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D.2.2.2

Collaborative and innovative Freight Quality Partnerships (FQPs) in all FUAs

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AUTHORING, REVISION & QA INFORMATION

Deliverable Contributors		
Type of author	**Name and surname**	**Organisation (short name as in AF)**
Main author	Alice Benini and Fahad Anwar	ITL
Contributor	Mate Lenart	BKK
Contributor	Philip Michalk	THWi
Contributor	Luca Simone and Riccardo Maratini	OE
Contributor	Katja Hanžič	UM

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GRETA Project

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1. The GRETA project

GRETA project aims to decarbonize the last mile delivery in Functional Urban Areas (FUAs) in Central Europe (CE) and create liveable and accessible cities for all by 2030. The project seeks to implement joint sustainable solutions in CE FUAs using zero-emission vehicles and cargo bikes and reorganize urban spaces with curb management. The pilot actions in the cities of Maribor, Reggio Emilia, Verona, Poznan, and Budapest (with Berlin FUA as an observer) have the potential to quickly deploy as pop-up measures in combination with existing measures. GRETA provides capacity-building activities, strategies, action plans, and tools for public authorities, enterprises, and relevant organizations to ensure financial, environmental, and social sustainability beyond the project's lifetime.

Last-mile delivery generates negative impacts, including emissions, noise, and congestion. Due to the Covid-19 crisis, global parcel distribution volume almost doubled, further adding inefficiencies in the peripheral areas. GRETA's FUAs recognize the problems that generate pollution, nuisance, noise, and congestion and jointed recognized three main problems: the lack of use of green zero-emission last-mile vehicles, conflicts between freight and public vehicles, and the lack of knowledge and strategies for a flexible and shared use of the curb and public space. Despite having SUMPs/SULPs, FUAs struggle to activate fitting measures while keeping their centres attractive and alive for residents and tourists.

GRETA addresses the common challenges of all CE FUAs by creating the conditions to promote ZE logistics through the use of micro-hubs, cargo bikes, light e-vehicles, and curb management strategies. Additionally, the project also focuses on paving the way to innovative concepts such as regional collaborative logistics, physical internet, and freight curb management. GRETA facilitates the dialogue towards the acceptance of a business and governance as a service model, where cities must equip themselves with a network of innovative services to guarantee seamless experiences for their users and a mobility plan considering different functions and priorities of the services.

GRETA's objective is to support the urban mobility transition in CE FUAs by jointly developing solutions and strategies with a huge potential for decarbonization of the last mile in line with the Green Deal and the Urban Mobility Package, abating congestion, pollution, and nuisance. The project's success relies on capitalizing on previous experiences, exploiting synergies with ongoing initiatives, testing innovative pilots, improving competences and knowledge among PPs and stakeholders.

2. Executive summary

Deliverable D 2.2.2 documents the establishment, implementation and assessment of Collaborative **Freight Quality Partnerships (FQPs)** in five pilot Functional Urban Areas (FUAs): Reggio Emilia, Poznań, Maribor, Verona and Budapest. The deliverable presents the governance processes developed within the GRETA project to support sustainable urban freight transport solutions through structured stakeholder cooperation.

The FQP model was applied in each pilot city to facilitate dialogue between public authorities, logistics operators, technical providers, business representatives and other relevant stakeholders. While the thematic focus differed across cities ranging from microhub implementation and Micro Urban Consolidation Centres (MUCCs) to digital curbside management and strategic regulatory frameworks, the common objective was to co-implement, test and evaluate innovative last-mile logistics solutions in a collaborative and data-driven manner.

The deliverable provides detailed information on the FQP planning process, stakeholder identification and prioritisation, engagement activities, data collection and monitoring approaches, findings, and corrective actions undertaken during pilot implementation. It also presents pilot-specific objectives, assessment results and stakeholder feedback.

The deliverable also offers a comparative analysis of the overall FQP experience across all pilot cities, highlighting key findings, added value, lessons learned and recommendations for future replication and long-term institutionalisation of FQPs. The results confirm that structured Freight Quality Partnerships are an effective governance mechanism to support sustainable, efficient and scalable urban freight solutions within Functional Urban Areas.

3. Introduction

Urban freight transport plays a crucial role in ensuring the economic vitality and accessibility of cities, while at the same time contributing significantly to congestion, emissions and pressure on public space. The increasing complexity of last-mile logistics, combined with environmental and regulatory challenges, requires coordinated governance approaches that balance public policy objectives with operational feasibility.

The deliverable is structured in two main parts. The first part presents the pilot-specific FQP implementation. For each city, the document describes:

- the FQP planning process and organisational setup;
- the stakeholder identification and prioritisation process;
- the engagement activities carried out during preparation and implementation of the pilot;
- the methods applied for data collection, control and archiving;
- the main findings emerging from the process;
- recommendations for further development and replication;
- the strategic and operational objectives defined for the FQP;
- the stakeholder structure and level of engagement;
- the overall assessment of the FQP process, including corrective actions and feedback from public and private actors.

This harmonised structure ensures comparability across pilot cities while allowing for the specific characteristics and thematic focus of each FUA to be presented.

The second part of the deliverable provides a cross-pilot synthesis of the overall FQP experience. It includes a comparative analysis of implementation approaches, stakeholder engagement models, and data management practices. It also identifies common findings, added value and lessons learned, and formulates recommendations for future application and institutionalisation of Freight Quality Partnerships in urban freight governance.

By combining detailed pilot documentation with an overarching analytical synthesis, this deliverable contributes to knowledge transfer, replication potential and long-term sustainability of the FQP model within and beyond the GRETA project framework.

