strengthening the role of rail transport in public urban and suburban transport. Expansion, extension, and reconstruction of the urban cycling network is one of the next measures in their plan. The final measure is the expansion of pedestrian zones.

Within the REALLOCATE project Zagreb will be implementing one pilot on road traffic safety, in close collaboration with the pilot of Budapest.

12.1 Pilot - Holistic solutions for the Central traffic corridor

12.1.1 Gaps and needs

The pilot initiative in Zagreb will focus on a dense urban area with high volumes of VRUs (pedestrians, cyclists, children, elderly, people with disabilities) as well as high traffic volumes. The **intersection is connecting Selska and Horvaćanska Street.**

Figure 20: Intersection between Selska and Horvaćanska Street (Source: University of Zagreb Faculty of Transport and Traffic Sciences, 2024)

The pilot will specifically address existing **gaps** at an intersection along a major traffic corridor that is identified as highly unsafe. Located in a very dense urban area, the intersection comprises many pedestrians and cyclists, as well as a high number of motorised traffic volumes leading to obscurity and confusion. The area of the intersection is particularly large, which affects the long duration of the cycle at the intersection. The intersections' complexity and size also leads to long waiting times particularly for pedestrians. To one of the intersections' approaches a direct pedestrian access is missing at all. Pedestrians furthermore illegally cross the road to shorten the path to the tram stop.

Road safety at the intersection **needs** to be improved, while prioritising and reallocating space in favour of sustainable modes of transport.

12.1.2 Objectives and actions

The overall objectives of the Zagreb pilot includes the development of safety measures addressing the challenges and needs at a specific intersection within the city centre. The primary goal is to increase traffic safety through the design of solutions and spaces that prioritise public transport and VRUs. With the proposed measures delays for public transport

and VRUs should be reduced, a shift towards bicycles and public transport promoted, green areas within urban landscapes expanded, and greenhouse gas emissions reduced.

Actions

High-priority topics for the Zagreb pilot include constructing bicycle paths, prioritising public transport, arranging bus and tram stops, enhancing pedestrian safety at crossings, implementing a 30 km/h zone, providing parking for cyclists, removing parking spaces, and planting greenery.

The high priority topics have been translated into the following key measures:

- Construction of a two-way bicycle path on the northern roadway of the eastern section of the intersection by eliminating parking spaces.
- Introduction of zone 30 on the eastern section , because it leads to the entrance to the neighbourhood Knežija and the zone of the future school.
- Introduction of priority for public transport vehicles in the intersection area.
- Modification of the signal plan and layout of traffic lanes, especially on the western section.
- When turning from Horvaćanska to Selska towards the Jadranski most, we have a tangential entrance with two lanes, and vehicles tend to drive at a high speed. It is suggested that pedestrian crossings be signalled for safety reasons.
- Construction of a two-way bicycle path on the northern approach of Selska cesta.
- Arrangement and construction of the bicycle path on the Horvaćanski zavoj.
- Construction of a bicycle path in front of Spar in the northern area of the western section.
- Planting of trees and greenery in the intersection area in consultation with Zrinjevac.
- Examination of giving priority to pedestrians and cyclists at the intersection in combination with priority for public transport.
- Arrangement of the bus stop on the southern section which does not have a covered waiting area or display.
- Arrangement and improvement of the service level of tram stops.
- Moving the tram stop on the southern track behind the intersection for the purpose of better functioning of priorities at the intersection.

- In front of Spar and the building of the local neighbourhood Knežija, installation of a parking lot for bicycles.
- Recessed curbs at pedestrian crossings.
- Introduction of measures to prevent illegal crossing of pedestrians towards tram stations (fences, etc.).

12.1.3 Stakeholders

Table 14: Stakeholders involved in the Zagreb pilot

Local partners involved	Horizontal partners requested	Other stakeholders
City Office for Reconstruction, Development, Physical Planning, Construction and Utility Services ZET – Zagreb Electric Tram Zrinjevac – subsidiary for arranging and managing of green areas in Zagreb Zagrebacke ceste – subsidiary for building and maintenance of Zagreb roads and management of signal plans at intersections City District Tresnjevka Jug FTTS: Faculty of Transport and Traffic Sciences of University of Zagreb Cyclist's Union	UCD: Nature-based street interventions CERTH: modelling and artificial intelligence – AI BSC: AI, urban data science, data visualisation Cerema: Traffic calming IFP: Sidewalk scanner and pedestrian-oriented tools ECF: Cycling policy IFP: pedestrians and inclusive design Ertico: Digital tools & new mobility services Nudgd: Behaviour & choice design UCD: citizen science,co-creation, stakeholder engagement	Representation of residents

