City context

Lisbon, capital of Portugal and the centre of the Lisbon metropolitan area, is the major commercial, political, and tourist centre in the country. The Lisbon Metropolitan Area (AML) covers 18 municipalities and is the largest urban area in the country and the 10th largest in the European Union. The region is the largest tech hub in the country and many major multinational corporations are based there.

Modal share

The Mobility Survey conducted in 2017 provides data on how people travel in the City of Lisbon and in the Lisbon Metropolitan Area. The results are as follows:

- In the City of Lisbon, car is the most used transport mode, accounting for 46% of all trips. However, active modes, which include walking and cycling, are also popular, with 30% of trips. Public transport, such as bus, metro, tram, train and ferry, represents 22% of trips. Other modes, such as taxi, ride-hailing, car-sharing and others, have a lower share of 2%.

- In the Lisbon Metropolitan Area, car is even more dominant, with 60% of trips. Active modes have a lower share of 23%, while public transport has a share of 16%. Other modes have a negligible share of 1%.

These results show that the car is still the dominant mode of transport in both areas, although the City of Lisbon has a higher share of active modes and public transport than the Lisbon Metropolitan Area.

Mobility offer

Lisbon is a city that provides a wide range of mobility services responding to passengers needs for seamless and convenient transportation options. Public transportation in Lisbon covers a broad network of buses, trams, metro lines, and trains, that serve most of the city and its surrounding areas. Both public (Carris – municipal, Metropolitano de Lisboa, Transtejo, Soflusa, CP - state owned) and private (Fertagus, Viação Alvorada, Rodoviária de Lisboa, TST, Alsa Todi – concession) operators are providing public transport services. Tickets or passes can be purchased at various locations, such as stations, kiosks, or through online platforms. Taxis operated by private companies (AutoCoop, Retalis, Ratalma) can be reached through various means, such as hailing one directly on the street, contacting a taxi service via telephone, or utilizing a mobile application. Ride-hailing services such as Uber and Bolt – private operators - have gained significant popularity among users. Both taxi and ride-hailing services operate at the city level and in the suburbs. On-demand services are provided by public transport operator Carris and operated at city level. E-scooter sharing services are present all over the city and are provided by private operators (Bolt, Lime, Bird, Superpedestrian, Whoosh). Bike sharing services are provided city wide by both public (EMEL) and private (Lime, Bird, Bolt) operators. Additionally, e-Moped services are provided by private operators (Cooltra, Electra).

The city of Lisbon has implemented access-controlled areas called the Zona de Acesso Automóvel Condicionado (ZAAC). Access to this area is restricted to specific periods of time and user types. Additionally, the municipality has established low emission zones (ZER = Zona de Emissões Reduzidas) that are differentiated into two distinct areas with varying Euro standards.

In Lisbon there are various delivery services that offer different options for first/last mile delivery. This includes delivery by vans, (e)cargo bikes and self pick-up. Moreover, ride-sharing services provided last/mile delivery of goods.

Transport data collection and integration

Lisbon has a comprehensive traffic and transport data collection system in place. There are collected and analysed data from different sources, such as general traffic, public transport, alternative mobility services, parking, traffic light, radars, cameras. The data collection system is not fully organised, but there is an integrated formalised system for ticketing and centralised platforms with limited data.

There are several ITS platforms that support various aspects of traffic and transport management. Traffic flow management platform is operated by the City Authority and collects real-time data from sensors, cameras and other sources to monitor and control the traffic conditions in the city. Public transport management platforms are operated individually by the Transport Authority and other public entities that provide public transport services in Lisbon.

Traffic/Transport simulation platforms are in place, but used separately, with different scope and models, by the City Authority, the Transport Authority, other public and private entities, to model and simulate different scenarios of traffic and transport demand, supply, and behaviour. However, they are not integrated because of various reasons, such as different transport model, data type, etc., but the UPPER project creates an opportunity to integrate the platforms, as each entity are using the same software.

The automated fare collection platform is operated by the Transport Authority, including public and private entities.

Parking management platforms are operated by the city, other public and private entities that manage on-street and off-street parking facilities. The platform monitors and regulates the parking supply and demand in the city, as well as provides information and guidance to drivers on available parking spaces and prices (e.g. EMEL ePark app).

