BUDAPEST MOBILITY PLAN 2030

I. OBJECTIVES AND MEASURES

BUDAPEST

BKK BUDAPESTI KÖZLEKEDÉSI KÖZPONT

BUDAPESTI MOBILITÁSI TERV


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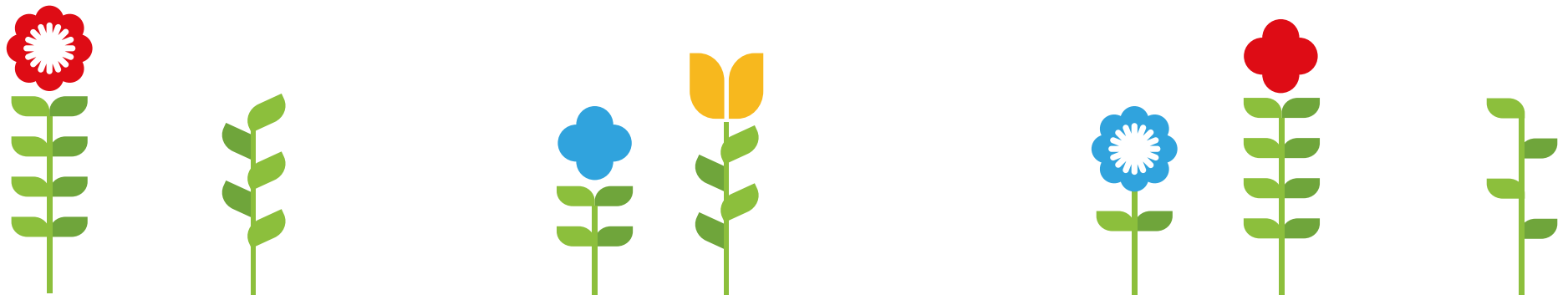
CONTENT



FOREWORD

The Budapest of the future is a people-centred, liveable, environmentally, socially and economically sustainable capital city. It is an attractive and healthy urban environment where all local residents, workers and visitors feel themselves at home and safe.
The city's liveability and good transport links also have a positive impact on its economic competitiveness – in the 21st century, high-quality urban public spaces and liveability are among the key attractions for knowledge-intensive sectors in international competition. Budapest is the centre and driving force of the country, being part of a cooperative region with approximately three million people, whose development is our priority and common cause. We must also work together to counter the increasingly severe effects of climate change.
The adoption of Budapest Climate Strategy and Sustainable Energy and Climate Action Plan (SECAP) by the General Assembly of the Municipality of Budapest in 2021 was an important step in shaping the Budapest of the future, with the key objective of achieving at least 40 percent reduction in greenhouse gas emissions by 2030 and carbon neutrality by 2050. It is a great opportunity for us that the European Union has included the Budapest Municipal Assembly's application in the "100 Climate-neutral Cities by 2030 – by and for the Citizens" programme, making Budapest, together with the other selected cities an exemplary centre of innovation that might achieve carbon neutrality even before 2050.

Dr. Katalin Walter, BKK CEO

Our aim is to ensure not to stop renewing mobility at Budapest's limits, and to work together beyond city boundaries, that includes addressing travel problems of people living in the agglomeration, forming unified regulations and performing developments in a coordinated manner. In Budapest Mobility Plan, we are formulating measures that go beyond the administrational city boundaries to support overall urban development goals for the whole urban area, so that Budapest and its metropolitan area can face the economic and social challenges of Europe and the world as a single, resilient region. Reducing mobility needs can best be addressed by using urban development tools (e.g. compact city), and more efficient land use management of transport movements (e.g. shifting to more sustainable modes) can free up public space for other urban public space functions. Our priority is to reduce the environmental impact of transport as quickly as possible, to increase the amount of green space per capita, to revitalise brownfield sites and to reduce the number of fatal and serious traffic accidents.

In order to reduce road congestion, we also aim to create healthy and attractive options for car users through a combination of sustainable modes: public transport, cycling and walking.

Recent years, our several developments served these goals already, such as the complex renovation of the Chain Bridge and the renewing of Blaha Lujza square, the refreshing of the MOL Bubi public bicycle-sharing system or the introduction of new, accessible public transport vehicles. As a result, 100 percent of buses and almost 100 percent of trolleybuses became accessible for people with reduced mobility by 2023, compared to when BMT was last adopted in 2019 (that time it was only 90 percent of buses and 69 percent of trolleys). We have also put 26 new modern low-floor trams into service during the last five years, and ordered 51 more trams to arrive to Budapest by 2026. In addition, we have launched a framework contract procurement for a total of 160 new trolleybuses in preparation for the related trolleybus network extensions, and are working to launch the procurement of 110 new trams.

An outstanding development of our customer-friendly service is the Application of the Year award-winning BudapestGO. It is extremely popular among the Hungarian capital's commuters and visitors: by May 2024 with more than five million downloads.
The number of users with a registered BudapestGO account is also growing steadily, reaching 2.1 million, and in May 2024 the app had 1.3 million active users. The success of BudapestGO demonstrates the need for further digital development.

To make our movements in the city more sustainable, we need the help of all stakeholders, businesses and institutions, so we will prioritise the development of BudapestGO by assessing and taking into account the needs and feedback of citizens and coordinating the different perspectives of stakeholders in a genuine dialogue.

The update of the older 2019 version of BMT sets out an integrated transport development framework for Budapest and its city-region, with the overall aim to improve the competitiveness of the region and to contribute to a sustainable, liveable, attractive and healthy urban environment. The comprehensive guidance of BMT for the creation of a liveable city will be detailed in specific sectoral strategies that are being developed. The existence of an approved Sustainable Urban Mobility Plan (SUMP) is already mandatory for all 424 EU cities, including Budapest, being an urban node of the Trans-European Transport Network (TEN-T), according to the TEN-T Regulation adopted in December 2023. Based on the new call for proposals, priorities, and funding opportunities, some of the projects included in the BMT are well-positioned to secure funding from the IKOP Plusz or TOP Plusz programs.

We wish to make a real difference in improving the quality of urban life, so Budapest Mobility Plan offers a programme that will help us to achieve our goal of climate-friendly and space-efficient urban mobility.
I count on your cooperation, let's work together for a liveable Budapest!

Dr. Katalin Walter
CEO

The challenges emerging since the adoption of the BMT in 2019 make it necessary to review it, despite the fact that the adopted BMT is valid until 2030. Accelerating suburbanisation, reduced public transport trips due to Covid, shrinking financial resources due to the economic crisis and government cuts, and the need to take action to combat climate change are fundamentally affecting development directions and opportunities. The 2030 target for the modal split remains unchanged1 , but with less time and resources to achieve it, and in the face of the adverse trends mentioned above, a new approach is needed:

1 Transport in the Budapest agglomeration is essentially a government responsibility, but the transport problems of the Budapest conurbation can only be solved in cooperation with the agglomeration, as 20-25% of Budapest journeys originate or end outside Budapest. The measures and projects for the agglomeration (see below in a separate annex for details) will continue to be treated as part of the BMT, and the necessary improvements and measures can only be implemented with the participation of the Central Government, through the cooperation between the Municipality of Budapest, the Government and the agglomeration municipalities. The aim of the Municipality of Budapest is to summarise and express the legitimate needs and expectations of the residents of the agglomeration and the people of Budapest for government action, while at the same time taking the measures within its own competence. One of the most important overarching objectives in relation to agglomeration measures is that the Government, as the primary responsible body, together with the agglomeration municipalities and the Municipality of Budapest, should provide answers and solutions to the above challenges based on partnership and cooperation, rather than dividing and antagonising those living in the agglomeration and in Budapest.

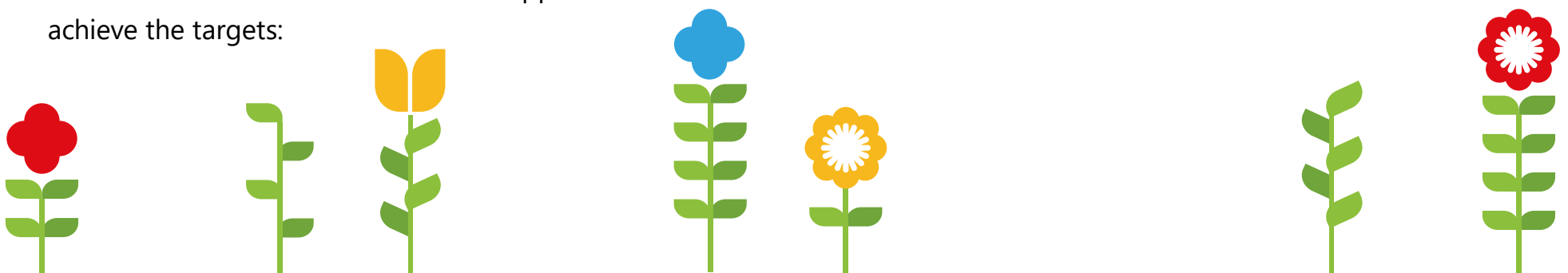
[1] In 2019, modal split targets based on trip performance were included in the BMT, now we return to the 2014 version of trip-based modal split targets because they are easier to communicate. They are numerically different but at the same level.

2 The (large) investment projects included in the BMT are mainly financed by EU funds (with very limited own resources, as the experience of the past years shows that no direct central government funding can be expected for the development of transport in the capital). Access to EU funding (soon to be available) will require the BMT to provide a professional framework for it, in line with the changed framework conditions and external factors. However, it must be taken into account that the implementation of the capital investment projects included in the first package is far from sufficient to achieve our goals, and there is a great deal of uncertainty surrounding the planned government development projects (e.g. BAVS developments), whose planning cannot even be expected to be completed in the short term, and whose implementation is decades away.

3 In addition to infrastructure investments, other measures will therefore be needed to approach and achieve the targets:

I Pursue fare and product policies that encourage sustainable transport, to make adequate mobility competitive and affordable for all. A central element of this is to keep the price of passes low (reducing their price in real terms). For example, the Municipality of Budapest provides a financially competitive alternative for families by offering free public transport for under-14s, and a very low-priced Bubi public bicycle-sharing service for those who want to try cycling.

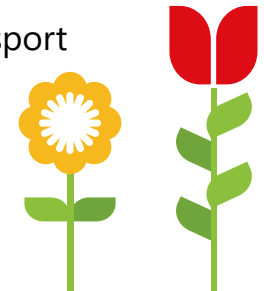
II Digitalisation. A breakthrough in digital access to sustainable transport services was the launch of the BudapestGO app, which should be extended to all (sustainable) transport services in an integrated way, in line with the Mobility as a Service (MaaS) guidelines. This means that all relevant transport services can (also) be planned and purchased digitally in one, customisable package.



III Expand and improve the quality of public transport. Continue to replace old, uncomfortable and energy inefficient vehicles. In the future, without giving up the intention to expand the urban fixed-rail network, it is necessary and possible to expand and refine the bus network (including the trolleybus). The public transport network in Budapest is generally of good quality, but there are a significant number of neighbourhoods in the capital (e.g. older suburbs or even new residential areas) where there is no competitive public transport service. In these areas, restructuring of existing capacity or new capacity by creating bus priority, a measurable change can be achieved even where no major fixed-rail development is likely to be built in the short term or even where it would not be worthwhile in the longer term.

IV The requirement for developers to make a meaningful contribution to the necessary expansion of public transport should be consistently applied to real estate developments that generate transport demand. By adapting the regulatory environment and enforcing the new rules, it must be ensured that new real estate development generating significant traffic volumes can only be carried out without increasing the burden of motorised traffic and road congestion in the affected parts of the settlement. To this end, such investments should only be permitted if adequate road, public transport, bicycle and vehicle storage infrastructure is provided at the same time.

V Continue to humanise public spaces to improve the liveability of the city. Prioritising public transport (e.g. bus lanes), making walking and cycling more attractive (e.g. wider pavements, bicycle lanes), reducing environmental pollution, will contribute to the health of Budapest's citizens and the revitalisation of public spaces. However, this humanisation must be done in a way that makes the main and transit routes more predictable for those for whom private car use is the only option. This process cannot wait until there are sufficient financial resources to completely rebuild roads and streets: wider pavements, safe bicycle lanes and protected bus lanes must be created



first through tactical urbanism and then through more permanent means. This „reallocation" should be done along the lines of the adopted Road Network Plan, the Cycling Route Network Master Plan and the Public Transport Network Plan under preparation, taking into account international best practices, local conditions and stakeholders' interests, while striking a balance between modes. This process should also be facilitated by the issuing of standards and recommendations, which can help to reduce costs and alleviate disparities within the city. Future road improvements should also promote public transport and road safety.

VI The planning and evaluation of measures should be done even more on a data basis. Output indicators will in the future include the main transport infrastructure assets (compared to European reference cities) such as the density and distribution of river-crossing capacity (typically bridges), , capacity of ITS internal and transition zone bypasses, P+R capacity, cycling and public transport infrastructure. In order to assess the impacts, it is necessary to continuously measure and analyse traffic volumes, traffic flow quality indicators and traffic safety data. In addition to the expected impact of each development, their estimated cost-effectiveness needs to be assessed when developing sectoral strategies.

