



Co-funded by the Intelligent Energy Europe
Programme of the European Union



Contract N°: IEE/11/826/SI2.615930 – ENCLOSE

Deliverable D2.2 “Sustainable logistics in European small-/mid-size historic towns: stakeholders goals and User Needs Analysis”

Document Control Record

ENCLOSE Doc. Type/ No. / Title	Deliverable / D2.2 / Sustainable logistics in European small-/mid-size historic towns: stakeholders goals and User Needs Analysis
WP	WP2: Energy efficient urban logistics in Small/Mid-size historic cities: situation, needs and challenges
Date/ Version	13/11/2012 / v. 1.0
Diffusion Level	Public
Document responsible	Lucca
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EXECUTIVE SUMMARY

ENCLOSE – ENergy efficiency in City LOGistics Services for small and mid-sized European Historic Towns – addresses freight delivery and city logistics in European small-/mid-size historic towns (SMHTs). The project aims to demonstrate and assess feasible and sustainable solutions leading to tangible reductions of energy and environmental impacts of logistics looking at good practices in three “forerunner” SMHTs – Lucca (IT), Trondheim (NO) and ‘sHertogenbosch (NL) – and their potentials for transfer / further development in six “follower/learner” towns – Alba-Julia (RO), Almada (PT), Balchick (BG), Burgos (ES), Dundee (UK), Serres (GR). Project activities will encompass various actions, including demonstration of sustainable schemes and measures, development of feasibility studies, investigation and assessment of “green vehicles” (FEVs, PHEVs, Bio-gas) and fleets operations in small-/mid-size historic towns, development of Sustainable Urban Logistic Plans in the nine ENCLOSE SMHTs.

This deliverable D2.2 “Sustainable logistics in European small-/mid-size historic towns: stakeholders goals and User Needs Analysis” reports on the results and achievements of project task T2.2. “Stakeholders goals and User Needs Analysis”. It first provides a description of the three “forerunner” and six “learner” ENCLOSE historic towns, outlining the main characteristics of freight and logistics processes, the main issues and actions investigated, planned or undertaken in each site. A common methodology for data collection and analysis is then introduced as a basis for the User Needs Analysis (UNA) to be conducted in all ENCLOSE sites. The data collected in each site are presented and the main goals for improvement of city logistics operations are illustrated in relation to the different stakeholders types concerned, including Local Authorities and service providers, fleet/transport service providers, commercial operators, citizens and consumers.

The main outcomes of the User Needs Analysis are finally summarized in relation to four main categories: technical, operational, commercial and socio-economic user needs.



1 INTRODUCTION

The data and considerations presented in this document originate from the surveys conducted by the ENCLOSE Consortium partners in their respective cities. These were made according to the methodology laid down in the internal document " WP2 Approach and Data Collection Methodology" where the methodological approach and the various questionnaires were detailed in order to collect both the objectives of the various local stakeholders (public authorities, transport operators , control centers, pollution, etc..) and the needs of the users of urban logistics (mainly shopkeepers and citizens)

2 ENCLOSE FOCUS

2.1 *ENCLOSE Project general view*

ENCLOSE – ENergy efficiency in City LOGistics Services for small and mid-sized European Historic Towns– (IEE/11/826/SI2.615930) is a 30 months Project initiated under the Intelligent Energy Europe (IIE) program.

The project aims to :

- demonstrate and assess feasible and sustainable solutions leading to tangible reductions of energy and environmental impacts of logistics in European small-/mid-size historic towns (SMHTs) and transferring best practice and benefits within and beyond the network of participating towns
- qualify the demand of Local Authorities and municipalities 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 of freight distribution and logistics schemes in the overall urban mobility and, more generally, town governance policies;
- investigate and assesses 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, assess the full energy cycle and impacts, identify their additional benefits and key issues for any effective adoption and integration in the overall logistics, mobility and energy management plans.
- develop Sustainable Urban Logistic Plans in 9 SMHTs involving partners from 12 EU countries – Austria, Bulgaria, Greece, Ireland, Italy, Norway, Poland, Portugal, Spain, Sweden, The Netherlands and the UK – with a very high potential of achieving a much wider reach thanks to participation of European and worldwide City Associations and networks (the European Association of Historic Towns the Walled Towns Friendship Circle) providing the necessary multiplying promotion and diffusion context.

The project will capitalise on the results, experience and practices of three consortium partners (Lucca Municipality, Posten Norge and 'sHertogenbosch) very expert in operating advanced and sustainable schemes for urban distribution and in connected value-added logistics services. The ENCLOSE Follower/Learner historic towns (Alba-Julia, Almada, Balchick, Burgos, Dundee, Serres) will benefit from this experience and will carry out



targeted transferability analyses leading to the identification of feasible solutions for local implementation of energy-efficient and sustainable urban logistics measures.

The planned work includes the following elements:

- In-depth analysis of stakeholders aspirations and objectives as well as of the needs of the main actors along the logistics service chain(s) as regards their own local contexts (Task 2.2 and subject of this deliverable).
- Identification of main objectives and dimensions of the towns' logistics domain, including: freight and logistics schemes and offered services (e.g. push/pull measures, B2B/B2C services, etc.), organisational set-ups, operational practices and commercial/collaboration agreements, supporting technologies, vehicle types and characteristics, the background institutional and policy frameworks and key aspects of the underlying business models
- Experience exchange and knowledge sharing activities (see WP4 for organisation). In particular, the ENCLOSE Follower/Learner historic towns (Alba-Julia, Almada, Balchick, Burgos, Dundee, Serres) will carry out targeted transferability analyses leading to the identification of feasible solutions for local implementation of energy-efficient and sustainable urban logistics measures.
- Pilot operations, carried out in the three ENCLOSE Forerunner towns Lucca, Trondheim and s'Hertogenbosch. 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.
- Soft measures will implemented by follower/learner towns introducing some improvements in their current urban logistics practice by optimisation of running scheme.
- 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 (SUMP) will be develop by all the sites
- Comparative evaluation of site results, by a common framework and evaluation methodology, as regards mobility, transportation and energy environmental benefits
- Communication and dissemination activities: the main objective of this task is to communicate and promote all information concerning the various activities and results achieved in the project. The results of ENCLOSE project will be disseminated within the network of ENCLOSE partners and the "ENCLOSE Stakeholders Support Group" involved and addressed by the project. An important targeted audience for project results will be the members of the European Association of Historic Towns and Region network (EAHTR), the members of the network provided by s'Hertogenbosch.

2.2 Scope and role of WP2 and related Tasks

The correlation between the various activities to be carried out in WP2 are illustrated in the following diagram from project's Annex 1:

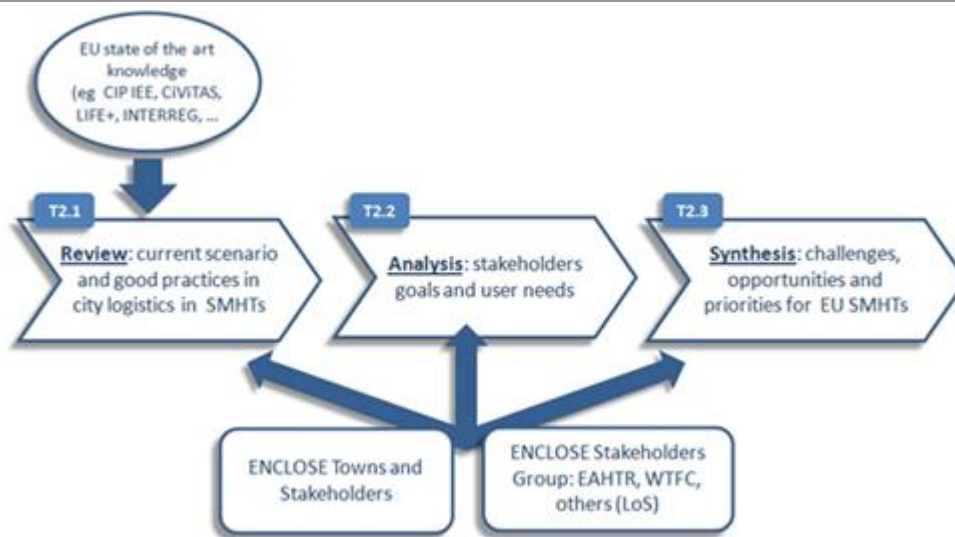


Figure 1 – Flow of activities (Tasks) of WP2

The planned activities in WP2 are organised in three tasks addressing a state-of-the-art review of sustainable logistics at the European level, analysis of local needs, synthesis of needs and opportunities:

1) T2.1 Review of current situation of freight and logistics in European SMHTs .

The current European situation will be reviewed under the specific perspective of energy efficiency and sustainability of freight and logistics operations, schemes and measures in small-/mid-size historic towns and centres.

The result of this phase will be a comprehensive and updated view of current city logistics initiatives (projects, schemes, commercial services, etc.) in European historic towns of a small/mid size, with a description of the addressed goals and needs, the solutions implemented, obtained benefits and open issues. All will be reported in the deliverable D2.1

2) T2.2 Stakeholders goals and User Needs Analysis

As described in the next section, the ENCLOSE historic towns have conducted, in their own local context, an in depth analysis of stakeholders aspirations and objectives as well as of the needs of the main actors along the logistics service chain(s)

3) T2.3 synthesis of challenges, opportunities and priority

The stakeholders goals and needs identified in T2.2 will be assessed with the aim of identify the most relevant challenges that SMHTs have to face when introducing sustainable, energy-efficient freight and logistics measures, together with a set of possible options and solution preliminarily identified in task T2.1. The needs will be evaluated and prioritized in terms of their importance, complexity of solutions, assessed/potential benefits, etc.

The results will provide a structured reference view concerning current goals and issues and possible solutions as regards sustainable logistics in small-/mid-size historic towns. This will contribute to design the activities related to pilot demonstration site feasibility/transferability analysis (WP3) and will also be aimed to support the development of the Sulp (Task 3.3).

2.3 Task T.2.2

In T2.2 “Stakeholders goal and User Needs Analysis” the main user requirements will be investigated for the different user categories within the logistics processes addressed by ENCLOSE (logistics operators, fleet operators, commerce and retail operators, end-customers, ...). This will lead to identifying a core set of requirements to be met by (1) the local solutions for implementation of energy-efficient sustainable urban logistics measures and (2) by the development of local Sustainable Urban Logistics Plans (SULPs) as foreseen in WP3

The general objectives of T2.2 are:

- To generate a robust, core set of user requirements to be met by the ENCLOSE measures
- To investigate and identify the user needs and the institutional, organisational and operational issues in greater depth by the discussion and validation through a dedicated seminar/focus group

Following the indications included in the internal ENCLOSE report “WP2 Approach and Data Collection Methodology” and starting from site requirements, a common core set of user requirements will be identified. In particular the institutional, organisational and operational needs and constraints will be investigated in order to define the support scenario to local the ENCLOSE solutions. The user participation (UNA updating) will represent a continuous feedbacks on the overall project life in order to create an improved acceptance of ENCLOSE measures and more the suitable economic and societal impacts.

In the dedicated seminar/focus group (planned in project WP4) with participating sites representatives of other towns and EU countries, the identified user needs will be analysed also taking as background different flexible, demand-responsive logistics schemes identified in T2.1.

The user needs analysis is also of utmost importance to assess the potential for transferability for other cities or even to adapt to changes in the contextual environment of a given city.

Within T2.2, four main results are to be achieved :

- to define the objectives of the local projects, the local stakeholders and their needs;
- to identify the institutional , organisational and operational aspects underlying the implementation of energy-efficient sustainable urban logistics measures in the sites;
- to define the common ENCLOSE system requirements which are likely to be implemented in the pilot sites (by T3.1);
- to integrate the different local results at project level and produce the Deliverable D2.2 “Sustainable logistics in European small-/mid-size historic towns: stakeholders goals and User Needs Analysis”.

2.4 WP02, WP03 and WP04 Interrelations

As fully illustrated in section 2.2, WP02 is of fundamental importance for the subsequent development of WP03 and WP04.

In WP02 and precisely in the task T2.2., each town participating to the ENCLOSE project will identify the local study area for the implementation of urban logistics measures and identify the main stakeholders and user needs.



It is on the base of the results of WP02 that in WP03 phase, in order to achieve significant energy efficiency and reductions of city logistics impacts, the towns of Lucca, Trondheim and 's-Hertogenbosch and will extend their current city logistics schemes with new measures (see T3.1) and the Follower / Learner towns will implement and develop soft measures and carry out the SULPs.

Certainly the success of these new measures is closely dependent on the accuracy of the analysis of user needs and stakeholders goals that have to correspond to the reality of the examined sites .

The actions of WP04 "Good practice analysis, knowledge sharing and exchange of experiences " aim for implementing the transfer of experience from forerunner sites to the less experienced follower/learner sites. In this experience exchange also the results of T2.2 regarding the individuated local user needs and stakeholders goals will be analysed and discussed with the help of the experience of the measure carried out by the Forerunners towns.

The returns of knowledge derived from these analysis and discussions with partners who have already carried out a number of measures relating to the urban logistic service are extremely useful for the designed and implemented activities foreseen in the WP03 to meet the local needs and as well as they can be replicated in other SMHT European and can be kept active even beyond the life of the ENCLOSE project.

3 THE ENCLOSE SITES

3.1 Forerunner sites

3.1.1 Lucca (Italy)

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.

The access to the centre is through six ports located along the walls that connect the external road network with internal reticule of medieval style.

In the historic centre, strongly affected by the road and access structures, integrated traffic regulations are in force including "Limited Traffic Zone" and "Pedestrian Zone" and with a maximum speed limit of 30 kilometres per hour for all vehicles. Vehicles access permissions are granted to residents, traders (traders, artisans, etc..) present with their activities in the centre and transport operators.