4. Objectives

The overall objective of Deliverable D 2.2.2 is to document and assess the establishment and functioning of Freight Quality Partnerships in the five GRETA pilot Functional Urban Areas, demonstrating how collaborative governance can support the development and implementation of innovative urban freight solutions.

More specifically, the deliverable aims to:

- Present the FQP planning processes and organisational setups established in each pilot city;
- Describe the stakeholder identification, prioritisation and engagement approaches applied;
- Document the methods used for data collection, monitoring, evaluation and archiving;
- Analyse the findings and corrective actions resulting from pilot implementation;
- Assess the effectiveness, efficiency and added value of the FQP model in supporting sustainable urban freight measures;
- Identify cross-pilot lessons learned and formulate recommendations for replication and long-term institutionalisation of FQPs.

Through these objectives, the deliverable contributes to the GRETA project's broader goal of promoting innovative, collaborative and evidence-based approaches to urban freight management in Central European Functional Urban Areas.

5. GRETA FQP Comprehensive report

5.1. Reggio Emilia FQP

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FQP EXPERIENCE
The Freight Quality Partnership (FQP) was implemented as an iterative and adaptive process, closely linked to both the Action Plan and the Pilot Action. The planning process combined an initial strategic framework with operational testing, allowing objectives and activities to be progressively refined based on stakeholder input and pilot results. The FQP supported the identification of freight-related challenges, the co-design of solutions, and continuous monitoring during implementation. Stakeholders were identified through the mapping of the urban freight system, focusing on actors directly involved or affected by last-mile logistics. Priority was given to logistics operators (traditional and cycle logistics), public authorities, business associations, local retailers, and residents. Stakeholders were classified according to their role and level of influence on the pilot action. Engagement followed a progressive approach, starting with information-sharing and consultation, and evolving toward co-design and active participation during the Pilot Action. Stakeholders were involved through workshops, bilateral meetings, technical discussions, and operational testing. Logistics operators played a central role during the pilot phase, contributing operational feedback on feasibility, constraints, and performance of the microhub-based delivery model. Data collection combined qualitative and quantitative inputs, including feedback from meetings, structured discussions with operators, and operational data generated during the pilot. Data collection tools were designed to remain light and non-burdensome for private operators. The FQP confirmed that zero-emission last-mile logistics solutions are technically feasible but require strong alignment with operators' operational needs. Stakeholder engagement proved essential to identify critical barriers (costs, organisation, regulatory incentives) and to build trust. The pilot demonstrated that microhubs can be effective if supported by adequate regulation, flexibility in design, and continuous dialogue with users. Future FQP processes should maintain a long-term, structured engagement framework, strengthen incentives and regulatory coherence, and ensure early involvement of logistics operators in design phases. Replication should be supported by evidence from pilots, simplified engagement tools, and clear communication of benefits for both public and private stakeholders.

OBJECTIVES		
Description of objective	**Reached (YES/NO)**	**Comments**

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FQP EXPERIENCE		
Active involvement of operators for the design and implementation of the microhubs.	Yes	

STAKEHOLDERS				
Type	**Identified**	**Targeted**	**Engaged**	**Comments**
Public institutions and authorities	yes	yes	yes	
Local administration	yes	yes	yes	
Neighbouring municipalities	yes	yes	yes	
Regional administration	yes	yes	yes	
National and state administration	No	No	No	
Association and intermediaries	Yes	yes	no	
Chamber of Commerce	no	No	no	
Business association	yes	yes	yes	
Private sector (big logistics companies or SMEs)	yes	yes	yes	
Other members and representatives	No	No	no	
Educational institutions and research institutes	yes	yes	yes	
Local media and the general public	yes	yes	yes	

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FQP EXPERIENCE				
Other				

ENGAGEMENT ACTIVITIES			
Type of activity	**Number of stakeholders engaged**	**Feedback from stakeholders**	**Comments**
Stakeholder mapping and initial consultations	10	Interest in sustainable logistics but need for clearer operational details	Useful to identify key actors and expectations
Participatory workshops and meetings	25-30	Positive attitude toward co-design; concerns about costs	Enabled shared understanding of problems
Bilateral meetings with logistics operators	5	Very concrete operational feedback; emphasis on feasibility and flexibility	Crucial for pilot design and adjustment
Pilot Action implementation and monitoring	5	Generally positive on technical feasibility.	Provided real-life evidence and lessons learned
Evaluation and monitoring	2	Appreciation for the governance model and micro hub layout	Reinforced trust and cooperation

FQP PROCESS ASSESMENT	
Corrective actions identified	**Corrective actions taken**

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FQP EXPERIENCE	
Due to confidentiality and competition rules, transport operators cannot share internal information with other competing operators.	Shift from generic meetings to targeted bilateral discussions with operators.
Need to adapt technical solutions to diverse operational models.	Increased flexibility in the design and use of the microhub; Continuous adjustment of pilot activities based on real-time feedback.
Need to simplify data collection and reporting requirements.	Reduced and simplified data requests.
Public sector	**Private sector**
Feedback from the public sector was mainly collected during project dissemination activities, including events and exchanges with other municipalities and public authorities. Public administrations showed strong interest in the governance model tested through the FQP, particularly in the role of the Municipality as coordinator and in the active involvement of logistics operators in the design and implementation of solutions. The participatory approach was perceived as transferable and relevant for other urban contexts dealing with last-mile logistics challenges.	Feedback from the private sector was primarily gathered through FQP meetings and bilateral discussions with logistics operators during the Pilot Action. Private stakeholders appreciated the microhub layout, especially the layout that allows operational independence for each operator. Moreover, the proximity of the microhub to the historic city centre was considered a key factor for operational efficiency and feasibility of last-mile zero-emission deliveries.
OTHER FEEDBACK	

5.2. Poznan FQP

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FQP EXPERIENCE

- FQP planning process;

The main objective of creating the FQP was to implement the pilot program based on project reserves, but also onthe needs of the local community, including residents and entrepreneurs. The plan was to identify potential participants in the pilot project and disseminate the project's results, which primarily concerned interested stakeholders, with the goal of reaching the most heterogenous group possible.

