

Following the successful implementation of their first sustainable urban mobility plan, the City Council of Almada identified a need to focus on logistics. The City Council has created an official Sustainable Urban Logistics Plan that prioritizes the establishment of an urban consolidation center from which last-mile delivery services can be sustainably provided.

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### Almada & ecomobility 'in context'

The City of Almada is one of 18 municipalities within the Lisbon Metropolitan Area (AML). Located on the south bank of the Tagus River, 176,000 full-time residents live within the municipal boundaries of Almada, which occupy a total area of 72 km<sup>2</sup>. The majority of the City of Almada's population resides within a well-developed urban core that comprises 40 per cent of the municipal area.

Tourism is a major aspect of the local economy for Almada and this has a considerable influence on municipal mobility planning. Almada receives an estimated 8,000,000 visitors per year as a result of its rich history, its 13 km of beautiful Atlantic Ocean beachfront and its proximity to Lisbon. The city is directly connected to Lisbon by the '25 de Abril' bridge – which is traveled by 160,000 vehicles every day – and approximately 50 per cent of the trips made in Almada are considered “crossing traffic”.

Personal automobile use is part of the culture of the region. 33 per cent of city-wide greenhouse gas (GHG) emissions in Almada are linked to the transport sector, and crossing traffic is not counted within that figure (in accordance with the guidelines of the Covenant of Mayors). The City Council of Almada cannot directly ameliorate crossing traffic, nor can they completely shift a regional culture which sees the independence provided by personal automobile use as being more desirable than shared and public transportation options.

Nonetheless, the City Council of Almada has displayed leadership and high achievement in the field of sustainable mobility. The modal split in Almada is currently 46.3 per cent automobile use, 36 per cent public transport, 17 per cent walking, 0.4 per cent other, and 0.3 per cent bicycling. These figures demonstrate regional excellence in contrast to the other municipalities within the AML, which possess an average modal split of 55 per cent automobile use, 28 per cent public transportation, 15 per cent walking, 1 per cent bicycling and 1 per cent assorted other modes.

### A strong legacy of strategic mobility planning in Almada

Part of the City of Almada's success is a reflection of its outstanding history of integrated and multi-thematic policy development and strategic planning. The City Council is currently implementing its second sustainable urban mobility plan, the Strategic Plan for Urban Mobility in Almada (PUMA), which runs from 2015 to 2025.



### Facts & Figures

#### Population

176,000 (6% of the Lisbon Metropolitan Area)

#### Land area

70.2 km<sup>2</sup>

#### Modal split (2017)

Walking: 17%  
Bicycling: 0.3%  
Public transportation: 36%  
Personal automobile: 46.3%  
Other: 0.4%



Almada has been a Member of ICLEI since 2001 and is an original participant in the EcoMobility Alliance

The first Municipal Strategic Mobility Plan, formulated in 2001, identified four key action areas: (1) the planning and development of a multimodal transport system, (2) the creation of infrastructure which can support sustainable urban transportation, (3) the promotion and use of new and more efficient technologies, and (4) increased awareness and usage of sustainable transportation amongst Almada's residents.

Within this first phase of strategic mobility planning, initiatives such as a tram system – *currently used by 25,000 to 30,000 people every day* – and the Flexibus – *a mobility service adapted to Almada's growing elderly demographic, and which offers time-and-location flexible public transit service on two electric mini-buses* – were introduced to complement Almada's existing modes of public transportation (bus, train and ferry).

These efforts have been, and continue to be, supported by the non-profit Local Energy Management Agency of Almada (AGENEAL). AGENEAL promotes energy efficiency, utilization of local energy resources, and the uptake of the best available technologies across all sectors of economic activity for the City of Almada.

### **The Strategic Plan for Urban Mobility in Almada (PUMA)**

The PUMA is the City Council of Almada's second sustainable urban mobility plan and targets five areas for intervention. The first four build on the momentum generated out of the 2001 strategy: (1) increasing efficiency within the mobility system, (2) increasing provision of public transportation services, (3) emphasizing greater uptake of 'soft' travel modes such as walking and bicycling, and (4) improving the circulation of transportation and improving parking regulations. In creating PUMA, however, the City Council of Almada identified an additional sector for intervention: (5) urban logistics.