Consideration on public transport service

The public transport system in Lisbon has many **strengths** that make it an attractive and convenient option for residents, commuters, and tourists alike. Some of the main strengths are:

- **Coverage** – public transport has a comprehensive network of metro, bus, tram, and train lines that connect different areas and neighbourhoods, as well as the airport and the suburbs. There are also dedicated lanes and priority signals for public transport vehicles.
- **Price structure** - the public transport system offers a family of tickets and passes (navegante), with discounts for students, seniors, families and low-income groups. There is also a single ticket that allows unlimited transfers between metro and bus within 1 hour (Carris/Metro), and a one-trip ticket (zapping).
- **Payment options** – the public transport system accepts cash, debit and credit cards, as well as contactless payments via smartphones or smart cards for some operators. There is also an app that allows users to buy and validate tickets, check timetables and plan their journeys. The occasional "navegante" card can be purchased and top up at any metro station, as well as at some kiosks, newsstands, and shops. The card can be used as a pay-as-you-go option or as a prepaid pass for a certain period of time. The card can also be used to pay for parking at some metro stations and for bike sharing services in the city. The personalized monthly "navegante" card can be used with monthly "navegante" tickets, that allow to ride in all metropolitan 3000 km2 in any public transport mode an illimited number of times. Additionally, the app Via Verde allows users to pay for public transport, parking, tolls, and other services with their smartphones.
- **Vehicle comfort/accessibility** - public transport vehicles are modern, clean and well-maintained, with air conditioning, wi-fi and information screens. They are also accessible for people with disabilities and reduced mobility, with ramps, lifts, audio and visual announcements, and reserved seats.
- **Safe and secure stops/stations and vehicles** - public transport stops and stations are monitored by CCTV cameras. They also have emergency phones, first aid kits and fire extinguishers. The public transport vehicles are equipped with GPS trackers, panic buttons and cameras, and are regularly inspected for safety standards.

The public transport system in the Lisbon has several **weaknesses**, which affect the quality of service and user satisfaction:

- **Availability** - the supply of public transport is insufficient at certain times and days, especially at night and at weekends.

- **Reliability** - the public transport service does not succeed to follow stated timetables on a regular basis, causing inconvenience and uncertainty for users.
- **Travel time** - the public transport service does not offer always a fast and efficient alternative to car use, taking longer to reach destinations.
- **Information** - the public transport service does not provide sufficient, multimodal and up-to-date information to users, which causes difficulties with regard to plan a travel.

Relation between major mobility stakeholders

The authority that regulates most of the mobility services is the Transportes Metropolitanos de Lisboa (TML), an entity that coordinates the planning, management and operation of the public transport system in the Lisbon Metropolitan Area. Nevertheless, 3 of the 18 metropolitan municipalities (Lisbon, Barreiro and Cascais) retain some transport authority powers, namely regarding local bus offer.

Public transport services in Lisbon are provided by several publicly owned or private companies. The main public transport operators in Lisbon are: Carris, a municipal company that runs buses and trams; Metropolitano de Lisboa, a state-owned company that operates the metro system; Transtejo and Soflusa, two state-owned companies that provide ferry services; CP - a state-owned company that runs suburban and regional trains, and Fertagus, a private company that operates suburban train under concession. There are also several private bus companies that have concessions to operate in specific areas of Lisbon, such as Viação Alvorada, Rodoviária de Lisboa, TST and Alsa Todi. These four bus private companies are operating under concession contracts managed by TML. Carris, the municipal company, also offers an on-demand service called Carris Flex.

Taxi services are provided by several private operators (AutoCoop, Retalis, Ratalma, etc.) and granted by the municipal authorities, who are responsible for defining the number of licenses, the fares, the zones, and the quality standards of the service. The main law that governs the taxi service in Lisbon is Decree-Law no. 251/98 of August 11, 1998, as subsequently amended and supplemented, which establishes the general rules for the public transport of passengers by taxi.

According to the Portuguese law (Law no. 45/2018), ride-hailing platforms such as Uber, Bolt or Kapten must obtain a license from the Institute for Mobility and Transport (IMT), the national entity responsible for overseeing the transport sector. Law no. 45/2018 regulates the activity of electronic platforms that connect passengers with drivers using their own vehicles.

