Energy-efficient and sustainable freight logistics solutions in small-/mid-size historic towns: ENCLOSE pilots Report

The sole responsibility for the content of this lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
### TABLE OF CONTENTS

1. **Introduction** ...................................................................................................................... 3
1.1 **Background and aim of ENCLOSE project** ................................................................... 3
1.2 **Overview of Objectives and Expected Results** .............................................................. 3
1.3 **The WP3: Improving energy efficiency of urban logistics in Small/Mid-size historic towns: piloting, assessment, transferability and development of SULP** ......................................................... 4
1.4 **Scope of deliverable D3.3** ........................................................................................... 6
1.5 **Common methodology** ............................................................................................... 8
1.6 **Lucca: planned pilot measures, expected measurable impacts (energy-efficiency, environmental benefits)** ................................................................................................. 9
1.7 **Pilot measures in Trondheim** ....................................................................................... 17
1.8 **'s-Hertogenbosch pilot measures** ............................................................................... 22

**Conclusions** .......................................................................................................................... 25

**Annexes** .................................................................................................................................. 25

**Acronyms and abbreviations** .................................................................................................. 25
1 Introduction

1.1 Background and aim of ENCLOSE project

The urban freight distribution applications operated in Europe towns, underline that city logistics can be realized by an appropriate mix of different measures (not all obligatory) such as: Urban Consolidation/Distribution Centres, optimized urban freight transport and delivery plans, clean vehicles and “green vehicle” technologies, ICT platform, restrictions and public incentive policies, last mile and value added services, integration of city logistics processes within sustainable urban mobility plan.

Whilst efforts and city logistics innovation projects have been undertaken in most European capitals and major cities (like e.g. Barcelona, Berlin, London, Paris, Stockholm, etc.) small and mid-size towns, particularly those involving historic centres, are somehow lagging behind, as they have to face and overcome several barriers (related to e.g. shortage of resources, competences, organisational structures, institutional backing, etc.) to be able to effectively embrace innovation, adopt and implement appropriate plans and measures towards sustainable city logistics. They also have additional constraints and challenges related to their specific territorial, social and economic characteristics (e.g. difficult mobility and freight distribution flows, higher impacts of environmental pollution on citizens and quality of life, etc.) and yet show increasing demand of effective measures as well as large potentials for improvements of energy efficiency and sustainability of city logistics operations.

ENCLOSE project, based on the real applications carried out by the Forerunner towns and on the consolidated experiences of some partners, aims to answer the IEE STEER 2011 Priority (Urban energy-efficient transport or “City Logistics”) by:

1) addressing the specific needs, requirements, options and priorities of European small-/mid-size historic towns, demonstrating and assessing feasible and sustainable solutions and releasing a specific SULP (Sustainable Urban Logistics Plan);

2) qualifying the demand of European SMHTs for sustainable, energy-efficient urban logistics and freight distribution solutions, generating and spreading the knowledge about good practices and suitable strategies for effective integration logistics schemes in the overall urban mobility and, more generally, town governance policies (Sustainable Urban Mobility Plan, SUMP);

3) investigating and assessing the operation of “green vehicles” (FEVs, PHEVs, Bio-gas) and fleets in urban distribution and other logistics schemes from the point of view of the needs and requirements of in small-/mid-size historic towns.

ENCLOSE Project consider therefore the Sustainable Urban Logistic Plans (SULPs) as one of the essential parts of the town mobility plan and aims to address the development of the SULP in each ENCLOSE towns, considering its relation with the Sustainable Urban Mobility Plan, SUMP. In this context the activation of a large and efficient ENCLOSE stakeholders group is one of the main support tool that we can use for promoting the SULP approach to be defined in ENCLOSE.

1.2 Overview of Objectives and Expected Results

In the following the overall ENCLOSE specific objectives (SPO) and expected results are summarised:

SPO1: Implementation of (1) pilot operations in 3 small-medium town in Italy, Norway and The Netherlands and (2) feasibility and transferability analysis and the implementation of soft measures carried out in 6 small and mid size towns in Bulgaria, Greece, Portugal, Romania, Spain and UK.
SPO2: Development of Sustainable Urban Logistic Plans (SULPs) in the overall 9 ENCLOSE forerunner and follower towns (also indicated as “learner” in the Technical Annex). The SULPs will be developed with participatory and integrated approach (to be defined in the first months of the project), in order to reach a strong consensus and collaboration among the relevant stakeholders and to consider the foreseen logistics measures in the overall urban mobility policy.

The development of the SULPs involve for each ENCLOSE towns different activities as, among the others: i) the definition of a vision, objectives and targets in relation also to the current sustainable mobility approach (see as stated before the IEE ELTISplus project); ii) a selection of policies and city logistics measures and schemes and related normative and regulations context; iii) time plan and assignment of roles and responsibilities; iv) identification of the costs and allocation of required resource; v) an outline of the actual procedures for monitoring and evaluation of the implemented measures.

SPO3: Building up a suitable and usable framework for the definition of Sustainable Urban Logistics Plans for small-/mid-size historic towns. Building upon the outcomes obtained under SPO1 and SPO2, this is the core specific objective of ENCLOSE, which will lead to a key usable tool for European towns to set up their Sustainable Urban Logistics Plans (SULPs). Background to the development of the SULP is the definition of the baseline data, for each town, based on a specific methodology that will be provided and discussed.

A first example of a “baseline data” is included in the Technical Annex I where have been detailed the results of the baseline developed for Lucca.

SPO4: Promoting and enhancing the networking of European small-/mid-size historic towns on the themes of sustainable and energy-efficient logistics, to facilitate the exchange of experiences, promote and achieve the adoption of Sustainable Urban Logistics Plans. In ENCLOSE the main tools to reach this objectives are 1) the technical visits/training courses that will be organised in each pilot sites and 2) the awareness rising events (local workshops) that will be organised in each follower towns.

SPO5: Investigating policy-level issues and defining a suitable strategy to ensure long-term sustainability of the designed framework for Sustainable Urban Logistics Plans for small-/mid-size historic towns. ENCLOSE will provide elements to address and stimulate the various institutional levels (regional, national, EU) to ensure the necessary frame conditions (i.e. legislative, incentives, etc.) for the adoption and implementation of the Sustainable Urban Logistics Plans by the concerned towns.