12.1.4 Risks for the implementation of the pilot

Key risks include financial constraints hindering construction progress, lengthy tender procedures, and challenges in communication and coordination among stakeholders. Balancing diverse user needs in public space redesign, potential traffic congestion, and resident resistance to parking changes pose significant challenges. Additionally, navigating

communal installations and potential data gaps might further complicate the implementation process.

13 Bologna

Bologna, the capital and largest city of the Emilia-Romagna region in Northern Italy, covers 140.85 km2 with a population of 373,000. The city is home to a prestigious university and many businesses. Bologna stands out as the first major Italian city to implement a 30km/h speed limit covering a broad city area, going beyond the historic centre. This initiative reflects the city's commitment to creating safer, quieter, and healthier public spaces.

The Bologna SUMP was last adopted in November 2019 and finds itself in the implementation phase. The development of a new SUMP is not planned yet. The geographic scope of the SUMP includes the municipality and the surrounding communities. The primary goals are to guarantee a high level of territorial accessibility, to comply with climate protection, to comply with air quality standards, to reduce road accidents, to make the metropolitan area more attractive, with high levels of urban quality and liveability. All phases of the drafting of the SUMP of the Metropolitan City of Bologna were characterised by a relevant contribution of the participatory process. Stakeholders and citizens were involved in both the goals-setting and defining a scale of their priorities.

As part of the REALLOCATE project, Bologna will be implementing one pilot, twinning with the city of Barcelona.

13.1 Pilot - Neutral, safe and sustainable school district along the Knowledge Path

13.1.1 Gaps and needs

The pilot initiative in Bologna is centred around the establishment of a neutral, safe, and sustainable school district along the Knowledge Path (Via della Conoscenza). This path serves as dedicated bicycle and pedestrian infrastructure spanning across the northwest territory of the historic centre. It strategically connects cultural, educational, and civic hubs such as research facilities, new urban settlements, public spaces, green zones, and educational institutions. The pilot site and interventions have been changed from what was initially outlined in the Grant Agreement to better align with the city’s objectives and ongoing activities.

The **Grosso school district** and its surrounding areas are situated along that Knowledge Path and serve as the main location for the pilot initiative. The area can be accessed via Erbosa, via Gobetti, via Cristoforo da Bologna, via Manin in Quartiere Navile.

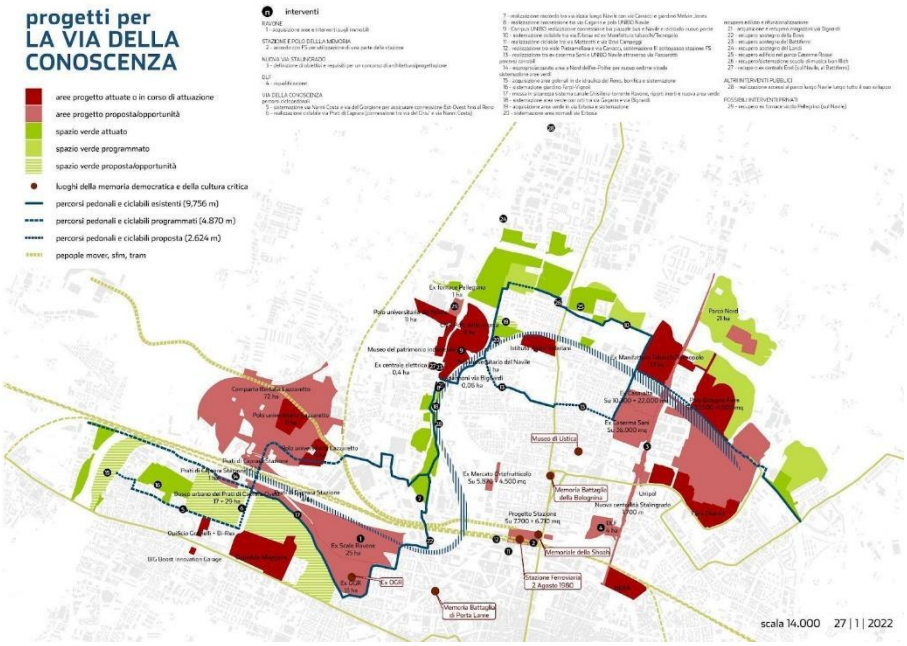

Figure 21: Via della Conoscenza project (Source: CoBo and FIU, 2024)

