Overview of the current situation in Budapest

General context

Budapest, the capital of Hungary is situated along the Danube and is the most populous city in Hungary, concentrating 17% of the country's population. Budapest is recognized as a prominent global city, with notable strengths in various sectors such as commerce, finance, media, art, fashion, research, technology, education, and entertainment. It attracts around 12 million tourists per year, making it a highly popular destination in Europe.

Modal share

According to a survey from 2018, modal share in the city is dominated by public transport, which accounts for 47.32% of all trips. This is followed by private motorised transport, which represents 35.14% of the total. Walking and cycling are less popular modes of travel, with 15.82% and 1.72% respectively. These numbers reflect the city's efforts to promote sustainable mobility and reduce congestion and pollution.

Mobility offer

Budapest is a city that provides a variety of mobility options to passengers who want to travel within or beyond its borders. Public transport entails various modes of transport, such as buses, trams, and metro, which are operated under the umbrella of BKK (transport authority). Public transport is characterized by its affordability, frequency, and extensive coverage of both urban and suburban areas. BKV operates 4 metro lines, 5 suburban railway lines, 33 tram lines, 15 trolleybus lines, 264 bus lines, 4 boat services and BuBi, a smart cycle sharing network. The total length of the PT network is 3300 km with almost 2200 vehicles in operation daily. BKK offers an integrated ticketing system that covers buses, trams, metro, suburban rail, trolleybus, boat, and bike-sharing services. BKK also provides real-time information, journey planning, and customer service through its website, mobile app, and call centre. BKK has partnered with several private companies to integrate their services into its platform, such as car-sharing, ride-hailing, e-scooter rental, and parking.

In Budapest, there are several car sharing operators available, including GreenGo, MOL Limo, and ShareNow. The service is accessible at the municipal level. Moreover, GreenGo is integrated with BKK's platform and offers discounts for public transport users and has only electric vehicles.

Taxis are operated by private entities and provide transportation services that extend to suburban areas.

The sole provider of on-demand services in Budapest is BKK,.

E-scooters, namely Lime, Bird, and Tier, are exclusively accessible within the central district of Budapest. Bike sharing in Budapest is facilitated by two operators: MOL BUBI, a public operator, and Donkey Republic, a private operator. The service is confined to specific areas, primarily at the district level and within the city centre. MOL Bubi bike-sharing system, is operated by the Hungarian oil and gas company MOL Group. MOL Bubi is designed to complement public transport and provide a flexible and eco-friendly option for short trips. MOL Bubi is integrated in the MaaS app that has recently been released - BudapestGo. This app is envisioned to integrate all mobility services in Budapest and has functions as travel planner, information, payment, etc.

The city of Budapest implements regulations related to the accessibility of various areas within its jurisdiction, comprised of a total of 11 protected zones and 15 restricted zones. Protected zones refer to areas of historic interest

or recreational green spaces that restrict any form of motorized travel. Restricted zones refer to specific areas within the city that require heavy-duty vehicles to obtain an entry permit prior to gaining access[14].

Transport data collection and integration

Budapest has a few systems for collecting data on traffic and transportation that deal with various aspects of city mobility, including general traffic, public transport, alternative mobility services, and Park&Ride sites. Nonetheless, the data collection is not organized in a coherent and efficient manner, with each organization administering its own data.

The ITS platforms that are available in Budapest are related to traffic flow/management, public transport management, and traffic/transport simulation. The traffic flow management platform is operated by a public entity. The public transport management platform traffic/transport simulation platform are operated by the transport authority - BKK.