The city's economy has been changing over time. In particular today the historic centre, in addition to contain the headquarters of the main public authority, shows a vocation for tourism and for a wide variety of economic activities: business, commercial, professional, etc. Recently survey, confirmed by studies produced by the Chamber of Commerce of Lucca, identify in this area about 1500 showcase fronts corresponding to more than 1400 shops or artisan laboratories.

Beginning in 2005, a urban logistics optimized service is operating that at the moment, service using an dedicated warehouse and a fleet of 4 electric vehicles it is able to make more than 120 daily deliveries (average 4/5 parcels/consigns, 2,5 teu/gg.) corresponding to 15% of city deliveries with the reduction of the number of commercial vehicles accesses to the historic centre of 44% .



Figure 2 – Lucca historic centre view

3.1.2 Trondheim (Norway)

Founded in year 997 AC in the middle of Norway, Trondheim is one of most known historical cities. The city has about 156.000 inhabitants and hosts the regional official political organization and administration.

Trondheim has a strong position as the centre of trade for central Norway. It has around 50 per cent of the regional retail trade and about 85 per cent of the wholesale. Trondheim is a small city, but the traffic problems are much the same as in larger cities, though in a minor scale.

Air quality is a local environmental problem, with a strong political commitment to improvements. In order to relieve these problems a Road Pricing system was operating since 1991 with the world's first automatic toll-ring.

With this large years' experience of automatic toll payment for road transport, Trondheim has great expertise in technical solutions, business management and public acceptance.

An optimized service of goods distribution is operating in the city managed by the company Posten Norge, that in addition to the mail distribution, operates in the logistic sector with 7 terminals and a large commercial vehicle fleet.



Figure 3 – Trondheim historic centre view

3.1.3 's-Hertogenbosch (The Netherlands)

's-Hertogenbosch is a city in southern Netherlands. Located 80 km south of Amsterdam, it is the capital of the province of North Brabant.

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 pharmaceuticals. A considerable activity is also tourism with the presence of 5,200,000 annual visits.

The city of 's-Hertogenbosch, has a goal of zero CO2 emission by 2050, has undertaken many efforts to reduce private cars traffic and at the present a large sector of the historic inner city is closed for private motorized traffic. Motorized transport account for about 30% of the CO2 emissions in the city and is the main cause of air quality problems.



Figure 4 – 's-Hertogenbosch historic centre view

The access to the city is facilitated by a number of car parking adjacent to the centre and several Park & Ride facilities in areas adjacent to the city. In the city there are free guarded parking places for bicycles and a pedestrian zone, closed to traffic. There is also an

environmental zone where only clean trucks are allowed in. Mobility measures encourage people to use the bicycle and the public transport.

's-Hertogenbosch chooses an integrated, comprehensive solutions that contribute and include better accessibility, economics, climate and other environmental targets, as well as the attractiveness of city for both dwellers and visitors.

In the field of urban logistics, 's-Hertogenbosch Municipality is promoting a sustainable approach to transportation: access to the environmental zone in the city centre is only allowed to clean trucks such as clean diesel, electric and (green) gas vehicles. Regulations seek to reduce the number of freight vehicles and optimize delivery schemes. Load/unload spaces for freight, and other advanced logistics measures will be improved in the near future.

3.2 Follower sites

3.2.1 Burgos (Spain)

Burgos is a medium-sized city (180.000 inhabitants) situated in the North-central part of Spain in the region of Castilla y León.

The core urban area is 108,26 km² and has a population density of 15,84 hb/ha. The agglomeration area has an extension of 175 km² with 248.000 inhabitants.

Burgos is an important commercial and touristic city, known world-wide because of its cultural, monumental, and artistic heritage including 3 sites declared Human Heritage by UNESCO. Its Gothic Cathedral; The Pilgrim's way Camino de Santiago; and the Atapuerca Prehistorical remains.

The layout of Burgos is determined by its 3 levels with a difference in height of 75 metres.

The funnel effect of the river and the Castle hillside, the vast historic heritage, different narrow roadways and streets, complicate mobility and logistics in the historic centre.



Figure 5 – Aerial view of Burgos historic centre

The flows of people in the historical centre is high due to the number of tourists visiting the area, which has increased during last years, added to which there are numerous small businesses and administrative offices located in its streets, as well as a large number of hotels, restaurants and bars surrounding each tourist attraction. Traffic in the centre is dense and continuous, resulting in frequent traffic jams during rush hours. This flow of traffic produces widespread parking problems and parking violations within the urban centre. In short, demand within the historic centre has increased considerably in recent years while the area has yet to adapt to its changing circumstances.

Since 2006 the Municipality established clean areas in the historic city center, covering 2,5 km, by controlling the pedestrian areas with bollards and phones and cameras surveillance



3.2.2 Almada (Portugal)

Almada is located on the south bank of the Tagus River across from Lisbon. With 174.030 residents living in 72 km², which includes two cities, suburban neighbourhoods and rural areas, Almada is one of the 18 municipalities that compose the Lisbon Metropolitan Region.

Almada local economy is primarily based on Tourism, Services and Public Administration. The region has important natural resources, several green protected areas with relevant biodiversity, geological sites of recognized importance, significant terrestrial, estuarine and marine ecosystems, etc. Almada's Atlantic Ocean beachfront extends for approximately 13 km and is a popular summertime destination for Lisbon residents as well as foreign visitors, receiving more than 8 million visitors each year that increasing the demand on tourism related services.

Within the Almada municipality territory lays Almada City. With nearly 100.000 inhabitants, Almada City is a modern, young and vibrant urban space. Thus, Almada territory lives the constant pressure of simultaneously making part of an intensively living metropolitan region while playing a major role as a touristic everyday destination.



Fig 9 – Almada city view

Almada has committed to the principles of sustainable development in many ways. In 1998 launched a local Agenda 21 process which in turn led to the City Council's 'Local Strategy for Sustainable and Solidary Development'. Almada has also developed its Local Strategy for Climate Change and, in accordance with the principles of sustainable development, joined the Cities for Climate Protection Campaign and ratified both the Aalborg Chart, also known as the European Sustainable Cities & Towns Campaign, and the Aalborg commitment. More recently, the municipality has subscribed the Covenant of Mayors and the Mexico City Pact.

Accordingly, the Almada City Council has set up ambitious policies on transport and mobility, namely through the Local Strategy for Sustainable Mobility. This strategy focused on the development of a multimodal transport system, creating greater public transport and soft modes infrastructures and promoting these modes of transportation, aiming at changing positively citizen's mobility behaviour and reducing car use. With projects such as the recent introduced new light rail system, the pedestrianization of the city centre, the Mobility Plan Access 21, the development of the Almada Cycling Plan and the optimization of PT-PT and PT-bike intermodality, Almada transport system became diverse and competitive. Parallel to that, Almada City Council developed efforts to inform and raise awareness amongst the population, with important actions as the European Mobility Week (Almada has won the 2010 EMW Award), the Green Week, participation forums, projects with schools (namely through the Children's Agenda 21) and EC co-financed projects.

Transport System in Almada



Fig 10 – Sustainable transport measures in Almada

Nevertheless, Almada still faces many traffic problems due the large number of private cars and commercial vehicles. Almada motorization value reaches 443 cars per 1000 inhabitants (71% of the population have access to a car), and it's modal split shows that 50% of commuting trips are made by private car, 30% by public transport and 20% by soft modes. Nearly 50% of the trips made in Almada refers to crossing traffic, as Almada is the southern gateway to Lisbon: the bridge crossing the Tagus river, connecting Almada and Lisbon, serves to funnel nearly 160,000 vehicles a day.



Fig 11 – Almada: the southern gateway to Lisbon

3.2.3 Dundee (Scotland, UK)

Dundee is the fourth largest city in Scotland with a population of 145,570 inhabitants, based on the most recent population estimates for mid-2011. It is situated on the northern shore of the River Tay estuary. Dundee grew up as a small port in the 11th century. By the 14th century it was one of Scotland's principal towns, based on trade with the Baltic and northern Europe. The growth of the textile industry in the 18th and 19th centuries was accompanied by rapid population growth. This industry declined through the 20th century and in its place

Dundee has developed as the retail, service and education centre for the surrounding Tayside region.

The city is almost entirely urban and suburban in character and is a hub for major routes in the east of Scotland. A line of hills bisects Dundee, consequently there are gradients on many of the major roads linking the city centre with the outer suburbs. Road congestion occurs in the peak periods, particularly at key road junctions across the city. Dundee is located on the main east coast railway line connecting Edinburgh with Aberdeen and has a modern deep-water port and large harbour area downstream from the city centre.

Air quality is a significant issue in Dundee with EU Limit Values being exceeded for both nitrogen dioxide (NO₂) and particulates (PM₁₀). The main source of air pollution is from road traffic emissions, with additional emissions from industrial sources. An Air Quality Management Area (AQMA), covering the entire city, was declared in 2006 following a review and assessment of air quality. An Air Quality Action Plan (AQAP) has been developed to set out the measures that the City Council intends to introduce to minimise the effects of air pollution on human health.

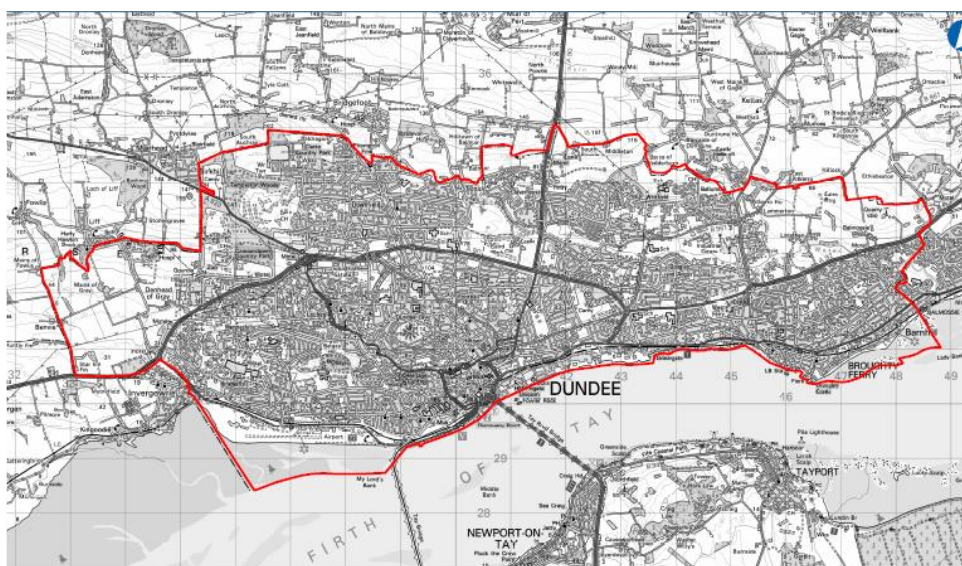


Fig 12 Dundee - designated AQMA area

The AQAP includes Measure M6 which outlines possible measures to improve the environmental and operational efficiency of freight distribution in the city. A feasibility study has investigated the possibility of freight consolidation with larger heavy goods vehicles dropping off freight on the outskirts of Dundee and using smaller less polluting vehicles delivering to the final drop off points in the city centre. The Plan also suggests exploring the possibility of formulating a Freight Quality Partnership for the city with the support of relevant stakeholders such as local businesses and large operators.

Dundee is one of the local authority areas which together make up the Tayside and Central Scotland Transport Partnership (Tactran). Tactran's role is to bring together the local authorities and the key stakeholders to take a strategic approach to transport planning and delivery in the region. A Regional Transport Strategy (RTS) has been developed which sets out a Vision and Objectives over a 10-15 year period for meeting the transport needs of people and businesses throughout the region. One of the RTS objectives is to improve the efficiency, reliability and integration of the movement of goods and people.

The Dundee SULP will take into account the AQAP, RTS and freight consolidation study, and local stakeholders/users in order to develop a Plan responding to the problems, opportunities, issues and constraints identified within the study area, particularly with regard to reducing air pollution and improving the efficiency of freight operation within the city.

3.2.4 Alba Iulia (Romania)

Alba-Iulia is a medium sized town capital of the county of Alba, situated in the center of the Transylvanian region, legally and institutionally defined of tourist interests, with a population of 60,000 inhabitants and a city area of 104 km². Alba-Iulia benefits from a good accessibility, with a large density of communication roads and the city is also crossed by the European E81 road and it is situated 100 km away from Cluj-Napoca International Airport and 70 km from Sibiu International Airport. It is a well-known historic city with a strong identity carved through two millennia of history, and a symbol of the unification of the Romanian provinces.



Figure 13 – Aerial view of Alba Iulia city centre

Traffic in Alba Iulia is quite dense despite the small size of the town. Car traffic must be restructured in some areas of the city, since there are some known deficiencies– temporary traffic jams, incoherent space management, poor signalling. The city has a significant number of public spaces designed for pedestrian use – squares and promenades – and has valuable historic sites: the bastion fortress and the Vauban style Citadel.

Alba-Iulia has an Integrated Urban Development Plan and a Development Strategy that aims to acknowledge the urban mechanisms as a positive force in improving the housing standards, equity and sustainability standards and social economic development meeting the principles of a sustainable development. The strategic plan concerning urban mobility in Alba Iulia is to address issues related to improving the quality of pedestrian and all public space areas and also to improve the accessibility in the Fortress Area.

3.2.5 Serres (Greece)

The Municipality of Serres is located in the Northern part of Greece (Region of Central Macedonia). Following a recent legislative reform in the Greek local administration, it is an expanded Municipality (resulting from 4 former municipalities and 2 communities of its Region) and the largest in population among the 7 municipalities of the Regional Unit of Serres.