SPO6: implementing the most effective communication and dissemination strategy to ensure the maximum visibility of project outcomes and promoting the adoption of good urban logistics practices in European small-/mid-size historic towns, by implementing concrete demonstration actions and rising the awareness of the involved local authorities and stakeholders through a number of local dissemination events and media involvement directly in 12 EU member states and, via the participating multiplier Association of European Historic Towns, indirectly in all EU27 countries.

In this context the set up and activation of a large and efficient Stakeholders Support Group is one of the first action to be carried out in the project.

1.3 The WP3: Improving energy efficiency of urban logistics in Small/Mid-size historic towns: piloting, assessment, transferability and development of SULP

The goal of ENCLOSE is to achieve significant energy efficiency and reductions of city logistics impacts in small-/mid-size historic centres by showcasing feasible solutions in advanced Forerunner sites and undertaking evaluation and transferability analysis in a number of Follower/Learner sites.
leading to the implementation of soft measures and development of SULPs. The towns of **Lucca**, **s’Hertogenbosch** and **Trondheim**, as **forerunners** operating advanced and sustainable schemes for urban distribution and a number of connected value-added logistics services, will provide the operational environments for pilot demonstrations, evaluation of impacts and of the benefits of applied solutions. Overall, the ENCLOSE targeted urban logistics schemes include different combinations of measures, specifically adapted to the goals and needs of historic towns:

1. Cooperative/optimised delivery schemes under policy constraints and restrictions (e.g. access restrictions to the urban historic centre based on time slots, minimum allowed load factor, vehicle type, etc.);

2. Transhipment and B2B last mile delivery services, based on available Urban Consolidation Centres (UCCs) or “virtual” UCCs defined by a coordinated use of third party warehouses and logistics centres;

3. Optimised delivery plans involving efficient planning and routing of freight operations and integration of both forward and reverse logistics flows;

4. Operation of dedicated load/unload areas with booking and information facilities;

5. Use of dedicated infrastructures (e.g. e-lockers, electronic pick-up-points, etc.) as well as of 3rd party services (e.g. parking houses, gas stations, hotels, etc.) for value added B2C delivery services;

6. Integration of efficient delivery schemes with 3PL services for shop owners and commercial operators, like e.g. 3rd party warehousing services at the UCC and related transport services for small shops and retailers;

7. Use of zero-emission fully / hybrid plug-in electric vehicles and green gas vans.

The three pilot sites are already experienced subject in the provision of several logistics services and have already consolidated a relevant network with the local stakeholders (chambers of commerce, transport operators, trade associations, retailers, etc.). The establishment of new piloting services in the frame of ENCLOSE in the forerunning towns benefit of the locally current existing relationships. If the new planned pilot services foresee the involvement of new entities, these are included in the existing local networks. From an operational point of view, the **common methodology** includes elements and assumptions indicated at the end of the description of T3.1 and have been introduced, discussed and agreed during the first two months of T3.1 (M8 and M9) inside the existing networks and among the three pilot sites. This methodology includes a **common and standardized approach** (by the definition of common guidelines) in order to obtain information that is comparable among different sites.

Pilot demonstrations, together with their operational evidence, measured impacts and assessed benefits, are the core part of a number of experience exchange and knowledge sharing situations (see WP4 for organisation). In particular, on the basis of the outcomes and indications resulting from T2.2 and T2.3 and of good practice show case actions, within task T3.1, the ENCLOSE Follower/Learner historic towns (Alba-Julia, Almada, Balchick, Burgos, Dundee, Serres) have been carrying out targeted **transferability analyses** leading to the identification of feasible solutions for local implementation of energy-efficient and sustainable urban logistics measures.

The feasible solutions selected by each Follower/Learner site generally include appropriate and localised integrations of measures and schemes demonstrated in the forerunner sites as well as other measures (targeting energy efficiency and environmental sustainability) of interest for the sites identified and conceived during the exchange and networking activities.

Moreover, within this action and in parallel with the definition of the SULPs to be carried out in T3.3, all Follower/Learner towns will introduce some improvements in their current urban logistics.
practice by optimisation of running schemes and each of them will implement at least 2 new learned soft measures within the lifetime of the project (measures that require none or little investments) that may lead to energy saving and CO₂ emission reduction.

All sites will then develop their local Sustainable Urban Logistics Plans (SULPs) providing the guidelines for introduction of the assessed measures and schemes and their integration in the overall Sustainable Urban Mobility Plans (SUMPs).

1.4 Scope of deliverable D3.3

The present deliverable addresses pilot operations, data collection and demonstration activities performed in the three ENCLOSE Forerunner towns: Lucca, Trondheim and s’Hertogenbosch. The involved local stakeholders and logistics partners undertook a number of pilot demonstrations by extending their current city logistics schemes and showing the additional benefits of the new measures in terms of energy efficiency increase of the freight distribution in the urban centres. All three forerunners’ sites undertook the full pilot experiment lifecycle, from pilot design and preparation, to experiment running, demonstration and data collection. Both Lucca and Trondheim, at the beginning of pilot operations, were already operating FEVs for part of their urban freight operations. This has allowed comparison of the impacts both locally (i.e. between non-FEVs and FEVs operations) and cross-site. s’Hertogenbosch has started the introduction of FEVs and were operating biogas green vehicles. Each forerunner city has implemented several pilot measures within the expected period.
**Report of ENCLOSE Pilot measures in forerunners towns**

The definition of the pilot measures and showcasing in the Forerunner towns, aims to develop pilot operations, data collection and demonstration/activation of new logistics services in the 3 ENCLOSE pilot towns of Lucca, Trondheim and s’Hertogenbosch, based on **common methodology**. All forerunner sites have adopted a common pilot set up and running methodology, together with a common evaluation methodology, in order to obtain comparable results which can be easily presented and explained to the Follower/Learner towns.

The introduction of the piloted services and activities, in the running operating local context, has been taken place and the activation of the services has been a relevant process, taking into consideration the level of complexity of each single measure. In any case the activation of the measure has been accomplished on the basis of local evaluation and experience; taking in consideration the local needs as emerged by the results of WP2 with the local analysis activities (see T2.2 and T2.3).

The showcasing phase of each activated measure last at least 6 months, in order to have a significant period for the monitoring and for the analysis of the results and impact evaluation and has been running in the period from M8 to M14. The first months have been mainly focused on the organization aspects, while the implemented measures covered the aspects described in D3.1. In particular, a detailed correspondence is provided in the in the attached table 1, reporting the piloting measures plan.