Bike-sharing services may be authorized by the Lisbon City Council, which monitors their operation and impacts on the city's mobility and environment. The main provider is EMEL, the municipal parking and mobility company. Other bike sharing schemes in Lisbon are operated by private company, such Lime, Bird and Bolt. Other micromobility services such e-scooters and e-mopeds can similarly be authorised by the Lisbon City Council. Law no. 47/2018 also states that operators must inform Institute for Mobility and Transport (IMT) of the characteristics of their sharing operations.

Logistic services (last/first mile delivery) are as well subject to regulation. For instance, e-vans and (e)cargo bikes can provide services in the LEZ, while certain diesel and gasoline vehicles are restricted in this area. There are also 5 restricted access areas where delivery is permitted on a time-window schedule.

Vision and policies for sustainable mobility and climate neutrality

The mobility policies of the city of Lisbon in the last five years have been guided by a clear vision, designated MOVE Lisboa, that aims at transforming the city into a more sustainable, efficient and user-friendly place to live. The main objectives of this vision are to reduce the dependence on individual car use, to promote more sustainable modes of transport such as public transport, cycling and walking, and to improve the quality and accessibility of the transport system for all users.
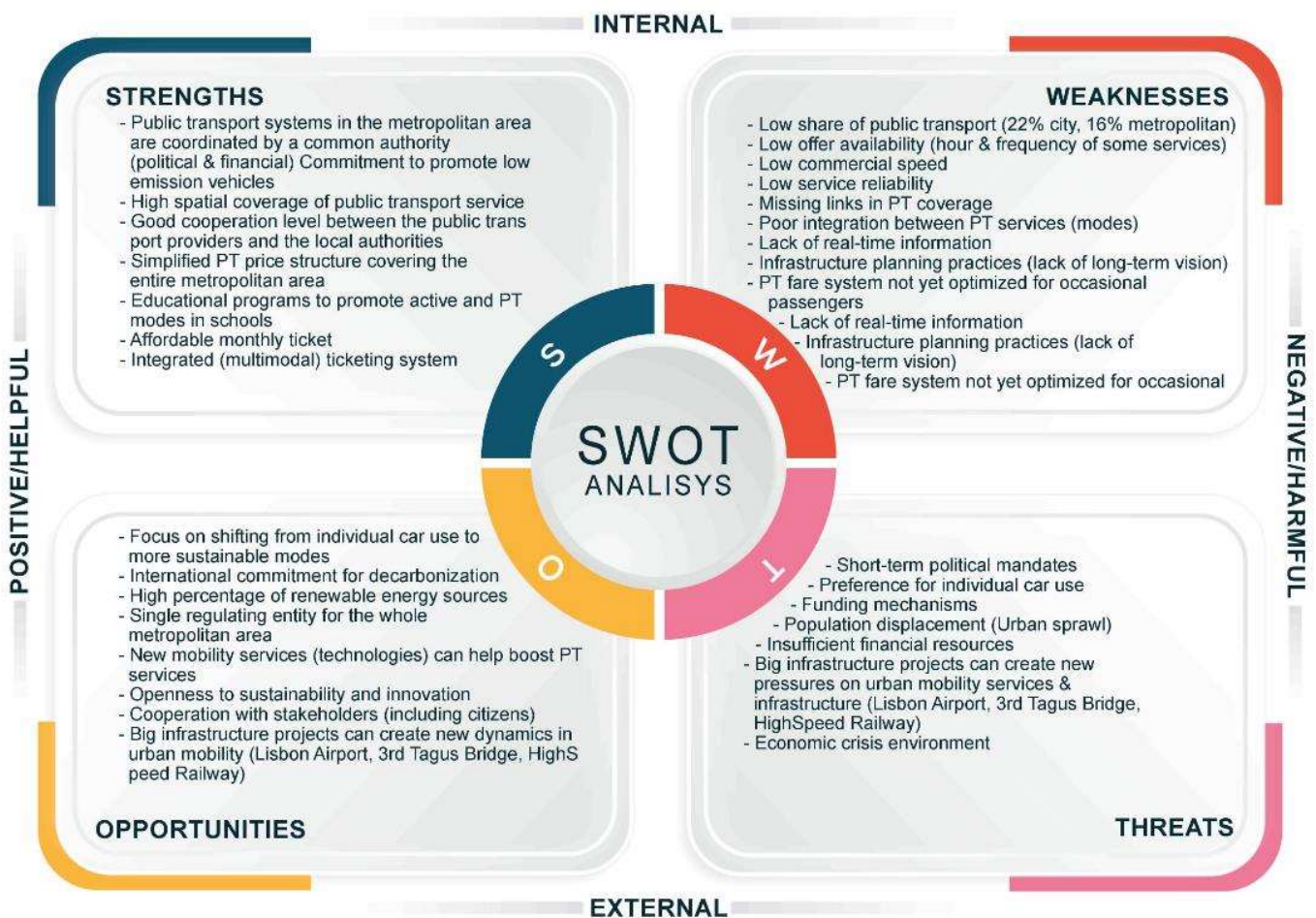
To achieve this vision, Lisbon has benefited from a strong political leadership that is open to sustainability and innovation. The city has implemented several measures and projects that reflect its commitment to sustainable