Several **gaps** and areas of improvement have been identified. The area of Grosso School is dominated by one-way streets, causing congestion and limiting convenient routes. The narrowness of sidewalks cause challenges related to pedestrian mobility, creating suboptimal conditions for public movement. The absence of designated and secure cycle paths further complicates these issues, particularly for parents commuting with their children by bike.

The school district is located in Grosso Park, which requires careful consideration in spatial planning to harmonise educational and recreational spaces with the wider urban context. Grosso Park, a significant green space and recreational area within the neighbourhood, faces constraints due to underdeveloped pathways, restricted accessibility and unclear navigation routes and signage. Existing fences within the park not only detracts from its visual aesthetics but also fragments the adjacent school area, introducing spatial challenges that impede efficient land use. An additional challenge arises from the unrecognisable and chaotic entrances to the school (from the car park on Via Manin and from Via Cristoforo da Bologna), contributing to conflicts between cars, pedestrians, and bicycles.

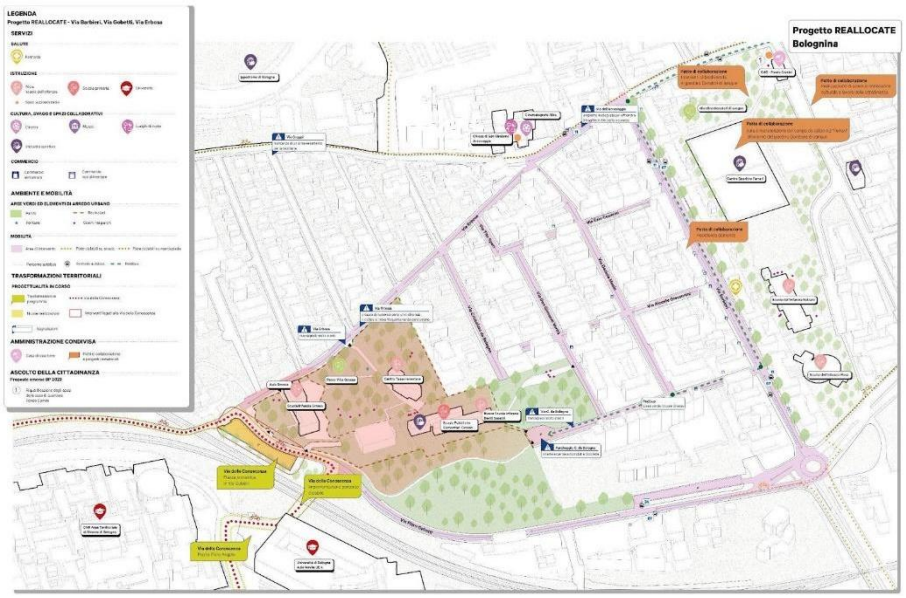

Figure 22: Location of pilot school (Source: CoBo and FIU, 2024)

To address these challenges, stakeholders emphasise the **need** for inclusive signage specifically dedicated to children, allowing their independent navigation and orientation within the area. Road crossings should be improved to enhance road safety and ensure their inclusive design. Furthermore, creating more safe cycle and pedestrian paths, strengthening the pedibus and cycle bus system, fostering greater involvement of schools in the discussion of school mobility, and improving functional interactions between different schools in the district are needs identified within the pilot conceptualisation process. All these improvements contribute to maximising children's autonomy in their home-school journey.

13.1.2 Objectives and actions

The primary goal of this intervention is to improve road safety for the protection of children and improving public space surrounding the school district. The pilot is part of the "Bologna Città 30" and the project "Bologna moves sustainably at school". The approach involves collaborative efforts with schools, students, and local stakeholders as **opportunities** to create new school squares that invite people to play, move, explore and get together. The aim of the intervention is to rethink the school district to encourage a sustainable, safe and autonomous daily home-school mobility. By engaging with the community and leveraging the unique features of the Knowledge Path, the initiative aims to foster a more inclusive, accessible, and environmentally conscious school district that promotes active and smart mobility.