**Table 1 - Piloting measures plan**

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Lucca</th>
<th>Trondheim</th>
<th>Den Bosch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cooperative/optimised delivery schemes under policy constraints and restrictions (e.g. access restrictions to the urban historic centre based on time slots, minimum allowed load factor, vehicle type, etc.)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2. Transshipment and B2B last mile delivery services, based on available Urban Consolidation Centres (UCCs) or “virtual” UCCs defined by a coordinated use of third party warehouses and logistics centres</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3. Optimised delivery plans involving efficient planning and routing of freight operations and integration of both forward and reverse logistics flows</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4. Operation of dedicated load/unload areas with booking and information facilities</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>5. Use of dedicated infrastructures (e.g. e-lockers, electronic pick-up-points, etc.) as well as of 3rd party services (e.g. parking houses, gas stations, hotels, etc.) for value added B2C delivery service</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Warehousing services at the UCC and related transport services for small shops and retailers</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7. Use of zero-emission fully / hybrid plug-in electric vehicles and green gas vans</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Common methodology

The definition of the pilot measures and showcasing in the Forerunner towns, was aimed to develop pilot operations, data collection and demonstration/activation of new logistics services in the 3 ENCLOSE pilot towns of Lucca, Trondheim and s’Hertogenbosch, based on common methodology.

Templates for the quantitative analysis of data related to energy consumption and emission reduction in piloting sites have been designed by ESS and supplied for the use of T3.3 (Part 1) and T5.1 aiming to record targeted measurable impacts, environmental benefits and common KPIs. Data were collected with the same timing (ex-ante, ex-post phases), whether possible, and organized for a common evaluation and assessment purposes.

The common methodology that was developed includes the following elements:

1. Definition of pilot goals and objectives;
2. Local partnering and service chain(s) organisation;
3. Targeted measurable impacts (energy-efficiency, environmental benefits) and common KPIs;
4. Common evaluation methodology;
5. Data collection methodology (ex-ante, ex-post phases) including questionnaires for stakeholders interviews, focus group running, etc.;
6. Pilot planning (duration, scope, etc.) to be adapted to site-specific elements and characteristics;
7. Pilot operation logging procedures;
8. Organisation of collected data for evaluation and assessment purposes.

In particular, beside the Common Evaluation toolkit designed for T3.3 (part 1) and T5.1, a further evaluation template have been used for gathering information about local context where piloting actions were set up and run in the forerunner town, containing a description of local piloting action planning, potential partnering with local stakeholders and results obtained. All the information acquired locally in both forerunner and followers towns have been useful to assess mobility benefits and energy efficiency improvement following ENCLOSE actions. On the basis of a common evaluation tool the piloting methodology could be thus better addressed.
1.5 Lucca: planned pilot measures, expected measurable impacts (energy-efficiency, environmental benefits)

The town of Lucca has a population of about 80,000 inhabitants and an area of just over 185 km square with an average density of about 430 inhabitants per square kilometre. The core of the city is surrounded by Renaissance Walls, the most representative monument of the city, extending for about 4.2 km, interspersed with a series of ramparts.

Lucca has focused on freight and logistics services under mobility restriction policies set up by the Local Authority, as well as on B2B services for local operators and B2C services for citizens, travellers and tourists, providing the needed infrastructures, local partners and organisational set-up for showcasing and evaluation of existing services and the piloting and demonstration of additional ones.

Lucca pilot logistic context

Lucca pilot logistic context is composed by different actions that the local authorities has implemented in the last ten years, whose goal is the implementation of a number of measures (regulatory, organisational, operational and technological) to enable the realisation and operation of a new city logistics system.

Luccaport (www.luccaport.it) is the Lucca UCC, the pivotal component of the Lucca city distribution system Luccaport as it is the main infrastructure supporting rationalised (eco- and business-efficient) distribution schemes, aimed, initially, to support delivery operations within the historic centre of Lucca and in the immediate surroundings and possibly, in the future, in other areas of the economic and production milieu within Lucca province. Logistics schemes are integrated in the broader context of mobility and transport measures, aim at achieving high standards of energy efficiency and environmental quality.

Logistics measures implemented in Lucca, beside those directly related to the UCC, include:

- Adoption of restrictions to regulate freight deliveries in the protected historic centre; e.g. time windows (for different types of goods), incentive electrical vehicles for deliveries.
- Access for deliveries in the protected centre granted only to freight operators meeting access requirements
- Cooperation between freight operators to cover last mile city distribution - e.g. load consolidation, transhipment at freight transit points, etc. – meeting access requirements and economic efficiency.

The Luccaport UCC provide a number of services to support city distribution processes in collaboration with the main actors of the city logistics service chains. The main activity of Luccaport is organising and implementing freight deliveries to (and collection from) final destinations (shops, services, businesses and residential locations) in the operative service area. Luccaport therefore operates as a traditional UCC

1. The Luccaport base is supplied daily by transport operators and couriers with the freight and goods to be delivered to final destinations in the historic centre of Lucca. It also collects and receives goods from locations (e.g. shops) in the service area, for further deliveries (e.g. outgoing freight flows, reverse logistics).

2. The level of demand of freight delivery to the Luccaport (by transport operators and couriers) is provided in advance (by means of suitable ICT tools) in a way that allows the Luccaport to pre-plan delivery operations in time.
3. Incoming goods are processed at the Luccaport premises achieving “groupage” (i.e. grouping freight items according to final destinations and delivery dates) and “load consolidation” (reaching high load factors for final delivery vehicles).
4. Deliveries to final destinations are carried out by the Luccaport fleet of Full Electric Vehicles (FEV) within the date/time limits required by the customers.

A major aim of Luccaport is to provide an expandable scheme which enables the most rational use of logistics resources and infrastructure in the area, facilitating cooperation among the different logistics operators in the system with a minimum impact on their normal operations.

The Luccaport platform
The Luccaport physical platform is located in a service area outside Lucca historical Walls, less than 1 km far from the Walls as well as from the A11 tollgate. This allows a proper operation of the fleet of Luccaport FEVs on the one hand and, on the other hand, goods accessibility to the distribution terminal by long-range freight transport operators using the motorway network for their service within the region and nationwide. The Luccaport distribution platform is characterised by a covered area of round 1000 m² and an open area of 900 m² thus representing the largest logistics platform in Europe set up by a local Authority in order to optimise city logistics processes in a urban centre.