- Stakeholder identification process;

Stakeholders were identified according to influence, importance, and desired engagement level (on every step of FQP development), resulting in a list including the GLS (Operator), ZDM (Zarząd Dróg Miejskich) , WCG, the City Architect (microhub supplier), the biggest Polish cities, research institutions, NGOs, media, and of course Poznan municipality (various departments) and L-PIT (project partners). For each stakeholder, roles, contact channels, and engagement plans were defined to focus efforts on actors with strong influence over urban freight decisions.

- Engagement of stakeholders;

The involvement of stakeholders depended on their needs and plans. The operator's goal was to improve the sustainability of last-mile deliveries without compromising delivery efficiency. Stakeholders from the city represented the interests of residents and businesses, while ensuring that the resulting infrastructure complied with local and national regulations. The hub operator reported on the work based on the financial results. Consensus between the parties was the task of the pilot project and a condition for the involvement of all interested stakeholders.

- Collection, control and archiving of data;

Data collection was structured as a six-month phase after pilot deployment, covering operational data (parcel volumes, delivery routes, sorting and transfer processes), environmental effects (emissions, truck traffic), and qualitative feedback from participants. The data was verified, archived and analysed for comparison against the baseline, enabling evaluation of efficiency and transferability of the solution. During the process, certain technical parameters required clarification (e.g., unnecessary hub heating, recommended winter heating for charging points), and these insights were recorded in evaluation materials.

- Findings;

Developing an FQP for an idea that lacks a clear objective is challenging because the approach relies heavily on producing practical outcomes. Building partnerships around a single, well-defined goal that aligns with the interests of most stakeholders makes coordination much easier. However, even then, sustaining the FQP after that goal has been achieved requires identifying a new, concrete objective to keep the process going.

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FQP EXPERIENCE
- Recommendations; FQP is an effective solution, mainly in the area of gathering and exchanging experiences and expectations. However, its creation should be linked to clearly defined goals that give direction to the work. It is important to define these goals at the beginning or after achieving the previous ones. Consistency of goals and at least a consensus in defining them are essential for the survival of the partnership.

OBJECTIVES

Description of objective	Reached (YES/NO)	Comments
Mobile app for cargo bikes	No	Utilization of Operator app
Microhub design	Yes	Microhub designed and implemented
Meating the Clean Transport Zone requirement by 2035 (reducing traffic and CO2 emissions)	Yes	Emissions and truck traffic reduced by (about) 30% (in the scope of operator deliveries and hub operation area)
Verify if the solutions will meet the requirements	Yes	Minor design modifications - unnecessary hub heating, recommended heating of battery charging points in winter
Verify if the solution is efficient and effective	Yes / No	The solution is effective in terms of process efficiency, but its financial efficiency is negative. However, this is due to the scale of implementation and the way deliveries are

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FQP EXPERIENCE		
		handled by the Operator.
Ensure the quality of the supply in the city centre	Yes	Recipients were unaware of the change in delivery method, which means that the level of service remained unchanged.

STAKEHOLDERS				
Type	**Identified**	**Targeted**	**Engaged**	**Comments**
Public institutions and authorities	Yes	Yes	Yes	
Local administration	Yes	Yes	Yes	
Neighbouring municipalities	Yes	Yes	Yes	
Regional administration	No	No	No	Hub has local influence only
National and state administration	No	No	No	Hub has local influence only
Association and intermediaries	No	Yes	Yes	NGOs
Chamber of Commerce	No	No	No	
Business association	No	No	No	
Private sector (big logistics companies or SMEs)	Yes	Yes	Yes	

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FQP EXPERIENCE				
Other members and representatives	No	No	No	
Educational institutions and research institutes	No	No	Yes	Only interested parties took part in final presentation
Local media and the general public	No	No	Yes	Only interested parties took part in briefing
Other	No	No	No	

ENGAGEMENT ACTIVITIES			
Type of activity	**Number of stakeholders engaged**	**Feedback from stakeholders**	**Comments**
Workshops	15	The consultation process and organization of pilot implementation, the feedback was continuously utilized during FQP existence	Engagement, preparation, process identification and concept, requirement and limitations, implementation, pilot control workshops
Site visits	30	Very positive, especially from Biker Association and Cities, planning similar activities	Visits of NGOs and interested cities representative
Summary visit	10	Very positive, especially from the Cities, planning similar activities	Visit of NGOs and interested cities representative
Press briefings	10	Widespread coverage in local media, reporting on the first implementation of a consolidation hub in the country	One briefing just after pilot initiation, one still planned (March 2026)
Bilateral meetings	25	Different	Different reasons, including initial

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FQP EXPERIENCE			
			consultation, idea exchange and finally organizational matters, including online meetings