Serres coverage area is around 600 sq. km and its residential population numbers 75.233 people (2011 census). There is also a considerable student community due to the presence of Technical Institute of Serres and the Physical Education Department of the Aristotle

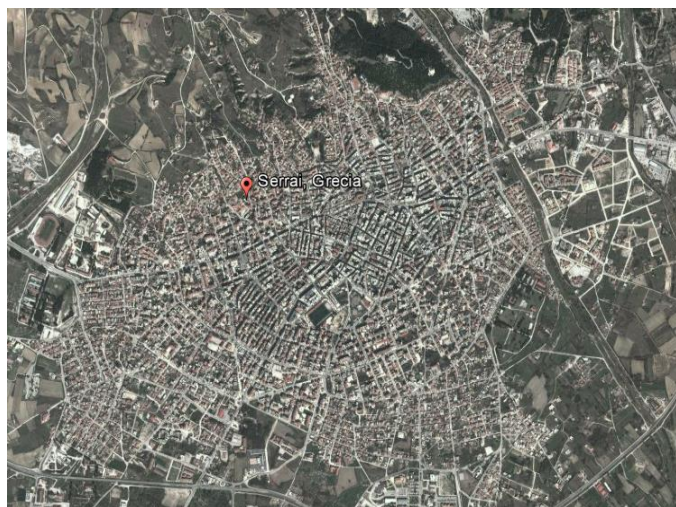


Figure 14 – Aerial view of Serres city centre

University of Thessaloniki. During working days the population increases up to 100.000 due to trips related to work, study and visits for administrative needs, deals and affairs.

Situated in a fertile terrain at an elevation of about 70m, 24km northeast of the Strymon River and 80km northeast of the city of Thessaloniki, Serres is integrated in the Transeuropean Transport Networks, part of the Egnatia Motorway vertical axe. Since its complete destruction in 1913, Serres has gradually become a remarkable urban administrative

and commercial centre with rich traditions, sports and cultural activities in arts and literature.

Mobility management is an issue of concern for the Municipality of Serres. In 2008 an important Traffic Regulatory decision was taken by the Municipal Council concerning the facilitation of sustainable urban mobility, with pedestrian paths expansion towards the whole historical and commercial centre, increase of controlled parking area up to 4,000 spaces, construction of cycling pathways and creation of three regional facilities for park and ride.

Municipality of Serres has shown a significant interest as regards environmental protection and energy saving matters. Among other activities, it has established an office of energy management and promotion of energy environmental technologies. In this field, urban freight transport is a crucial issue and regulatory decisions are also in place. However, they need perhaps reconsideration as they are a bit out of date and have to be accompanied by control enforcement by the Municipal Police. Having acknowledged the problems related to current freight traffic situation especially in the city centre, Municipality of Serres wishes to take steps forward in this field. In close cooperation with different stakeholders, a strategy towards sustainable urban freight mobility needs to be conceived with less traffic congestion or energy consumption, more environmental friendly commercial fleet, logistics management aiming at social approval and economic growth.

With the ENCLOSE project Serres aims to identify and analyse the local needs and implement logistics management measures in order to truly assess their costs and benefits and develop a suitable for local conditions Sulp. This will be a useful manual including local strategy for urban logistics facilitation and development in a sustainable way.

3.2.6 3.2.6 Balchik (Bulgaria)

The town is located just near the coast of Black Sea – NE Bulgaria panoramically viewed to the Bay of Balchik. It is a well developed tourist centre with a number of tourist attractions

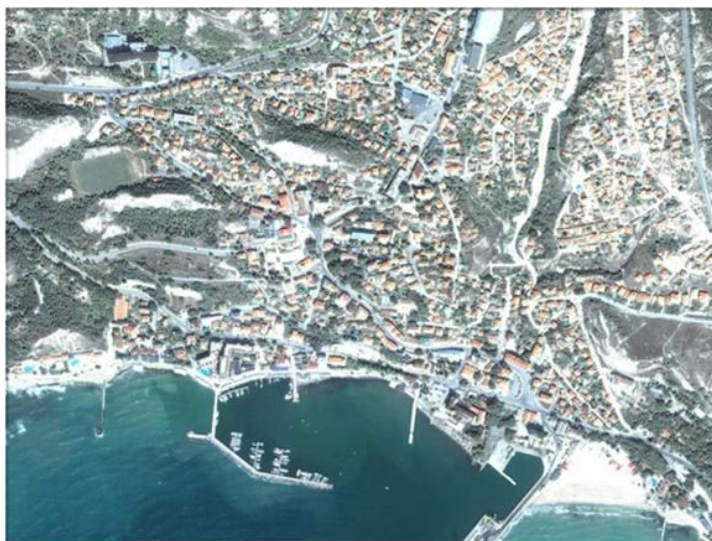


Figure 15 – Aerial view of Balchik

And a population of 15,000 in low season periods (twice to three times more, i.e. ~35-45,000 during the tourist season).

Mobility management is one of the problems for Balchik Municipality, which has significant interest concerning the protection of the environment and energy saving. The development of a sustainable approach to urban freight mobility, with less traffic congestion, energy consumption and lower emission is therefore a goal of the Municipality. As the main needs identified by Balchik

Municipality are the reduction of the environmental pollution due to heavy traffic, particularly during the summer high tourist season and the autumn supply of the port, and the introduction of energy efficient logistics measures, a feasibility study will be carried out taking up the solutions investigated and assessed during the project.

In the frame of the Project, BAM intends to develop a Sulp for Balchik and perform studies about the optimal development of city logistics.

4 DATA COLLECTION METHODOLOGY AND ANALYSIS

4.1 General overview

In order to collect information and analyse the requirements of the participating ENCLOSE cities, a suitable methodology has been defined and used in WP2 Task analysis. The methodology is fully described in the ENCLOSE Internal Report “WP2 Approach and Data Collection Methodology” and is briefly outlined in the remainder of this section.. Specifically, the methodology has been designed to investigate and understand the general ENCLOSE town situations from the mobility and transport point of view, to identify the specific issues and concerns with respect to urban logistics services and schemes and to determine the core User Needs of each involved town. Special focus is the identification of the main towns needs and constraints, the investigation of the goals and requirements related to logistics services, the different logistics stakeholders, end-customers and the background institutional, normative and organisational framework.

This analysis is concentrated on investigating the goals and needs of each stakeholder category in all 9 towns, both forerunners and followers.



Overall:

- A. ENCLOSE forerunner towns will basically describe their operating city logistics schemes and services, illustrating how these are related to the various stakeholders goals and needs, the benefits achieved, etc.
- B. ENCLOSE follower towns will describe the goals, expectations, etc. of their key stakeholders involved (or potentially involved) in city logistics and provide any initial idea or expectation about the new schemes they are interested in implementing.

4.2 Site Context

For all 9 towns, the analysis and description of the site context is organized and carried out into the following main activities:

1. General aspects such as e.g. territory, study area definition, main socio-economic data, etc.,
2. Overall mobility approach, and general main normative aspects (e.g. traffic restrictions, pedestrian areas, regulated access areas, special regulations for residents, etc.) ITS and city mobility technologies (e.g. Access Control System, ETC and Pricing systems, Parking Management System, etc.)
3. Specific regulations for commercial and freight vehicles circulation in the study area
4. Overview of characteristics and main types of logistics flows in the study area (e.g. clothing, foods and drinks, Ho.Re.Ca., supermarkets, consumer electronics, house appliances, etc.),
5. Infrastructures and facilities for city logistics and freight distribution (e.g. City Distribution Terminals, load/unload areas for freight, etc.) either available and already in operation (forerunner sites) or planned, studied or of a potential interest for the site (forerunners)

4.3 Local data collection

1. Interviews with local stakeholders: a more detailed analysis of freight and city distribution processes will be carried out through interviews with key stakeholders, aimed at identifying the goals and needs of each relevant category. Particularly, two main categories will be addressed and interviewed:

- shop owners,
- transport operators.

Both individual stakeholders and Associations (of stakeholders) in each relevant category will be interviewed, depending on the particular context in the site (i.e. whether any Associations are present, are relevant for the logistics processes, etc.).

2. Field data collection: in addition to the interviews of previous point 1, information collection from Transport Operators will be complemented by surveys carried out on-site at specific time periods. Two kinds of surveys will be conducted:

- Vehicle counts at key locations (e.g. entry/exit points of historic centre, main traffic routes, etc.) depending on the characteristics and particular issues/goals of the site. These shall aim at providing updated and assessed picture of the commercial and freight flows in each ENCLOSE SMHT study area.



- Interviews with sample users Those interviews will be carried on using a specific transport operator questionnaire produced as annex in the internal report “WP2 Approach and Data Collection Methodology” at entry/exit points of study area, historic centre, main traffic routes, etc. The aim was the assessment of information such as e.g.:
 - o the kind of vehicles used,
 - o the actual load factor,
 - o number of trips per week/day/month,
 - o days of the week and transported freight type,
 - o etc.

Both types of surveys (vehicle counts, on-site interviews) have provided additional information to (a) extend the information collected by stakeholders interviews (point 1 above) and (b) validate such information through direct observations of logistics flows in the area.

The surveys will be repeated in many cases 2 times in order to cover different working days of the week and different time periods of the day (peak vs. non-peak hours), avoiding particular situation (for example market days, etc.).

5 DATA COLLECTION RESULTS

5.1 Lucca

Study area and general aspects: The study area is the city historical centre where it is a strong vocation for tourism and for a wide variety of economic activities: business, commercial, professional, etc.

Mobility approach and regulation in the study area: In this area a Pedestrian Zone and a Restricted Traffic Zone (RTZ) is operating with a specific admission and access regulatory policy enabling access to different user categories (resident people, freights vehicles for the delivery service, tourists direct to the hotels). For all vehicles the maximum speed limit of 30 kilometers per hour and for frights transport vehicles there is an access widow from 7.00 to 10.00 and from 14.30 to 15.30 with a the maximum loaded mass of 3.5 tons and maximum dimensions of 5.40 meters long x 2 meters. wide x 2.10 m. in height (limits derogable only in special cases). However, the presence of more than 530 shops implies large amounts of delivered goods with more than 1500 freight vehicles/day circulating in this area, with peaks of 480 vehicles in the time window 08:00-10:00.

Overview of main types of logistics flows: The analysis of data collected in the previous survey shows that on average the main flows of delivered goods in the study area are represented by 15% alimentary products, 12% clothing and sports, 7% furniture, 12% electronic equipments, 7%, pharmaceuticals, 15% cars and mechanics. About 27% of the shops are using own vehicle and the rest is served by couriers and transporter operators

Infrastructures and facilities for city logistics

The key Lucca logistic infrastructures is a City Distribution Terminal (Lucca Port) providing the services to support “last mile” deliveries to Lucca centre within the wider scale regional (and national) freight logistics chains. In that, Lucca Port provides all typical CDT services to



support cooperation between long-/mid-range freight operators and the local distribution actors including: transshipment of goods at the CEDM logistic platform; organisation of best possible operations (e.g. *groupage*, load consolidation, etc.) for deliveries of goods to their final destinations by the Lucca Port eco-fleet (4 full electric vehicles); provision of ICT services enabling the exchange of updated information – including particularly track-and-trace information – between the transport operators utilising Lucca Port delivery services, the Lucca Port itself and all the actors throughout the logistics service chain.

Third-party remote warehousing is an other Lucca Port service 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.

Complimentary to previous services, the Lucca Port will also provide services to operate freight transport in the opposite direction; i.e. logistic flows with goods collected from locations within Lucca historical centre and final destinations outside the Lucca Port area.

Local logistics data

The data collected during the general survey carried out in 2003 were checked in 2011 with the City Distribution Terminal (Lucca Port) in operation and substantially confirmed their validity. Approximately 1.300 vehicles per day have access to the city historical centre in the time slot 8-20. The peak of about 200 accesses is between 8.00 and 9.00 and more than 56% of the vehicles access is concentrated in the morning from 8 alle 12 with considerable trouble for the flow of pedestrian citizen and tourist. Regardless of the type of vehicles used almost all consist of vans and trucks with diesel engines. From interviews results that the average load factor of the freight transport vehicles is no more than 40%.

The City Distribution Terminal (Lucca Port) has 4 full electric vehicles for the distribution of goods in the center that on average they make 4 trips per day working with 100% load factor and making about 15 deliveries every trip.

5.2 Trondheim

Study area

The study area Trondheim, the city centre ("Midtbyen"), includes the historic city, as well as commercial activities, institutions and some dwelling areas. The size of the central area (delineated by the river Nid in the south and east, and by the canal in the north) is around 1 km².

In the city centre about 560 commercial shops are, and market shares are particularly high in clothing, shoes, jewellery and other types of "small" merchandise.

Mobility approach and regulation in the study area

The city centre is accessible by four main routes, from the south, west, east and north. The traffic amounts to around 75 - 80 000 vehicles travelling daily to or from the centre. This includes more than 2 000 bus trips, as this is the hub of the public transport system.

Modal split of the people access to the city centre:

- Private car (driver) 25 %
- Private car (passenger) 8 %
- Public transport 16 %
- Cycling 10 %
- Walking 40 %

In the city centre area, the main traffic flows will follow a two-way “inner ring”. Inside this inner ring, accessibility is generally more restricted due to pedestrian areas, one-way street regulations and reserved public transport lanes and bicycle paths.

Freight distribution experience several types of challenges in the central urban district:

- General accessibility problems in the rush hours
- Delivery in the pedestrian areas has to be accomplished before 11 a.m., while many of the shops are manned only from 9 a.m.
- A shortage of reserved load/unload areas for freight delivery.
- Many shops lack specific facilities for receiving goods

Infrastructure and facilities for freight distribution

There is a general lack of statistics concerning freight transport. However, it is estimated that around 10 % of heavy vehicle (> 3 500 kilograms) distribution in Trondheim is connected to the inner city (2008). In the central areas, smaller vehicles carry out an important part of the deliveries as well.

The harbor and the rail freight terminal is located just north of the city centre, while several large freight terminals are situated 4-12 km south of the centre.