Supporting ICT infrastructure
Crucial for the operation of Luccaport is an integrated, internet based e-Services platform, hosted in the Luccaport base and allowing to link all main actors of the city logistics chain – long/mid-distance freight transport operators, city distribution operators, shops and delivery destinations, freight transit points, eCommerce infrastructures, etc. This multi-service architecture operates as a City Logistics Virtual Agency providing business-to-business (B2B), business-to-consumer (B2C) and business-to-Administration (B2A) services to enable cooperation between the different involved actors and improve the operation of city logistics schemes.

The solutions adopted for Luccaport operation is based on innovations previously achieved in the IST eDRUL project (Ambrosino et al., 2005) involving a number of eBusiness and eCommerce solutions developed to improve city logistics processes (Boero et al., 2005; Wild et al., 2005) and customized with the European project LIFE CEDM. Overall, the Luccaport ICT infrastructure is based on the integration of the following main components:
1. A planning and operation ICT platform, providing a number of tools and services in the City Logistic Agency for planning and management of the goods delivery system, including support to the operators in managing system information, data and geographical information related to the logistics road network, algorithms for distribution planning and optimisation, etc.;
2. A multi-service web portal providing access to a number of B2B and B2C services related to the city distribution processes operated by Luccaport. This involves the functionalities enabling the interfacing between the end-customers and the goods retail/delivery system, as well as the integration between the management centre and the parties involved in the logistic chain (traders and sale points, wholesalers and goods distribution centres, transport operators) by means of services for information exchange (e.g. track-and-trace information) and for workflow support (e.g. transhipment booking and information);
3. Wired and wireless (e.g. GSM/GPRS, UMTS, WiFi) communication infrastructures to support the flows of
information among the logistic operators and between the end-customers and the logistic system;

4. Mobile terminals – in-vehicle and hand-held (PDAs, 2.5/3G smart phones based on GPRS and UMTS) – to ensure the exchange of information among the logistic planning and operation services of the platform and the goods delivery fleet (using real time data exchange) as well as for external parties involved in logistics related administrative operations (e.g. city police for control and enforcement related to access to the restricted area, occupancy of load/unload dedicated spaces, etc.).

5. Interfaces to the other external ITS elements of the overall city mobility management system, the freight system is planned to interact with (eg Access Control System).

Luccaport City Logistics services
The city logistics services provided by Luccaport can be subdivided in two main categories:
1. Base city logistics services,
2. Additional, value-added city logistics services.

Base city logistics services
The key function of the Luccaport as a Urban Consolidation Centre is providing services to support “last mile” deliveries to Lucca centre within the wider scale regional (and national) freight logistics chains. Luccaport provides all typical UCC services to support cooperation between long-/mid-range freight operators and the local distribution actors (particularly, the Luccaport FEV fleet) including:
• Transshipment of goods at the Luccaport logistic platform;
• Organisation of best possible operations (e.g. groupage, load consolidation, etc.) for deliveries of goods to their final destinations by the Luccaport eco-fleet;
• Provision of ICT services enabling the exchange of updated information – including particularly track-and-trace information – between the transport operators utilising Luccaport delivery services, the Luccaport itself and all the actors throughout the logistics service chain.

Moreover, Luccaport logistics base can also operate, in principle, as a goods collection location for Business to Consumer (B2C) delivery services dedicated to consumers and citizens in general. From this perspective, Luccaport can operate as a pick-up point for any goods purchased in the historical
centre and bound for outside destinations. The purchase process may be originated in the ordinary way (i.e. directly at the selling point) or by any distant selling means (e.g. phone order placement, e-commerce purchase, etc.) while the transport service between the selling location and the Luccaport is provided by the Luccaport fleet of electric vehicles.

During the ENCLOSE project activity, and in particular with the Pilot measure n.1 (see below) specific Base city logistics services were integrated, piloting the provision of palletized goods transportation to businesses (B2B services) with Luccaport FEV.

Added Value city logistics services

In addition to the base services introduced in the previous section, Luccaport operational model includes also a number of added value services that will be gradually implemented and offered to the users and operators of the city logistics system in Lucca after the start up phase and consolidation of base Luccaport services. Such additional services, some of which are piloted in the ENCLOSE project activities (e.g. pilot services n.2 and n.3, see below), address different city logistics market segments – as well as some services with a social relevance – and include:

- Home delivery services, for generic users (i.e. citizens living in the service area) or specific user categories (e.g. elderly people, etc.).
- Delivery services to specific locations within the historic centre, such as hotels and other service locations.
- Reverse logistics services, for collection and delivery (through the Luccaport) of refused/returned goods, packaging materials, logistics waste, etc.

In particular, in the local context above described, the ENCLOSE piloted measures for Lucca included but are not limited to the following action:

1) B2B services for freight operators concerning the provision of palletized goods transportation to businesses with FEV;
2) B2B services for local businesses concerning the provision of forwarding services toward any destination outside the target area in partnership with other national or international freight operators,
3) Freight operations integrated with leisure mobility: dedicated delivery programmes providing services for tourists and travellers, luggage transport to/from hotels, etc.

Lucca piloting measures have mainly involved public and public-private stakeholders cooperating in the framework of a partnership program: the Municipality of Lucca, the Local Mobility Agency (Metro), Chamber of Commerce and sector Associations, private local and national freight service operators.

Pilot measure n.1 - B2B services for freight operators concerning the provision of palletized goods transportation to businesses with FEV

Lucca historic centre and surrounding areas actually represents the core of an active commercial system with more than 1400 activities with great variety commercials, artisans’, professionals’ activities. Moreover the offices of main public authorities are localized in the historic city centre. This active economic context contributes to the high number of commercial vehicles for freight distribution acceding to the historic city centre per day, bringing to the subsequent negative
impacts, both directly and indirectly on the urban environment due to air and noise pollution and traffic congestion especially in the rush hours.