Image 1: The western urban boundary of Almada, prominently demarcated by a motorway leading to Lisbon via the 25 de Abril Bridge Source: City Council of Almada



## Description of activities: The Almada Sustainable Urban Logistics Plan

### *Creating a Sustainable Urban Logistics Plan*

The City Council of Almada completed their first ever Sustainable Urban Logistics Plan (SULP) in 2014 as a deliverable of the ENCLOSE Project. The ENCLOSE Project was financially supported by the European Commission under the Intelligent Energy – Europe (IEE) program.

### *What are urban logistics?*

The term urban logistics refers to the transportation systems and processes which allow for the movement of goods (e.g. retail products, e-commerce goods, and building supplies) and services (e.g. waste management) with an urban area. The ability of residents to access food from the supermarket, or have waste and recycling collected at regular intervals, are requirements for a functional city and hinge on an effective logistics system.

As a city grows, it is very likely that its urban logistics footprint will also expand in order to satisfy the needs of a larger population. Yet while vital for a functioning city, a growing number of freight vehicles in an urban area also implies greater amounts of vehicle congestion and increased air and noise pollution. This has a negative impact on both the environment and quality-of-life within a city. In response to this aspect of urban growth, municipalities at the forefront of sustainable mobility planning have identified urban logistics as a necessary element of their strategic planning.



Image 2: The historic urban core of Almada is not conducive to heavy urban freight. The central market is in the bottom-right of the image Source: City Council of Almada

Almada's Sulp is a key part of the strategic PUMA framework. Municipal staff believe that the challenge of optimizing logistical operations is also an opportunity to enhance the attractiveness of their city, improve quality-of-life for citizens, and the reduce traffic congestion, energy consumption, and GHG emissions associated with the conventional logistics system. Because the challenge of making urban logistics sustainable is cross cutting, it is also being integrated into the overall energy strategy.

The process of drafting the Sulp enabled municipal staff to assess the current state of logistics within the city, and to identify and evaluate potential actions which might improve energy efficiency and reduce environmental impact. In 2013, AGENEAL supported this process by conducting a survey to identify relevant business interests and active logistics processes.

The survey detailed approximately 2,300 shops in Almada's city center. An average of 512 heavy commercial and 1,024 light commercial vehicles conduct over 1,550 logistic trips and deliver 60 tons of freight each day (heavy vehicles defined herein as any vehicle above 3.5 tons). The peak activity for circulation of heavy commercial vehicles is between the hours of 08:00-10:00. This sum of this logistics activity does not take the personal vehicles of shopkeepers into account, and these are increasingly being used to conduct self-supply transport of goods as a cost-cutting measure. The total CO<sub>2</sub> emissions generated from current urban logistics activity in Almada (not counting personal vehicles) is equal to 1,289 tons a year, and the annual fuel requirement (primarily diesel) is upwards of 361 tons-of-oil equivalent (toe).

When the Sulp was developed in 2014, only a few urban logistics regulations were in place, and none of these were explicitly aimed at optimizing distribution or reducing GHG emissions and energy consumption. The City Council had previously enacted time windows for the loading and unloading of goods, but these were often misused by logistics vehicles due a lack of effective regulation. Making matters more complicated, private automobiles frequently used the parking spaces allotted for commercial vehicles. In certain areas, no dedicated logistics parking existed, leading to pedestrian walkways being used for loading and unloading.

The intense logistics activity within Almada, combined with the personal automobile culture already dominant throughout the region, has had detrimental effects on public space and reduced the total area available for public leisure. In addition, because urban logistics in Almada are largely organized and conducted by private entities, there has been no impetus among freight operators to consolidate and optimize the transportation of goods to Almada. Accordingly, the Sulp has identified processes for management and control of freight flows and is focused on reducing the impact of loading and unloading operations.

## **Outcomes of Almada's Sustainable Urban Logistics Plan**

### ***Identifying measures for implementation***

Participation in the ENCLOSE project enabled the City Council of Almada to create their Sulp and identify immediate measures to improve urban logistics in Almada. These soft measures include new regulations and time windows for loading and unloading of freight, improved enforcement of parking regulations and electric trolley services for shops in the central market. In addition to these measures, the City Council identified the creation of a freight consolidation center as a vanguard project for revamping urban logistics in Almada.