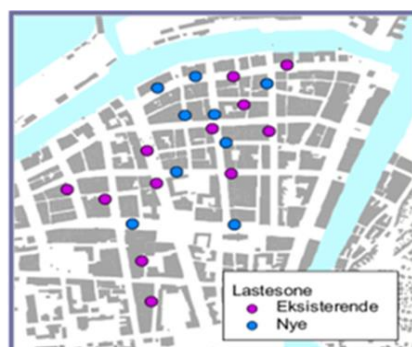
The freight traffic in the city centre particularly serves the commercial and office districts, mainly in the east and north. A number of reserved locations for delivery vehicles are established. More locations are planned in the future, according to a specific plan for the use of streets in the city centre (sanctioned in 2007).



Figure 16 – Freight terminals in Trondheim



City centre “inner ring”



Reserved locations for freight delivery, existing and planned (blue)

Figure 17 – Reserved freight delivery locations in Trondheim and “inner ring”

Posten Norge is one of the freight transport operators (particularly packaging supply) operating in city center. It uses a warehouse located 5 km south of Trondheim and employs almost full electric vehicles for freight distribution.

5.3 s’Hertogenbosch (Netherland)

Study area and accessibility

The Hertogenbosch study area is the historical center, with triangle shape surrounded by canals. The accessibility is supported by 5 car parking areas located inside and around the city centre and by P+R facilities on the edge of the city. Moreover a railway station is located in the centre, together with several free guarded parking places for bicycles. In the near future, big buses and coaches can run only around city centre where the ring road will be restructured and new P+R facilities will be realised.



Figure 18 – 's-Hertogenbosch study area

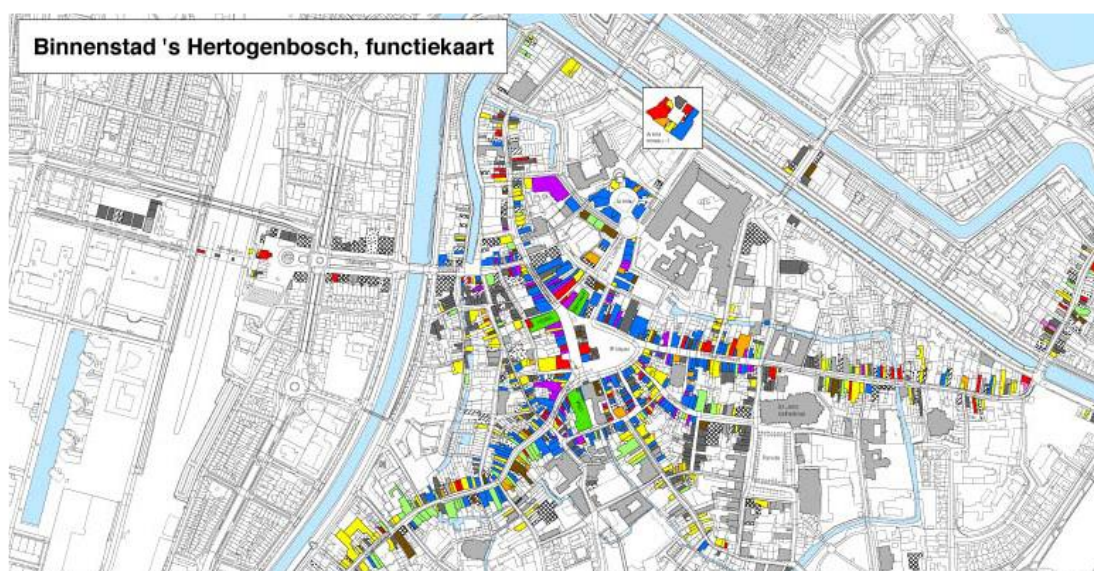


Figure 19 – 's-Hertogenbosch centre retails

The city of 's-Hertogenbosch wants to improve the local air quality, reduce the inner city traffic noise, reduce the vibrations caused by public transport busses and reduce the amount of CO₂-emission by traffic.

Mobility regulations and policy

In general, the regulation for mobility in the city (centre) aims to reduce the car traffic and increase cycling and public transport, through the realisation of a pedestrian zone closed to traffic and an environmental zone (where only clean trucks are admitted). Electric and (green) gas sustainable transportation is stimulated together with optimised logistic measures. Vehicles exceeding 10 meters total length are not admitted.

Freight commercial vehicles are admitted in the slots 7-12 AM and 6-8 PM (shopping nights 9-10 PM) and have to use reserved load/unload places. Special admission and regulations are in place for specific categories such as residents, fresh foods, tourists.

Clustering is promoted. Logistic companies with a minimum of 60 addresses and an average of 20 deliveries per ride (entry) have access outside of the access-windows.

Logistics data

Weekly a volume of 5100 m³ of merchandise enters the city centre. This is done in 5050 deliveries with 2500 rides with an average of 1-2 deliveries per shop per day. 20% receives deliveries every working day (6 days per week), 1/3 receives them 1-3 times per week.

The peak of about 180 (55%) accesses in the city centre is between 10.00 and 12.00 AM.

Waste collection for private companies (shopkeepers) is privatised in the Netherlands. So for shopkeepers it is mandatory to deliver their waste to a contracted private (licensed) company of their choice. Because of this, several waste collecting companies access the city centre each day.

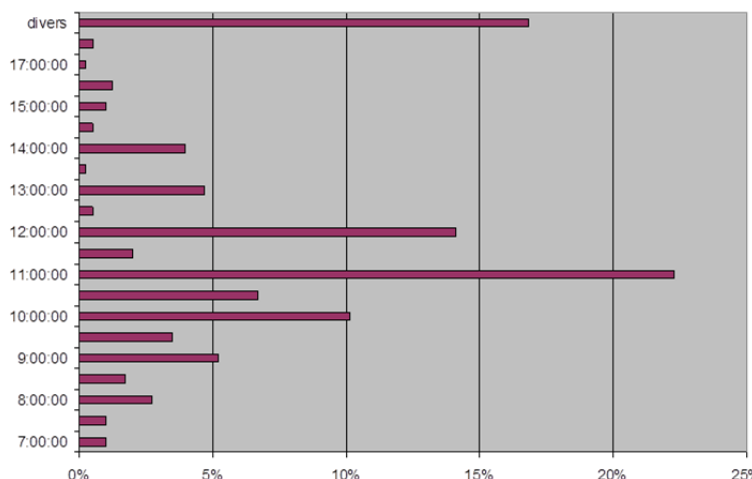


Fig 20 Delivery % during the day

28 % of the waste (mainly used packing material) is taken back and combined with the delivery of goods. The rest is collected by three big waste collecting companies and some smaller ones. Part of the waste (glass and paper) is also brought out by shopkeepers themselves.

For residents waste collection is a task for the municipality of 's-Hertogenbosch.

Overview of main types of logistics flows

Although 50% of the shopkeepers (also) deliver goods themselves, this only accounts for 30% of the total volume. This is done mainly by cars and vans.

Specialised logistic companies are highly efficient; for 51% of all deliveries they only account for 11% of the city accesses.

46% of all deliveries is combined with no or only 1 other delivery causing 84% of all vehicle movements in the city centre.

3 % of the deliveries are done by chain companies (like McDonalds, clothing etc.). They enter the city centre with rather large vehicles for relatively small deliveries. From the perspective of the city centre this is inefficient.



Figure 21 – 's-Hertogenbosch centre

16% is done by car, 29% by vans and 26 % by light trucks (3% by bike).

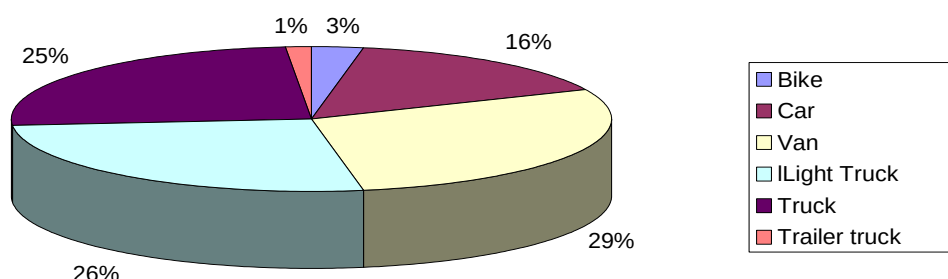


Fig 22 Deliveries per vehicle type

Infrastructure and facilities for freight distribution

To stimulate applying sustainable solutions in freight transport, the city of 's-Hertogenbosch supports local sustainable mobility initiatives for goods as well as shoppers in the city centre.

The solutions are organized in cooperation with entrepreneurs and suppliers. "InnerCityService/BinnenstadService" is a local initiative near to the city centre with the result that high number of energy efficient and green vehicles are used by suppliers. In the municipalities there are about 50 points for electric vehicles. There is one green gas station and the Local Administration is working on a second one.

Binnestadsservice.nl is a company operates an distribution centre (DC) just outside of the city centre. The company delivers combined services like collective (external) stock management and collection package materials.

In the city centre loading/unloading area's are created where needed.

5.4 Burgos (Spain)

Study area and general aspects

The target area, where logistic services are been analysed is located in vehicle restricted area of the historical city centre, all around the cathedral, where about (estimation) 628 commercial activities are with this average breakdown: HO-RE-CA (32%), Food Commerce (9%), Personal Equipment Commerce (Clothing,...) (33%), Home Equipment Commerce (10%), Commerce with high service component (9%), Banks (5%), Pharmaceuticals (2%).

Mobility approach and regulation in the study area

In order to stimulate and improve sustainable mobility, "clean areas" in the historic city center were created by controlling the pedestrian areas with bollards, phones and cameras surveillance 24 hours a day. This involved the reorganization of traffic by restricting to pedestrian several streets, the design of routes and neighboring access protocols, and other traffic and public road use.

The current mobility regulation on freight urban transport (loading and unloading areas and routes,...) in the historical City Center comes from the 2007 Local Decree on access control system.

This regulation limits the vehicle maximum speed in pedestrian areas to 20 kilometers per hour. Freight transport vehicles can access the target area only in the time slot 7.00 - 11.30 and 16.30 - 17.30, with a maximum load mass of 3.5 tons (unless authorized) and a maximum stay of 20 minutes in the restricted area.

The City Council is developing a new regulation this year, which is on public exhibition phase and will enter into effect in mid December 2012.

Overview of main types of logistics flows

This Data on main flows and its types is being collected through surveys.

Figure 7 (or Fig 25) shows the Entrance and Exit Points. The area is divided in 9 sectors, and for the HO RE CA, sectors 1, 3 and 9, the exits are through C/ San Gil; C/ San Juan and C/ San Gil, respectively, in order, to optimize deliveries in specific hostelry areas.

Infrastructures and facilities for city logistics

The loading and unloading areas are the only existing logistic infrastructures in the historical City Center.

About the realization of a logistics distribution centre near the target area (Plaza España-España Square) it was done a calculation about the resources and cost estimation needed to implement the centre (There was a specific location planned for the centre). In the short term there are no specific plans for the centre implementation.

Burgos has an intermodal logistics center. The creation of "*Centro de Transportes Aduana de Burgos*" (CT Burgos) company (Freightage Facility Burgos Transit Customs) dates back to 1980, culmination of a long job period to fulfill the initiative. The setting up of the company is backed up by the Burgos vast industrial activity, its freightage and foreign trade business flow, its good communication networks (main roads and highways, railway, airport), and Burgos excellent geographic location within the region and Spain.



Figure 23–CT Burgos and target area location

The success of the company led to its constitution in Public limited company with the following partners and institutions: the local banks, Burgos City Council, the local commerce and industry association, the Province Authority, and the Regional Authority.

"CT Burgos" services:

- Users and crews: Hotel, Coffee Bar, Restaurant, Bank Offices, Green areas and rest areas and Car park area
- Vehicle services: Car park area, Lorry park area, Service station and Garages

- Customs services: International Terminal and Customs Clearance, Free and Tax Depot, Phytosanitary Controls, Groupage, Break Bulk and Freight Storage Facilities
- Logistic services: Premises Available for Warehouse-Owners, Premises for Logistic Companies, Cold Stores, Temperature-Controlled Warehouses and Vehicle Warehousing

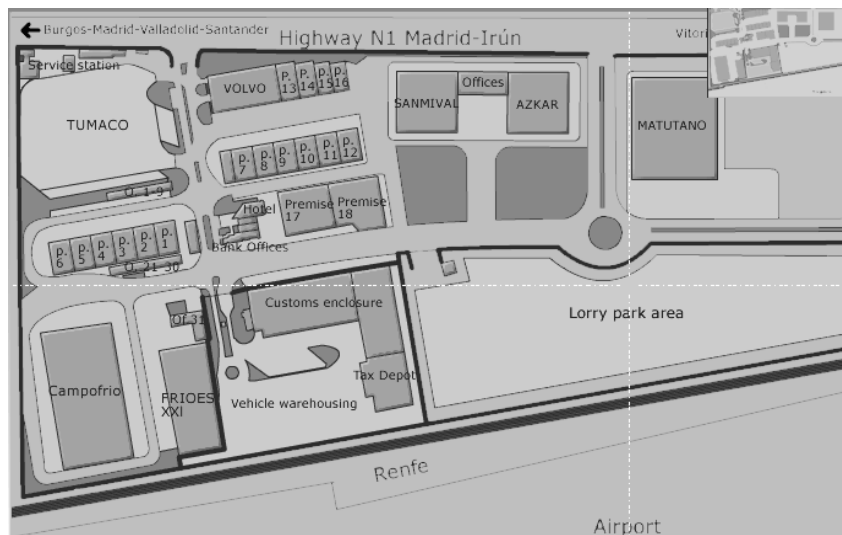


Figure 24 – CT Burgos site map

Local logistics data

Data collected during the survey carried out in September 2012 (vehicle counts: 4 September / 11 September) detects 902 vehicles per day, entering and leaving the target area through the points studied, in the time window 8-10. Of this total, 644 were vehicle entries into the area. Surveys were carried Tuesday to Thursday in order to avoid weekend traffic influence. Regardless of the type of vehicles used, the distribution of the 644 incoming vehicles was: cars 26%, minivans and vans 52%, light commercial vehicles 15%, heavy commercial vehicles 0% and municipal vehicles (police, ambulance, cleaning service, etc.) 7%. Vehicles with more than 3.5 tons are not allowed to enter without permission by the regulation, and during the data collection no heavy vehicles were detected trying to access to the area.