mobility, such as creating low-emission zones, expanding the metro and bus network, introducing bike-sharing and electric scooter schemes, and supporting mobility-as-a-service platforms. The technical personnel in the mobility-related departments have also played a key role in supporting the mobility vision of Lisbon. They have shown openness to sustainability and innovation, as well as competence and professionalism in their work.

The citizens and the civil society of Lisbon have also shown interest and engagement in the sustainable mobility agenda of the city. They have participated in various initiatives and consultations that aim to involve them in the decision-making process and to raise their awareness and knowledge about sustainable mobility.

SWOT analysis

The results of the Lisbon SWOT analysis carried out with the main stakeholders in UPPER project are presented in the figure below:

INTERNAL

STRENGTHS
- Public transport systems in the metropolitan area are coordinated by a common authority (political & financial) Commitment to promote low emission vehicles
- High spatial coverage of public transport service
- Good cooperation level between the public transport providers and the local authorities
- Simplified PT price structure covering the entire metropolitan area
- Educational programs to promote active and PT modes in schools
- Affordable monthly ticket
- Integrated (multimodal) ticketing system

WEAKNESSES
- Low share of public transport (22% city, 16% metropolitan)
- Low offer availability (hour & frequency of some services)
- Low commercial speed
- Low service reliability
- Missing links in PT coverage
- Poor integration between PT services (modes)
- Lack of real-time information
- Infrastructure planning practices (lack of long-term vision)
- PT fare system not yet optimized for occasional passengers
  - Lack of real-time information
  - Infrastructure planning practices (lack of long-term vision)
  - PT fare system not yet optimized for occasional

SWOT ANALISYS

POSITIVE/HELPFUL

NEGATIVE/HARMFUL

OPPORTUNITIES
- Focus on shifting from individual car use to more sustainable modes
- International commitment for decarbonization
- High percentage of renewable energy sources
- Single regulating entity for the whole metropolitan area
- New mobility services (technologies) can help boost PT services
- Openness to sustainability and innovation
- Cooperation with stakeholders (including citizens)
- Big infrastructure projects can create new dynamics in urban mobility (Lisbon Airport, 3rd Tagus Bridge, HighSpeed Railway)

THREATS
- Short-term political mandates
- Preference for individual car use
- Funding mechanisms
- Population displacement (Urban sprawl)
- Insufficient financial resources
- Big infrastructure projects can create new pressures on urban mobility services & infrastructure (Lisbon Airport, 3rd Tagus Bridge, HighSpeed Railway)
- Economic crisis environment

EXTERNAL

In response to the SWOT analysis's strengths and opportunities, a set of *acceleration strategies* could be defined as follows:

- High spatial coverage and ticketing structure to facilitate the transition from car to public transport,
- Commitment for international decarbonization is a key driving force behind the transition towards low emission vehicles.
- Secure a good cooperation between stakeholders to help design more efficient big infrastructures.
- Develop an integrated ticketing system that can incorporate new mobility services,
- Set a price structure that provides affordable monthly tickets allowing for the creation of new mobility services.

Several *improvement strategies* were identified based on the SWOT analysis:

- Establish a single regulating authority that can manage and coordinate the multimodal public transport network. This would help to harmonize the standards, policies and incentives for different modes of transport, and to ensure a seamless and integrated service for users.

- Increase the quality and extension of active modes infrastructure, as a standalone and a complementary tool to public transport.