### ***The Almada Urban Consolidation Center***

The flagship initiative that will emerge out of the Almada Sulp is an urban consolidation center (UCC). An UCC is a logistics base which provides an intermediate location that allows for goods to be temporarily stored in advance of subsequent transport. An immediate benefit of an UCC is that goods can be consolidated into a reduced number of trips into the city-center and subsequently delivered to the final destination by a dedicated fleet; a process also referred to as last-mile service. So long as the UCC is located within a suitable distance for all deliveries to be completed on a single charge, the provision of last-mile service can also allow for the use of electric vehicles.



The City Council of Almada has created a multi-phase model for its UCC. In addition to serving as a base for gathering shipments from various logistics companies and consolidating deliveries, the UCC will also offer services such as reverse logistics (the collection of goods from locations within Almada and subsequent transport to the UCC), information-communication-technology (ICT) service for tracking and tracing all deliveries, third-party warehouse storage with on-demand delivery, hotel baggage delivery for tourists, and deliveries outside of normal business hours. The City is also setting up an online platform to organize and manage deliveries by bicycle and will conduct a pilot project with various shops and small businesses.

The location selected – close to each the 25 de Abril Bridge, the southern and western highways, and within 3.3 km of Almada's commercial areas – is easily accessible for both logistics companies and the dedicated Almada last-mile fleet. The projected daily distance that the last-mile fleet will travel from the UCC is between 40 to 60 km, which can accommodate the battery life of electric vehicles.

The initial phase of the UCC will require a budget for two 3.5 ton vehicles, two drivers, one warehouse worker and one administrator. Following six to 12 months, the next phase will see greater staff requirements in order to operationalize the ICT platform, as well as increased amounts of equipment for both the warehouse and the fleet. The selected location for the UCC is a small segment of an existing parking lot that will provide ample room for maneuvering heavy freight vehicles.

The management structure for the initiative is yet to be decided upon. The City Council will actively manage the activities of the UCC in the early phases and sees operating the UCC as a municipally owned company as being preferable in the long run. That being said, public-private-partnerships and service procurement models are also being considered.

The projections for the UCC show a net annual CO<sub>2</sub>eq emissions reduction of 24.3 and net annual energy consumption reduction of 7.55 toe.



Image 3: Public forums for debate are an important part of effective mobility planning and implementation

Source: City Council of Almada

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## Costs and Financing

The projected capital costs for infrastructure and equipment of the UCC is 290,000€, while operative costs – including staff, vehicle rental, energy and depreciation – have been calculated at 200,000€ each year. The Almada UCC will be economically viable if an average of 120 deliveries per day (based on a revenue model of 6€ per delivery) are guaranteed. A lower number of deliveries can be economically viable if additional revenue streams are introduced.

## Challenges and Lessons Learned

The urban logistics space is occupied by multiple stakeholders – including the City Council, AML, logistics operators, shopkeepers, and citizen organizations – which may have conflicting interests and priorities. Implementing a UCC is thus a necessarily participatory process which requires close collaboration. The City Council of Almada recognizes that flexibility is key to making the UCC a success, and has approached the initiative with a business model which empowers small local operators through service contracts. This provides an immediate incentive for buy-in from the local private sector, while also allowing the City Council to keep its immediate capital outlay to a minimum before purchasing dedicated electric vehicles.

A major challenge in operationalizing urban logistics plans is finding a successful business model which sufficiently addresses the economic efficiency and cost reduction priorities of private stakeholders. To overcome this hurdle, the City Council of Almada has stressed the added value, cost savings and efficiency gains offered by the UCC model. These include avoiding trips to the urban core of the city to fulfill small deliveries, the possibility of using larger vehicles with greater storage space – which cannot navigate many of Almada's narrow historic streets – for long haul shipments to the UCC, greater flexibility for delivery times, and reverse logistics services. Similarly, shopkeepers within Almada's core have been engaged by the City Council to discuss the economic advantages of better accessibility to the market area for pedestrians, increased parking for personal automobiles, and the advantages of being able to use the UCC as a third-party storage facility.

## References and further reading

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