VII Predictability, planning, reliability and partnership are important in transport development measures. Individual measures are integrated in sectoral strategies and network plans based on the BMT (e.g. road network plan, public transport network plan). When scheduling individual measures, it is important to ensure gradualness and avoid shock effects, and accordingly :

- humanisation measures (often involving road capacity reductions) focused mainly on the inner and transition zones, and
- road improvements (mainly ring-shaped layouts aimed at solving structural network deficiencies), which are mainly focused on the outer areas, and developments increasing the public transport offer in the whole city need to be harmonised

in a proportional and balanced manner. The assessment of proportionality should also take into account the significant measures (e.g. metro upgrades; road lane reallocation) that are declared to be planned before and after the planning horizon (2023-2030).

In the design and implementation of sectoral strategies, network plans and individual measures, particular attention should be paid to genuine partnership and participation at all relevant stages.

VIII Urban development tools should also be used to promote transport objectives in the capital and in the agglomeration. Urban development instruments, such as the urban development contribution, provide (part) financing for the cost of public transport and public space developments. Even better, of course, is if building codes and regulatory plans are enforced by (preferably municipal) institutions to get to the root of the problem and prevent or reverse urban sprawl, or if specifically transport-oriented real estate developments (TOD) are implemented with private or government funding.

An action plan for the institutional system should be drawn up for the above measures and for the investments that the capital city can make in the 1st package up to 2030. In view of the scarcity and uncertainty of the financial resources available for the programming period, a separate decision should be taken in the second half of the programming period - subject to the necessary budgetary framework being provided by the government - to start planning and preparing the transversal road developments not currently included in the investment packages, but which are included in the full list of projects of the BMT and have adequate social support, and which are intended to fill the network gaps. Lessons should be learned from public consultations on useful projects included in the BMT but stalled at some stage of preparation. On the basis of these, an effective, democratic and technically correct dialogue should be initiated with the administrations, interest groups and civil society organisations concerned, with the content sometimes corrected, to give these projects a new chance of being implemented.

EXECUTIVE SUMMARY

Since 2015, Budapest has had a Sustainable Urban Mobility Plan (SUMP), adopted by the European Union, the competent state institutions and the Municipal Assembly of Budapest, which sets out the strategic directions and interventions for the transport development of the capital of Hungary. The strategic plan, which is prepared in accordance with EU SUMP directives, needs to be reviewed periodically to ensure that decisions on specific measures are in line with the city's strategic objectives, respond to current challenges and take into account the capital's potential.

Transport development projects that are part of the Budapest SUMP framework, the Buda tram network, the extension of tram line 1 to Etele tér (Square), the renewed trolleybus and tram fleet, the renewed Chain Bridge, Blaha Lujza tér (Square) and other public spaces, the Bubi public-bike system and related complex cycling-friendly developments, the more than 600 new Mobi-Points, the rail improvements, digital developments, FUTÁR and BudapestGO journey-planning applications have already improved the environmental and social sustainability of mobility in Budapest, while making everyday life more comfortable for people living here and visiting the city, and making it more competitive. The detailed Budapest Mobility Plan (BMT) will help to achieve urban development and climate neutrality goals by selecting the right future measures and development projects, and will open the way to bid for current national and EU funding.

Half a year after the first revision of the BMT and its adoption in May 2019, on 5 November 2019, the capital's city management declared a climate emergency, expressing its intention to protect the population of the capital from the effects of the climate crisis. In addition to being a major city-shaping force in Budapest, transport is also the second largest source of CO2 emissions after energy use in buildings), accounting for 24% of the capital's energy use and around 28% of its greenhouse gas (GHG) emissions. Within the metropolitan transport sector, private and commercial road transport is responsible for 87% of transport GHG emissions and public transport for 13%[2].

[2] Budapest Climate Strategy, 2018

If we want to make a real difference in improving the quality of life in Budapest and reducing greenhouse gas and other climate change emissions, we need to be more consistent in implementing the plans we have committed to (BMT, ITS, SECAP) and in supporting measures and projects that will bring us closer to the climate neutrality target.

The Budapest Mobility Plan, which was revised in 2022, aims to define the development and operation of the mobility system in line with climate objectives in a sustainable and adaptable way, using the digital opportunities offered by information technology, up to 2030.

The key urban development objective is to create a compact city (15-minute city), which would allow to mitigate the growing mobility needs. A 15-minute compact city has a balanced structure: the proximity of housing, services and jobs reduces the length of journeys, favouring active modes and public transport.

Since 2015, Budapest's mobility targets have included the need to significantly reduce the share of private motorised transport, which has led to a stabilisation of the share of public and active modes (walking, cycling and micromobility), despite the increase in car ownership, through the continuous development of public and active modes. Mode choice data, regularly monitored by BKK, show that from 2014 onwards the

share of car use initially decreased and then slightly increased, with a stronger impact of Covid, while the share of public transport, after a temporary increase following the epidemic, has been in a permanent decline. The share of walking varies between 16-18% and cycling between 2 and 3%.

The overall objective of the Mobility Development Strategy, derived from the Budapest Urban Development and Climate Goals, is to develop a transport system for compact urban solutions across the whole urban area that contributes to a climate-neutral, sustainable, liveable, safe, attractive and healthy urban environment, to make Budapest a green, open and opportunity-generating city, and to enhance the competitiveness of the city and its region through improved quality of life. In the city and its region, the aim is to create a people-centred mobility environment where sustainable modes are the backbone of the transport system, where the alternatives offered are comfortable, fast, reliable and affordable. The Mobility Plan is based on the strategic principle of a holistic approach: transport development for urban development, an integrated approach to the development and operation of different transport modes, and well-coordinated cooperation between urban and peri-urban transport systems. Three main strategic objectives following these principles:

The strategic objectives are grouped into four areas of intervention and implemented through a total of 11 operational objectives, to which packages of measures and projects are assigned.

I **SERVING THE MOBILITY NEEDS OF A CLIMATE-NEUTRAL, RESILIENT CITY**

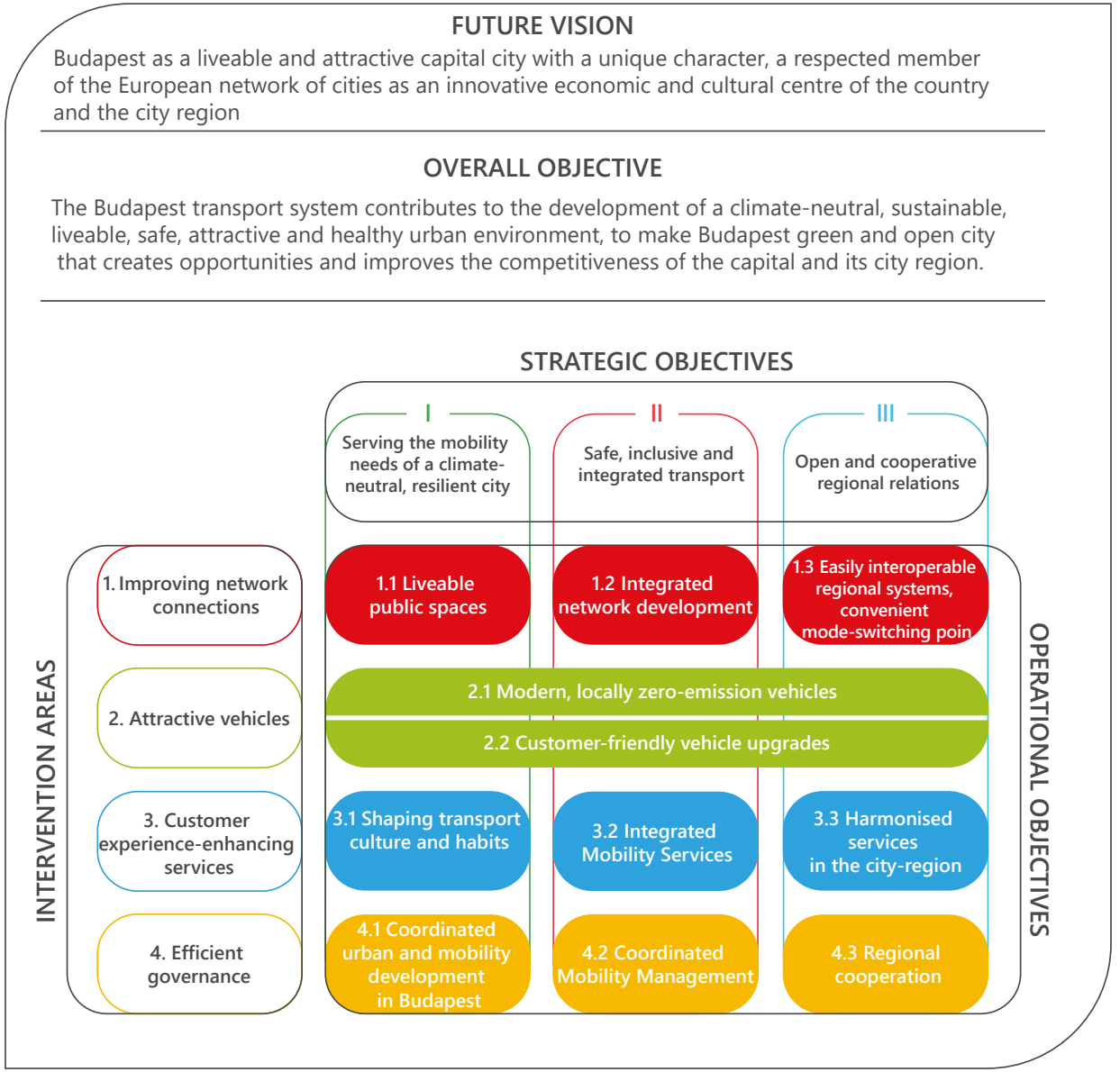
influencing transport needs and mode choice, targeted climate-friendly developments

II **SAFE, INCLUSIVE AND INTEGRATED TRANSPORT**

promoting cooperation between modes of transport for all, efficient organisation, stable funding, equal opportunities

III **OPEN, COOPERATIVE REGIONAL RELATIONS**

achieving the regional integration of the capital city across the functional urban body, developing a transport system that strengthens urban-regional cooperation and socio-economic competitiveness



1. Improving network connections

IMPROVING NETWORK CONNECTIONS

1.1 LIVEABLE PUBLIC SPACES

the street belongs to everyone. Creating liveable public spaces by ensuring the reliable and safe operation and modernisation of transport networks, reallocating and greening public spaces, creating infrastructure that meets equal opportunities criteria, calming traffic and limiting through-traffic.

1.2 INTEGRATED NETWORK DEVELOPMENT

building an accessible, comfortable, passenger-friendly transport network by creating smart urban connections, developing networks to reduce traffic imbalances, continuously improving public transport infrastructure and service quality, and standardising parking conditions.

1.3 EASILY INTEROPERABLE REGIONAL SYSTEM, CONVENIENT MODE-SWITCHING INTERCHANGESPOINTS

creating convenient travel chains by creating integrated transport networks, efficient mode-switching points, interoperable systems, passenger-centred development of intermodal transport links, creating conditions for safe travel, improving intermodality (including access to shared mobility) and touristic links.

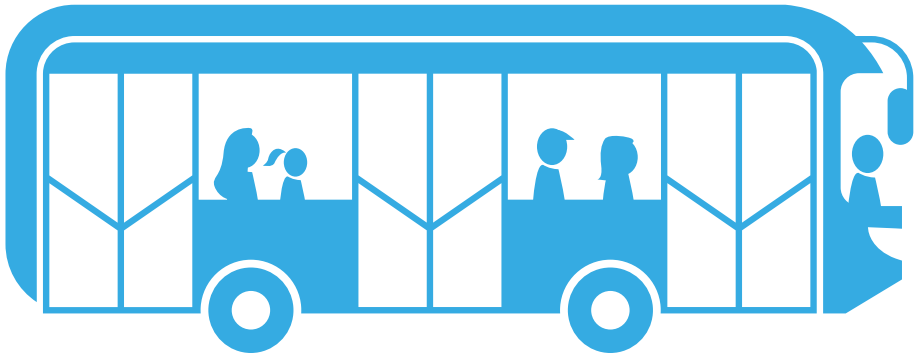
ATTRACTIVE VEHICLES

2.1 MODERN, LOCALLY ZERO-EMISSION VEHICLES

the renewable public transport fleet in Budapest contributes to cleaner air in the city by creating a climate-neutral public transport fleet, increasing the energy efficiency of the fleet, promoting climate-friendly vehicle technology and reliable maintenance.

2.2 CUSTOMER-FRIENDLY VEHICLE UPGRADES

comfortable, barrier-free travel with new public transport vehicles, renewing the fleet with accessibility features, making it suitable for onboard bicycle transport and digital tools to support active travel.



CUSTOMER EXPERIENCE-ENHANCHING SERVICES

3.1 SHAPING TRANSPORT CULTURE AND HABITS

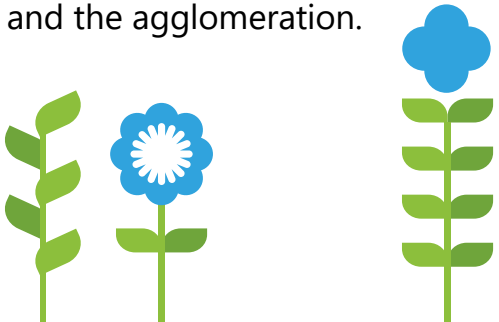
ensuring a cultured and clean transport environment and promoting informed mode choice and changes in mobility habits through up-to-date information and customer-oriented communication.