The points for data collection were chosen based on the volume of freight traffic. Not considering those entrances to the restricted area which mainly collect municipal and resident flows.

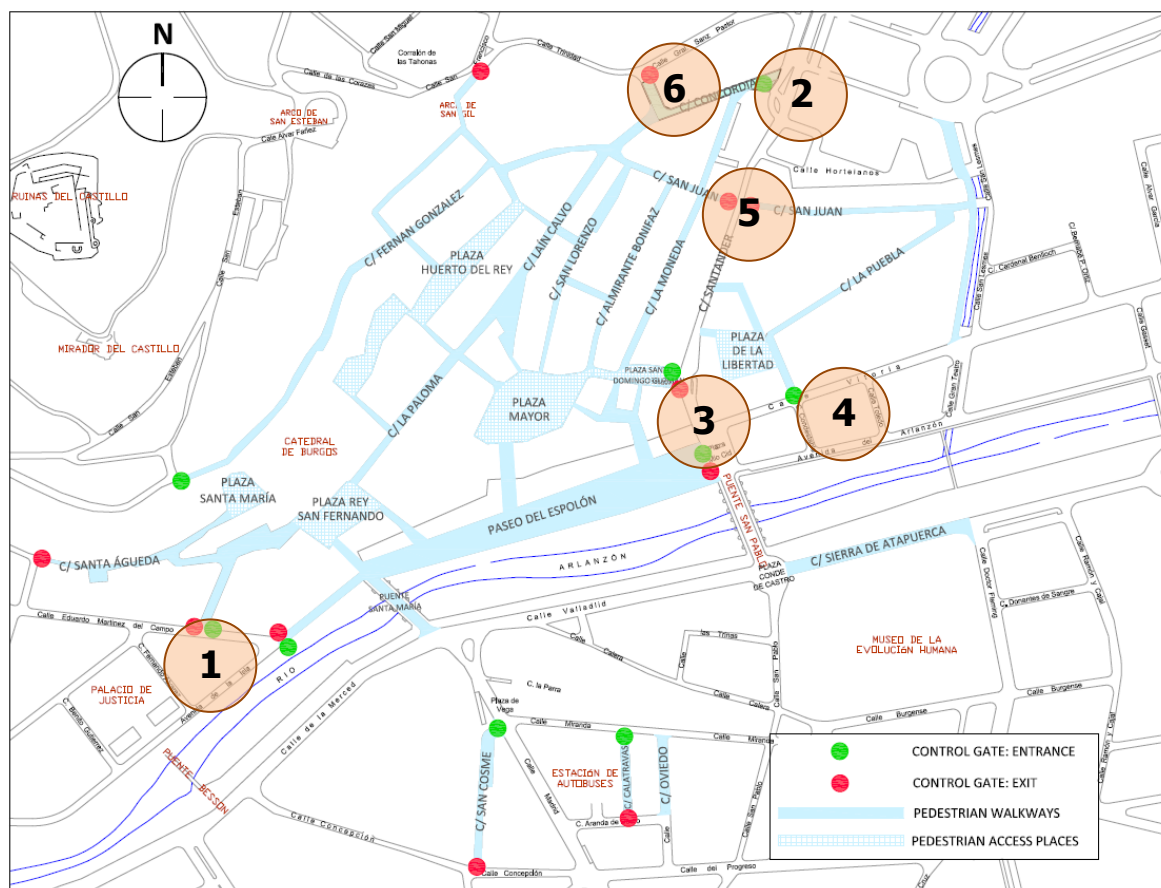


Figure 25 – Data collection points.

In more details, for each counting point:

- 1.- C/ Asunción de Nuestra Señora, 40 incoming (60 total) vehicles. Entries distribution: cars 40%, minivans and vans 40%, light commercial vehicles 10%, heavy commercial vehicles 0% and municipal vehicles 10%.
- 2.- C/ Concordia, 230 incoming vehicles. Distribution: cars 41%, minivans and vans 41%, light commercial vehicles 9%, heavy commercial vehicles 0% and municipal vehicles 9%.
- 3.- Plaza Santo Domingo de Guzmán, 46 incoming (128 total) vehicles. Entries distribution: cars 22%, minivans and vans 57%, light commercial vehicles 1%, heavy commercial vehicles 0% and municipal vehicles 20%.
- 4.- C/ Condestable, 328 incoming vehicles. Distribution: cars 15%, minivans and vans 61%, light commercial vehicles 20%, heavy commercial vehicles 0% and municipal vehicles 4%.
- 5.- C/ San Juan, 60 outgoing vehicles. Distribution: cars 43%, minivans and vans 37%, light commercial vehicles 10%, heavy commercial vehicles 0% and municipal vehicles 10%.
- 6.- C/ General Sanz Pastor, 96 outgoing vehicles. Distribution: cars 41%, minivans and vans 36%, light commercial vehicles 15%, heavy commercial vehicles 0% and municipal vehicles 8%.

5.5 Almada (Portugal)

Study area and general aspects

The city of Almada, with around 100 000 inhabitants and a strong tourist flow, has very significant dynamic patterns. The city is organized in several districts, with particular characteristics in what concerns mobility and logistics.

Cacilhas district, Almada's downtown neighbourhood, close to the harbour, is one of Almada's strongest mobility areas. Cacilhas is home of the Lisbon Metropolitan Area most important Multimodal Interface, where 50 000 people arrive every day, and has a strong commercial area as well, with restaurants and small shops hooking local citizens, Lisbon visitors and foreign tourists. Rua Cândido dos Reis, the most emblematic street of Cacilhas has just been made fully pedestrian (June 2012) and no vehicles are allowed, except bikes and the electric mini-bus.

Almada Centro is the town commercial centre, with a large shared space area where pedestrians, public transports, bikes and cars circulate daily. The area is called an open air commercial district, although the economical crises has constrain it's vivacity in the last couple of years.

Almada Velha is the historical area of the city, with small streets, old shops, little restaurants, churches, gardens, theatres, museums and services facilities. Most of Almada Velha streets are so small that not all types of cars can go in, which makes the district particularly difficult when it comes to logistics.

The vicinity and difference of the three districts implies that Almada logistics, of both people and goods, is a significant complex system. Thus, Almada City Council is considering these or some of these districts to be part of the pilot area for ENCLOSE study and logistics measures.

The area comprising the three districts includes over 500 commercial activities (see overview in the figure 27 below).



Fig. 26- Possible ENCLOSE target areas in Almada



Fig. 27 - Overview of commercial activities in Almada ENCLOSE study area

Mobility approach and regulation in the study area

For the pilot project in Cacilhas district, in the areas surrounding Rua Cândido dos Reis, it is planned the restriction of access, allowed only to authorized private cars. For commercial traffic, there will be defined areas with slots times for loading / unloading (ex. 07h00 to 09h00 and 14h00 to 15h00, for instance).

In Almada Centro, a maximum speed limit of 20 kilometers per hour will be defined for all vehicles, and for freights transport vehicles there will be defined also access widows, for example, from 07h00 to 10h00 and from 14h30 to 15h30 with a the maximum loaded mass of 3.5 tons and maximum dimensions of 5.40 meters long x 2 meters wide x 2.10 meters in height (limits exceeded only in special cases).

In Almada Velha, no restrictions of speed or access are planned, as streets are narrow enough to constrain traffic physically, but loading / unloading windows and other small measures are planned as well (e.g. 07h00 to 09h00 and 14h00 to 15h00).

Overview of main types of logistics flows

The presence of more than 500 shops implies large amounts of delivered goods with more than 1500 freight vehicles/day circulating in this area, with peaks of 480 vehicles in the time window 08:00-10:00.

In average the load factor of the freight transport vehicles is no more than 50%. The transported freight average breakdown is: 40% alimentary products, 8% clothing and sports, 4% furniture, 8% electronic equipments, 7%, pharmaceuticals. As in many commercial areas, about 27% of the shops and restaurant uses own vehicle for freight supply the others commercial activities are served by couriers and transporter operators

Almost all the commercial vehicles have the diesel engine Euro 2 and Euro 3.

Infrastructures and facilities for city logistics

In the historical City Center there are no significant logistics infrastructures or organized measures (optimized logistic platform, electric vehicles, optimized loads, etc) with the aim to save energy and improve the city centre mobility and air quality. The only existing logistic infrastructures are loading and unloading parking areas in commercial streets and some electrical vehicles for the municipal gardening services.

Local logistics data

A survey done in the study area shows that 200 commercial vehicles per day have access to commercial area in the Cacilhas district of historical centre. The peak of about 60 accesses is between 8h00 and 9h00 and more than 56% of the vehicles access is concentrated in the morning from 8h00 to 12h00 with considerable trouble for the flow of pedestrian citizen and tourist. Regardless of the type of vehicles used almost all consist of vans and trucks with diesel engines. From interviews results that the average load factor of the freight transport vehicles is no more than 40%.

5.6 Dundee (Scotland, UK)

General aspects and study area

The city of Dundee has evolved from an industrial and manufacturing centre into a modern city with a focus on bio-science, digital media, education, retail and culture and can be considered as a global leader in life sciences.

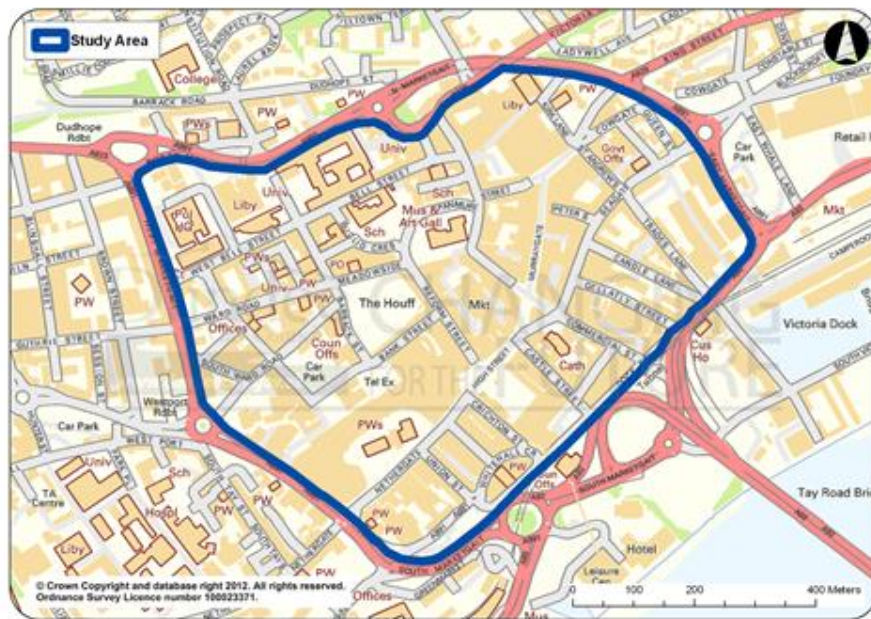


Figure 28 Dundee Study Area

The City Centre is undergoing a very significant change with the implementation of the Central Waterfront Project. This includes the redevelopment of the former harbour area of the city centre bringing a focus closer to the Tay Estuary. It will include the creation of high class retail/commercial/residential buildings surrounded by high standard facilities. Within



this area there will be the establishment of the prestigious V&A Museum that will be located in an iconic architectural building, forming the focal point of the new waterfront area.

The study area comprises the city centre within the 1960's constructed Inner Ring Road. This includes the Dundee Central Conservation Area which contains the historic heart of the city and provides protection for an area of significant historic and architectural interest. Remnants of medieval Dundee exist in the street pattern of the Murraygate, Seagate, High Street and Nethergate, along with the Howff Cemetery, the 'Old Steeple' and Gardyne's Land. There are many important historic closes and pends surviving in the city centre, some of which may be medieval, or contain fragments of medieval fabric within them.

The Central Conservation Area contains a wide range of architectural styles – ranging from Georgian to Art Deco. Many buildings are architectural set pieces such as the City Churches, McManus Galleries, Dundee High School and St Pauls Cathedral. Significant examples of planned streets also exist such as the neoclassical Reform Street (1832) and Commercial Street (1871), both formed as part of nineteenth century 'improvements' to the city. Open space is provided in the environs of City Square, McManus Galleries and the Howff Cemetery.

The study area includes the main retail and commercial centre for Dundee. The shops are divided between two purpose-built shopping centres developed from the 1970s, the Overgate and Wellgate Centres, and those occupying older properties in Murraygate, Seagate, High Street, Nethergate, Commercial Street and Reform Street. There are approximately 400 retailers in the study area. A number of streets are pedestrianised particularly those in the main shopping streets of Murraygate, High Street, Commercial Street and Reform Street.

There are a number of office buildings within the study area including the headquarters of Dundee City Council and Tayside Police. The main buildings of Abertay University are also included in this area.

Air Quality Action Plan (AQAP) and City Council Freight Initiatives

Dundee City Council published its AQAP in January 2011. The key objective is to address air quality issues and environmental targets in Dundee. Within the study area air quality exceedances are focussed in three localities, namely Nethergate/Union Street/Whitehall Street, Meadowside and Seagate /lower Commercial Street.

Freight related measures within the AQAP are:

- Freight Quality Partnership
- Freight Retail Consolidation Centre
- Improve emissions from Council Fleet.

The Council is also considering other actions and issues relating to freight, though no definite plans have been formulated at this stage, these are:

- Traffic Management for freight
- Electric vehicles.