- Leverage the potential of new mobility services, such as ride-hailing, car-sharing, bike-sharing and micro-mobility, to complement and enhance the existing public transport system.

- New mobility services can offer several benefits for public transport service planning, infrastructure planning, urban space planning, passenger information provision and real-time information access. For example, new mobility services can help to fill the gaps in public transport coverage and frequency, especially in low-density areas or during off-peak hours. They can also help to reduce the need for parking spaces and road capacity, and to create more liveable and walkable urban environments. This can improve the convenience and reliability of public transport and attract more occasional passengers who may otherwise choose private cars.

Resilience strategies that emerged from the SWOT analysis are:

- Leverage the high spatial coverage, the multimodal information to the public and the ticketing structure of the public transport network to promote a modal shift from car to public transport. The high spatial coverage can ensure that public transport is accessible and convenient for most of the urban population, especially those who live in peripheral or low-income areas.

- Establish a single transport authority that can coordinate and integrate the planning, operation, and management of the public system. This strategy can help mitigate the impacts of short-term political mandates and conflicting interests among different stakeholders, such as operators, regulators, users, or local governments. A single transport authority can also facilitate the implementation of long-term visions and policies for public transport development, such as improving service quality, expanding network capacity, or enhancing intermodal connectivity.

- Use the high spatial coverage of the PT network to reach distant populations that may be vulnerable or isolated. This strategy can improve the social resilience of these populations by providing them with access to essential services, and support networks.

- implement educational programs that can help invert the trend for car dependency and foster a culture of public transport use among the population. Educational programs can target different segments of the population, such as children, students, workers, or seniors, and use various methods and channels, such as campaigns, workshops, events, or media.

Some of the *intervention strategies* that emerged from the SWOT analysis of the public transport (PT) sector in Lisbon could be:

- Improve the quality of public transport service, especially in terms of reliability, frequency, comfort, and safety. This strategy aims to make public transport more attractive and competitive to car users. By improving public transport service quality, we can increase public transport patronage, reduce congestion and pollution, and enhance social equity and accessibility

- Improve the planning practices of the public transport sector, such as coordination, integration, evaluation, and participation.

- Correct the missing links in the public transport network, aiming to help reach not covered populations, especially in the remote areas, who have limited or no access to public transport services. By correcting missing links, the public transport network expands the coverage and connectivity, reduce travel time, and improve social inclusion and cohesion.

- Improve the long-term planning of the PT sector, such as visioning, aiming to reduce the impact of short-term political mandates that often undermine the continuity and consistency of public transport policies and projects.

SUMP + UPPER measures

The current SUMP was published in 2016 (last revision in 2019). New metropolitan and city SUMPs are being launched, and the process of their adoption is expected to be concluded in 2024/25. They are funded by the regional authority (Lisbon Metropolitan Area) and by the 18 municipalities of the Lisbon Metropolitan Area. Several actions related to the implementation of the SUMP currently in force were funded by EU Structural Funds / Cohesion Funds.

SUMP action/measure/project related to public transport	UPPER Measures
A few local measures to promote safer mobility around schools	LIS_01 "Restrict car access in the city"
Several measures related to the creation of corridors to prioritize PT	LIS_02 "Promote, extend services and prioritise PT"
2 measures related with the development of mobility planning	LIS_03 "To improve mobility planning"
A few local measures to promote mobility to school	LIS_04 "To improve PT offer, adapted to school students"
Several measures focusing on the creation of solutions for the integration and better serving peri-urban territories in what concerns PT	LIS_05 "To enhance multimodal interconnection with the peri-urban municipalities"
A few measures related to the enhancement of info to the public and the improvement of PT infrastructure for universal accessibility	LIS_06 "To improve comfort, convenience and safety of PT interfaces"
Some measures related to ticketing and information to the public	LIS_07 "To create a new Multimodal Digital Mobility Services (MDMS)"
A measure related with implementation of campaigns of sustainable mobility	LIS_08 "To implement campaigns and partnership initiatives"
More than 50 actions and measures of promotion of walking and cycling infrastructure, most of them with impact in PT stations and interfaces	LIS_09 "To improve the integration of PT and active travel modes"
Some measures to improve the quality and efficiency of the bus service	LIS_10 "To improve the quality and efficiency of the bus service"