3.2 INTEGRATED MOBILITY SERVICES

advanced solutions and services will increase customer satisfaction by exploiting the potential of digitalisation, intelligent systems, flexible services, including facilitating the sustainable operation of urban freight transport and supporting the use of micromobility devices.

3.3 HARMONISED SERVICES IN THE CITY REGIONCONURBATION

uniform passenger information, integrated timetables coordinated between operators, a common, uniform tariff system serving the city and the agglomeration.



AN EEFFICIECTIVENT INSTITUTIONAL SYSTEMGOVERNANCE

4.1 COORDINATED URBAN AND MOBILITY DEVELOPMENT IN BUDAPEST

developing transport together with the city by setting up a system of transport governance and rules to support common goals.

4.2 COORDINATED MOBILITY MANAGMENT

developing a set of institutions and rules to support cleaner, more sustainable transport modes.

4.3 TERRITORIAL REGIONAL COOPERATION

City-regional transport management thinking by helping to integrate regional and metropolitan area systems.

The horizontal approach to sustainable transport development planning provides an opportunity to present the transport development tasks in Budapest in a holistic way, using the A-S-I (Avoid, as in prevent, reduce, Shift as in change, Improve as in develop) approach, which also reflects the order of priorities:

1. reduce - avoid unnecessary, polluting traffic movements in the future;

2. shift - to encourage city dwellers to use active and public transport in a sustainable way for their daily mobility;

3. improve - stimulate development with quality mobility links and services thus rendering the energy efficiency of transport modes sustainable.

REDUCTION INTERVENTIONS

The easiest way to reduce GHG emissions from transport is to make jobs and services more accessible locally, thereby reducing mobility needs. By building a compact city, encouraging remote working, and reorganising work and school operations, it will be possible to reduce the number, length and frequency of journeys. Supporting this process requires close cooperation between transport and urban development. By developing a 15-minute city, basic services, urban sub-centres and the public transport backbone can be accessed close to residential areas, so that most destinations can be reached conveniently and safely on foot or by bicycle or public transport. Achieving compactness means, on the urban development side, improving suburban services and basic functions, while on the transport side it means a major paradigm shift: improving access to local services and transport links to sub-centres, affordable pricing and infrastructure development for car-free modal shift options.

Urban development tools that go beyond transport development to reduce transport demand and daily commuter traffic to the city centre: teleworking and digital education, and the promotion of online commerce. Furthermore, supporting urban development in agglomeration settlements and peripheral areas of the capital: local provision of local service centres, social, educational and health functions, and encouraging local job creation.

INTERVENTIONS TO SUPPORT MODAL SHIFT

In order to achieve climate neutrality as soon as possible, the Budapest Mobility Plan's toolbox of intervention areas will mainly encourage city dwellers to use active transport modes and public transport instead of private motorised transport. This can be promoted by improving accessibility and safety conditions.

CORRECTIVE INTERVENTIONS

Tools to improve the energy efficiency, accessibility and security of the mobility system. Upgrading existing mobility system assets to meet modern requirements and technological standards, achieving digital accessibility, procuring net-zero emission alternative propulsion vehicles, and continuously developing Mobility as a Service (MaaS).

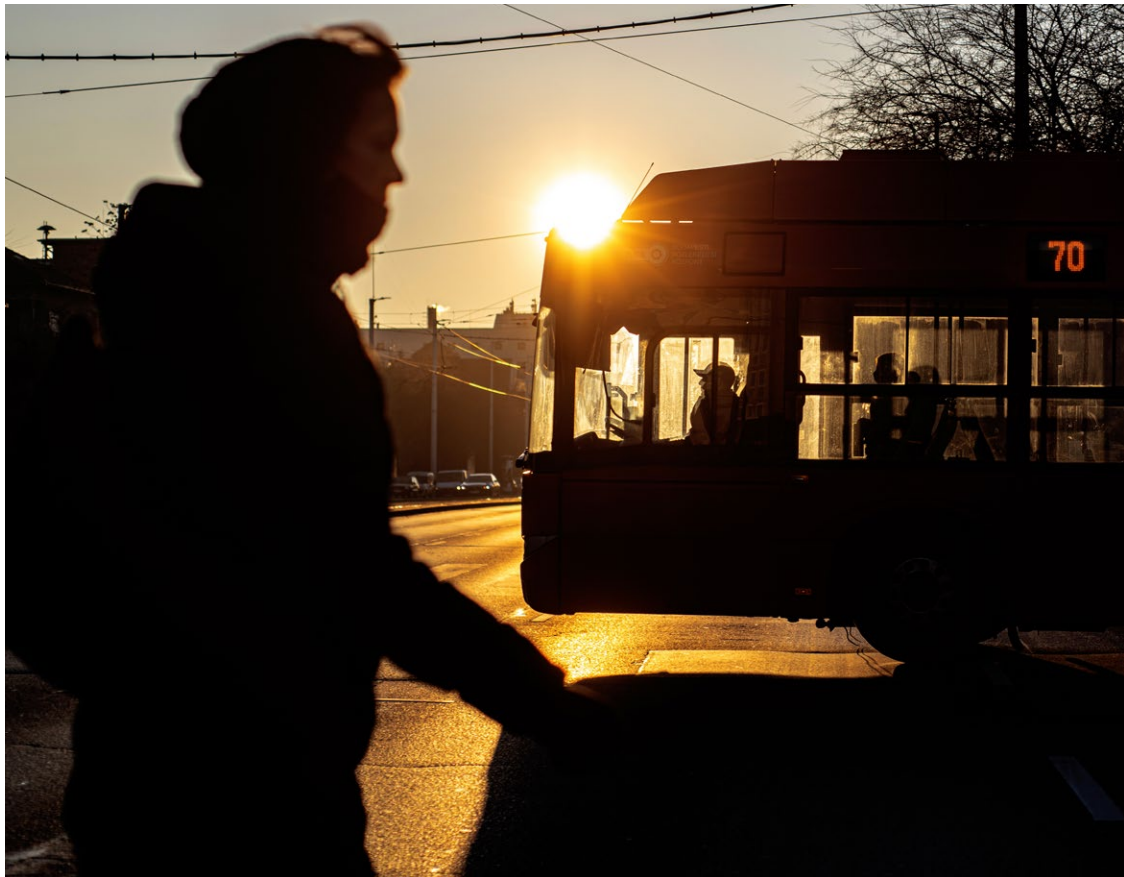
THE STRUCTURE OF THE BUDAPEST MOBILITY PLAN

The Budapest Mobility Plan (BMT) is a metropolitan transport strategy for the period up to 2030, prepared in accordance with the Sustainable Urban Mobility Planning (SUMP) guidelines.

The detailed and agreed Budapest Mobility Plan will lay the groundwork for selected future developments to help meet urban development and climate neutrality targets, and to access the funding that will be available in the 2021-2027 EU funding cycle.

The two main parts of the Budapest Mobility Plan, based on a full public and institutional consultation, are the Objectives and Measures and the Transport Development and Investment Programme proposal. The documentation of the Budapest Mobility Plan is complemented by a comprehensive Strategic Environmental Assessment of the objectives and the programme, which assesses the environmental and sustainability aspects of the programme in accordance with European Council Directive 2001/42/EC.
The BMT also includes a Monitoring and Evaluation Manual to ensure the strategic monitoring of the planning periods.

The building blocks of the planning methodology are the problem tree based on the situation analysis, the vision developed in the light of this, the hierarchy of objectives (setting out the overall strategic and operational objectives) and the specific actions to be taken to achieve them. In the programming process, the measures are further broken down into development projects that work in synergy with each other.



A.1 HISTORY, PRINCIPLES AND PROCESS OF MOBILITY PLANNING

In 2015, the General Assembly of the Municipality of Budapest adopted the objectives of the Budapest Mobility Plan (formerly known as the Balázs Mór Plan) by Resolutions 877/2015 and 878/2015 (06. 23.) Subsequently, on 29 May 2019, the General Assembly adopted the supplemented BMT's transport development investment programme based on the project evaluation, together with the revision of the previous objectives by Resolutions 776/2019 (05.29), 777/2019 (05.29), 778/2019 (05.29) and 779/2019 (05.29).

Changes in International transport policy guidelines, national and metropolitan development goals, rethinking of transport needs due to the 2019 Covid pandemic, and the climate emergency have justified the Budapest

Mobility Plan review. Details of the key events and aspects justifying the review:

- The pandemic has changed transport patterns and has made it necessary to review the situation and priorities for mobility. The consequences of the Covid-19 pandemic have rewritten the tasks previously planned, the possible resource envelopes considered and the life of the city. They have made it clear that, in addition to the long-term orientations that remain valid, greater emphasis needs to be placed on the management of unexpected impacts on the ability to function, as well as on resilience and flexibility.
- The capital's leadership has rethought the strategic goals of urban development, with a stronger focus on climate change, the environment and equal opportunities.
- In 2021, the Government of Hungary adopted the Budapest Agglomeration Railway Strategy, which defines the urban and suburban transport of Budapest and its urban area.[3]
- In 2019, the European Union issued its new guidelines for urban transport, the renewed SUMP 2.0 recommendations, which have also changed the planning process for the Budapest SUMP.

[3] Based on Decision 2/2021-03-25/FKT of the Metropolitan Public Development Council of 25 March 2021, the measures and the context of the BMT and the BAVS should be coordinated in the update of the BMT regarding the connection points of the local urban and regional high-speed rail network.

The SUMP design methodology takes a different approach from the traditional one, summarised in Figure 2 below.

Conventional transport planning	Sustainable urban mobility planning
Focus on transport	Focus on people
Priority objectives: Traffic flow capacity and speed	Priority objectives: Accessibility and quality of life, including social equity, health, quality of the environment and economic viability
Focus on specific transport modes	Integrated development of all transport modes, and a shift towards sustainable mobility
Infrastructure is the main theme	A combination of infrastructure, market, regulation, information provision and promotion
Sectoral planning document	Planning document in line with related policy areas
Short- and medium-term implementation plan	Short- and medium-term implementation plan embedded in a long-term vision and strategy
Covers an administrative area	Covers a functional urban area based on commuter traffic flows
Transport engineers' field	Interdisciplinary planning teams
Planning by experts	Planning through stakeholder and public involvement and with a transparent and participatory approach
Limited impact assessment	Systematic impact assessment to promote learning and development

Figure 2 : Differences between traditional transport planning and SUMP planning (source: SUMP 2.0 (2020) A guide for the development and implementation of a Sustainable Urban Mobility Plan (SUMP)[4]

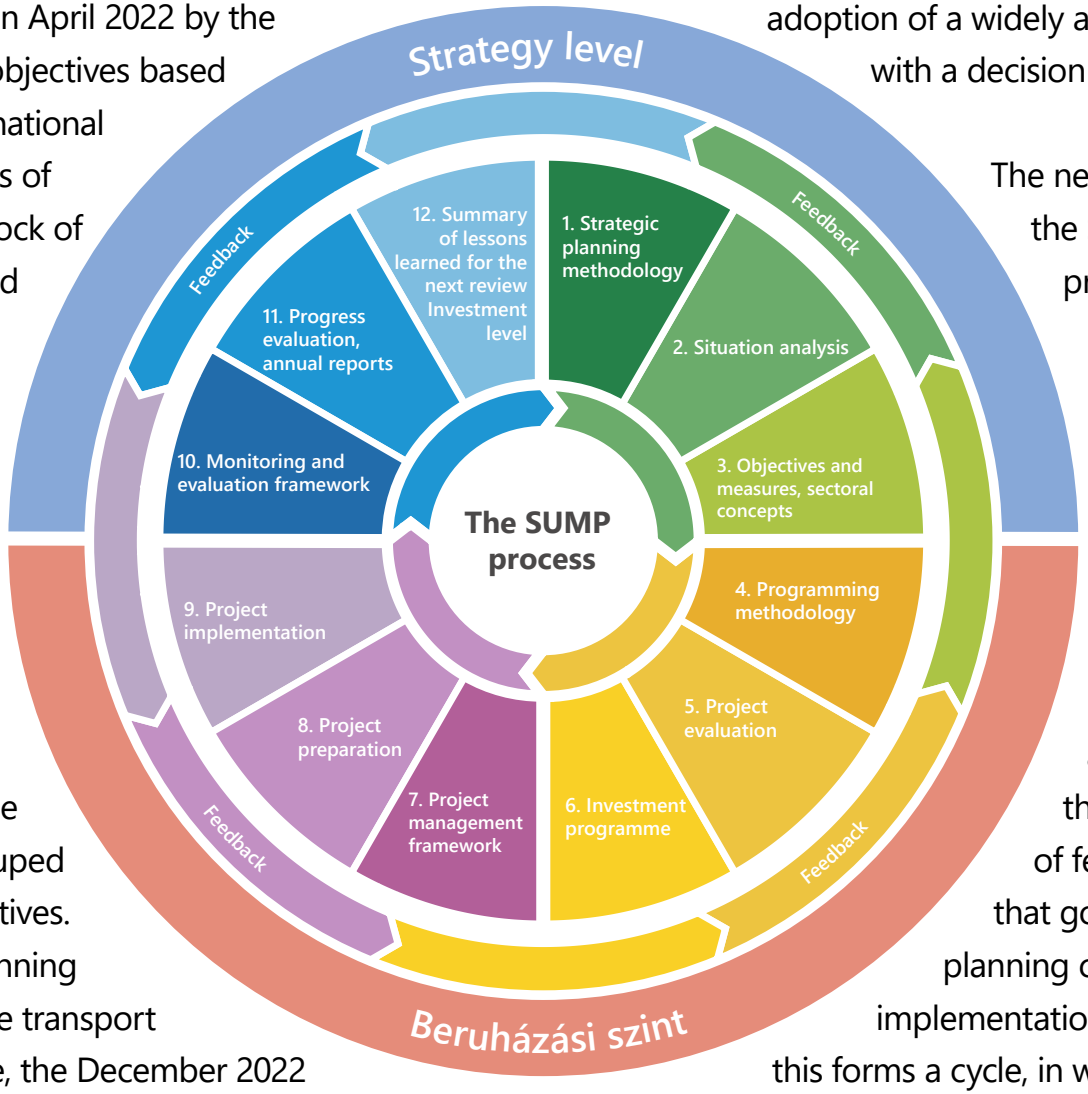
The horizontal SUMP principles that have been highlighted in the Plan update:

- humanised urban development, a people-centred approach, where developments aim to improve the quality of urban life, while influencing the mobility needs of residents and businesses;
- the flexible adaptability and responsiveness of the transport system, strengthening resilience;
- planning transport investments in line with the development vision for the city- region;
- planning and interventions are made with the participation of the public and stakeholders.