FQP PROCESS ASSESMENT	
Corrective actions identified	**Corrective actions taken**
Comparison of the idea of how the hub should function with the operator's expectations and actual limitations.	Identification of the operator's processes/needs and adaptation of the resulting hub design to these needs.
Preliminary arrangements related to the hub design without the involvement of a contractor, who has been selected at a later stage because of a public tender.	Preparation of the hub design by the hub supplier prior to its implementation, as a consensus between the operator's expectations and technical capabilities.
Overall satisfaction with the process	
Public sector	**Private sector**
Cities all over the world are facing similar threats from deliveries in city centres, such as Poznań, expressing considerable interest in the solution. However, both the experience of piloting the hub in the GRETA project and other similar solutions indicate the validity of locating hubs in enclosed spaces. Free-standing containers, despite their beneficial impact on city centre delivery logistics, are not welcome due to aesthetics, city-wide regulations, and restrictions resulting from the requirements of monument conservators. This is understandable, but a certain consensus is necessary to reconcile the interests of the parties concerned, for example, by designating separate zones, partially hidden from the view of residents (e.g., as in Prague, under city bridges).	The initial announcement of the project launch generated considerable interest among logistics operators seeking to improve sustainability in last-mile deliveries. Similar implementations in neighbouring countries (Germany, the Czech Republic) allowed some benchmarking. Despite a single operator selection at the beginning of the project, competitors also expressed interest in similar implementations/pilot projects. It can therefore be concluded that there is significant interest in similar micro-consolidation centre solutions.
OTHER FEEDBACK	
Creating an FQP for an idea without a specific goal is difficult due to the emphasis on practical results. Establishing partnerships for the purpose of achieving a single, consistent goal that is aligned for most	


FQP EXPERIENCE
stakeholders greatly facilitates organisation. In this case, however, maintaining the FQP after the goal has been achieved is still a process that requires identifying another practical goal.

5.3. Maribor FQP


FQP EXPERIENCE
- FQP planning process The FQP process in Maribor was built on previous cooperation developed within the SULPITER project and further strengthened within the GRETA project. The focus was to coordinate logistics improvements in the pedestrian zone and to introduce a Micro Urban Consolidation Centre (MUCC) as an alternative solution for last mile deliveries. **- Stakeholder identification process** Key stakeholders were identified among municipal departments, public companies, logistics operators, retailers operating in the pedestrian zone, the University of Maribor and regional development bodies. **- Engagement of stakeholders** Stakeholders were engaged through workshops, bilateral meetings and FQP meetings organised during preparation and implementation of the pilot. Special attention was given to local retailers and logistics operators active in the pedestrian zone. **- Collection, control and archiving of data** Data was collected through meetings, questionnaires and feedback sessions with retailers and delivery operators, while monitoring pilot preparation and implementation steps. **- Findings** Stakeholders generally support solutions improving delivery organisation in the pedestrian zone, provided that deliveries remain reliable and business operations are not negatively affected. **- Recommendations** Continuation of cooperation after pilot completion and gradual development of sustainable business and operational models for the MUCC solution.-

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FQP EXPERIENCE		
OBJECTIVES		
Description of objective	**Reached (YES/NO)**	**Comments**
Identification of the most appropriate location for MUCC	Yes	Location selected and coordinated with relevant municipal departments
Development of stakeholder cooperation for last mile delivery improvement	Yes	Cooperation established through FQP meetings and workshops
Implementation of alternative last mile delivery solution	Yes (pilot phase)	MUCC implementation and testing about to be started
Verification of feasibility of MUCC solution	Yes	Stakeholder acceptance and operational feasibility confirmed
Development of long-term sustainable delivery model	Partly	Business and operational models still need further development after project end. City is still defining long-term measures (according to the newly prepared SUMP (to be adopted in February 2026) and SULP (to be prepared by the end of 2026)

STAKEHOLDERS				
Type	**Identified**	**Targeted**	**Engaged**	**Comments**
Public institutions and authorities	YES	YES	YES	Municipality departments actively involved

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FQP EXPERIENCE				
Local administration	YES	YES	YES	Core actor in implementation, departments actively involved
Neighbouring municipalities	NO	NO	NO	Pilot focused on Maribor FUA only (only other City municipality in Podravje is Ptuj, but with less than half population as Maribor)
Regional administration	YES	YES	YES	Regional development agency participated as associated partner
National and state administration	NO	NO	NO	Not directly involved
Association and intermediaries	NO	NO	NO	Not directly involved
Chamber of Commerce	NO	NO	NO	Not directly involved
Business association	NO	NO	NO	Retailers involved individually
Private sector (big logistics companies or SMEs)	YES	YES	YES	Delivery operators and retailers engaged
Other members and representatives	NO	NO	NO	-
Educational institutions and research institutes	YES	YES	YES	University of Maribor is project partner. Core involvement

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FQP EXPERIENCE				
Local media and the general public	NO	NO	YES	Information shared mainly via project communication and planned for theHybrid implementation workshop in March
Other	NO	NO	NO	-

ENGAGEMENT ACTIVITIES			
Type of activity	**Number of stakeholders engaged**	**Feedback from stakeholders**	**Comments**
FQP meetings	App. 150 invited retailers and companies (ca. 40 attended in 2 held meetings)	Positive	Meetings helped identify delivery needs and challenges
Workshops and coordination with municipal departments	8 departments/levels included 15+ coordinations	Mostly positive (often lack of commitment)	Increased efforts for coordination across departments. Getting the right people on board is time-consuming. (mayor, vice-mayor for traffic, vice-mayor for spatial management, municipal urbanist, Department for traffic, Department for municipal premises, Department for spatial management, Department for geographic information system).
Bilateral meetings with future manager of the MUCC	1	Positive	Used for technical and operational coordination of the MUCC and for management model