Lucca experimented during the pilot B2B services for freight operators concerning the provision of palletized goods transportation to businesses with FEV, integrating the service already offered by Luccaport. Previous evidence gathered during the first years of activities of the UCC (2011-12) in the new location showed the presence of relevant flow of palletized good arriving to town, highlighting the need to deliver the palletized goods composed by several parcels as a single shipment without separating parcels. Such a solution could not be properly addressed in the past due to lacking of vehicles equipped with tail lifts. These are mechanical devices permanently fitted to the back of van, which are designed to facilitate the materials handling of goods from ground level or a loading dock to the level of the load bed of the vehicle, or vice versa, due to the average heavy payload of the pallet. In fact, at the onset of ENCLOSE two new FEVs integrated the UCC fleet and both were equipped with tail lift. Agreements were therefore taken with local distributors and transport operators already customers of Luccaport in order to test the integration of the B2B services in their current workflow. The service were proposed to customers which could unload several pallets which were to be delivered in the historic centre directly at the UCC with the aim to include the service in the current contractual offering. Under these agreements with operators the delivery of an average of five pallets of goods (e.g. wine boxes) per day was tested for all the piloting period resulting in dozens of pallets delivered. Both transport operators and shop owners appreciated the service and high satisfaction registered led to and increased demand for provision of palletized goods transportation to businesses with FEV. The pilot allowed to obtain the integration of the palletized distribution within the actual services provided by the UCC to the short range operators in the area. The service optimized former loading/unloading activities in the sense that there is no need to unbundle the pallet that can now be delivered as a single object, reducing the operation time of the transport operator and therefore reducing the possibility of loss parcel.

Moreover, pilot activities allowed to test the seamless integration of the ICT systems of Luccaport and other freights operators also in the case of palletized goods. The shipping documents are transferred in advance in electronic format to the UCC and automatically uploaded into the ICT platform allowing to duly plan the receipt of the palletized goods.
Pilot measure n.2 - B2B services for local businesses concerning the provision of forwarding services toward any destination outside the target area in partnership with other national or international freight operators

Lucca is focusing on freight and logistics services not only for the urban area, but also on B2B services for local operators and B2C services targeting any destination outside the urban area with other national or international freight operators. LuccaPort provides services to support cooperation between long-/mid-range freight operators and the local distribution actors including: transhipment of goods at the LuccaPort logistic platform; organisation of best possible operations (e.g. groupage, load consolidation, etc.) for deliveries of goods to their final destinations toward the Lucca city centre. As introduced before, Luccaport aims to offer also several added value service, and therefore during the pilot Luccaport tested the provision of forwarding services toward destinations outside the city centre (reverse logistics). Partnership with other national or international freight operators were established between long-/mid-range freight operators already collaborating with Luccaport distribution centre: deliveries were forwarded and shipped to the final destination outside the local area of operation of LuccaPort (e.g. Milano, ecc. .....) testing, in partnership with other national or international freight operators, a “first mile” service as compare to last mile delivery service already offered by Luccaport.

Pilot measure n.3 - Freight operations integrated with leisure mobility: dedicated delivery programmes providing services for tourists and travellers, luggage transport to/from hotels, etc

The area involved in the project is the city historic centre where in addition to the headquarters of the main public authority, there are the main tourist attractions and a wide set of economic activities: business, commercial, professional, etc. The city centre can be accessed through six ports located along the walls that connect the external road network with internal network of medieval streets. In the historic centre, integrated traffic regulations are in force. In Lucca, as in most of the historic towns, leisure mobility accounts for an high percentage of the yearly distance travelled by people. Therefore, leisure mobility plays a decisive role in overall reduction of emissions from the transport sector. Beyond the main services for commercial activities in the historic city centre, the third pilot measure implemented by Lucca was dedicate to freight operations related and integrated with leisure mobility, in particular related to tourist (added value service).

During the piloting activity, Luccaport have defined and developed customized services addressing specific needs of tourist, such as luggage transfer to/from the hotels located in the pedestrianized area of the city centre. In fact, with the aim of reduce the presence of bus in the inner city centre, the city administration provide through Luccaport a dedicated luggage transfer service to/from the hotels. During the pilot, it was proven that the average stay of the tourist bus in the inner centre was reduced by 20% and 10% of the arriving tourist buses choose to stop outside the city centre, taking advantage of the luggage transfer service.
Moreover, additional service were identified by customer’s request allowing to customize the offer of the Urban Distribution Centre on the peculiarities of the city activities and attractions. In particular, a monthly antiques market in Lucca historic centre is highly visited by tourist. In order to develop additional dedicated logistics service related the antiques market, a porterage service from the local market (reverse logistics) and the temporary storage of freight and bulky goods at the LuccaPort warehouse have been offered during piloting activity. A total of 200 services (transfer and antique, 5 monthly market with 5 services for a total of 25 services operated) related to leisure mobility were implemented during the pilot, and the level of satisfaction of both tourist and hotels was registered. The pilot pave the way for the development of agreements and protocols with relevant local actors in order to permanently offer dedicated logistic service for specific events and city attraction as well as for specific subject related to the leisure mobility (hotels, buyers and retailers of antiques). In particular, the antique market service is now part of the commercial offering of Luccaport.

The pilot activity related to logistics service development integrated with leisure mobility allowed to open the dialogue with different actors involved in the logistics related to leisure mobility, such as hotels and accommodation business and local market and antiques sellers.

Aside the above described piloted services which were activated during the timeframe of the T3.1 “Pilot implementation and showcasing”, several other service were already running, showcasing relevant aspects and providing valuable information during T3.1 activities and for the WP4 “Good practice analysis, knowledge sharing and exchange of experiences” and in particular to T4.1 “Experience Exchange Actions” and related study visits. Such services take advantage of the infrastructures, local partners and organisational set up for showcasing and evaluation of existing, services integrating the piloted services and piloting and demonstration of additional ones. Such services address different city logistics market segments as well as some services with a social relevance including:

- B2C services for citizens and tourists using Luccaport office as a dedicated Pick-up-Point services, where parcels could be collected and/or directly shipped. The service is similar to those offered by large express courier which has started also in Italy to use facilities external to their network as pick up point. This is the case of the partnership between SHELL and TNT where the express courier uses SHELL gas stations as pick up points of their delivery/collecting network.

- Complementary logistics services for hotels. One of this service dedicated to the HO.RE.CA - hotels, restaurants, catering – operators, is developed in collaboration with the main industrial laundries, and consists in the transport of bedding /linen to/from laundry services. This service uses FEVs for the pickup and delivery of linen from/to hotels, restaurants, B&B, etc.