The update of Budapest's Sustainable Urban Mobility Plan started in early 2021 with the establishment of the planning team and the design process. After the planning decision, the first substantive step was the preparation of the situation map in December 2021. A questionnaire-based survey helped to refine the situational picture and the key issues identified during the situation assessment.

[4] *https://eionet.kormany.hu/download/d/23/b2000/SUMP_2020.pdf*

The Budapest vision and overarching goal for the future of mobility was followed in April 2022 by the development of a set of objectives based on the national and international professional achievements of mobility planning. This block of the process can be divided into three steps: strategic objectives, operational objectives and measures. The objectives can be achieved within the framework of the traditional intervention areas of the BMT (infrastructure, vehicles, services, institutions), while the measures can be grouped around operational objectives. The third block of the planning was the preparation of the transport development programme, the December 2022 selection and scheduling of the projects to achieve the objectives. . The programming process will result in the adoption of a widely agreed proposal in 2023, with a decision to finalise the Mobility Plan.



The next, most complex task of the SUMP process is to deliver projects as planned.

Planning moves from general principles to increasingly specific objectives and actions, and up to the level of project designation. Feedback and modifications of previous decisions are necessary throughout this process. The process of feedback and evaluation that goes hand in hand with planning continues and accompanies implementation. Based on the SUMP guide, this forms a cycle, in which the steps of mobility planning in Budapest are illustrated in Figure 3.

Figure 3: The sustainable urban mobility planning and implementation process in Budapest

A.2 SITUATION ANALYSIS

The detailed situation analysis of the capital and its urban area is contained in the Situation Analysis document of the Integrated Urban Development Strategy (ITS) of the capital adopted in 2021 and the Situation Analysis document of the Budapest Agglomeration Railway Strategy (BAVS) adopted in 2022, the data and findings of which were taken into account in the revision of the BMT when formulating the situational picture and the problems. A detailed analysis of the mobility situation of the capital and its urban area will be a separate task in the next SUMP planning cycle, based on the Monitoring and Evaluation System developed for the BMT. Mobility characteristics (including infrastructure coverage, road congestion index, etc.) will be examined and presented in the public monitoring reports through the BMT indicators, where appropriate, in an international comparison (SUMI). The evaluation results are carried out and published by BKK on a less detailed annual basis and for all BMT indicators every 3-5 years.

The BMT monitoring system includes strategic indicators to measure the implementation of the mobility plan and the impact of projects.
The monitoring system will be based on the Sustainable Urban Mobility Indicators (SUMI) system, which is a set of indicators specifically proposed by the European Union for SUMPs. The monitoring process will include a shorter annual and a longer (4-5 years) report, aligned with the BMT review cycle. The longer report will include all indicators, a detailed institutional analysis and an analysis of changes in transport characteristics. The shorter (annual) report will list the main changes and give a status report on them. The first long report will support data-driven decision making by generating a series of data based on indicator values.

A.2.1 MOBILITY MAP OF THE CAPITAL AND ITS METROPOLITAN AREA

The operation of Budapest and its urban area is determined on a daily basis by the need to serve the mobility needs arising from the location and economic strength of the capital and the Budapest-centric design of the national transport networks.

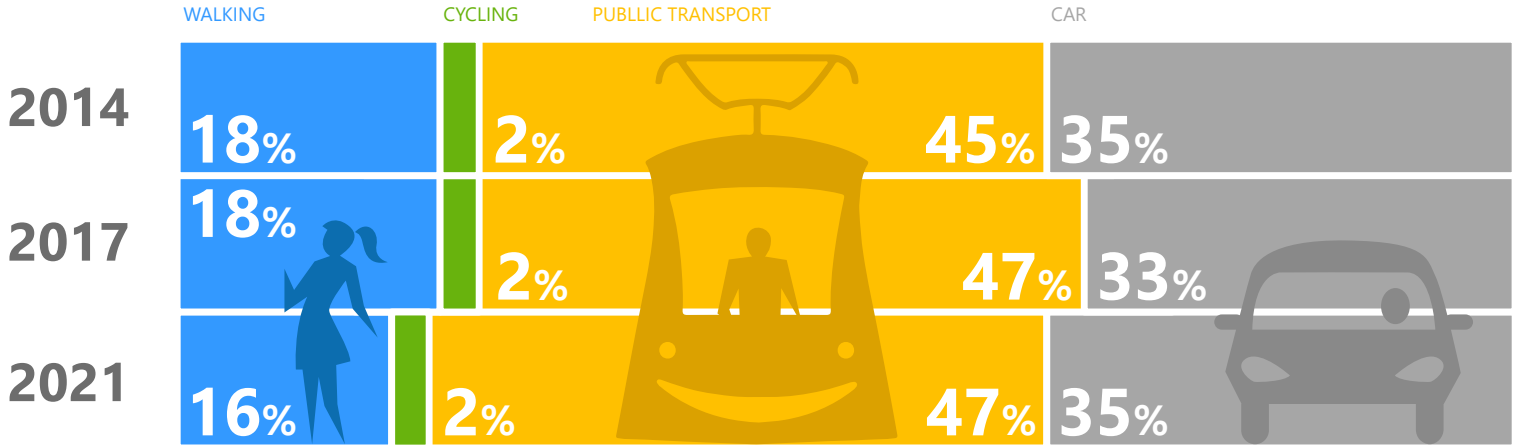
The mobility situation of the capital is significantly affected by interconnection and cooperation with the functional urban area. An urban area that cooperates effectively with the capital extends beyond the boundaries of the agglomeration: it is administratively fragmented but functionally works in close interaction in terms of social, economic and environmental processes.

The Budapest metropolitan area covers about 15% of Hungary's territory, almost 35% of its population, and more than half of the country's economic wealth is generated here.

Over the past two decades, the direction of population migration in Budapest and its urban area has been determined by the renewed wave of outward migration from Budapest. The migration margin per thousand inhabitants shows that between 2014 and 2019, the population of the capital city has been steadily decreasing, while the population of Pest County and the Central Hungary region, which constitute the urban area, has been steadily increasing. As residences have moved to the urban area, but jobs, schools, institutions and other travel destinations have remained in the capital, the number of daily trips across the city border has also increased. Based on the situation analysis of the Budapest Agglomeration Rail Strategy for the period 2019-2021 and the data of the BKK Unified Traffic Model (for the analysis of transport investments in the capital and the agglomeration), it was found that around 1.2 million people cross the border of Budapest in both directions every day. Of these, 202,000 passengers use the heavy-rail lines, 47,000 use the suburban railway (HÉV) lines, 198,000 use intercity buses and 755,000 use private cars. The figures therefore show that almost two thirds of commuter traffic is by car.
The high share of car commuters is a significant burden on the road network in Budapest and its surroundings and on the liveability of the road-network environment.

Data on modal split within the capital show a more favourable picture. Active modes of mobility (walking and cycling) are, by definition, more prevalent in urban transport than in commuting. Even for trips within the capital, however, the share of road vehicle traffic is significant, at 35%, which is detrimental to the liveability of the city and also leads to conflicts in the use of public space due to the space requirements for vehicle parking.

The significant share of car traffic in the capital is due to several factors, one of which is daily commuter traffic, but also to the inadequate transport infrastructure, which was determined by the urban planning and development principles prevailing in the 20th century. At that time, in the organised, hierarchical technocratic system of industrial society, machines for the convenience of the people were central to the vision of the future. In public



4. Figure 1: Change in modal share in Budapest (on a per trip basis)

spaces, which were also used for transport, motorised transport was given priority, to the detriment of all other aspects, and the liveability of the city was equated with its permeability by car. The response of the time was primarily to meet the spectacular growth in demand by constantly expanding capacity. Cities were transformed in favour of car transport. The victims were the city dwellers and the public spaces they used: wide pavements, tree-lined streets and stopping places along the main urban transport axes were reduced. This process has changed housing preferences and transport patterns, and has led to a trend towards displacement from the city to the suburbs.

Following the construction of the East-West and North-South metro lines (M2 and M3), Budapest's public transport system was defined by public transport that ran to and from the metro lines. In order to achieve this, the former street-level public transport lines running on long routes were fragmented and became metro-feeder lines, thus increasing the number of forced transfers. The network conditions have not changed since the fourth metro line (M4) was opened, as none of the metro lines reaches the agglomeration and passengers have to use other means of transport for onward travel from the terminuses, but the conditions for changing mode (from car or bicycle) are not met either (B+R, P+R).

Transport planning in the 20th century did not focus on passenger comfort, but on operational and management aspects. At the largest passenger hubs, the ability to turn back vehicles, terminal functions and vehicle storage took precedence over passenger movements and the potential for urban development.

Following Western European trends with a lag, Budapest has gradually changed its approach to planning, and at the strategic level, too, has adopted the aspects of a liveable city: pedestrian zones, cycle lanes, traffic calming zones, prioritisation of public transport, bus lanes, the restoration of long bus routes. The need to regulate car and road freight traffic into Budapest and to create a public transport tariff community has been identified,

and a long-term plan has been developed to integrate rail lines into urban transport, reduce congestion and curb further growth in car traffic.

A.2.2 INSTITUTIONAL ENVIRONMENT AND GOVERNANCE

Public transport in the Budapest urban area is contracted by the Hungarian State or the Ministry of Transport acting on its behalf as a public interurban passenger transport service: rail services are contracted from MÁV-Start Zrt, road services from Volánbusz Zrt and suburban railway services from MÁV-HÉV Zrt. The local authorities of the municipalities concerned do not have a customer role in the development of interurban public transport, i.e. public transport serving national and regional travel needs.

In the case of the capital city, local, urban public transport is provided by the Municipality of Budapest. While in Budapest the local government system is two-tier - the Municipality of Budapest and the district governments jointly carry out the municipal tasks - the districts participate as proposal-makers in the commissioning of urban public transport. In 2010, the Municipality of Budapest set up BKK Zrt. as transport organiser to ensure the proper operation of local public transport services.

BKK was established as an integrated urban mobility manager, as a transport competence centre for the capital. It carries out strategic, development, management, commissioning and control tasks, as well as the management of transport development projects of metropolitan interest with a unified professional approach, coordinating the operation between the Municipality of Budapest as the owner and the public transport service providers (currently in-house operator BKV Zrt and ArrivaBus Kft).

A.2.3 EXTERNAL CHANGES AFFECTING THE MOBILITY STRTEGY

The BMT review adopted in 2019 took into account the events, global economic and foreign policy developments in 2019 and 2022 that have had an impact on the design and operation of the mobility system and on transport patterns in the capital and its metropolitan area:

- EU and national strategic changes,
- Covid-19 pandemic,
- institutional changes at national and local level,
- the outbreak of the Russian-Ukrainian war and the subsequent energy crisis, economic crisis.

The government's vision and the priorities of the city's leadership have also changed: in line with EU targets, priority will be given to climate change mitigation, energy efficiency, greening of urban public spaces and sustainable mobility.

EU strategic changes in urban transport since 2019

EU strategic changes in urban transport since 2019 The financial environment available for the provision of public transport services in the capital has become even less predictable during the period of the revision of the BMT. In recent years, government regulations have diverted significant resources away from municipalities, limiting the scope for investment at local level and even jeopardising the proper delivery of services. The current governance framework in the capital is functionally fulfilling its role, but the lack of central government funding for the operation and development of public transport in the capital and the unpredictable operating costs due to the energy crisis are creating new challenges.

In addition to the above, there is also much uncertainty about the funding sources for the 2021-2027 EU budget cycle. Based on the agreements reached at the end of 2022, the provision of EU funding is subject to the fulfilment of a number of conditions falling within the Hungarian government's competence, so the uncertainty of EU funding will also affect the launch and implementation of planned transport development

investments. In addition to financial risks, institutional uncertainty is also a problem. The Ministry of Transport, which has been reorganised several times since then, wanted to set up a new national transport organising authority , but this did not materialise. The delimitation of tasks and responsibilities has remained unclear.
In addition to transport management, there are also uncertainties in the area of transport infrastructure development, as the government restructuring following the 2022 national elections has also affected the former state institutions in charge of transport development (NIF Zrt., BFK Zrt., ITM). The restructuring of the state institutions in charge of transport management and transport development will affect a number of decisions, including public infrastructure investments planned in the capital, on which the Municipality of Budapest does not yet have information.