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FQP EXPERIENCE			
Questionnaires among businesses in pedestrian zone	375 contacted	Useful input on needs/demands for the delivery before/after delivery window in the pedestrian zone	Helped in defining delivery needs.
Follow-up meetings	ongoing	Positive	Continued cooperation in pilot implementation

FQP PROCESS ASSESMENT	
Corrective actions identified	**Corrective actions taken**
• Need to better explain MUCC operational model to businesses. • Adjustment of location and operational setup according to stakeholder feedback.	• Additional meetings and clarifications with municipal departments and retailers. • Adaptation of implementation timeline and operational details.
Overall satisfaction with the process	
Public sector	**Private sector**
The process strengthened cooperation between municipal departments and stakeholders, enabling coordinated development of logistics solutions.	Retailers and logistics operators support solutions that improve delivery organisation, provided operational reliability is maintained. (questionnaire results after the implementation of the pilot not available as the pilot is still in implementation phase).

OTHER FEEDBACK
The establishment of FQP proved useful for coordinating stakeholders with different interests. Maintaining cooperation after pilot completion requires the definition of new common goals and long-term operational sustainability of the MUCC solution. FQP stakeholders are willing to participate in the FQP as the advisory body to the mayor and the municipal management on long-term policies regarding the optimization of the city logistics. Future involvement regarding the incoming renewal of the SULP (till the end of 2026).

5.4. Verona FQP

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FQP EXPERIENCE

- **FQP planning process**: The Freight Quality Partnership (FQP) in Verona was established as a structured and progressive governance framework aligned with the GRETA pilot action on digital curb management. The planning phase started with the identification of key urban freight challenges within the Verona Functional Urban Area (FUA), particularly inefficient use of loading/unloading bays, double parking phenomena and lack of real-time monitoring tools. Based on these challenges, ZAILOG and the Municipality of Verona defined strategic objectives focused on improving curbside regulation through digital solutions and strengthening cooperation between public authorities and logistics operators. The FQP was embedded within the GRETA pilot timeline and aligned with the local Sustainable Urban Mobility Plan (SUMP), ensuring policy coherence and institutional ownership.

- **Stakeholder identification process**: Stakeholder mapping was conducted at an early stage of the pilot development. Priority was given to actors with direct regulatory, operational or technical responsibilities in urban freight management.

The main stakeholders identified were:

- Municipality of Verona (policy and regulatory authority),
- AMT3 (municipal in-house company managing parking infrastructure),
- Municipia Spa (IT provider selected through public tender),
- Logistics operators active within the LTZ,
- Technology and telecommunications providers (LoRaWAN infrastructure).

Stakeholders were prioritised according to:

- decision-making power,
- operational dependency on curbside infrastructure,
- willingness and capacity to engage in pilot implementation.

- **Engagement of stakeholders**: Engagement activities were continuous throughout the project lifecycle and structured in three main phases:

- Preparation phase (2024) – Bilateral meetings with the Municipality and AMT3 to define technical requirements and align pilot objectives with regulatory constraints.
- Implementation phase (2025) – Intensive coordination meetings with Municipia during procurement, platform development and sensor installation.
- Testing and monitoring phase – Engagement of logistics operators to test booking functionalities and provide usability feedback.

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FQP EXPERIENCE

- Engagement methods included:
- physical and virtual meetings,
- technical workshops,
- bilateral coordination sessions,
- operational testing activities.

The FQP functioned as a governance coordination platform rather than a purely consultative body, ensuring that stakeholder feedback was directly integrated into technical and regulatory decisions.

- Collection, control and archiving of data: Data collection was integrated into the pilot through IoT sensors installed under loading/unloading bays and connected via LoRaWAN network infrastructure.

The digital platform allowed:

- real-time monitoring of occupancy,
- archiving of booking and usage data,
- analysis of operational indicators (double parking reduction, empty trips reduction).

Qualitative feedback from stakeholders was collected during meetings and testing sessions. All technical documentation, meeting reports and monitoring data were archived within municipal and project records, ensuring traceability and transparency.

- **Findings**: The FQP process in Verona demonstrated that:

- Early and continuous involvement of the Municipality and its in-house mobility company is crucial for regulatory alignment.
- Digital curb management solutions require strong coordination between technological and governance components.
- Infrastructure readiness (LoRaWAN coverage) is a critical prerequisite and must be assessed early.
- Logistics operators are willing to engage when operational benefits (predictability, reduced waiting times) are evident.
- Institutional commitment ensures durability beyond the project lifetime.

The FQP approach facilitated problem-solving during procurement delays and network coverage issues, allowing corrective actions to be taken without compromising pilot objectives.

- Recommendations: Based on the Verona experience, the following recommendations can be identified:

- Start stakeholder engagement at the earliest planning stage.

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FQP EXPERIENCE

- Ensure strong institutional ownership by embedding FQP objectives within existing mobility plans.
- Conduct early technical assessments of digital infrastructure readiness.
- Combine regulatory enforcement with technological solutions.
- Maintain regular coordination meetings to manage emerging risks.
- Define clear post-project governance arrangements to guarantee continuity.

The Verona FQP experience confirms that structured governance cooperation significantly increases the effectiveness and scalability of digital curb management solutions.