Expected outcomes of the actions:

- Improved accessibility especially for children

- Enhanced sensitivity and education on sustainable mobility
- Raised awareness and care of the area by users
- Increased use of bike to go to school
- Raised autonomy in student travel
- Increased safety perception

Actions

All actions will focus on the three main assets of safety, autonomy and sustainability. Interventions aimed at raising awareness of active mobility, improve user flows within the area and especially entry and exit points, and implementing small-sale urban design interventions.

The interventions will include:

- Create a wayfinding system with enhanced routes within and around Grosso Park.
- Enhancement of crossings in the park through awareness-raising activities and experiential routes, reorganisation of internal accesses and the possible creation of new routes. This also implies the opening of some existing fences that separate the schools.
- Modification of the entry and exit flows of the Grosso Nursery School to enhance the new school square in Via Gobetti.
- Increased sustainable mobility education activities in the school district.
- Awareness-raising activities on nature, green spaces and sustainable mobility with children from schools and laboratories in the Aula Grosso.
- Small-scale interventions dedicated to cycle-pedestrian mobility and valorisation of the ecological capacity of the park along the home-to-school paths. These small-scale interventions can include bike racks and a covered bike station, seating infrastructure, free drinking water distribution, and equipment for emergency maintenance or a recharge station for e-bikes.
- Integration of the small interventions with the Knowledge Path.

13.1.3 Stakeholders

Table 15: Stakeholders involved in the Bologna pilot

Local partners involved	Horizontal partners requested	Other stakeholders
Navile neighbourhood multidisciplinary team Bicycle consultation Overcoming Handicaps Consult and Diversity Team Cinnica Children Consult Fondazione Pietro Giacomo Rusconi Villa Ghigi per l'Innovazione Urbana	University College Dublin (UCD): nature-based street intervention University College Dublin (UCD): citizen empowering planning Arup: street space reallocation design International Federation of Pedestrians (IFP): sidewalk scanner and pedestrian-oriented tools International Federation of Pedestrians (IFP): pedestrians and inclusive design Nudgd: behaviour & choice design	Users association (pedestrians; disables; cyclist; bike, cars and school associations) BP Proponents 2023 Fondo Comini Aula Grosso Grosso School District Parents Committee Centro Antartide Centro Bambini e Famiglie Tasso Inventore

13.1.4 Risks for the implementation of the pilot

The Bologna pilot project aims to align diverse user expectations along the Knowledge Path, which presents challenges in coordinating timely interventions that meet various community requirements. Proactively engaging local communities in stakeholder consultation is very important, yet complex due to differing levels of engagement and expectations, alongside budget constraints that may impede the ability to address specific local needs promptly.

14 Conclusions

The REALLOCATE cities encounter common challenges related to transportation and urban planning. These challenges include:

- Traffic safety concerns: Many cities, such as Gothenburg and Lyon, face issues with inadequate lighting, lack of dedicated infrastructure for vulnerable road users, and unsafe intersections, leading to high dependence on cars and compromised safety for pedestrians and cyclists.
- Environmental impact: High motorization rates contribute to increased CO2 emissions and pollution, as seen in Heidelberg and Warsaw, necessitating a shift towards sustainable transportation modes to mitigate climate impacts.
- Public space allocation: Challenges in managing limited public space and accommodating various modes of transport, as observed in Zagreb and Budapest, require strategic planning to ensure safety and accessibility for all road users.
- Accessibility and service availability: In peri-urban areas or for specific user groups, such as the elderly or individuals with disabilities, access to reliable transportation services can be limited, as seen for example in Barcelona, Gothenburg, and Heidelberg.
- Traffic management: Several cities, including Gothenburg, Lyon, Zagreb, face challenges in effectively managing urban traffic in terms of fleet constitution and traffic volumes at corridor intersections and urban mobility hubs, necessitating comprehensive strategies to ensure safe and efficient transportation networks.

Addressing these challenges requires comprehensive approaches that integrate data-driven analysis, community engagement, and innovative solutions tailored to each city's unique context.

The REALLOCATE project encompasses a diverse array of pilot initiatives across the 10 Mission cities, each tailored to address their specific challenges and gaps related to urban mobility and road safety. Table 16 to Table 20 summarise the identified needs and the corresponding list of actions aimed at addressing them for each of the pilots.