The European Green Deal[5] set the goal of a climate-neutral continent by 2050.

To achieve climate neutrality by 2050, transport emissions should be reduced by 90% (compared to 1990 levels). Budapest has joined the 100 Climate Neutral Cities initiative, which sets a target of achieving climate neutrality by 2030.

The European Green Deal derived from the Community's 2020 transport strategy, the Sustainable and Smart Mobility Strategy 6 , the main challenge for the transport sector is to significantly reduce emissions and become more sustainable.

In December 2021, the EU's The New European Urban Mobility Framework7 was published, setting out principles to strengthen public transport, intermodality, attractiveness and efficiency, alongside a tightening of the main climate target under the EU Green Deal.

[5] The European Green Deal, Brussels, 11.12.2019, COM (2019) 640 final

[6] Sustainable and Smart Mobility Strategy – putting European transport on track for the future, Brussels, 9.12.2020, COM (2020) 789 final

[7] EN_-_THE_NEW_EUROPEAN_Urban_Mobility_Framework.pdf.pdf

The EU's mobility strategies have focused on promoting sustainable transport modes and multimodality, developing rail transport and promoting Cooperative, Connected, and Automated Mobility (CCAM). Digital solutions, data-driven planning and operations are essential to better serve sustainability and mobility needs.

Both the European Union and the international transport industry are calling for radical action to be taken as quickly as possible to meet the climate targets.

CHANGES IN NATIONAL TRANSPORT STRATEGY

The BMT adopted in 2019 was based on several strategies, concepts and development documents at national, county and metropolitan level, which ensured that transport measures were not implemented as isolated interventions, but in a policy-coordinated, comprehensive context:

- OFTK: National Development and Spatial Development Concept (2014)
- NKS: National Transport Infrastructure Development Strategy (2014)
- NKP: 4th National Environment Programme (2015)
- PMTFK: Regional Development Concept of Pest County (2013)
- VFK: Budapest 2030 - Long-term urban development concept (2013)
- BTFK: Budapest Spatial Development Concept (2014)
- TSZT: Budapest Urban Development Plan (2005)
- Budapest tomorrow, the day after tomorrow: the Danube Capital of Culture (2010)
- Utilisation concept for the areas along the Danube in Budapest (2013)

In the period since 2019, several documents have been adopted that indicate shifts in emphasis compared to the past, sometimes accelerating the actions already started. Among these, the following are significant changes:

Metropolitan Integrated Settlement Development Strategy (ITS, 2021)

The three main focus areas of the strategy are: Opportunity Budapest - ensuring affordable housing for all sections of society and improving the health and living conditions of Budapest residents; Green Budapest - creating the conditions for a liveable and healthy city that

preserves and creates value and is climate-conscious; Open Budapest - proactive city governance, where cooperation and innovation play a key role. These focus areas are in line with Budapest's long-term vision for urban development set out in 2013, but also highlight the directions in which the Municipality of Budapest would like to see significant change and progress in the coming years (up to 2027).

Budapest Sustainable Energy and Climate Action Plan (SECAP, 2021)

In Budapest today, transport is the second largest CO2 emitter after energy use in buildings, accounting for 28% of total emissions. SECAP targets a 40% reduction in total CO2 emissions by 2030 compared to 2015, including a 33% reduction in transport emissions from 1.71 million tonnes in 2015 to 1.14 million tonnes in 2030. The main mobility-relevant messages of the Action Plan are: climate-friendly rehabilitation of public spaces, increasing energy efficiency of transport, promotion and dissemination of environmentally friendly transport modes, and active awareness raising.

Transport sub-sector strategies adopted or in preparation for the capital

Concerning agglomeration:

- Budapest Agglomeration Rail Strategy (BAVS, 2021) - adopted
- Agglomeration Cycling Network Development Strategy

Within the administrative boundaries of Budapest:

- Active and micromobility strategy
- Budapest Bicycle Master Network Plan
- Road Safety Strategy
- Road Network Development Strategy
- The Budapest public transport vehicle strategy
- Budapest City Logistics Strategy

In addition to the sub-sectoral strategies listed above, further sub-sectoral concepts are planned. Among the sub-sectoral strategies, the Budapest Agglomeration Rail Strategy (BAVS) is an important document for the capital and its urban area, often cited in the situation assessment, whose main focus is on the development of suburban rail transport in Budapest, increasing the role of rail within the city, and increasing the share of sustainable modes within the cross-city modal split. The BAVS has, among other things, drawn up a programme for the development of the circular railway within the capital, the appropriate development of interchange links between the state railways and urban public transport, and the implementation of the Budapest main railway through-station concept.

A.2.4 METHODOLOGICAL CHANGES IN THE PREPARATION OF THE SUMP

In 2019, the EU published the revised version 2.0 of the Sustainable Urban Mobility Plan (SUMP) guidebook[8], which does not contain fundamental changes, but it does reinforce the importance of functional urban space, institutional cooperation and quality assurance, at the expense of the previously more prominent economic efficiency. Greater emphasis has been placed on the fact that each city is unique and that the guidelines should not be rigidly copied, but that it is worth applying the method to the specific city or location, adopting the basic principles.

[8] *Guidelines for developing and implementing a sustainable urban mobility plan, Second edition*

Following the revision of the SUMP guide, the primary and secondary indicators recommended for sustainable urban mobility plans (Sustainable Urban Mobility Indicators - SUMI indicators) were published in 2020. The BMT Monitoring and Evaluation Manual includes revisions, additions and amendments to the previously recorded BMT indicators to take account of the new guidance.

A.2.5 MOBILITY IMPLICATIONS OF EXTERNAL CONDITIONS IN 2020-2022

The Covid-19 pandemic in 2020 has fundamentally changed people's lives and affected their mobility patterns. The changes experienced during the pandemic highlighted the volatility of trends that were previously considered predictable and known. The effects of the Covid-19 pandemic on mobility patterns were not only immediate and came from current waves or inter-waves, but are expected to remain significant in the longer term, precisely because of the lessons learned about rapid response.

Transport patterns in Budapest and the surrounding areas have also changed as a result of the forced restrictions and measures introduced during the pandemic. While the need to travel has declined as work and shopping have been partly shifted to virtual space (online meetings, remote working, home delivery), the choice of transport mode has shifted from public to private transport (social distance and hygiene related concerns). The spread of alternative forms of mobility has accelerated (micromobility and shared transport), and the role of digitalisation and services has been enhanced. There has been a large increase in small goods deliveries within the city (online orders, home deliveries), which has increased road traffic and parking problems.

The pandemic restrictions have had a negative impact on both the global and the Hungarian economy. Supply chains faced unprecedented challenges, inflexible systems, just-in-time production and trade faced unforeseen difficulties following the introduction of pandemic restrictions. Globalisation has led to a spill-over of not only larger, national/

regional, but also local problems, the combined effects of which have created economic difficulties throughout Europe, which are so far being felt in the form of a sharp rise in inflation. The latter is also contributed by the intense price increases on the energy market. This complex crisis phenomenon is compounded by the prolonged Russian-Ukrainian war that broke out in early 2022.

In such a challenging and fast-changing environment, mobility planning and management must place greater emphasis on the development and operation of a flexible and change-responsive sustainable mobility system to achieve sustainable urban mobility.

During the pandemic, public transport has proved to be one of the most important pillars of sustainable urban transport, and its development is key. As alternative forms of mobility (active and micro-mobility, shared transport) become more widespread, improving their accessibility and conditions of use is also an important task. As the demand for digitalisation has increased and the development of digital technology opens up new opportunities for all segments of mobility, the digital development of public transport services is essential.

A.3 PROBLEMS IN BUDAPEST'S MOBILITY SYSTEM

The situation analysis identifies a number of areas for improvement in the transport system in Budapest, but the most serious mobility problem is the excessive use of private cars, which is increasingly putting a strain on the environment and our health, as well as causing congestion, disproportionate use of land and accidents.

In Budapest, since 2014, public transport use has been slightly decreasing, contrary to the current targets, while car use is increasing. This trend can be attributed to a number of underlying processes and conditions prevalent for several decades , which can be grouped as follows:

- transport network links and facilities to be improved;
- unchanged transport patterns, accessibility and access difficulties;
- a fragmented metropolitan transport governance system.

A.3.1 TRANSPORT NETWORK LINKS AND FACILITIES TO BE IMPROVED

In terms of the network, urban transport development in the past three decades has not been flexible enough to follow urban developments, and real estate developments have not taken into account network accessibility aspects and changes outside the transport system in general. As a result, there are still too many unnecessary or at least avoidable trips on the network. Private car use is high and access to the city from outlying areas by public transport is generally more difficult. This problem has implications for the whole city area, i.e. it increases congestion even in parts of the city well covered by public transport.

The main radial-ring road network of Budapest is only fully developed in the inner areas, the transversal road and rail connections are not fully developed, the existing network elements are incomplete, fragmented in some parts of the city, and the Danube-crossing connections are missing in the northern and southern parts of the city. In the outlying districts, there are no continuous, capacity transversal links, either by public transport or by road.

Due to the central urban network, much of the traffic between the districts passes through the inner districts and the Danube bridges in the city centre, increasing congestion there.

The use of public transport often involves inconvenient transfers, and the level of service is further reduced by the partly obsolete, ageing and heterogeneous fleet of vehicles that is challenging to operate on a daily basis. The urban rail network is fragmented and poorly integrated into the public transport system. The Danube is underused as a transport corridor; public waterborne transport in Budapest has virtually disappeared.

Pedestrian surfaces are scarce and outdated and do not encourage active mobility. Inadequately regulated parking sometimes impedes pedestrian and bicycle traffic. Significant improvements in cycling have been made in recent years, but the comfort level of the cycling network remains low and pedestrian and cycling links are poor in the city. The insufficient number of B+R and P+R facilities makes it difficult to switch between modes.

The disproportionate use of public space resulted from the excessive growth of motorised transport: too much space for cars and too little space for pedestrians, cyclists and other public space activities, which results in the crowding out of urban functions, poor and unwelcoming public spaces and limited green space.

A.3.2 UNCHANGING TRANSPORT PATTERNS, ACCESSIBILITY AND, ACCESS DIFFICULTIES

Since the 1970s, Budapest's public transport has been defined by a system of public transport to and from the metro lines. None of the four existing metro lines reaches the suburbs and passengers have to make several transfers from the terminuses, which means that public transport is inadequate to serve the peripheral areas and the agglomeration. Until recently, with few exceptions, street-level services in the inner districts have also been disconnected from lines in the outer districts, and suburban transport is therefore dominated by private car traffic. The segregated urban and suburban transport situation is reinforced by an

inflexible and non-interoperable tariff system. Metro lines and passenger underpasses are only partially accessible, and in addition to physical accessibility, info-communication accessibility is also insufficient.

The Covid-19 epidemic has brought sudden changes to everyday life that have shocked urban transport, causing drastic and long-lasting changes. The transport system must be prepared for similar events in the future, i.e., it must be able to adapt to unexpected impacts.

A.3.3 FRAGMENTEDSPLIT METROPOLITAN BUDAPEST TRANSPORT GOVERNANCE SYSTEM

There are difficulties of cooperation and inevitable duplication between metropolitan and peri-urban transport institutions, and institutional coordination is inefficient. The legal and institutional fragmentation is not only true in the relationship between city and suburb, but also in Budapest, for example in the fragmented parking regulation. The lack of predictable, normative and, above all, sufficient funding makes medium- and long-term planning very difficult.

Operational difficulties due to a lack of resources jeopardise the maintenance of service quality, infrastructure and rolling stock are underdeveloped and depreciation is inadequately replenished. Coordination difficulties in the organisation of urban and suburban transport are also reflected in service shortcomings and inflexible tariff systems.

In addition to the situation assessment, a questionnaire survey was carried out [9] as part of the social consultation, whose results were taken into account for identifying problems.

[9] The questionnaire was available on the BKK Facebook page from 30 May to 19 June 2022. In addition to the convenience sampling, a representative sample of 500 people was surveyed between 26 May and 3 June. The results of the two surveys were almost identical in terms of problems. The results of the expert problem analysis and the questionnaire survey are summarised in the problem tree.