OBJECTIVES

Description of objective	Reached (YES/NO)	Comments
Creation of an IT platform for management and booking of loading/unloading slots	YES	Platform developed, operationally tested and integrated with municipal systems.
Improvement of curbside efficiency and reduction of double parking	YES	Measurable reduction of approx. 67 double-parking cases per month.
Reduction of empty vehicle trips	YES	Approx. 115 empty trips reduced per month.
Strengthened cooperation between public authorities and logistics operators	Yes	Continuous engagement throughout planning and implementation phases.

Type	Identified	Targeted	Engaged	Comments
Public institutions and authorities	YES	YES	YES	Municipality of Verona
Local administration	YES	YES	YES	AMT3

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FQP EXPERIENCE				
Neighbouring municipalities	NO	NO	NO	
Regional administration	NO	NO	NO	
National and state administration	NO	NO	NO	
Association and intermediaries	NO	NO	NO	
Chamber of Commerce	NO	NO	NO	
Business association	NO	NO	NO	
Private sector (big logistics companies or SMEs)	YES	YES	YES	FAI (Federazione Autotrasportatori Italiani)
Other members and representatives	NO	NO	NO	
Educational institutions and research institutes	NO	NO	NO	
Local media and the general public	YES	NO	YES	Dissemination activities
Other	YES	YES	YES	IT PROVIDER - MUNICIPIA SPA

ENGAGEMENT ACTIVITIES			
Type of activity	**Number of stakeholders engaged**	**Feedback from stakeholders**	**Comments**
Bilateral Meetings	5	Positive and Operational	Technical alignment and regulatory coordination
Technical workshops	5	Constructive	Definition of platform features

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FQP EXPERIENCE			
Testing sessions	5	Positive	Usability feedback integrated
Virtual coordination meetings	1	Problem solving oriented	Addressed network and procurement issues

FQP PROCESS ASSESMENT	
Corrective actions identified	**Corrective actions taken**
Insufficient LoRaWAN coverage	Installation of additional LoRaWAN antennas
Procurement-related delays	Launch of revised procurement procedure
Risk of non-compliance by operators	Introduction of monitoring and enforcement coordination mechanisms
Overall satisfaction with the process	
Public sector	**Private sector**
High satisfaction due to improved data visibility, structured governance coordination and policy alignment with the SUMP.	Positive perception, particularly regarding improved predictability and reduced operational inefficiencies.

OTHER FEEDBACK
The Verona FQP experience shows that governance-driven digital innovation can effectively address urban freight inefficiencies without requiring major physical interventions. The process demonstrated that structured stakeholder cooperation, supported by robust digital infrastructure and regulatory alignment, can produce measurable operational improvements and create the foundations for scalable urban logistics solutions.

5.5. Budapest FQP

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FQP EXPERIENCE

- FQP planning process: The FQP was established within the framework of the GRETA project to support the development and implementation of sustainable urban logistics measures in Budapest. The process followed the five-step methodology: strategy design, stakeholder identification and prioritisation, management and organisational setup, action plan development and implementation, and monitoring and follow-up. The main thematic focus was curbside management and sustainable urban logistics infrastructure development, aligned with the future Sustainable Urban Logistics Plan (SULP).

- Stakeholder identification process: Key public and private stakeholders were identified based on their role in urban freight transport decision-making, operational involvement, and influence. Stakeholders were prioritised according to power, interest, and engagement level. A structured stakeholder list was developed including public authorities, district municipalities, logistics companies, civil organisations, research institutions, and business associations.

- Engagement of stakeholders: Stakeholder engagement included:

- Strategic meetings with Municipality of Budapest and Public Road operator of Budapest
- Workshops with logistics stakeholders (Sustainable City Logistics Chapter)
- Data-related workshops (District VII pilot preparation)
- Civil organisation working groups
- Consultations with District IV and District VIII
- Site visits with food delivery companies
- Meetings with Chamber of Commerce and Industry
- Regular meetings with Mobilissimus (curbside management framework developer)

Engagement methods included workshops, technical meetings, site visits, consultations, data-sharing discussions, and follow-up emails.

- Collection, control and archiving of data: Urban logistics data collection was conducted in pilot areas. Feedback from workshops and consultations was documented and incorporated into planning documents. Meeting summaries and stakeholder inputs were archived and used in the development of pilot proposals and regulatory discussions.

- Findings

- Strong need for structured curbside management framework.
- Data-driven planning is essential for stakeholder acceptance.
- District-level cooperation is crucial for pilot implementation.
- Private sector stakeholders are willing to engage when practical solutions are discussed.

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FQP EXPERIENCE

- Location selection is a critical risk factor.

- Recommendations:

- Continue structured city logistics forum beyond project lifetime.
- Strengthen cooperation with district municipalities at earlier stages.
- Develop long-term regulatory framework for new urban logistics infrastructure.
- Maintain regular feedback loops with logistics operators and civil organisations.

OBJECTIVES

Description of objective	Reached (YES/NO)	Comments
Develop a strategic document connected to SULP supporting curbside management	YES	Curbside Management Framework prepared with Mobilissimus and Municipality
Establish structured stakeholder engagement for urban logistics	YES	Multiple workshops and meetings organised (2023–2025)
Develop and prepare pilot interventions in selected districts	YES	Pilot areas identified in District IV and VIII
Improve data collection and data-based planning in urban freight	YES	Workshops and preliminary data collection conducted
Raise awareness among stakeholders about greener logistics solutions	YES	Continuous workshops, forums, and consultations