Table 16: Safe & Sustainable Schools

City	Pilot name	Needs	Actions
Lyon	Public space redesigning and enhancing road safety in the schools surroundings	Prioritisation of pedestrians, especially children Traffic calming	Traffic Calming Solutions; Parking Reallocations; Urban Greening Initiatives
Utrecht	Safety-proofing schools in vulnerable neighbourhoods	Pedestrian-friendly and green infrastructure and to enhance traffic safety, biodiversity and air quality	Engagement with schools; Participation and co-design with schools; Cyclist and e-scooter behaviour prediction and simulation (2D&3D technology); Infrastructural adaptations: Behavioural measures
Warsaw	Warsaw's green & safe road to school	Improve road safety, and attractiveness of public spaces at a school area with a special focus on pedestrians and VRUs	Road space reallocation initiatives; Climate adaptation measures; Safety measures; Children's traffic behaviour survey and monitoring; Monitor the impact of implemented measures
Bologna	Neutral, safe, and sustainable school district along the Knowledge Path	Inclusive measures to improve accessibility, autonomy and road safety for children in a school area	Enhancement of crossings; Modification of the entry and exit flows; Increased sustainable mobility education activities; Awareness-raising activities; Small-scale interventions; Small mobility interventions

Table 17: Peri-urban traffic reorganisation

City	Pilot name	Needs	Actions
Gothenburg	Safe System Approach for children's active travel in peri-urban areas	Improvement of access and safety of infrastructures and public space in peri-urban areas especially for children Sustainable and secure mobility hubs in peri-urban areas	Creating a 'Virtual mobility hub'; Apply the Safe System Approach Rework the 15 minute city/village concept for (semi-)rural, periurban spaces
Heidelberg	Regional commuter plan for climate neutrality	Joint, regional planning process of mobility hubs and commuter plans Improve accessibility of sustainable mobility options for commuters.	Initiate a planning process with adjoining communities; Test dynamic space reallocation for buses

Budapest	Peri-urban traffic safety	Redistribution of space to improve safety and efficiency at a peri-urban intersection Awareness raising measures	Connect the missing cycling infrastructure; AI based traffic modelling and measurements

Table 18: Central areas traffic reorganisation

City	Pilot name	Needs	Actions
Gothenburg	Seamless travel, citizen engagement, and nudging tools in a complex mobility hub	Ensure safety and accessibility during temporary arrangements at intersections and mobility hubs	Focus groups with citizens; Trial space reallocation for cyclists and e-scooters
Zagreb	Central traffic corridor holistic solutions	Safety measures and solutions that prioritise public transport and VRUs	Construction of bicycle paths; Prioritise public transport; Arrangement of bus and tram stops; Pedestrian protection; Zone 30; Parking lots for cyclists Abolition of parking spaces on the northern carriageway of the eastern approach; Planting greenery

Table 19: Tactical Space Reallocation

City	Pilot name	Needs	Actions
Heidelberg	Contextual & tactical public space reallocation	Enhance safety measures for pedestrians, particularly children and older people, as well as for cyclists Tailored and context specific safety measures	Co-creating solutions for low-traffic areas; Assessment of traffic flows and public acceptance
Budapest	Introducing “Healthy Superblocks”	Create a safe environment that prioritise active modes and public transport	Facilitating pedestrian traffic; Public space adaptation; Traffic calming measures; Community events; Needs-based analysis methodology for the design of multifunctional public spaces
Barcelona	Pedestrians, cyclists and MMV in shared spaces: A holistic design approach	Analysis and mitigation of conflicts between active mobility road users in shared spaces	Speed limit analysis; Bicycle accessibility; Cyclist-pedestrian conflict evaluation

Table 20: Hi-tech for safety & accessibility

City	Pilot name	Needs	Actions
Lyon	Road safety tech & non-pollution parking policy	Mobility management and parking policy to control motorised traffic volumes and discourage the use of heavy and polluting vehicles	Diagnosis of the current state; Identification of potential traffic safety hazards; Simulate user interactions; Modify parking policies
Barcelona	Increased and integrated public transport accessibility system for people with disabilities	Improve accessibility to mobility services and public transport for people with disabilities	DRT service implementation; Automation of existing services; incentive consideration; Improve current system
Tampere	AI for increased road safety, space reallocation, and parametric design	Enhance urban road safety through the application of Artificial Intelligence (AI)	Data collection and analysis; Installation of surveillance cameras and algorithm development; Citizen engagement and road space reallocation; Monitoring and implementation