Consideration on public transport service

The public transport system in Budapest has many **strengths** that make it a convenient and efficient way to travel around the city. Some of these strengths are:

- **Availability** – the service operates 24/7, meaning that passengers can always find a service that fits their schedule and needs.
- **Coverage/network density** - the public transport network covers a large area of the city and its surroundings, with over 200 bus lines, four metro lines, five suburban railway lines, and several tram and trolleybus routes. There are also boat services on the Danube River and a funicular railway on the Buda Castle Hill.
- **Frequency** - the public transport offers high-frequency services, especially during peak hours, reducing waiting times and overcrowding.
- **Price structure** - the public transport service has a simple and affordable price structure, with a single ticket valid for all modes of transport within the city limits. There are also various discounts and passes available for students, seniors, families, and tourists.
- **Payment options** - the public transport system accepts various payment options, such as cash, credit cards, mobile phones, and smart cards. Passengers can also buy tickets online or at vending machines and ticket offices.
- **Vehicle comfort/accessibility** - the public transport vehicles are comfortable and accessible, with air-conditioning, free Wi-Fi, audio-visual information systems, and low-floor entry. The vehicles are also adapted for people with disabilities and reduced mobility with ramps, lifts, tactile paving, and audible signals. The stations and stops are also equipped with signs, maps, timetables, and information screens.

The public transport system in Budapest faces several **weaknesses** that affect its performance and quality:

- **Accessibility** - many public transport stops/stations are not easily reachable, especially for people with reduced mobility. This limits the potential catchment area of public transport and reduces its attractiveness for users.
- **Integration -** the public transport system lacks a coherent and seamless integration between different modes and services, such as buses, trams, metro, suburban rail, and bike-sharing. Users often experience inconvenient transfers when changing between various modes.
- **Vehicle comfort/accessibility** - the public transport vehicles do not offer adequate comfort and accessibility features for vulnerable users' groups. This affects the user satisfaction and perception of public transport quality.

[14] Budapest - AR (urbanaccessregulations.eu)

- **Safety and security** - the public transport stops, stations, and vehicles are not sufficiently safe and secure for users. Users may experience harassment, theft, or vandalism when using public transport.
- **Capacity to collect information and adapt to the demand** - the public transport system does not have a robust and reliable data collection and analysis system that can monitor the demand, user preferences, service performance, and network conditions. This impedes the ability of the public transport operators and authorities to plan, manage, and improve the system according to the changing needs and expectations of users.

Relation between major mobility stakeholders

In Budapest, there are several operators that provide mobility services, either public or private.

BKK Centre for Budapest Transport is the official public transport authority and mobility manager in the city. It manages the metro, tram, bus, trolleybus, suburban railway, ferry, and bike-sharing systems. Under its control are the 3 public transport operators: BKV is an in-house PT operator that operates all metro, tram, trolleybus boat and several bus services, Arrivabus is operating a large amount of bus lines and the state-owned Volánbusz operates the bus lines in the suburban area of Budapest.

Alternative mobility service providers, such as MOL Bubi, GreenGo and Bolt have different agreements with BKK, regarding the use of public space, data sharing, and discounts for the combined use of public transport.