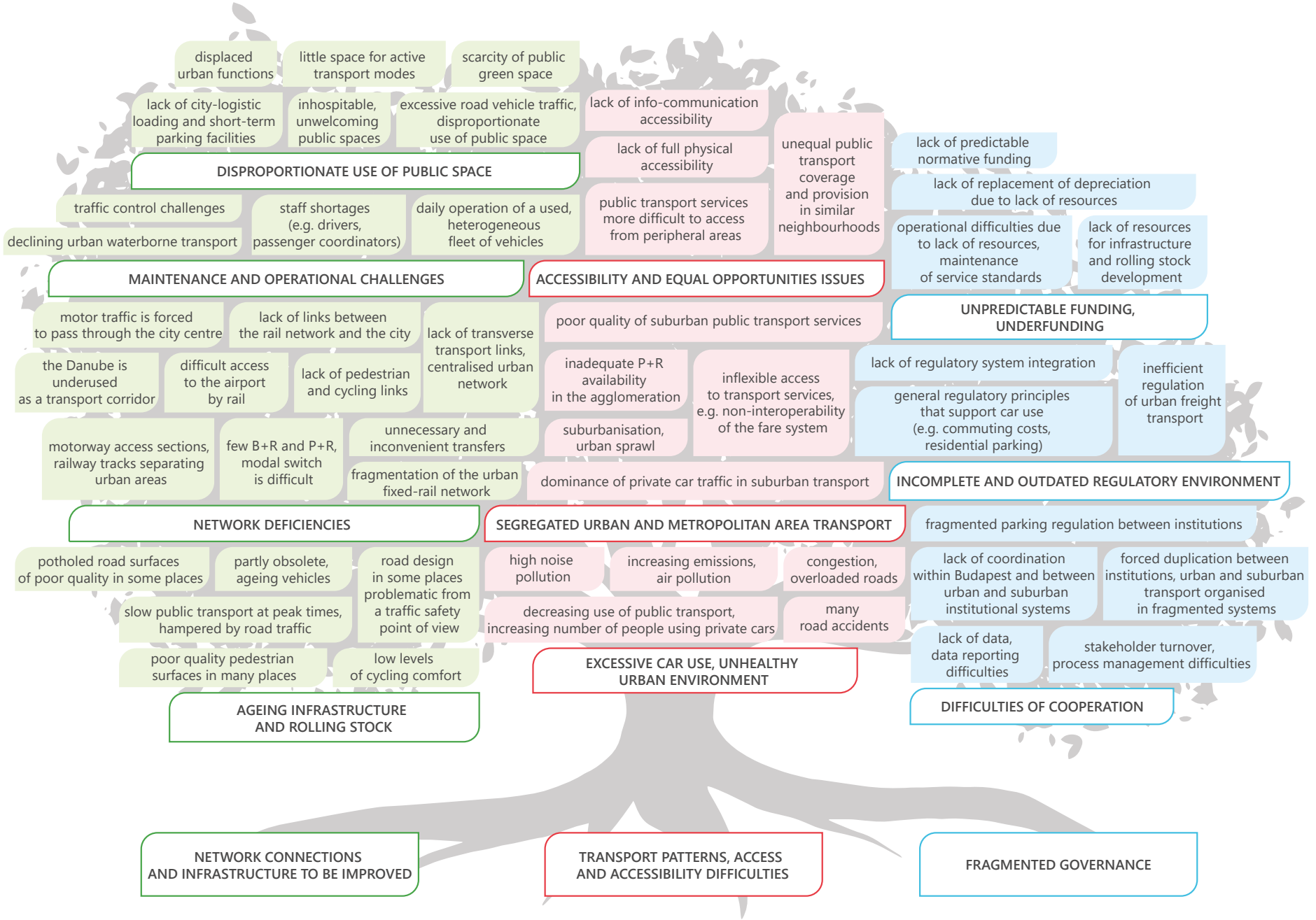


Figure 5: Main problems of mobility in Budapest

A.3.4 KEY PROBLEMS

The conclusions drawn from the questionnaire survey and the situation analysis are illustrated in Figure 5. In summary, the eight key problems of transport in Budapest:

1 Excessive private car use and deteriorating modal split ratios

Despite the improving trends in the 2010s, recent trends in mode choice show an increase in private car use to the detriment of green transport modes (public transport, cycling and walking) in the city. This trend has been further exacerbated by the Covid-19 epidemic, the government measures taken in response to it, the long period available for free parking in the city and the introduction of a cap on fuel prices.

2 Increasing private car traffic in the agglomeration, separate urban and agglomeration transport

The increase in private car use across city boundaries due to urban sprawl and the commuting of people from the countryside to the conurbation and the agglomeration remains a major problem. This is reinforced by the fact that suburban public transport services are often inadequate and poorly connected, so that the increase in the number of private cars is much higher in the agglomeration than in the capital. "Forced" car use causes excessive congestion, which is not good for car users and for people travelling from the metropolitan area to the city.

3 Disproportionate use of public space, inhospitable public spaces

Although the development approach of recent years is changing, in many parts of the city public spaces are still optimised for private car use. This applies both to the number and distribution of road lanes, the excessive space requirements for storing vehicles in public spaces, the design of intersections, the lack of pedestrian and cycling facilities and neglected, heavily paved spaces, all leading to disproportionate use of public space. The capital's streets are often unwelcoming and uninviting, with a low proportion of green spaces.

4 **Access and equal opportunities issues**

The lack of full physical and info-communication accessibility does not ensure equal access to public transport. Another territorial accessibility problem is the difficulty of accessing outlying neighbourhoods by public transport and the uneven coverage of public transport in similar neighbourhoods.

5 **Maintenance and operational challenges, ageing infrastructure and vehicle fleet**

Operational difficulties, mainly due to a lack of resources, internal inefficiencies and a heterogeneous fleet, jeopardise the maintenance of service quality, infrastructure and rolling stock are not upgraded and depreciation is not adequately replenished. The continuing dependence of public transport on fossil fuels is a growing concern.

6 Gaps in transport networks

Within metropolitan transport, there has been a sustained preference for radial network development over transversal development in both public transport and road development. As a legacy, the centralised urban network hinders the development of a more favourable spatial distribution of transport loads. Decentralised inner-city development is accompanied by a lack of transversal network links, forcing traffic to pass through the city centre, increasing congestion.

7 Cooperation difficulties, incomplete and outdated regulatory environment

The coordination of urban and peri-urban transport institutions is inefficient: it hinders modern development and causes operational problems and cooperation difficulties. The legal, institutional and regulatory context affecting the planning and service environment as a whole does not support sensible cooperation and the ability to react and adapt to unexpected situations. The lack of coordination within Budapest and between the city and suburban institutional systems leads to inevitable duplication of services.

8 Unpredictable funding, underfunding

The overarching problem in transport is the lack of predictable funding and the uncertainty of the predictability and availability of the resources allocated to tasks. Resources often arrive at the last minute, on the verge of becoming unviable, cannot be used for long-term planning and lead to underfunding. The impact of the economic crisis, exacerbated by geopolitical uncertainty and the worsening economic crisis due to energy insecurity, is further worsening financial conditions and accelerating negative trends.

B

THE OBJECTIVES OF THE BUDAPEST MOBILITY PLAN

Mobility is part of urban policy, and therefore the objectives of mobility development reflect the interests of Budapest and its urban area as a whole, in accordance with accepted urban development principles that take into account the fact that transport is itself a significant urban shaping force, an economic development and environmental factor. The vision (B2) and the overall objective (B3) of the Mobility Plan are defined by the urban development objectives of the ITS[10] adopted in 2021. Two further levels of the four-level target structure of the BMT set out the development orientations for the mobility subsystem. Three strategic objectives, which frame the transport priorities, form the third level of the target structure (B4). The path towards the objectives is defined by 44 measures (B6), broken down by intervention areas (B5), along a total of 11 operational objectives.

The Budapest Mobility Plan targets are based on the following three underpinning sources:

- international transport development experiences and trends, European and national objectives;
- the overall development objectives of the capital;
- targets to help solve the key transport problems identified.

The European Green Deal calls for a 90% reduction in greenhouse gas emissions from transport, in order for the EU to become a climate-neutral economy by 2050, while also working towards a zero-pollution ambition. To achieve this systemic change, we need to
(1) make all transport modes more sustainable,
(2) make sustainable alternatives widely available in a multimodal transport system and
(3) put in place the right incentives to drive the transition. These are the three pillars of our future actions.
(10. Sustainable and smart mobility strategy COM (2020) 789 final)

[10] *ITS III (2021) Home in Budapest: Integrated Spatial Development Strategy III. Municipality of Budapest, April 2021.*

Figure: 6 Position of the Budapest Mobility Plan in the hierarchy of national and metropolitan regional plans

The position of the BMT in the international, national and city-level strategies and plans is illustrated in Figure 6. While the BMT is based on higher level strategies, sub-sector strategies are aligned with the BMT. The Budapest Agglomeration Rail Strategy (BAVS) is partly a sub-sector strategy under the BMT and partly a document of national importance beyond the capital, directly under the National Transport Infrastructure Development Strategy.

In order to harmonise with the territorial policy, the mobility plan also distinguishes the following territorial units according to their function, based on the zones defined in the Budapest 2030 long-term urban development concept and the Budapest Municipal Planning Code (Figure 7):

- The Inner Zone, the Danube Zone and the City Centre areas where pedestrian, cycling and public transport are favoured and where the aim is to discourage private car traffic and through-traffic that can be accommodated elsewhere (environmentally sensitive and densely built-up areas). To reduce congestion and concentration in the inner zone, while reducing car traffic, it is also not favourable to install new transfer connections in the Inner Zone, which has excellent public transport coverage.

- Pedestrian access to the riverbank in the Danube Zone and access to all major public transport links in the northern and southern stretches should be ensured.

- Public transport provides a reliable basic service in the Suburban and the Buda Hills Zones, but there is also a significant presence of car traffic (loosely built-up areas). The Buda Hills Zone would attract significant traffic from elsewhere, which would be detrimental if a new transverse road link were to be built. Access from the Suburban Zone and peri-urban areas to the inner city should be mainly by public transport.

- The Transition Zone is an area where the symbiosis of the two mobility preferences can be achieved and where, in addition to the lines crossing the area, the infrastructure for intermodality-based modal shift and the development of transversal connections (transitional areas with development potential) are also involved. The development of the road and public transport ring within the area can facilitate the development of the Transition Zone.

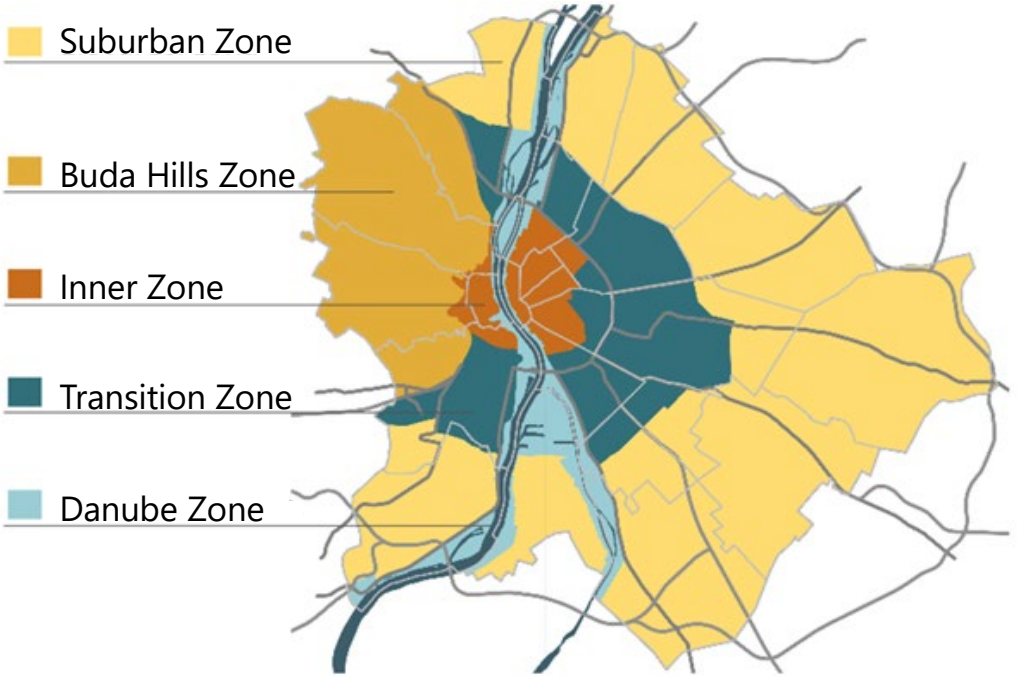


Figure 7: Differentiated transport interventions in the zones defined by the Budapest 2030 long-term urban development concept

B.1 STRATEGIC GUIDELINES FOR THE SPATIAL STRUCTURE OF TRANSPORT

The Strategic Guidelines, based on the Budapest 2030 Long-Term Urban Development Concept and ITS, define the transport infrastructure layout that the strategic and operational objectives of the Budapest Mobility Plan should serve. The strategic guidelines go beyond the 2030 situation, which is the target date of the Mobility Plan, or any other date covered by projects foreseen today. However, their spatial context provides a basis for transport structure objectives and a basis for identifying projects that could hinder the achievement of integrated long-term objectives.

The principles for achieving the strategic and territorial objectives can be distinguished according to three functional layers: (1) the urban fabric of liveable travel endpoints, (2) the transport backbone network, and (3) the transport fine network (Figure 8).