From the descriptions of the pilot initiatives and their corresponding actions, it is evident that they will play a significant role, both directly and indirectly, in advancing the Sustainable Urban Mobility Plan (SUMP) objectives established for 2030. Based on the analysis of gaps, needs and objectives of each pilot, several opportunities for the pilot implementation have been identified. The collaboration with horizontal partners will allow cities to benefit from European-level expertise. This support will be instrumental in navigating complex challenges and leveraging specialised knowledge from diverse sources. Additionally, the exchange of experiences and best practices among participating cities will facilitate a rich environment for learning and innovation. Looking ahead, this collaborative effort not only aligns with the mission of achieving the ambitious objectives set for 2030 and beyond but also fosters a culture of experimental learning and continuous improvement. The provision of innovative tools and resources, such as sidewalk scanners, AI, and data visualisation techniques,will empower cities to tackle urban issues with cutting-edge solutions. Moreover, the engagement with local stakeholders has and will provide invaluable insights, enabling cities to address gaps and needs more effectively.

The descriptions outlined in this deliverable serve as preliminary versions, with more comprehensive details intended to be included in Deliverable 2.2, offering a deeper insight into pilot activities and their respective timelines and stakeholder responsibilities.

15 Acknowledgements

We would like to extend our gratitude to the following individuals and organisations for their invaluable support in drafting this report:

- The city representatives for generously providing us with essential documents, pictures, and information.
- Our horizontal partners for their valuable inputs and contributions during meetings.
- Fraunhofer for conducting the Survey on Sustainable Urban Mobility Plans (SUMPs), which enriched our research.
- Eurocities and CERTH for their ongoing feedback and guidance throughout the process.
- UCD for their feedback and support in defining the role of horizontal partners.

16 Appendices

Appendix 1: Guidelines for stakeholders

Stakeholder categories

1. **Government and Regulatory Authorities**
    - Departments within the municipality
    - Regulatory bodies
    - Policymakers
2. **Community and Residents**
    - Community and neighbourhood associations
    - Parents' associations
    - Local Schools and Educational Institutions
    - Voluntary sector organisations & charities
3. **Businesses and Retailers**
    - Local business owners
    - Chambers of commerce
    - Social enterprises
4. **Research institutions & Experts**
    - Urban Planners
    - Safety experts
    - SUMP experts
    - Behavioural analysis experts

Appendix 2: Guidelines for co-creation

Co-creation process objectives

- Get a better understanding of the context of the city, especially with a focus on the pilots' area.
- Come up with a list of solutions/activities for the aforementioned areas.
- Agree on the activities to be prioritised.
- Finally come up with a preliminary action plan

Examples of participants

- Transportation department of the city
- Urban planners of the city
- City representatives
- Local partners involved in the pilot implementation.
- Safety regulators

Deadlines

The Co-creation activities start before the workshops. We advise to have these activities within November and December 2023

Co-Creation Process structure:

Introduction:

- Welcome participants and acknowledge the roles and expertise of each of them
- Provide an overview of the city's pilot/lab project.
- Share key challenges and opportunities.
- Explain the goals of the co-creation process as well as how participants will collaborate and provide input.

Co-creation tools can be divided by specific purpose: 1)Research: qualitative research such as surveys, cover different ways to learn about citizens and stakeholders' needs, perceptions, habits, preferences, etc; 2)Team-building: These tools are deployed to bring the groups together; 3)Ideation & development: develop ideas and scenarios that fit into solving or addressing issues uncovered through the research tools; 4)Assessment: to gain a perspective on ideas, creating an understanding about their feasibility, impact; 5) Validation: used towards grasping how the ideas and solutions

Part 1 - Understanding the Context:

- Discuss the current urban mobility challenges in the city.
- Share data and insights.
- Encourage participants to express their perspectives.

Part 2 - Ideation and Solutions:

- Brainstorm potential solutions and interventions.
- Facilitate discussions on best practices from other cities.(Check out Amsterdam example and this document for more examples)
- Encourage innovative ideas.