STAKEHOLDERS

Type	Identified	Targeted	Engaged	Comments

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FQP EXPERIENCE				
Public institutions and authorities	YES	YES	YES	Municipality of Budapest, Public road operator
Local administration	YES	YES	YES	District IV, District VIII
Neighbouring municipalities	NO	NO	NO	Not directly relevant for pilot
Regional administration	NO	NO	NO	Not directly involved
National and state administration	NO	NO	NO	Not within pilot scope
Association and intermediaries	YES	YES	YES	Hungarian Association of Logistics
Chamber of Commerce	YES	YES	YES	Budapest Chamber of Commerce and Industry
Business association	YES	YES	YES	Logistics associations
Private sector (big logistics companies or SMEs)	YES	YES	YES	Logistics operators, food delivery companies
Other members and representatives	YES	YES	YES	Mall representatives, office buildings
Educational institutions and research institutes	YES	YES	YES	Budapest University of Technology and Economics
Local media and the general public	YES	YES	PARTIALLY	Public engagement through civil organisations and media news portals

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FQP EXPERIENCE				
Other	YES	YES	YES	Mobilissimus (consultancy)

ENGAGEMENT ACTIVITIES			
Type of activity	**Number of stakeholders engaged**	**Feedback from stakeholders**	**Comments**
Strategic meetings (Municipality & Road Operator)	3 main institutions	Positive, alignment on priorities	Enabled framework preparation
Workshops and forums	15–25 per meeting	Constructive professional feedback	Platform for continuous dialogue
Civil organisation working groups	4 organisations	Feedback on public space and logistics impact	
District municipality meetings	3 districts	Site-specific input	Essential for pilot localisation
Site visit (Food delivery companies)	8 stakeholders	Identified hotspots and operational issues	

FQP PROCESS ASSESMENT	
Corrective actions identified	**Corrective actions taken**
• Change of pilot location (District VII → District VIII) due to lack of local interest. • Additional consultations required for infrastructural proposals. • Need for stronger early district-level political engagement	• Identification and involvement of new district (District VIII). • Additional workshops on infrastructure planning. • Increased focus on legislative discussions (January 2025 workshop)
Overall satisfaction with the process	
Public sector	**Private sector**

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FQP EXPERIENCE	
High: Strong cooperation between BKK, Municipality of Budapest, and districts. Improved inter-institutional coordination	Moderate: Logistics companies appreciated technical discussions and data-driven approach, though regulatory uncertainty remains a concern

OTHER FEEDBACK

- The establishment of a permanent city logistics forum significantly strengthened professional dialogue.
- Cross-project synergies (LEAD, SULP, GRETA) enhanced knowledge exchange.
- The FQP structure proved useful as a coordination mechanism for urban logistics planning in Budapest.
- Continued operation of the FQP beyond GRETA is recommended.

6. Overall FQP Experience Across All Pilot Cities

6.1. Comparative Analysis of FQP Implementation

Across the five pilot cities, the Freight Quality Partnership (FQP) was implemented as a structured governance mechanism to support the design, testing and validation of innovative urban freight solutions. While the thematic focus differed, microhubs in Reggio Emilia and Poznań, a Micro Urban Consolidation Centre (MUCC) in Maribor, digital curb management in Verona, and a strategic curbside management framework in Budapest, the FQP model consistently functioned as a coordination platform between public authorities and private operators.

In all pilots, the FQP was closely linked to the respective Pilot Actions and local strategic frameworks (SUMP/SULP or equivalent). The process generally followed a logical sequence: initial strategic alignment, stakeholder identification and prioritisation, engagement during pilot preparation, implementation and monitoring, and final assessment. However, the maturity level of the FQP varied among cities.

Reggio Emilia and Verona demonstrated structured governance processes with strong institutional ownership and continuous technical coordination. Budapest implemented a methodology-based approach aligned with long-term strategic planning and district-level cooperation. Maribor built upon previous cooperation frameworks and focused on consolidating stakeholder trust for the MUCC solution. Poznań highlighted the importance of defining a clear and concrete objective from the outset, particularly when establishing a partnership around a single pilot action.

Overall, the comparative analysis confirms that FQPs are most effective when directly linked to a tangible pilot intervention with measurable objectives and when embedded in existing mobility strategies.

6.2. Stakeholder Engagement Approaches

Stakeholder engagement approaches across pilots followed similar principles but differed in intensity, scope and structure depending on the thematic focus and institutional context.

All cities applied stakeholder mapping and prioritisation based on power/influence, level of interest, operational dependency and willingness to engage. The core stakeholders typically included municipal authorities, logistics operators, infrastructure or technology providers, and in some cases business representatives and research institutions.

Reggio Emilia and Verona emphasised strong bilateral coordination with logistics operators and technical providers during implementation. In these cases, engagement extended beyond consultation toward co-design and operational testing. Maribor focused particularly on retailers operating within the pedestrian zone and on coordination between municipal departments. Budapest applied a broader stakeholder forum model, including district municipalities, civil organisations and business associations, ensuring wide institutional coverage. Poznań combined public dissemination (including media coverage) with targeted engagement of the selected operator and infrastructure suppliers.

Engagement formats included workshops, bilateral meetings, technical sessions, site visits, testing phases, public presentations and dissemination events. Across all pilots, bilateral discussions proved particularly effective when addressing operational constraints, confidentiality issues or procurement-related challenges.

A common finding is that stakeholder engagement is most productive when discussions are solution-oriented and supported by concrete pilot actions rather than abstract planning debates.

6.3. Data Collection and Management Experience

Data collection approaches reflected the technical nature of each pilot but shared common characteristics: integration of qualitative feedback with operational monitoring and simplified reporting mechanisms to avoid overburdening private operators.