The Council has constructed an improved access to the Port of Dundee including interventions that will support road freight movements and its connections to the Trunk Road network.



The Council expect to gain further knowledge and innovative ideas applied elsewhere in Europe that could be used and applied in Dundee. This could lead to introducing new systems and projects that would tackle freight related problems.

Tactran Freight Initiatives

Tactran established a Freight Quality Partnership (FQP) in 2008. This brings together at a regional level stakeholders with an interest in freight movements, comprising both public and private sector organisations. A key role for the FQP is to contribute to the development and delivery of freight initiatives.

Tactran has investigated the feasibility of a freight consolidation centre to serve both Dundee and the neighbouring city of Perth, approximately 30 kilometres to the west, and a road/rail freight facility based at the port of Dundee. Freight information has been included in the Tactran's travel and transport information website www.tactranconnect.com.

Mobility approach and regulation in the study area

All kerbside road space in the study area is regulated by means of Traffic Regulation Orders (TRO), drawn up by the City Council under the auspices of national legislation and is subject to enforcement by City Council-employed Parking Assistants. The TROs define the times that parking or loading/unloading are permitted or restricted and the types of vehicles that can park or load/unload there. These are backed up by traffic signs and lines to guide and inform motorists.

Through traffic movement is restricted in the study area which is divided into a four traffic cells. Vehicles can access group of streets, or cell, from a small number of access points on the Inner Ring Road. Movement between the cells is permitted only for buses.

The main retail streets are pedestrianised with restrictions on access for vehicles and are landscaped to restrict vehicle speeds and discourage general traffic use. In Murraygate for example, nineteenth century cobbles and tramlines have been exposed which also enhance the quality of the streetscape.

The retail businesses on the pedestrianised streets are dependent on front-door deliveries with time restrictions in place from 11.00 till 16.00. The Overgate and Wellgate Centres have off-street servicing areas which can be accessed without time restriction. Elsewhere in the city centre designated loading bays provide kerbside access for retail and office properties.

Overview of main types of logistics flows

Traffic counts were undertaken during September to December 2012 to determine the number of commercial vehicles entering the study area during a weekday (Monday to Friday). The total number of commercial vehicles entering and leaving the study area is 2,007. 83% of these vehicles are light vans (LGV). The peak time of movements is 08.30-10.30 when 449 vehicles entered the study area. This corresponds with the opening time for most shops until the start of restrictions on vehicle access to the pedestrianised streets. A steady flow of vehicles was evident for the rest of the day from 10.30 till the closing time of most shops at 17.30.

From surveys of retailers it is apparent that 92% of deliveries involve deliveries to more than one shop. Responsibility for organisation of deliveries is generally through company head offices, in the case of 76% of shops, while 15% are arranged by the retailers themselves or

through an employee. The majority of retailers (77%) indicated that deliveries are made to a regular schedule, while 13% receive deliveries on an ad hoc basis and 10% on a mixture of regular and ad hoc. The main delivery areas used are split between through the customer entrance (26%), on street (24%) and delivery bays within the premises (33%).

Infrastructure and facilities for city logistics

At present, infrastructure for logistics in the study area is limited to delivery bays in the purpose built shopping centres and designated on street loading/unloading bays for commercial vehicles. A feasibility study has been undertaken into freight consolidation in Dundee and the city of Perth approximately 30 kilometres to the west. Freight consolidation involves grouping individual consignments or part-loads that are intended for the same destination at a logistics facility (consolidation centre) so that fewer and fuller loads are transported to the target destination. This enables efficiency gains to be achieved as well as reducing air pollution from vehicle emissions. Urban freight consolidation therefore adds a link in the supply chain and sits on the interface between secondary and tertiary distribution.

5.7 Alba Iulia (Romania)

General aspects

About the energy saving and vehicles pollution reduction, Alba Iulia identified “Transilvaniei Boulevard” (marked in red in the picture) as the study area where ENCLOSE Sulp and logistic measures would be useful. The car traffic into the area must be restructured due to the important number of commercial and tertiary activities (on average 100 commercial/tertiary activities over 1 km distance, taking into account only the activities with direct access from the Boulevard) and freight distribution is difficult due to the interference with the pedestrian zone and the narrow access streets. Moreover at the moment there is no regulation concerning the reduction of pollution for freight distribution in the area. The density of the traffic is very high during the whole year, as this route connects the upper town with the downtown through the Citadel. During summer, this route is even more crowded due to tourist areas (e.g. the terraces) and new temporary activities like moving foods dealers, toy renters, etc.



*Fig. 29 - ENCLOSE study area in Alba Iulia
(Transylvania Boulevard)*

The Sulp that Alba Iulia will carry out will take in account the data surveyed from the study area in order to identify logistics measures (regulatory and operational) in the pilot sites of interest for the town.

Study area commercial activities

Transilvaniei Boulevard is the largest pedestrian road in Alba Iulia with dense commercial activity, and it is situated in the vicinity of the Vauban Citadel, with an important number of inhabitants living in that neighbourhood, representing the shorter connection of the upper



town with the down town, through the walls of the citadel. The ENCLOSE survey took place in this area starting at the end of August 2012.

The survey of commercial activities shows that in the Transilvaniei Boulevard approximately 100 different activities are present, including: more than 25 stores for clothing, 9 shoes stores, 9 food stores, 12 bars with additional open terraces in the in the summer time, 4 pastries, 2 toy stores, 5 gaming shops, 1 flowers shop, 4 banks, 6 pharmacies and cosmetics stores, 2 porcelain and craft store, 2 small Carpet stores, 2 jewellery stores, 2 newspaper stands, etc.

Mobility approach and regulation in the study area

In the selected study area, roads are very crowded and noisy, from 8 o'clock in the morning to 17 o'clock, all year long. Unfortunately there are no regulations in the area concerning traffic optimization as speed limits, neither special rules as regards the access of both private cars and of commercial vehicles. This lack and the narrow accessibility of the roads result in significant interference with pedestrians, whose safety and comfort are thus compromised, in the summer time even more due to the even higher people fluency for recreation and for commerce.

During a study about social needs realised a few years ago by the Alba Iulia Association for Intercommunity Development in Alba Iulia Municipality, 37% of the respondents considered the infrastructure challenges (including bridges and parking system) as the first important problem to be faced by Alba Iulia Community, particularly for Transilvaniei Boulevard area

Within the Sustainable Energy Action Plan assumed by the City Hall of Alba Iulia by signing the Covenant of Mayors, the city has also developed a Sustainable Urban Mobility Plan in order to improve urban mobility. But the town also needs a more specific approach of the Mobility Plan focused not only on citizen, but also on specific needs as those related to the logistics processes (which in the historical cities are even harder to regulate). For the time being Alba Iulia has been analyzing which solutions could be suitable for the improvement of the local urban mobility. From ENCLOSE project Alba Iulia plans to acquire relevant experience and know-how from the forerunners partners who are more experienced in logistics efficiency. This will allow Alba Iulia to apply the most suitable solutions to the community's needs.

One of the soft measures that could be successfully adopted in Alba Iulia study area, is establishing restricted time windows for commercial vehicles, in collaboration of course with the dealers and the beneficiaries of the envisaged perimeter, together with applying severe penalties for those not respecting the time windows and for the inhabitants not respecting the parking places reserved for loading and unloading operations. These soft measures could be efficiently implemented only if before an awareness campaign will be organised.

Overview of main types of logistics flows

In some sectors of the boulevard, the narrow streets behind the stores allow retail supply, but due to the dense number of inhabitants living in that area not even load/unload dedicated parking areas are able to provide an help for logistics activities.

Moreover, in Alba Iulia Municipality the penalties for not respecting the parking signs or the parking windows are not that well implemented. Thus, most of the inhabitants use nonconventional spaces to park their personal cars, even if this behaviour results in traffic blockage or interference with delivery vans.

In general, on the Transilvaniei Boulevard the transported freight average breakdown is: 25 % food products, 45% clothing and sports, 4% furniture and carpets, 10 % electronic and household appliance equipment, 6%, pharmaceuticals and medicinal



equipments, 10 % tertiary and others. As in many commercial areas, about 30% of the shops use their own vehicle for freight supply while the remaining commercial activities are served by couriers and transport operators.

Local logistics data

On average, more than 50 commercial vehicles per day have access to the commercial study area of Transilvaniei Boulevard.

More than 60 % of the pick-ups and deliveries is between 8.00 and 9.00 generating considerable problems for the flow of pedestrians in the area. Almost all used vehicles consist of vans with diesel engines. From the conducted interviews, it was seen that the average load factor of freight transport vehicles is no more than 30%, meaning that commercial vehicles are almost empty for the deliveries, wasting a lot of depositing space and fuel, which shows a lack of efficiency in organizing the deliveries.

Almost all commercial vehicles have the diesel engine Euro 2 and Euro 3.

Infrastructures and facilities for city logistics

In the historical City Center there are no significant logistics infrastructures or organized measures (optimized logistic platform, electric vehicles, optimized loads, etc) with the aim to save energy and improve the city centre mobility and air quality. The only existing logistics infrastructures are loading and unloading parking areas reserved to freight operations in the study area of Transylvania Boulevard.

Moreover, a feasibility study recently developed in the project "Cycle logistics", financed through Intelligent Energy Europe Program, aimed to analyze whether the current infrastructure could be adapted to the use of freight distribution bicycles in the town center for and identified some areas where the infrastructure could be adapted for this purpose. The results could bring an added value for the ENCLOSE project on the Transilvaniei Boulevard, even if it was not focused on the ENCLOSE reference area. Combining soft measures adapted to the specificity of the diverse activity in the area could be a solution for the Boulevard. For example, small business owners in the area could be encouraged to use cargo bicycles for small transports in order to avoid the use of half empty distribution vehicles, not only by promoting cargo bikes advantages but maybe also by imposing time windows and regulations for pollutant vehicles.

5.8 Serres (Greece)

General aspects and Study area

The economy of the Serres region is at a large extent linked to agriculture and livestock activities. The agricultural products that are being produced today in the fertile field of Serres, are mainly cereals, tobacco, rice, cotton, corn, vegetables, fruits, horticultural and garden products. Animal production concerns sheep, beefs and porks, as well as milk products. Local industry is mainly based on the elaboration of the agricultural products but involves also textiles and several manufactured items. The most dynamic sector seems to be alimentary products and the wood products industry is also a very promising one. At the outskirts of the city, at 7 km from the city of Serres and close to the vertical axe of Egnatia odos, there is also an industrial area with 1.2 km² surface, where larger industries are located with a range of activities e.g. home and office equipment production, plastic materials production, agricultural equipment, beauty products, construction materials etc.

Since the seventies, Serres faced intense urbanization, especially in the city center. Open spaces were replaced by residential blocks and cars began to dominate streets. Due to the concentration of many activities in the broader centre area (administrative, commercial and

recreational ones), the city centre attracts many working people and visitors all day long and it is penalized by congestion, as the ring road of the city cannot serve efficiently the generated traffic. Mobility conditions are deteriorated by the car addiction of many citizens that leads in parking problems and less space for other users, like pedestrians and cyclists. The relevant infrastructure for walking and cycling needs to be improved and a more balanced approach towards different modes is needed.

However, during the last decade steps are being taken forward. Serres Municipality has participated in several many EU projects regarding sustainable mobility that provided with awareness raising, good practices and a rich experience and know-how in this field (e.g. PIMMS, PIMMS TRANSFER, ACTIVE TRAVEL NETWORK). Sustainable mobility is from now on integrated in local policies for hard and soft measures as well. So, passenger transport has received the most of attention and it is high time to tackle problems related to freight as well.

Urban freight mobility is an issue of considerable concern in the city of Serres as it seems to be “unregulated”. Urban freight distribution processes are, together with private car traffic



Fig. 30- Serres city centre and ENCLOSE study area

flows, penalizing the urban environment through the related energy consumption, emissions and noise nuisance. Also, urban freight is also accused of space consumption, pollution and accidents in urban areas, hypothecating the city environmental quality. In addition, there seems to exist a lack of coordination in urban freight flows that intensifies all negative impacts. Thus, the need to organize optimally city logistics management comes to the forefront and the

implementation of good practices on the issue, are of high importance in line with the European vision of sustainability.

It is high time that local authorities played the crucial role of sustainable city logistics promoter, and the Municipality of Serres with the cooperation of different stakeholders wishes to take up action. An appropriate approach is to take advantage of current structures like a relevant company with municipal share which exists in Serres, that may undertake several tasks related to city logistics management, green practices promotion etc. The starting point is the city centre where our study focuses on.

The Serres study area (fig. 31) where the logistics activities are being analysed coincides with the city commercial centre (near Vassileiou and Ermou streets) where a lot of activities are concentrated e.g. 6 hotels, almost 100 restaurant and bars, 40 pharmacies and many other (Source: Association of Serres Shoppers/Merchants). The exact study area involves the area presented in the figure below and it is within the ring formed by the following streets: Dytikis Thrakis – Megalou Alexandrou – Ikostis (20is) Septemvriou – Ethnikis Antistasis - Vasileos Vasileiou – Venizelou – Komninon - Thessalonikis – Kerasountos.

Mobility approach and regulation in the study area

Mobility management is a crucial issue in the heart of the city. There have been several measures like pedestrianization of streets in the city centre, traffic calming measures



project alters the parking organization in the city centre and beyond it, among which, the spread of spaces dedicated to loading purposes and modifies pavement infrastructure giving priority to pedestrians and bikers. Therefore, an overall change is taking place that will create new conditions for both people's mobility and freight transport.

The vision for the city involves the development of sustainable mobility strategy that will take into account all stakeholders views and needs through an integrated approach in order to change logistics practices, improve performance, minimize environmental impact, strengthen public awareness and involve citizens and local stakeholders in city decision-making. The development of a Local Action Plan (LAP) on Sustainable Urban Logistics is a real challenge. The Sulp will be a valuable development lever. It will be a useful instrument for priorities setting and realistic planning of next steps, in accordance with existing plans. Making the most of the city's potential, it will engage all stakeholders into a different perspective for a more viable, friendly and people-oriented place to live in where logistics will be smoothly integrated.