- Third party warehousing and support services (e.g. replenishment transport) for shop keepers and small business. providing space rental, remote stocking, services and related electronic services (e.g. stock state information, replenishment order submission, etc.) for interested shops and other service operators.
- Household and Company goods moving: dedicated service with everything from packing of personal property, by moving to unpacking in the new location.

- Internal transfer: service for people and businesses relocating their goods from one place to another in the same building (boxing, porterage and unboxing service)

It is worth to note that the management board of the Urban Consolidation Center of Lucca decided to start with the full implementation of optimized town reverse logistics services and “Third-Party Warehousing service” before the start of the task T3.1. Such services, are not reported in the list of piloted service, but have been implemented in Lucca and are actually fully operative.
1.6 Pilot measures in Trondheim

Trondheim is the Norway’s most known historic town and, with a population of about 180 000 inhabitants, it is the third most populous municipality in Norway and city in the country. Founded in year 997 AC by the Viking King Olav Tryggvason, Trondheim is one of most known historical cities and ancient capital and hosts the regional official political organization and administration. The city has a strong position as the centre of trade for central Norway supporting good relations with other cities in the middle of Scandinavia as Østersund and Sundsvall in Sweden. Moreover the city is the administrative centre of Sør-Trøndelag County Trondheim, it has around 50 per cent of the regional retail trade and about 85 per cent of the whole sale making traffic problems mainly the same as in larger cities, though in a minor scale.

The Norway Post group is a significant post and logistics provider with Mail and Logistics as main business areas. Norway Post is fully owned by the Norwegian state, but operate as an ordinary private transport actor with the Nordic countries as the home market. Norway Post has environment as a Common Social Responsible area, and have decided to take the position as the leading transport company on environment in Scandinavia. Norway Post has ambitious goals for reduced CO2-emissions which is 30 % reduction in 2015 from 2008-level. Posten Trondheim, as a partner in the ENCLOSE project, are represented from operational units from both the Mail and Logistics Divisions in Trondheim. A local project in Trondheim, “CO2-free post distribution in Trondheim city center” was established in March 2010, and this project is the main reason why Posten Trondheim became an ENCLOSE partner.

The logistic base infrastructures of Norway Post in Trondheim are the following:
- Trondheim Post Terminal at Sluppen, 5 km. south of city center
- Bring Cargo Terminal at Brattøra, 1 km. north of the city center
- Bring Frigo Terminal at Brattøra
- Bring Warehousing terminal at Brattøra

At Trondheim Post Terminal letters, commercials, small parcels and parcels are handled to and from businesses, offices and households in Trondheim city and the Trøndelag Region. For 2013 the terminal handled 106 500 000 letters/small parcels, 173 000 000 commercials and 4 635 886 parcels.

The Bring Cargo Terminal handle parcel and goods to and from the Trøndelag region. The Bring Frigo terminal handle thermally-regulated logistics for foods to and from the Trøndelag region.

The infrastructure of Norway Post for customers are:
- Post office and Post in shops for private and business customers to pick up parcels and letter post in mailboxes. From Post in shops customers also can send letters and parcels inside Norway and to rest of the world
- Pick up and delivery agreements door to door service
- Postmen delivering letter post and small parcels in private mail boxes
- Vans and trucks deliver and pick up from businesses and offices

The pilot measures for Trondheim are directly linked to activities in the project. The geographical limits for the pilot services are the city center of Trondheim, about 1 km² area and about 6100 shops,
offices and households. Posten Trondheim have their main activities at the Post Terminal at Sluppen, which is located 5 km south of the city center. At this terminal letter mail and parcels are handled for the whole Trøndelag region, and the areas in and around Trondheim represent about 50% of the total volume. Most letter mail to the terminal being transported by air with an air freight company from other postal terminals in Norway. As Trondheim airport is located 40 km north of Trondheim, this mail is transported by trucks to and from the airport. Parcels, goods and commercials are transported to and from the terminal by trucks and trains.

In the context described in D3.1, the ENCLOSE piloted measures for Posten Trondheim were have been the following:

1. Mail distribution (large and small envelopes) in Trondheim city center by using electric-vehicles replacing 5 diesel vehicles
2. Parcel distribution in Trondheim city center by using electric and hybrid vehicles replacing 5 diesel vans.
3. Pallets distribution in Trondheim city center and transport between Trondheim city center and Trondheim Post terminal by using electric and hybrid vehicles replacing 1 diesel truck.

**Pilot measure n.1 - Mail distribution (large and small envelopes) in Trondheim city center by using electric-vehicles replacing 5 diesel vehicles**

When the local project “CO2-free post distribution in Trondheim city center” started in March 2010, this service was done by 5 postmen who each operate from a diesel van (Peugeot Partner). The logistics solution was that early each morning 6 days a week the 5 postmen started their work at Trondheim Post Terminal, located at Sluppen, 5 km south of the city center. After finished their route planning activities the letters was uploaded in 5 vans and the 5 postmen drove into the city center for the mail delivery. Each postman had their own route in the city center, and they organized the Mail delivery by parking the vehicle and walk in the nearby area for delivery in mail boxes and partly on desks in the shops. After finishing a part of a route they drive the car to next stop and the same activity was done.

After, the establishment of the UCC (Urban Consolidation Center) in the city center in Trondheim, it has been decided to start replacement of the diesel cars with electric vehicles such as trolleys, bicycle or moped in order to achieve the goal of CO2-emissions reduction.

The first pilot measure aims not only to contribute to the reduction the CO2-emissions in the urban centre but also to reduce costs by reducing the postmen driving time between the Post Terminal and the city center. In fact, the UCC located inside the city center avoid postal workers transfer from the Post terminal to the city centre.

With the first pilot measure, 5 diesel vehicles were in fact substituted with 2 electric trolleys, 2 electric jeep and 1 Piaggio Porter electric van dedicated to mail distribution in Trondheim Municipality. In May 2014 more than 50% of these vehicles are electrically driven. During pilot measure n.1 the number of mail-deliveries performed by 5 vehicles was a total of 153 000 per year.