Reggio Emilia and Maribor relied on qualitative feedback, structured discussions and pilot monitoring data. Poznań implemented a six-month monitoring phase combining operational indicators (parcel volumes, routes, transfer processes) with environmental performance data (emission and truck traffic reductions). Verona applied a digital data-driven model through IoT sensors and a real-time booking platform, allowing quantitative monitoring of curbside occupancy, reduction of double parking and empty trips. Budapest focused on data collection to support strategic framework development and district-level planning.

Across all pilots, corrective actions were introduced when data collection proved too complex or when technical assumptions required adjustment. Simplification of reporting requirements, clarification of technical parameters and infrastructure improvements (e.g. LoRaWAN coverage in Verona) were common responses.

The experience demonstrates that data-driven evaluation strengthens stakeholder trust and policy credibility. However, the scale of implementation influences financial feasibility, as observed in Poznań, where operational efficiency did not immediately translate into positive financial results.

6.4. Key Findings and Added Value of FQPs

The overall experience across all pilots highlights several key findings:

- Clear objectives are essential. Partnerships built around a concrete, well-defined goal (microhub implementation, MUCC testing, digital curb management, or strategic framework development) were more effective and easier to coordinate.
- Early involvement of logistics operators is crucial. Operational feasibility, cost considerations and regulatory alignment must be addressed from the beginning.
- Institutional ownership ensures continuity. Strong engagement of municipalities and integration into SUMP/SULP processes increases sustainability beyond the project lifetime.
- Flexibility is necessary. Pilot actions required technical and organisational adjustments based on stakeholder feedback and real-life constraints.
- Data enhances legitimacy. Quantifiable results (emission reductions, double parking reduction, traffic decrease) significantly increase acceptance among public and private stakeholders.

The added value of the FQP model lies in its ability to function as a structured dialogue mechanism that translates strategic objectives into practical, testable solutions. It strengthens trust between sectors, reduces implementation risks and supports evidence-based decision-making.

6.5. Lessons Learned and Recommendations

Based on the cross-pilot experience, the following lessons learned and recommendations can be identified:

- **Define specific and measurable objectives from the outset:** The S.M.A.R.T. approach supports clarity and long-term sustainability of the partnership.
- **Limit and prioritise stakeholders:** A focused group of 10–20 key actors ensures effective management of expectations and resources.
- **Adopt a phased engagement model:** Start with consultation and progressively move toward co-design and operational testing.
- **Ensure regulatory and technical alignment early:** Infrastructure readiness, procurement procedures and compliance issues should be assessed before implementation.
- **Simplify data collection requirements:** Avoid excessive administrative burden for private operators.
- **Plan post-project governance:** The continuation of FQP structures requires identification of new objectives and integration into long-term urban logistics strategies.
- **Balance public interest and operational feasibility**: A consensus-based approach is necessary to reconcile sustainability goals with business realities.

Overall, the GRETA experience confirms that Freight Quality Partnerships are an effective governance instrument for managing urban freight innovation. When embedded within strategic frameworks and supported by measurable pilot results, FQPs can significantly contribute to sustainable, cooperative and scalable urban logistics solutions across Functional Urban Areas.

7. Conclusions

Deliverable D 2.2.2 documents the establishment, implementation and assessment of Freight Quality Partnerships (FQPs) across five pilot Functional Urban Areas: Reggio Emilia, Poznań, Maribor, Verona and Budapest. The experience confirms that FQPs represent an effective governance instrument for supporting the development and testing of innovative urban freight solutions within a structured, collaborative framework.

Across all pilots, the FQP functioned as a platform for dialogue, coordination and co-creation between public authorities, logistics operators, technical providers and other relevant stakeholders. Although the thematic focus varied—from microhubs and micro urban consolidation centres to digital curbside management and strategic regulatory frameworks—the core purpose remained consistent: to facilitate cooperation, reduce implementation risks, and ensure that proposed solutions were both operationally feasible and aligned with public policy objectives.

The pilots demonstrated that successful FQP implementation requires several key conditions. First, clearly defined and measurable objectives are essential to provide direction and maintain stakeholder commitment. Second, early and continuous involvement of logistics operators and other private stakeholders significantly increases the likelihood of operational feasibility and acceptance. Third, embedding FQP activities within existing planning frameworks (SUMP, SULP or equivalent strategies) strengthens institutional ownership and long-term sustainability. Fourth, data collection and monitoring mechanisms enhance transparency, enable evidence-based decision-making and reinforce the credibility of proposed measures.

The experience also highlighted challenges. Balancing public policy goals, such as emission reduction and traffic mitigation with the economic realities of freight operators remains complex. Procurement procedures, technical constraints and regulatory requirements may require adjustments during implementation. Furthermore, sustaining stakeholder engagement beyond the achievement of a specific pilot objective requires the identification of new shared goals and continued institutional commitment.

Despite these challenges, the overall results confirm the added value of the FQP model. In several pilots, measurable improvements were achieved, including reductions in truck traffic, double parking and emissions, as well as strengthened cooperation between municipal departments and logistics operators. Even where financial efficiency requires further optimisation or long-term business models are still under development, the FQP process has laid the foundation for scalable and transferable solutions.

The GRETA project demonstrates that Freight Quality Partnerships can significantly enhance the governance of urban freight transport in Functional Urban Areas. By combining structured stakeholder engagement, practical pilot testing and data-driven evaluation, FQPs support the transition towards more sustainable, efficient and cooperative urban logistics systems. The continuation and further institutionalisation of FQPs beyond the project lifetime is therefore strongly recommended as part of long-term urban mobility and logistics planning.