The new approach within ENCLOSE is to gather experiences of City Logistics based on innovative services, technologies and practices already developed in other EU mid-size cities, that face problems similar to our Municipality's and to study the transferability of solutions already implemented in other places, that is, the adaptability of such successful schemes to our local context.

The conduction of a feasibility study will be the core activity to be carried out in Serres in order to figure out the potential of the structure and activity envisioned for current entities (AFETIRIA S.A.), testing the good practices suggested elsewhere. The aim is to create a lever of development for the region and the city itself through logistics management and to promote sustainable urban freight mobility with less traffic congestion or energy consumption, lower emission commercial vehicles fleet combined with social approval and economic growth etc.

ENCLOSE will provide us the chance to identify and analyse the local needs and to consider the implementation of new services and perhaps related ICT tools such as remote warehouse services; different types of delivery services; dedicated to special destinations or events etc.; loading/unloading areas management services etc. This project will be an innovative and fruitful learning experience in topics that penalize our city's quality and development potential: shortage of resources, competences, organisational structures, institutional backing, etc. Figuring out good practices that adjust to local requirements in the form of a local action plan and taking benefit from common guidelines addressing the institutional and organisational issues of city logistics management will be of added value for the city's sustainability. ENCLOSE encloses a rich set of advantages for the Municipality of Serres, enhancing knowledge and facilitating decision making in the field of sustainable city logistics.

Overview of main types of logistics flows

The presence of about 500 shops in the city implies a consistent amount of delivered goods for day. A considerable percentage of these shops is located within the study area but the really "dynamic" situation as regards shops closure etc does not allow a more specific information. There are different kinds of freight vehicles which circulate in this area accounting for 3176 PCU/day, with the peaks of traffic being in the time window 13:00-15:00. It should be stressed that all available statistics seem out of date and especially do not reflect current situation following the crisis. The Chamber of Commerce of Serres Region informs on the closure of 450 enterprises in the region of Serres during the last two years and 400 enterprises starts. But no safe conclusion can be drawn as these statistics involve all kind of activities (even new farmers in the region of Serres) and not necessarily commercial



activities in the study area. Moreover, so far there is no available information for the average load factor of the freight transport vehicles or the actual breakdown of the transported freight average. A possible estimation could be made considering the information gathered from the Association of Serres Merchants as regards the breakdown of shops in the study area (where it should be stretched that alimentary shops with a considerable daily volume are excluded) is: 60% clothing, shoes and sports, 40% household products, furniture, electronic equipments, etc. From the 500 shops all over Serres in the study area, there are 40 pharmacies and their Association informs about 4 supplies/day with different kind of pharmaceuticals using the fleet of the PRO.SY.FA., which is the agency that supplies the association usually two loaded light private goods vehicles.

Most shops use own vehicles for freight supply and the smaller commercial activities are served by couriers and transport operators. Different commercial vehicles are used according to volume transported etc.

In order to have recent information, a relevant survey took place lately during the ENCLOSE project and gave the results shown in the following table:

Vehicle type	PCU	Flows in PCU Morning slot (07-09.00)	Flows in PCU Noon slot (13.00-15.00)
Light private goods vehicles up to 1.1t unladen	1,0		
Goods vehicles > 1,1 tn	1,8		
Goods vehicles > 3,5 tn	2,5		
Goods vehicles > 6 tn	3,5		
	Total	1525	1651
	Total/day	3176	

Infrastructures and facilities for city logistics

In Serres, there are no significant logistics infrastructures or organized measures (optimized logistics platform, electric vehicles, optimized loads, etc) with the aim to save energy and improve the city centre mobility and air quality. The only existing logistics infrastructure are loading and unloading reserved vehicle parking areas in the historical City Center as mentioned above in the regulation section.

Considerable construction works took place in the nineties as regards a Heavy Vehicle Parking (HVP) significant installation of 7he surface with 180 parking spaces. In 2000 a feasibility study was elaborated for the creation of a company of SA status entitled AFETIRIA S.A. The AFETIRIA S.A. has been created a decade ago following important construction works for the creation of its infrastructure in terms of a dedicated logistics park where a range of services could be provided. A very ambitious project was conceived involving the creation of series of services of technical checks, warehouses, logistics centre, fuel supply, parking for heavy vehicles, cleaning and maintenance services etc. This company was established with the aim, among others, of facilitating urban logistics, it involved different stakeholders but somehow so far has not been performing as expected.

Given that the Municipality of Serres has the biggest share in AFETIRIA S.A., ENCLOSE can help organising better the function of this company and of developing a set of activities

related to city logistics such as infrastructure (logistics base, depots, etc.), a technological platform for the provision of urban freight “info-mobility” from which, tested operative schemes and procedures will be available to different stakeholders. Our ambition is to make a point of reference out of this company activity, aiming at soothing urban settings from freight transport external costs as well as other costs like energy consumption. This project will provide an insight on the proper steps to take in order to organize this existing entity optimally so as to make the most of it and to check on the transferability of good practices implemented elsewhere.

5.9 Balchik (Bulgaria)

Study area and general aspects

The Balchik touristic vocation (the population present in the summer months is approximately three times that of the usual residents) results in a strong flow of traffic in the area in front of the port where it has concentrated most of the commercial activities as shops, hotels and restaurants. During the touristic season in this area there is significant pollutant gas emission and harmful interference with pedestrians.

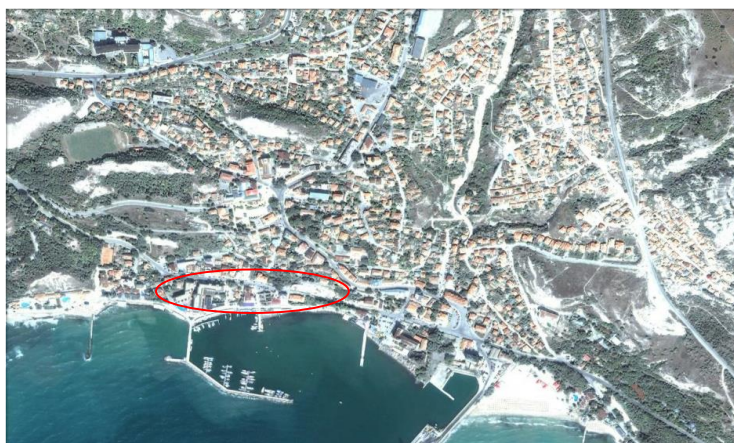


Fig. 32 Balchik study area

Other problematic areas are the city center and the outdoor parking in front of the Balchik Queen Palace. These areas in front of the port, the city center and the parking places are therefore the study areas where the Sulp will carry out analyzing private and

commercial traffic and possible logistics/normative measures that can be applied in order to solve / alleviate the above problems.

Mobility approach and regulation in the study area

In the study area there are no speed limits or special rules as regards the access both of private cars and of commercial vehicles which prefer to use the most convenient ways for frights delivering with heavy traffic on the main town streets result.

One of the problems is the parking capacities with problems for frights load/unload activities.

Overview of main types of logistics flows

The main transported freight average breakdown is: about 50 % alimentary products, 30 % clothing and sports, 20 % electronic equipments. As in many commercial areas, about 40% of the shops uses own vehicle for fright supply the others commercial activities are served by couriers and transporter operators

Almost all the commercial vehicles have Euro 2 and Euro 3 diesel engines.

Local logistics data

About 50 private transport operators supply the Balchik commercial activities. On average, every day about 250 commercial vehicles access the study area for goods delivering. No commercial electric vehicles is used by the local transport operators.



The peak of about 60 accesses is between 8.00 and 9.00 and more than 60% of the vehicles access is concentrated in the morning from 8 alle12 with considerable trouble for the flow of pedestrian citizen and habitants. Regardless of the type of vehicles used almost all consist of vans and trucks with diesel engines. From interviews results that the average load factor of the freight transport vehicles is no more than 40%.

Infrastructures and facilities for city logistics

At present, in Balchik there are no significant logistics infrastructures or organized measures (optimized logistic platform, electric vehicles, optimized loads, etc) with the aim to save energy and improve mobility and air quality in the city centre. It is an intention of the Municipality to promote these facilities with creation of an action plan and, even more, to undertake the development of the Sulp and Sump for Balchick.

6 ANALYSIS OF USER NEEDS

In the first part of this chapter different stakeholders at the nine ENCLOSE sites are identified and their objectives presented. Their user needs, derived from an in depth analysis, are then clearly presented as the pivotal element for the definition, at a later stage, of specific user requirements. The users' needs are specified in relations to four main categories – Technical, Operational, Commercial and Socio-economic needs – and are summarized in the form of tables. Commonalties are then highlighted and an effort made to synthesise both the requirements and context of the ENCLOSE project in the form of "Problem Definition", concise statements of the points at issue at both site and project level, which ENCLOSE will contribute to solve.

In the final part of this Chapter the foremost results are presented in order to broaden the picture of urban logistics user needs analysis and research questions are derived for the following task T2.3 analysis and for the Sulp study developing.

6.1 Classification of the stakeholders

Based on the site description, a classification of the stakeholders at each site has been made. In the tables reported in the remainder of this section we have clustered the different stakeholders in the following categories:

- Local Authority
- Service Provider (or Agency)
- Logistic Company & fleet / transport service provider
- Commercial operator
- Consumer



Local Authorities

Stakeholder name	Type	Linkage to other stakeholder(s)	Additional comments
Lucca Municipality	Local Authority in Lucca	Metro, CNA/Transport, Dealer and Touristic Associations	Mobility regulations for historical city center (RTZ)
Trondheim Municipality	Local Authority in Trondheim	Posten Norge, Transport, Dealer and Citizen Associations	Urban Accessibility policy and mobility regulations for historical city center (RTZ)
Municipality of s'Hertogenbosch	Local Authority in s'Hertogenbosch	Transport Associations,, Dealer Associations	City centre private traffic reduction with EV use stimulation
Municipality of Burgos	Local Authority in Burgos	Transport and Dealer Associations, environmental Agencies	Energy efficient logistics measure interest
Municipality of Almada	Local Authority in Almada	Ageneal, Tram operator, Transport and Dealer Associations	City logistic innovative services, city centre access regulation, public-private partnership
Municipality of Alba Iulia	Local Authority in Alba Iulia	Touristic, Transport and Dealer Associations, ADR centrum, ALEA	Integrated Urban Development Plan for the city mobility rules
Municipality of Serres	Local Authority in Serres	AFETIRIA S.A. company, Transport and Dealer Associations	Municipality interest in logistics advanced infrastructures
Municipality of Balchik	Local Authority in Balchik	Transport and Dealer Associations	Interest in energy efficiency of last mile delivery, introduction of FHVs in the city centre
Dundee City Council	Local Authority in Dundee	Freight Quality Partnership, Community Planning Partnership	Air Quality Action Plan, City Centre Manager, implement. of the Central Waterfront by the redevelopment of the city centre close to the Tay Estuary.
Tayside & Central Scotland Transport Partnership (Tactran)	Regional Authority including Dundee	ScotFLAG (Scottish Freight and Logistics Advisory Group)	Freight Action Plan, Freight Quality Partnership



Service Providers and Agencies

Stakeholder name	Type	Linkage to other stakeholder(s)	Additional comments
METRO SrL	Optimised logistics services manager in Lucca	Local Authority, CNA /Transport, Dealer and, Touristic Associations.	Lucca logistic operator
Posten Norge	Public operator in Trondheim as Norwegian Post	Municipality of Trondheim, Transport and Citizen associations	State public Company responsible for post and packing distribution in Norwegian
Sintef	Research company from University of Trondheim	Municipality of Trondheim	CO2 reduction program
Green Car	Norwegian organization	Municipality of Trondheim, Posten Norge	Increase EV in Norway
Freight Quality Partnership (FQP).	Private and public partnership	Dundee Municipality	Cost of freight supply in regions where RTS objectives are meet
AGENEAL	Municipal Energy Agency of Almada Municipality	Co-operation protocol with the Almada Municipality	Active in Almada municipality in saving and renewable energies fields
ADR Centrum	Regional Development Agency	Alba Iulia Municipality, Transport and Dealer Associations	Alba Iulia Mobility plan collaboration
ALEA	Alba Local Energy Agency	Alba Iulia Municipality, ADR Centrum	Renewable energies fields
ITCL (Castilla and Leon Technological Institute)	State University	Mobility Department of Burgos Municipality	Municipality technological partner in the Burgos Mobility Strategic Plan drawing up
AFETIRIA S.A.	Private company (5% owned by Serres Municipality)	Serres Municipality, transport associations, gas stations	Manage the new transit center of Serres
Sofia University	State University	Balchik Municipality	Prof Boiko Rangelov collaborate with Balchik Municipality in EU projects
MICRO-VETT	Private company	Municipalities and services providers	Electric Vehicles producer/outfitter



Fleet / transport service provider

Stakeholder name	Type	Linkage to other stakeholder(s)	Additional comments
Transport Associations	Freight Carriers, Freight transport service providers	Metro, Posten Norge, AFETIRIA, Private commercial activities, Mobility Department of the Municipalities	Very large quantity of companies are operating in the partner towns areas
Posten Norge	Post and packing distributor in Norwegian	Freight Carriers, Shippers, Private commercial activities	Large increasing of EVs to comply with CO2 free transport goal
TACTRAN	Scotland Regional Transport Partnerships whole	Dundee Municipality, Freight Carriers, Shippers	Aims to develop more efficient and sustainable movement of goods
Freight Transport Association (FTA)	Association for freight users		
Road Haulage Association (RHA)	Association for road hauliers		
Individual freight and parcels companies	Private sector companies		
Dundee One	Association of city centre interests	Dundee City Council	

Commercial operators

Stakeholder name	Type	Linkage to other stakeholder(s)	Additional comments
Dealers Associations	Private commercial operators, retailers, companies, hotels, restaurant, and others	Transport Associations, Metro, Local Authorities	In the partner towns centre are operating a very large quantity of commercial activities
Dundee & Angus Chamber of Commerce	Association of commercial interests	Dundee One	Represents a wide variety of private sector interests in the study area including shops, offices, restaurants and hotels
Shippers	Manufactures, wholesalers, food producers, residents	Transport Associations, Dealers Associations, Citizens Associations	



Consumers

Stakeholder name	Type	Linkage to other stakeholder(s)	Additional comments
Citizens Associations	Residents, end users, tourists in partner towns	Local Authorities, wholesalers, Shippers, Transport Associations,.	Involved in environmental and sustainability issues.
Hartje 's-Hertogenbosch	City of 's-Hertogenbosch association of entrepreneurs	Local Authority; City shops owners; Local transport operators	Responsible for the exposure of the sustainable city center.
Individual property occupiers in Dundee study area			Including shops, offices, restaurants and hotels
End-user	Customer (B2C)		Places order via the internet

6.2 Overview of stakeholders objectives

In this section we will describe the objectives of the ENCLOSE sites. The focus in this section is on similarities and differences between the stakeholders at the different pilot sites.