The main challenge for increasing the number of electric vehicles is related to the distances driven (some vehicle travel more than 70 kilometers in one route). A possible solution will be the improvement of logistics platform to reduce driving distances for each single vehicle. The establishment of 2 – 3 Consolidation Units is planned and such action will reduce driving distance for more cars and vans.
Pilot measure n.2 - Parcel distribution in Trondheim city center by using electric and hybrid vehicles replacing 5 diesel vans.

At the beginning of the “CO2-free post distribution” parcel distribution service was done 5 diesel vans (Ford Transit). This service includes door to door parcel (up to 35 kg) deliveries B2B (Business to Business). The logistics solution applied consisted in loading 5 vans between 9 to 10 in the morning at the Trondheim Post Terminal in Sluppen (5 km south of the city center). Then vans drove to the city center for parcel delivery to shops and business customers. Since after 11 pm cars access is restricted in the pedestrian areas, 2 of the 5 vans mainly served that areas. Each vehicle had specific delivery area in the city center. When the volume/number of parcels was high, some of the vans need to return to the terminal for further parcels loading. Vans mainly stopped in specific unloading areas, but, where not forbidden, also in the streets for a short time for delivery. During pilot measure n.2 the number of parcels-deliveries performed by 5 vehicles was a total of 42 280 per year (Note: mail deliveries, means several letters each delivery).

Once the UCC (Urban Consolidation Center) was established at the harbour-area (1 km north of the city center in Trondheim), the transport of parcels between the Post terminal and the UCC was planned to be conducted with trucks which otherwise driving empty from the Post terminal to the railway station nearby the UCC. Replacing diesel vans with eco-friendly vehicles allow to obtain a relevant reduction of CO2-emissions.
Pilot measure n.3 - Pallets distribution in Trondheim city center and transport between Trondheim city center and Trondheim Post terminal by using electric and hybrid vehicles replacing 1 diesel truck

In 2010, palletized good distribution service was operated by 1 diesel truck (Mercedes Atego). The service covers both door to door parcel/goods delivery (B2B Business to Business) and pick-up and delivery for specified customers. The service also covers transport of mail and parcels between Trondheim Post terminal and postal units in the city center. The truck mainly stopped in defined unloading areas, but also in the streets where the rules in Trondheim allow to stop for a short time for delivery. The third pilot operation consists in replacing the diesel vans with eco-friendly vehicles to further reduce CO2-emissions. In particular 1 hybrid diesel/electric truck was used to deliver palletized good instead of the previous diesel truck. Deliveries of pallets and deliveries to shops and customers who has an agreement for special deliveries, counted during Pilot measure n. 3 was in total 4590 per Year performed with 1 truck.

On the whole the 3 pilot measures implemented in Trondheim aims to make a more sustainable good transport in Trondheim city centre. Posten in Trondheim is now using mainly electric trolleys for letter deliveries, smaller electric and hybrid vans for smaller parcel deliveries and a hybrid truck for bigger parcel and pallets deliveries. For express courier Posten also use bicycle.

Concerning the overall management and technical aspects of the piloting activity, some issue are worth to note. Initially the logistic context for mail and parcel delivery was the following: 5 postmen start working at the postal terminal located 5 km away, drove their own postal car from the terminal to the city center (10 km, each day for 5 cars means 50 km a day). The new situation was that the postmen start working directly in the city center, and instead of 5 vehicles they use 1 vehicle each from the terminal to the city center (with a related reduction of 40 km/day).

Reducing the distance to the city centre, it was also possible to replace diesel cars with electric vehicles. Among management, technical challenges it is worth to note that the replacement of diesel vehicles with FEV was not well accepted by postmen because they lost a standard good and warm van and had to walk with a trolley or another electric vehicle with less comfort standard. However, after the first period, this change was not well accepted for mail deliveries (pilot measure n.1). On the other hand, for parcel deliveries (pilot measure n.2) Posten realized that reduced load capacity in the electric vans brought to higher costs and in this case, diesel vans were put back again for parcels deliveries. One the important lesson learnt by the pilot experience has been that a big challenge is moving a diesel truck driver from a standard truck to an electric vehicles. Maybe innovative technologies will allow the development of electric trucks, which would have made this problem easier to solve.

Another challenge that Posten had to face during the pilot was related to the technical problems with one of the electric vehicles that have been solved by technician during piloting activity (it is known that FEV requires more routine maintenance that diesel vehicles). Concerning the adaptation to the winter season, electric vehicles was not very different from the diesel vans, actually Posten drivers highlight that in case of much an FEV could be easier to handle than a diesel van.

Posten is actually working with Sintef research institute, Trondheim Municipality and the regional authority in order to establish hydrogen filling infrastructure in Trondheim area. To further reduce CO2-emission, Posten need to replace diesel vans and trucks with other eco-friendly fuels, and now the most possible seems to be hydrogen. Biogas vehicles has been evaluated but the possibility was discarded due to the lack in the Trondheim area of a biogas production plant.

Trondheim Municipality is strongly motivated in supporting the ENCLOSE project and was involved in the pilot activities as well as in the development of the local SULP. This high involvement of
Trondheim is guaranteed by the level of collaboration of the local Municipality with Posten Norge, and by the fact that Trondheim Municipality has developed a “Programme for sustainable transport in Trondheim” in collaboration with Sør-Trøndelag County Authority and the Public Roads Administration that foresees a specific “Action plan for efficient goods transport in Trondheim”. For these reasons, in parallel to the above described pilot measures, Trondheim planned to strengthen the experience with electric trolleys, mopeds and cars in logistics operations in city centre, further integrating and piloting FEVs in town logistics schemes to fulfil their goal for 100% reduction of CO₂-emissions. The aim is to improve the operation of an optimised energy-efficient city logistics service for the distribution of goods and parcel to the shopkeepers in the inner city centre, through a zero-emission high-quality pick-up and distribution services for the citizens (e.g. with guaranteed delivery times).
1.7 's-Hertogenbosch pilot measures

's-Hertogenbosch (short: Den Bosch), is a city in southern Netherlands. Located 80 km south of Amsterdam, it is the capital of the province of North Brabant with a rich culture history. The city has 140,000 inhabitants, 100,000 of them working in various sectors in 9,890 companies, with a particular focus on food, healthcare and pharmaceutics. A considerable activity is also tourism with the presence of 5,200,000 annual visits. Den Bosch is also a member of the Cities for Mobility http://www.cities-for-mobility.net/.