Part 3 - Prioritization and Planning:

- Review the proposed solutions (you can find here an example of the toolkit to be used)
- Prioritise interventions based on feasibility and impact.
- Develop a preliminary action plan.(Please fill in the templates provided in the city folders with the details on the activities that will be carried out)

Part 4 - Feedback and Finalization:

- Share the draft plan with participants.
- Gather feedback and make necessary revisions.
- Discuss the next steps and timeline.

Closing Remarks:

- Thank participants for their valuable contributions.
- Emphasise the importance of ongoing collaboration.
- Provide inputs regarding the results of the process.

Appendix 3: Guidelines for workshop

Workshop objectives

- This document aims to provide you with guidelines on the workshop organisation, but every city should tailor it to their specific needs and contexts.
- Identify the main issues encountered by city representatives as well as other stakeholders/actors involved.

- Collaboratively propose solutions for the pilot areas
- Come up with a more detailed action plan and a list of activities for the implementation of the pilots

Workshop preparation:

1. Identify key stakeholders (see word document “1. Stakeholder identification template”)
2. Define venue and time (consider that D2.1 is due in February 2024, so the input is needed by January 2024)
3. Reach out and send invitations to key stakeholders
4. Prepare materials.
5. Launch workshop

Workshop structure guidelines

Part 0. Introduction:

- Welcome participants to the specific workshop.
- Provide a brief overview of the workshop's purpose and goals.

Agenda Overview:

Outline the agenda for the workshop, including discussion topics, as follow:

Part 1: Identifying Main Issues

- Current Mobility Challenges: Explore the main mobility challenges and issues that residents and stakeholders are facing in the pilot area.
- Traffic and Safety Concerns: Discuss specific traffic-related problems, including safety issues, congestion, and bottlenecks.
- Environmental Concerns: Address environmental issues, such as air pollution and carbon emissions, that need to be tackled in the pilot area.
- Accessibility and Inclusivity: Examine the accessibility and inclusivity challenges, particularly for vulnerable road users and people with disabilities.
- Infrastructure and Urban Design: Discuss the state of the current infrastructure and urban design, and how it impacts the pilot area.

Part 2: Stakeholder Needs

- Stakeholder Roles and Interests: Define the roles and interests of various stakeholders in the pilot area, including residents, local businesses, authorities, and advocacy groups. For each stakeholder identify arguments supporting and/or opposing the pilots and project.
- User-Centered Approach: Explore the specific needs and preferences of residents and users, particularly in terms of transportation choices.

This could be done by identifying the different types of users and residents in your city, by defining their everyday needs in terms of mobility and public space use. (You can create a character for each type of user, e.g. a student, an elderly, etc).

- Accessibility and Inclusivity: Identify the needs of people with disabilities and other underserved communities (the end users and their gender, age, social background, ethnicity) in terms of mobility options.
  The use of surveys could be very useful to identify the needs of the underserved communities. Please, if you have it, provide that information, in relation to the accessibility and inclusivity of the different communities.
- Economic and Commercial Needs: Discuss the needs of local businesses and the commercial sector in relation to mobility and accessibility.
- Education and Awareness: Address the need for education and awareness campaigns to inform and engage stakeholders about the pilot project.

Part 3: Proposing Solutions

- Brainstorming Solutions: Encourage stakeholders to brainstorm potential solutions and interventions to address the identified issues.
- Innovative Technologies: Discuss the role of innovative technologies, such as smart traffic management systems and data analytics, in improving mobility in the pilot area.
- Behavioural Change Strategies: Explore strategies for encouraging behavioural change among residents and commuters to promote sustainable transportation choices.
- Infrastructure Enhancements: Discuss potential infrastructure improvements, including road redesign, public transport expansion, and the creation of safe pedestrian and cycling pathways.

- Environmental Initiatives: Consider environmental initiatives, such as the introduction of electric vehicles, green spaces, and air quality monitoring, to address environmental concerns.

Part 4: Group Activity (optional)

- Facilitate a group activity, such as brainstorming or prioritization.(activities to provide some examples for use case scenarios, future scenarios if time allows it. This activity is optional.)
- Encourage collaboration and creativity.

Part 5: Action Planning

- Summarise the key takeaways from the workshop.
- Discuss the next steps and responsibilities.
- Set deadlines and milestones.

Part 6: Closing Remarks

- Thank participants for their contributions.
- Remind stakeholders of the importance of their involvement.