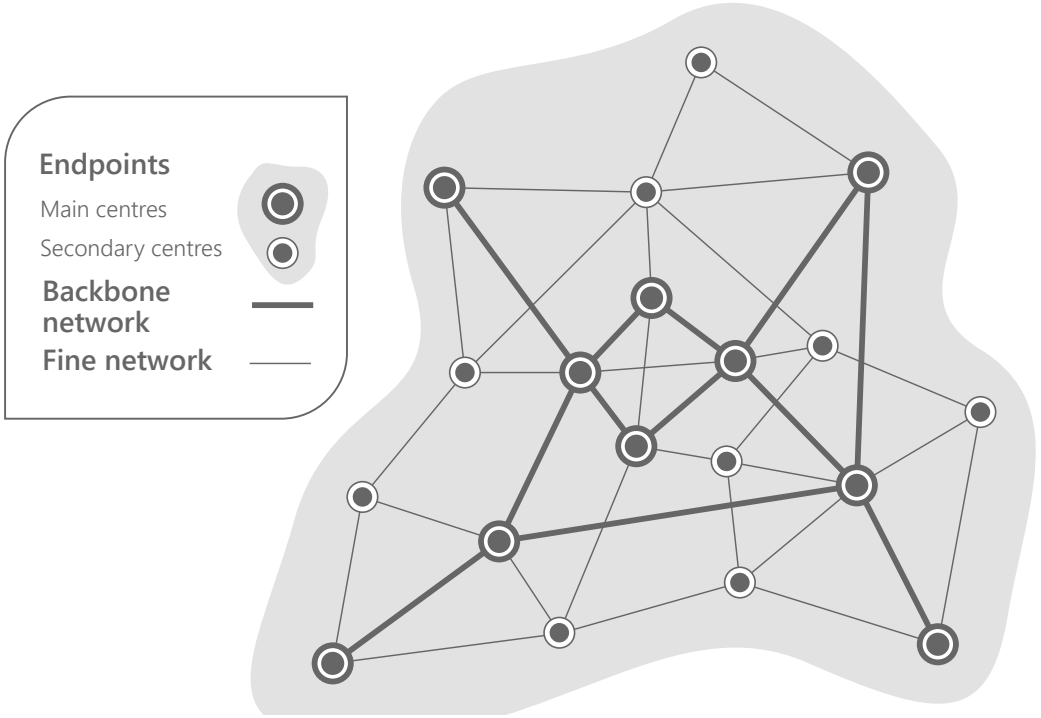


Figure 8: Schematic diagram of the functional layers defined by the strategic guidelines

THE URBAN FABRIC OF LIVEABLE TRAVEL ENDPOINTS

The integration of urban development and transport requires that transport development pays particular attention to the travel endpoints served by transport (placemaking). The objective of a people-centred liveable city based on a social approach thus includes the crucial role of technically non-transport ‚places' that at the same time give purpose to transport, which is the inhabited, urban fabric being used. (Figure 9).

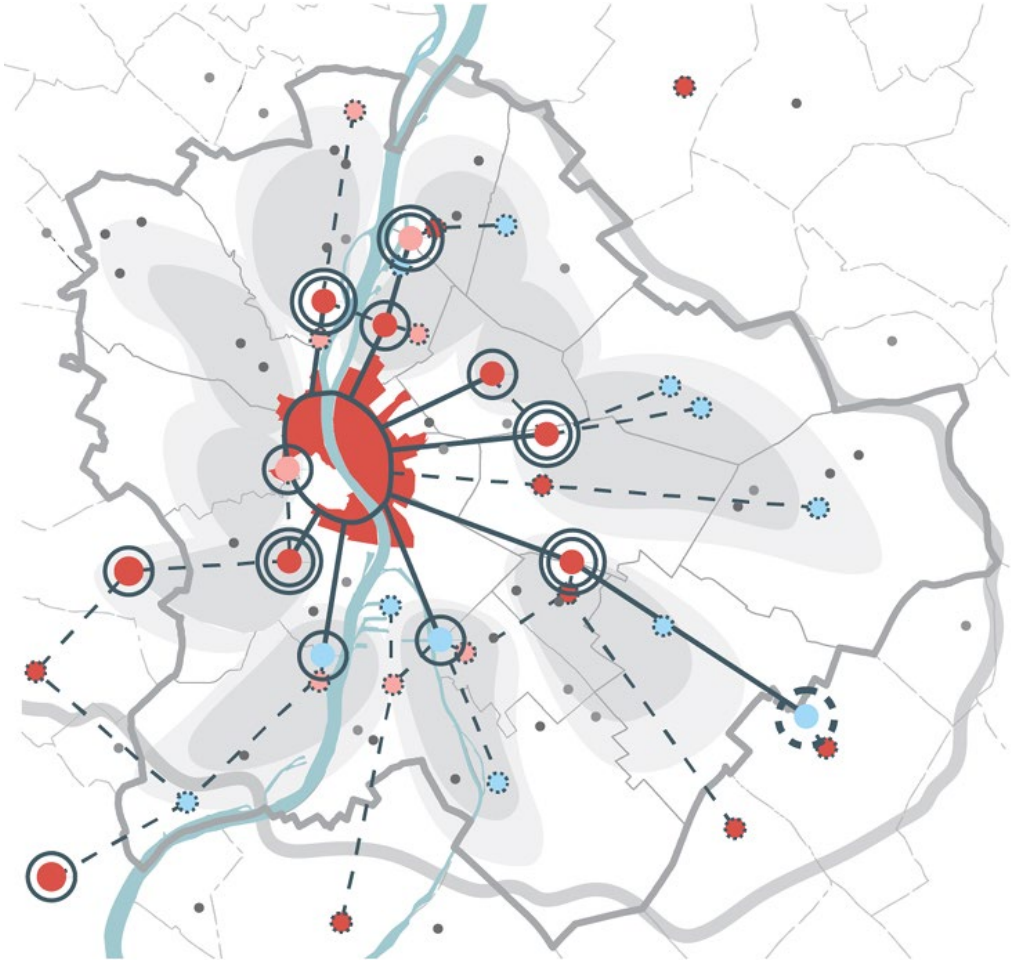


Figure9: The capital's system of urban centres central system [11]

[11] *Source: BFVT Compact City Study*

A BACKBONE NETWORK CONNECTING THE ZONES OF THE CAPITAL WITH EACH OTHER AND WITH THE ZONES OF THE AGGLOMERATION

The spatial role of the backbone networks connecting the zones of the functional urban body varies according to the mode of transport. Road traffic in general, and in particular in densely built-up urban areas, needs to be reduced to ensure optimal public space use; alternatively, public transport and cycling facilities should provide convenient and predictable access with few transfers and quick, simple, coordinated and transparent solutions for the necessary transfers and modal switching. The city centre should in no way be a transport hub for all transfers. The transport network's interconnection functions, including a significant proportion of transfers, should be decentralised. Decentralisation can also help to balance traffic flows and reduce congestion in the city centre (Figure 10).

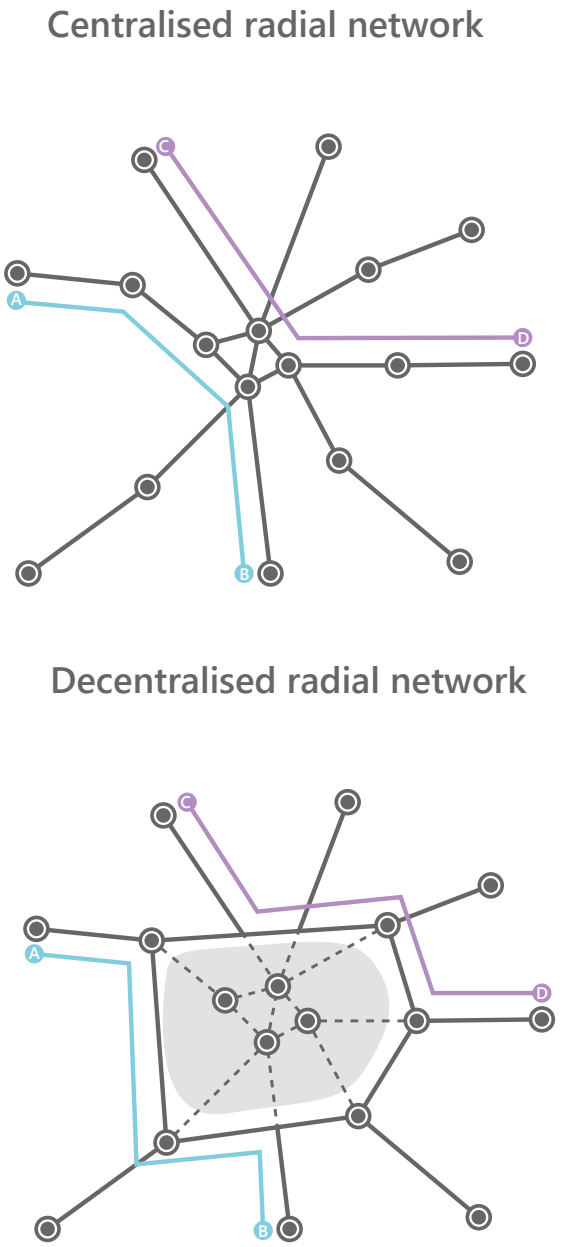


Figure 10: Decentralisation of radial transport networks

Both the modal shift from road to public transport and the transfer connections within public transport can be made more efficient if this task is not concentrated in a single high-capacity intermodal hub along each access route, but if there are several options for modal shift along the route, or if it can be easily performed at smaller hubs. On most feeder routes, mode shifting can be achieved by means of P+R and B+R connections outside the city, close to the suburban (heavy-rail and HÉV) stations close to the origin of the journey, but it is more efficient if the journey chain does not start with the car. However, for public transport to remain attractive for reaching a wide range of urban destinations, it also needs to be integrated into a competitive suburban rail system („S-Bahn network"). Such a system is proposed in the Budapest Agglomeration Rail Strategy (BAVS), which would include a complete ring of circular railways, with the necessary new stops, and the integration of HÉV suburban railway lines alongside the Hungarian state railways. Overlapping lines along the ring would provide convenient connections to all major radial routes of the urban transport system. Both the suburban S-Bahn rail system and the use of rail land can be rationalised, which will help to achieve the capital's objectives in terms of both financing and land use.

The other basic element of the backbone network, the metro network, is connected to the suburban S-Bahn rail system described above, mainly at the points where it intersects the circular railway. This is conditional on the metro lines going outwards at least reach the ring of the circular railway. Where existing metro terminuses are linked to railway stations, the option of extending them overground should be explored. The feasibility of metro-rail integration needs to be considered in the light of technological changes and should be taken into account in the related investments (e.g. rolling stock requirements, platform heights, station reconstructions, operational equipment).

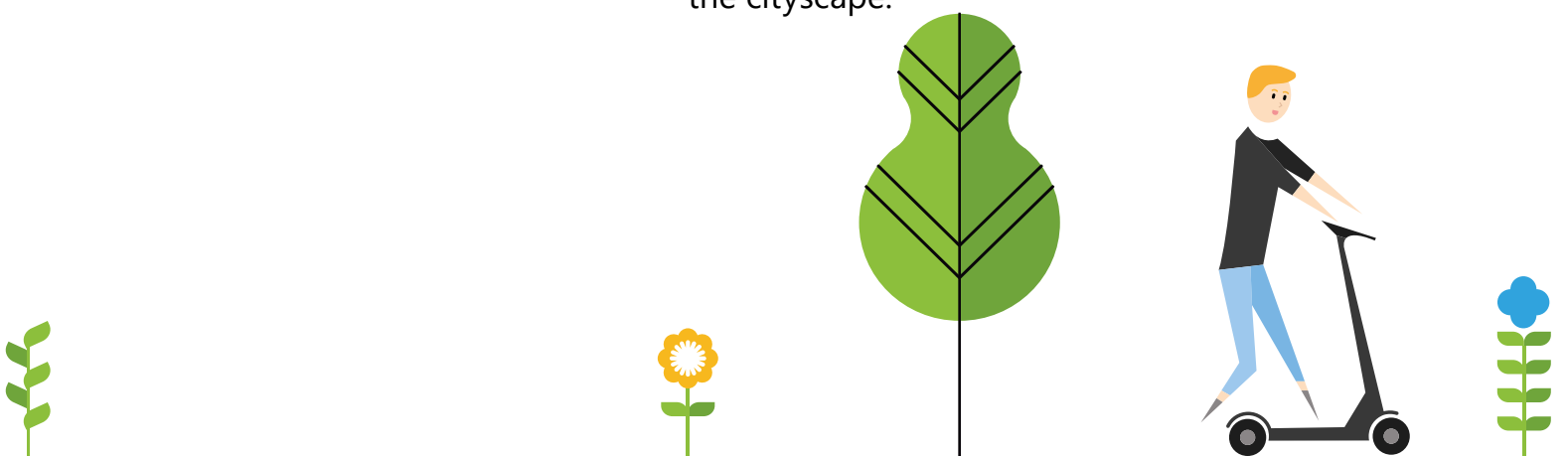
The outlined design of the community backbone network provides an appropriate basis for reasonably limiting incoming car traffic in the inner-city areas.

The priority is to reduce the use of cars by regular daily commuters and by those arriving in the city for business through the radial links.

In the road transport network, the current centralisation should be addressed. This requires new Danube river-crossing points in the Transition Zone. In addition to the circular railway ring , a further external transversal link should be integrated into the spread-out urban fabric of the South-East Pest districts by connecting the M31 and M51 motorway areas (effectively the missing link in Pest of the 4th ring road). These new road links will improve accessibility and transversal permeability in the Transition Zone and will help to promote regional development and strengthen sub-centres.

FINE TRANSPORT NETWORK

The primary function of the fine network layer is to provide local, in-zone connections and to provide the appropriate interfaces to the backbone network. It is not a ‚feeder' network in the strict sense, the fine network layer should be capable of managing transport between adjacent districts in its own right. In the case of the public transport network, this means improvements to reinforce its integrity: connecting isolated parts of the network, extending links in the transversal direction and, where appropriate, extending radial network elements. Related to this, the reduction - and possible elimination - of terminal functions in the city centre will have benefits in terms of passenger flows, operational management and urban development, as it will reduce unnecessary transfers, while improving operational efficiency and the cityscape.



B.2 FUTURE VISION FOR BUDAPEST

The future vision of Budapest and its region is in line with the Budapest 2030 concept: „Budapest is a liveable, attractive capital city with a unique character, a respected member of the European network of cities as an innovative economic and cultural centre of the country and the urban area."