6.2.1 Local authorities and service providers

The overall objectives of local authorities and service providers show many similarities at the different sites. Since the Local Authorities deal with various other stakeholders their objectives focus on the functionality and long-term development of the city. In general they can be summarised in the following common objectives:

- Alleviate traffic congestion and reduce the number of heavy trucks in the city
- Sustain economic development
- Maintain accessibility of the (historical) town centres
- Maintain the attractiveness of the city for residents, tourists and commercial organisations
- Optimal use of loading and unloading spaces and parking spaces

Beside the overall objectives, which are common to all ENCLOSE participating cities, the local authorities in Trondheim have the further challenging objective to reduce CO₂ emission by 90% from 2008 to 2050.

6.2.2 Fleet / transport service provider

Within the ENCLOSE project the objectives of fleet and transport service providers focus on:

- Lower transport costs / maximise profit
- Provide high quality services and maintain relationship with clients
- Expand activities
- Maximise Electric Vehicles use



- Alleviate traffic congestion, reduce traffic pollution, energy saving
- Minimise trips of commercial vehicles at low loading level

6.2.3 Commercial operators

The objectives of commercial operators are often focused on optimising business:

- Minimise delivery costs / maximise profits
- Expand retail / core activity
- Gather new clients
- Reduce stocks
- Increased service towards clients

6.2.4 Consumers

The objectives of the consumer reflect both objectives regarding delivery of goods, tourism and urban environment:

- Reduce traffic congestion, noise, air pollution and accidents
- Upgrade availability of the city center for visitors and tourist
- Protect consumers rights and interests

6.3 User Needs data and analysis

The information about users needs derives from a wide investigation conducted within logistics operators, local authorities and commercial organisations. The main goal of the User Needs Analysis (UNA) is to clearly identify the specific requirements of the different stakeholders in the ENCLOSE investigation areas.

The determination of user needs is a crucial factor for a sound assessment process (task T2.3). In particular, it is essential for system assessment as well as for Sulp design. User needs analysis is a complex issue since the needs are combined from many different actors involved, especially for a project like ENCLOSE.

Moreover the user needs data and analysis will be the starting point also of the ENCLOSE evaluation process, as zero-state analysis, verification and validation phases will be developed against the identified user needs. The methodology for evaluating the individual pilot measures will be described in deliverable D5.1 (Common methodology for the implementation and evaluation of the pilot measures in the forerunners cities).

The assessment framework (task T2.3) will consist of four elements: technical, operational, commercial, socio-economic. Specifically:

- The technical user needs focus on the technical and functional aspects of the involved city logistics schemes and applications.
- Operational needs address the day-to-day city logistics operations and include elements such as the type of operations carried out, the implied workload, the work environment, motivation, monitoring and control of logistics processes.
- Commercial impacts are related to the impacts of city logistics operations on commercial and sales processes. One can think of services and support offered to commercial operators, customer service level, customer satisfaction, the quality of information supply, competitive advantage or company image.



- The fourth group consists of the wider impacts of city logistics schemes and services on socio-economic related user needs.

All stakeholders needs resulting from the surveys carried out locally by the ENCLOSE city partners have been organised around these four main categories. The results are summarised in the tables included in the remainder of this section.

Each table provides a list of key elements that are relevant for the specific UNA category (technical, operational, commercial, socio-economic). For each ENCLOSE site, forerunner and follower/runner, the elements of relevance are cross-checked identifying the particular stakeholder category involved in the site (the various stakeholders are identified by acronyms, full names are reported at the bottom of each table).



6.3.1 Technical user needs

The technical user needs identified at the ENCLOSE sites are presented in the following table

		Lucca	Trondheim	s'Hert.bosh	Burgos	Almada	Dundee	Alba Iulia	Serres	Balchik
1	Allow track-and-tracing	TA	PN		LC		DCC		AF	LC
2	Possibility to generate statistical reports about the logistic processes	LM	TM, PN	HM		AM (by surveys, not automatically)	FQP	AIM	SM, TA	BAM
3	Interfaces with other systems sharing data / information	ME			LC		DA	LC	AF	
4	Possibility to handle external warehouse	DA		DA	DA		LC		DA	DA
5	Route planner (GIS) and real-time traffic information system	LC	LC, TM	PD, HM		AM (already in operation)	FQP	AIM	AF	BAM
6	Utilize modern technologies in truck circulation optimisation and city access authorization issues and monitoring	LM	LC	HM						
7	Utilize modern technologies for automatic control of trucks in city center	LM	TM	HM	BM				SM	BAM
8	Utilize modern technologies in optimisation and distribution vehicles entry authorization issuing to city centre and load/unload areas	LM	TM	HM	LC, BM			AIM	SM, LC	BAM

9	Utilise logistic optimisation technologies to increase load factors of carrier trucks	ME LC	LC	LC	LC, ITCL	LC	LC	LC		LC
10	Providing an online system of loading and unloading spaces reservation on the internet	ME LC	LM	LC, HM	LC	AM, LC		AIM, LC	LC	
11	Optimise the assignment of available loading and unloading spaces (network optimisation)	LC	LM	HM	ITCL		DCC			LC

ME = Metro Lucca

LM = Lucca Municipality

LC= Local and national Carriers

DA= Dealers, Dealer Associations

PN = Posten Norge

EU = B2C end-users

TM = Trondheim Municipality

SM = Serres Municipality

SU = Sofia university

AF = AFETIRIA Company (Serres)

HM = s'Hertogenbosch Municipality

BM = Burgos Municipality

ITCL = Technological Institute of Castilla and Leon

AM = Almada Municipality

AG = Ageneal (Almada)

DCC = Dundee City Council

AIM = Alba Iulia Municipality

BAM =Balchik Municipality

FQP = Dundee Freight Quality Partnership

6.3.2 Operational user needs



The operational user needs identified at the ENCLOSE sites are presented in the following table.

		Lucca	Trondheim	s'Hert.bosh	Burgos	Almada	Dundee	Alba Iulia	Serres	Balchik
12	Availability of a service centres for information about deliveries at lockerpoints	CV, EU	EU	CV, EU						
13	Possibility to contact and contract different transport operators (transport operator 'market')	DA	DA	DA	DA		DA	DA	DA	
14	Creation of a consistent framework of institutional measures (public and private): public private partnership construction	LM				AM	DCC,		SM	BAM
15	Remove authorized time windows restrictions for delivering goods to customers	LC	LC	LC	LC	DA	FQP	LC	LC	LC
16	Fast authorization process to enter in the city center	LC	LC	LC		DA			LC	LC
17	Minimise delivery times and slight warehousing	DA	DA	DA				DA		
18	Maximise Electric Vehicles employment	LM	PN	HM	BM	AM			SM	
19	Minimum number of days (5) to collect goods from lockerpoints before removing package from lockerpoint		PN	HM						
20	Carriers possibility to handle peak loadings	LC		LC				LC		LC
21	Harmonise access restriction (weight – length) between municipalities	LC	LC	LC	LC		LC	LC	LC	LC
22	24 hour availability of lockers / goods collection points	EU	EU	EU						



LC = Local and national Carriers	HM = s'Hertogenbosch Municipality
EU = B2C end-users	BM = Burgos Municipality
PN = Posten Norge	DA= Dealers, Dealer Associations
DCC = Dundee City Council	AIM = Alba Iulia Municipality
FQP = Dundee Freight Quality Partnership	SM = Serres Municipality
BAM =Balchik Municipality	CV = citizens and visitors
AM = Almada Municipality	



6.3.3 Commercial user needs

The commercial user needs identified at the ENCLOSE sites are presented in the following table.

		Lucca	Trondheim	s'Hert.bosh	Burgos	Almada	Dundee	Alba Iulia	Serres	Balchik
23	Maximise profits	LC	LC	LC	LC	LC, DA	LC		LC	
24	Generate recognizable benefits for the participants (price, delivery time/quality) to optimised logistic measures	LM, ME	EU, CV	EU, CV, HM	BM	AM	DCC	AIM	SM	BAM
25	Minimise transport costs of inner city deliveries	DA	DA	DA, HM		DA	DA	DA	DA	DA
26	Increase business	LC, ME	LC, DA	LC, DA	LC	DA	LC	DA	LC	LC
27	Delivery cost knowledge	DA	DA	DA	DA		DA		DA	
28	A reliable, attractive and quick e-Commerce internet shop (B2C) / Hands-free shopping	CV	CV	DA, CV						
29	Maintain goods transport prices in the inner city at a competitive level	LM	DA	HM, DA	BM, LC	DA, AM	DCC	LC	LC	
30	Increase the number of I deliveries	ME, LC	LC	LC	LC		LC		LC	
31	Optimise the distribution system for retailers	LM	LC, TM	HM	BM	AM	DA	AIM	SM	BAM

LC = Local and national Carriers

DA= Dealers, Dealer Associations

CV = citizens and visitors

AM = Almada Municipality

PN = Posten Norge

LM = Lucca Municipality

ME = Metro Lucca

HM = s'Hertogenbosch Municipality

EU = B2C end-users

BM = Burgos Municipality



DCC = Dundee City Council

SM = Serres Municipality

TM = Trondheim Municipality

AIM = Alba Iulia Municipality

BAM = Balchik Municipality



6.3.4 Socio economic user needs

The socio-economic user needs identified at the ENCLOSE sites are presented in the following table.

		Lucca	Trondheim	s'Hert.bosh	Burgos	Almada	Dundee	Alba Iulia	Serres	Balchik
32	Enhance local economic development	LM			BM	AM	DCC	AIM	SM	BAM
33	Increase citizen's employment opportunities	LM			BM	AM	DCC	AIM	SM	BAM
34	Increase pedestrian citizen/ tourist city tours	LM, CV	TM, CV	HM, CV	BM,CV	AM, CV	DCC, CV	AIM, CV	SM, CV	BAM,CV
35	Reduce impacts traffic congestion	LM	TM	HM	BM	AM	DCC	AIM	SM	BAM
36	Improve the environmental sustainability and CO2 reduction within the city	LM	TM	HM			DCC			BAM
37	Improve the urban area traffic safety	LM				AM	DCC			BAM
38	Maintain the citizens consensus	LM			BM				SM	
39	Reduce kilometres driven related to goods distribution	LM	TM	HM, PN			DCC	AIM	SM	Balchik

LM = Lucca Municipality

HM = s'Hertogenbosch Municipality

AM = Almada Municipality

PN = Posten Norge

DCC = Dundee City Council

SM = Serres Municipality

CV = citizens and visitors

TM = Trondheim Municipality

BM = Burgos Municipality

AIM = Alba Iulia Municipality

BAM =Balchik Municipality



7 CONCLUSIONS

Based on the surveys conducted and as highlighted by the various tables in previous chapter, many similarities regarding user needs have been identified among the ENCLOSE partner cities. However, many site-specific users needs have also been formulated due to the fact that the characteristics and problems of the forerunner sites differ quite significantly from those of the follower cities.

Overall, the common ENCLOSE user needs can be summarised as follows:

- Tracking and tracing ability
- Availability of a route planners (GIS) and real time traffic information systems
- Utilise logistic optimisation technologies to increase load factors of carrier trucks
- Optimise the assignment of available loading and unloading spaces
- Possibility to contact and contract different transport operators
- Minimize delivery time and slight warehousing
- Harmonise access restrictions
- Optimise physical access restriction
- Increase profits of commercial parties and freight operators
- Minimise transport costs
- Increase business
- A reliable, attractive and quick e-commerce internet shop (B2C)
- Reduce traffic congestion
- Improve the urban sustainability within the city

Overall, the User Needs Analysis and requirements identification conducted in the ENCLOSE sites has identified a number of strategic goals to be addressed by the pilot and soft measures and in the Sulp designs to be developed in the project. These include:

- To improve urban distribution processes in terms of rational use of resources (energy, vehicles, load capacity, unloading spaces, ...);
- To improve the quality level of logistics services offered to the “end-users” of the logistics system, both consumers and commercial operators;
- To contribute to social inclusion objectives, as far as logistics services, by improving goods delivery services for disadvantaged citizens and consumer categories (elderly, disabled, ...);
- To contribute to the overall sustainability of urban freight processes by e.g. improving EV use, reducing CO2 emission, limiting the access/impacts of commercial vehicles in the inner centres (reducing number of accesses, peaks and operation time) optimising trips/routes and occupation of unloading areas, etc.

These objectives relate to a number of entities – users, operators, infrastructures and transport resources, technological systems for managing mobility flows and processes, etc. – which have been identified, in relation to the different ENCLOSE sites, and described in previous chapters.