Vision and policies for sustainable mobility and climate neutrality

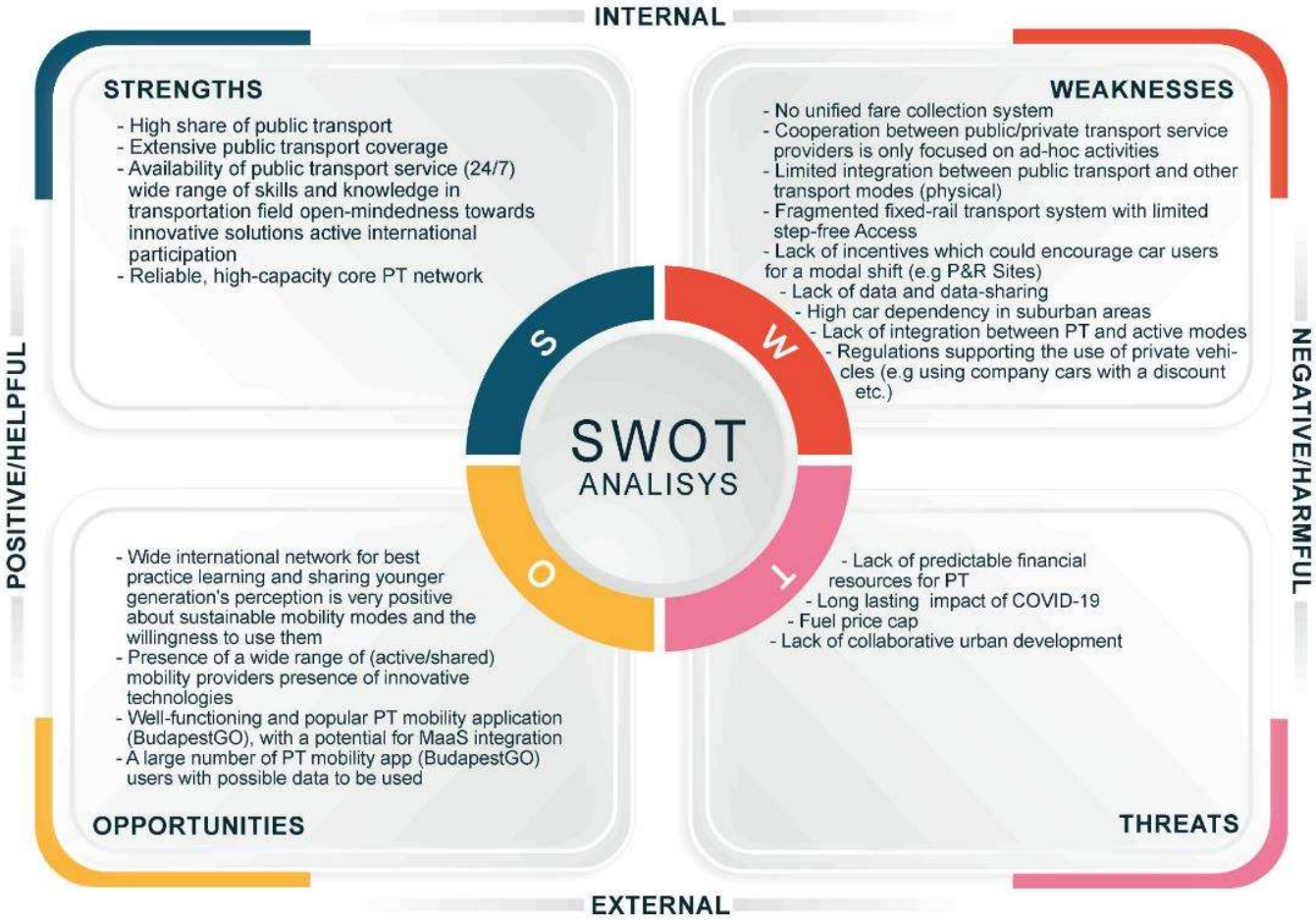
Budapest has a clear vision behind its mobility policies developed in the last five years: to reduce the dependence on individual car use and promote more sustainable modes of transport, such as public transport, cycling and walking. The city has adopted an integrated approach in providing sustainable mobility, considering the environmental, social and economic impacts of transport decisions. The city has also focused on a user-centric approach for sustainable mobility, involving the citizens and the civil society in the planning and implementation of mobility projects and initiatives.

The political leadership of Budapest is open to sustainability and innovation, as demonstrated by the support for various mobility measures, such as the expansion of the bike-sharing system, the introduction of low-emission zones, the improvement of public transport services and infrastructure, and the promotion of electric mobility. The technical personnel in the mobility-related departments are also driving sustainability and innovation in the city.

The citizens and the civil society of Budapest are open to sustainability and innovation, as shown by their participation in mobility consultations, campaigns and events, their willingness to adopt new mobility behaviours and practices, and their feedback and suggestions for improving the mobility conditions in the city.