On the basis of the operational background and local context described in D3.1, by use of the ENCLOSE resources, 's-Hertogenbosch will focus on delivery as well as other municipal logistics services and piloting actions:

1) set up of specific partnership agreements (B2B) between shopkeepers, transport companies and other stakeholders aimed at improving the efficiency of town delivery services;

2) demonstrating and enhancing the use of fully electric busses for transport of people with bulky purchases;

3) town delivery services using biogas vehicles.

Pilot measure n.1 - Set up of specific partnership agreements (B2B) between shopkeepers, transport companies and other stakeholders aimed at improving the efficiency of town delivery services

At the start the city council called for ideas in the field of efficient commercial city distribution. Three business plans were submitted. The company “Binnenstadsservice” had the best plan and was granted a subsidy to start up their activities.

The concept is the company is to put the shopkeeper in a key position. They decide in what way they want goods to be delivered to them. During the first years, services like warehousing and removal of package material were added. The distribution centre is now running using one biogas truck and a cargo bike.

In 's-Hertogenbosch 45% of the delivery’s cause 80% of the trips. This, in turn, is mainly caused by the smaller shops where only one or two delivery’s per trip are made. Therefore the smaller shops are the main target groups.
In theory the 2500 trucks that enter the city centre could be reduced to 170 trucks. Although it is clear in practice it is not achievable, it does show that there is great potential. Binnenstadsservice has been slowly but steadily growing in ‘s-Hertogenbosch and has branches in 15 other Dutch cities.

Pilot measure n.2 - Demonstration and enhancement of the use of fully electric busses for transport of people with bulky purchases

From 2015 all public transport will be diverted and all lines will use and stop only on the ring around the city centre. Because of the limited size of the city centre the last kilometre can be done walking. An additional service with three small electric busses has been tested and is planned mainly for tourists and elderly people. The only full sized (12 meter) busses that will continue to enter the city centre, will be the P&R shuttles. This concept will make that all remaining public transport in the city centre runs on zero emissions. This means a significant reduction in noise, vibrations and emissions and so improvement of air quality, attractiveness and sustainability.

Wireless charging full size electric bus

By running pilots, experience is gained on the impact of electric vehicles in public bus services. This project is about a full size electric powered bus for public transportation which runs from a Park & Ride facility right into the centre of ‘s-Hertogenbosch. “Electric powered” means, no air pollution, less noise and - in our case- no greenhouse gasses. This makes the historic city more sustainable and even more attractive for inhabitants and visitors.

Why topping up?
The existing electric mini-buses in ’s-Hertogenbosch charge at night. For them, overnight charging is sufficient for a day schedule. Big 12 metres busses would demand much more battery-capacity. This would make them heavy and expensive. By recharging while in service, less batteries are required.
but still guarantee operation from early morning until late evening. In practice the bus receives a fast
and powerfull recharge while boarding passengers at the busstop. This way the recharging has been
fitte into the existing timetable.
The city of ’s-Hertogenbosch is working towards cleaner air, is reducing greenhouse gase and also
actively participating in innovative solutions that make the city more attractive and sustainable.
Zero emission public transport and electric transportation in general are part of these innovations.
The city is working closely together with local and regional enterprises.

What’s next?
Many lessons have been learned from the project concerning technical and financial issues as well as
and how to organise electric public transportation. We currently use these lessons in the planning of
additional lines, vehicles and charging stations. Knowledge is also used as input for the next tender
for public transportation.

Pilot measure n.3 - Town delivery services using biogas vehicles
Garbage collection in the Netherlands is strictly divided in public and private activities.
Local governments are responsible for garbage collection for their inhabitants. Companies (like
shopkeepers) choose their own garbage company themselves in a (highly competitive) market.
Whereas in most area’s garbage collection is done by private contractors, ’s-Hertogenbosch still has
her own, semi privatized, garbage collection service. This company (Afvalstoffendienst) is owned by
the city and collects garbage from inhabitants (public task) as well as shopkeepers that contracted them
(private task).The afvalstoffendienst has an annual turnover of 32 mln
and reaches 110.000 households
and 3000 companies. In total there are 65 vehicles in use.
In the city center, the
Afvalstoffendienst has 80% market
share in garbage collection (in the private sector. Use of cleaner
vehicles therefore will have a
significant effect on CO2 and other
emission in the inner city. After a
market scan the introduction of
biogas vehicles appeared the best
option in terms of financial,
functional en environmental
demands.
In 2012, 2 biogas vehicles are in use and 3 more ordered. Reduction of emissions and noise are the
most important advantages. In the longer term they are expected to be more cost effective as well.
For example: At the moment there is inefficiency because there is no filling station nearby. Once the
facilities are there, the trucks will use biogas from the nearby sewer plant.
1.8 Conclusions

The introduction of pilot services and activities, in the running operating local context of the forerunner towns, has been taken place and the activation of the services have been a relevant process, taking into consideration the level of complexity of each single measure. In each single case the activation of the measure is accomplished on the basis of local evaluation and experience; taking in consideration the local needs as emerged by the results of WP2 with the local analysis activities (see T2.2 and T2.3).

The showcasing phase of each activated measure last at least 6 months, in order to have a significant period for the monitoring and for the analysis of the results and impact evaluation and mainly running in the period from M8 to M14 of the project. The first month (M8) was mainly focused on the organization aspects, while the implemented measures covered the aspects above described and some of the piloting measures have been maintained after T3.1 conclusions.

Annexes

Acronyms and abbreviations

<table>
<thead>
<tr>
<th>Acronym / Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCC</td>
<td>Urban Consolidation Centre</td>
</tr>
<tr>
<td>UDC</td>
<td>Urban Distribution Centre</td>
</tr>
<tr>
<td>CDT</td>
<td>Central Distribution Terminal</td>
</tr>
<tr>
<td>B2B</td>
<td>Business-to-Business</td>
</tr>
<tr>
<td>B2C</td>
<td>Business-to-Consumer</td>
</tr>
<tr>
<td>FEV</td>
<td>Full Electric Vehicle</td>
</tr>
<tr>
<td>P&amp;D</td>
<td>Park and Drive facility</td>
</tr>
<tr>
<td>RTZ</td>
<td>Restricted Traffic Zone</td>
</tr>
<tr>
<td>PD</td>
<td>Pedestrian Zone</td>
</tr>
</tbody>
</table>