SWOT analysis

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



The SWOT analysis revealed several strengths and opportunities for improving the performance and competitiveness of public transport in the region. Based on these findings several ***acceleration strategies*** could be envisaged. For instance:

- Involvement in international R&D projects that foster collaboration and knowledge exchange among public transport operators, researchers, policymakers, and other stakeholders. These projects provide access to cutting-edge technologies, best practices, and funding sources that could enhance public transport system and services.
- Development of educational campaigns for younger generations to raise their awareness and appreciation of the benefits and sustainability of public transport.
- Implementation of various innovative pilot options for testing and evaluating new solutions for improving public transport efficiency, reliability, safety, and user satisfaction. The pilot options can provide valuable feedback and data that can inform the decision-makers and scaling-up processes.
- Maintaining the level of service of public transport by ensuring adequate infrastructure, fleet, staff, and maintenance are essential for providing high-quality public transport services that meet the needs and expectations current and potential users.

Several ***improvement strategies*** have been identified for public transport in Budapest:

- Implementing collaborative campaigns between mobility providers could offer more integrated and seamless services to the users, increasing their satisfaction and loyalty. Collaborative campaigns can help raise awareness and promote the benefits of sustainable and multimodal mobility options, attracting new users and reducing environmental impacts.
- Implementing collaborative campaigns between mobility providers for piloting MaaS elements, demonstrating thus the feasibility and value of MaaS elements, such as dynamic pricing, personalized recommendations, real-time information, and interoperable payment systems. These pilots can serve as a proof of concept and a learning opportunity for both mobility providers and users, as well to collect feedback and data for further improvement.

- Establishing a clear and consistent regulative framework and user terms and conditions that enable a better exploitation of users' data. This can help mobility providers to optimize their services, tailor them to users' preferences and needs, and enhance their competitiveness and innovation.

The identification of ***resilience strategies*** that can assist Budapest in dealing with future challenges for public transport service are:

- Responsible data-based decision-making: using reliable and transparent data sources to inform policymakers and planning processes, as well as engaging stakeholders and citizens in data collection and analysis. By doing so, the city can ensure that its decisions are evidence-based, accountable and responsive to the needs and preferences of its residents.
- Reallocating public transport capacities: optimizing the use of public transport capacities by reallocating them according to demand and supply patterns, as well as promoting modal shift from private to public transport. By doing so, the city can reduce congestion and emissions while improving accessibility, mobility and quality of life for its inhabitants.

The Budapest SWOT analysis identified several ***intervention strategies*** to improve the urban mobility, reduce the environmental impact of transport in the city and rise the role of public transport system. These strategies are:

- Introducing low-emission zones: restrict the access of vehicles that emit high levels of pollutants to certain areas of the city, especially the historical centre and the residential neighbourhoods. The goal is to encourage the use of public transport, cycling, walking or electric vehicles, and to improve the air quality and the health of the citizens.
- Combined access to different sustainable mobility modes for a discounted price: provide a single ticket or subscription that allows the users to access different modes of transport, such as buses, trams, metro, bike-sharing or car-sharing, for a lower price than buying separate tickets or subscriptions. The goal is to increase the attractiveness and convenience of using multiple modes of transport, and to reduce the dependency on private cars.
- Congestion charge: charge a fee to the drivers who enter or use certain roads or areas of the city during peak hours or periods of high traffic. The goal is to reduce the congestion and the emissions caused by traffic, and to generate revenue that can be invested in improving the public transport infrastructure and services.

SUMP + UPPER measures

The Budapest SUMP was adopted in 2019 and it was funded by the city budget. In UPPER project, BKK would like to increase the service level of the public transport system and its efficiency in peri-urban and rural areas. It is important to find the connections and synergies between the public transport and the other alternative sustainable mobility modes.

In the UPPER project, BKK aims to implement measures that are directly linked to the Budapest Sustainable Urban Mobility Plan. The objective is to improve the service level and efficiency of the public transport system in peri-urban and rural areas. Moreover, it is essential to identify the complementary aspects of public transportation and other sustainable forms of mobility.

SUMP action/measure/project related to public transport	UPPER Measures
Car-sharing	BUD_02: To create new mobility packages of Multimodal Digital Mobility Services (MDMS) [PULL]
Maintenance and Development of the Unified Traffic Model	BUD_01: To improve the efficiency and convenience of PT service