Reinforcing the vision of Budapest, the ITS has identified three strategic objectives that define the main directions for urban development interventions in the coming years:

„**Opportunity Budapest**
providing affordable housing for all social groups, improving the health and living conditions of Budapest residents;

Green Budapest
creating the conditions for a liveable and healthy city, which preserves and creates value and is climate conscious;

Open Budapest
proactive city governance, where collaboration and innovation play a key role." (ITS III Strategy 2021)

By naming three strategic goals, the capital highlights the directions along which „the Municipality of Budapest would like to achieve significant change and shift in the coming years as a result of coordinated and integrated interventions." (ITS III Strategy 2021)

B.3 THE OVERALL OBJECTIVE GOAL OF MOBILITY IN BUDAPEST

The Mobility Plan builds on the vision and overall goal of Budapest's urban development, stating that it aims to support the objectives set out in the Urban Development Concept and refined in the ITS through transport. The objectives are also in line with the principles set out in the European Union's Sustainable and Smart Mobility Strategy:

> The sustainable European transport system that the EU strives for must be smart, flexible and adaptable to ever-changing transport patterns and needs, based on cutting-edge technological advancements to provide seamless, safe and secure connectivity to all European citizens. (Section 110. Sustainable and smart mobility strategy COM (2020) 789 final)

The mobility system of Budapest and its urban area should contribute to a climate-neutral, sustainable, liveable, safe, attractive and healthy urban environment to shape Budapest as a green, open and opportunity-generating city, and to enhance the competitiveness of the city and its region through an improved quality of life (based on Budapest 2030 and ITS).

B.4 STRATEGIC OBJECTIVES FOR MOBILITY DEVELOPMENT IN BUDAPEST

In the integrated approach of the Mobility Plan, the target system becomes mobility specific at the level of transport solutions that contribute to the overall objective. Therefore, the strategic objectives can be defined as an expression of the overall objective, which is a general expectation in all other operational objectives.

The common element of the strategic objectives is cooperation and integration. Sustainable urban mobility planning achieves integration in three target areas. It breaks away from a one-sided sectoral, transport or even sub-sectoral or service-oriented approach, or one that looks only as far as the city boundaries, and builds on cooperation, thus the three strands of mobility integration:

- transport development integrated into urban development (Strategic Objective I);
- transport modes serve mobility needs in optimal cooperation (Strategic Objective II);
- the capital and its metropolitan area work together to develop a metropolitan-wide accessible transport system (Strategic Objective III).

In line with the EU's integrated approach to transport policies, the Mobility Plan focuses on healthy lives for individuals and their communities, and on the liveability of cities. In the spirit of integration, Budapest will develop mobility that supports sustainable transport and a competitive economy, by ensuring participation, including partnership in setting objectives and actions, systematic follow-up of decisions and ex-post evaluation of the improvements made. Budapest is taking measures to slow down or stop the process of urban sprawl (e.g. performance-related, differentiated and integrated tariff systems), but it is not supporting developments that work against this.

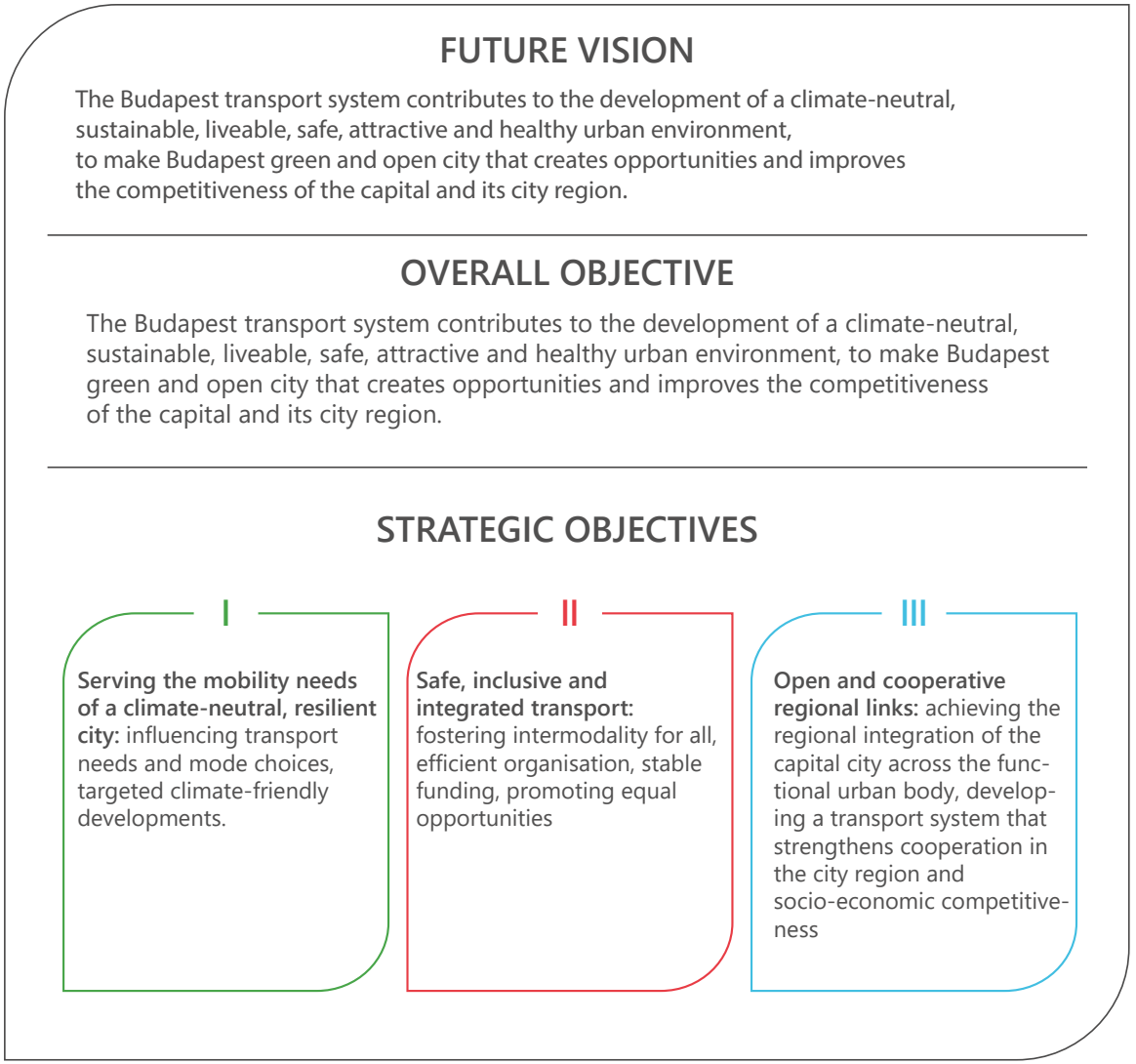


Figure 11: Strategic target system for mobility in Budapest

I SERVING THE MOBILITY NEEDS OF A CLIMATE-NEUTRAL, RESILIENT CITY

influencing transport needs and mode choice, targeted climate-friendly developments

Mobility solutions support the fulfilment of urban development and environmental objectives, the creation of a green and open capital city that creates opportunities, as a key condition for sustainable development, by effectively managing existing facilities, spaces and assets. Transport surfaces can be integrated into urban public spaces as an integral part of them, taking into account real needs and spatial conditions. In addition to balanced urban development in line with the principles of the compact city, the environmentally sound development and use of built infrastructure also contributes to the livable use of urban space

and sustainable mobility. While paying attention to the quality of use of all modes of transport, the volume of road traffic should be brought into line with the congestion-free use of the available space, and as part of alternative security, efforts should be made to facilitate access to and availability of modes of transport that are less environmentally damaging. It should promote the natural, safe and everyday use of pedestrian, cycling and public transport, the creation of liveable green public spaces and the possibility of mobility by private car, where that is unavoidable, in a cultured way.

This strategic goal also needs to be achieved because the environmental status of Budapest has become unsustainable. In 2019, the General Assembly of the Municipality of Budapest declared a climate emergency and mandated the city government to take action to reduce the capital's carbon emissions as quickly as possible and to ensure that Budapest is prepared to adapt to the increasingly extreme weather conditions expected.

II SAFE, INCLUSIVE AND INTEGRATED TRANSPORT

– promoting cooperation between modes of transport accessible to all, efficient organisation, stable funding, strengthening of equal opportunities

On the streets of Budapest today, different modes of transport compete with each other; mode choice is driven by individual interests and there is little cooperation between transport users. As a consequence, more people than necessary use private cars. Excessive car use in the city is not sustainable, neither because of the high levels of pollution caused by cars nor because of their disproportionate use of land and the associated congestion. Budapest aims to promote shared solutions that are more resource and space efficient, and to ensure that only those who absolutely need to travel by car are able to do so, and that they have more predictable and less congested access. It would make environmentally friendly modes of transport more attractive as an appropriate alternative when choosing a mode of transport.

As a consequence of the legacy of the transport network, the design of public spaces currently serves mainly the needs of individual car transport, and through changing this, public spaces should be made accessible to other urban functions and other road users. If active mobility and public transport are convenient, safe and accessible, the share of private car use can be reduced, the 2030 target for which is illustrated in Figure 12.

The predictable operation of the city requires stable transport funding and the provision of well thought-out, integrated, cost-effective development, maintenance and operational interventions. Development should allow for complementarity between transport modes, increase cooperation between services and providers, and enforce a sub-sectoral division of labour. Such a predictable, cooperative structure will also improve adaptability and responsiveness to unexpected situations.

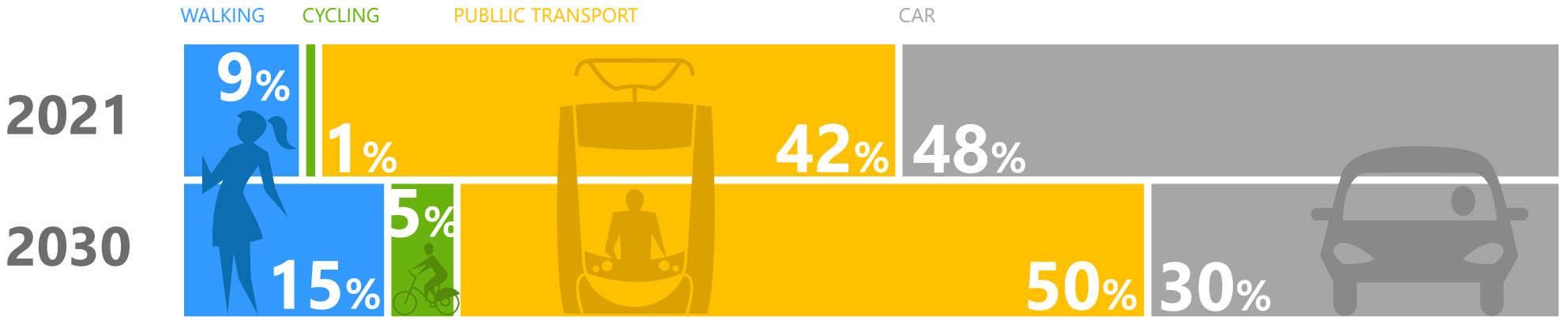


Figure 12: Projected evolution of modal split [on a trip-count basis]

Road accidents are still high in the capital and its metropolitan area, and improving road safety, including the goal of eliminating serious and fatal accidents (Vision Zero), is a priority. Budapest prioritises the principle of equal access in developments and operation, as this ensures that people from all walks of life can travel safely and predictably.

III OPEN, COOPERATIVE REGIONAL RELATIONS

– the realisation of the spatial integration of the capital city throughout the functional urban body, the development of a transport system that strengthens urban-regional cooperation and socio-economic competitiveness

The capital and its urban area are located at the intersection of European, national and regional transport network systems, creating the prerequisites for an internationally competitive economic area. Only together can the capital and its surroundings as an urban area provide an environment for a wide range of activities. Well-coordinated economic and social cooperation requires, for example, the enhanced interconnection of transport networks and services at different levels, including public transport and climate-friendly systems, and the promotion of fixed-rail transport on the busiest routes.

The presence of macro-regional transport systems - international and domestic - implies the need for links to regional and local transport systems, as well as the possibility and feasibility of network connections between transport sub-sectors (rail, road, water and air).

In Budapest today, transport services are characterised by a fragmented and separated provision of tasks due to the two-tiered local government (capital-districts) and the different domestic-local transport organisation. The organisation of regional transport systems requires a complex network and regulatory structure that cooperates in day-to-day practice. A key principle for achieving metropolitan transport development objectives, and in line with the ambitions of the

European Union, is that the mobility strategy should take an integrated approach across administrative boundaries. To this end, the development of regional transport network connections, interoperable systems and suburban intermodal transfer points, the creation of functional cooperation between the related services and the development of an appropriate governance and regulatory framework are strategic objectives.

Cooperative mobility services require a collaborative and partnership-based role for communication between the provider and the customer and mobility users. People living in and travelling through the capital and its urban areas typically have three levels of needs, which are complex and demanding to serve. The passenger who wants to get from A to B, the customer who wants real-time transport information and quality service, and the partner who wants to share his or her views are not a developmental approach, but rather levels of demand that coexist and build on each other (Figure 13). Service providers (e.g. transport organisers) need to focus on the different types of demand and expectations separately and to keep these three levels (passenger, customer, partner) in mind simultaneously and in parallel.

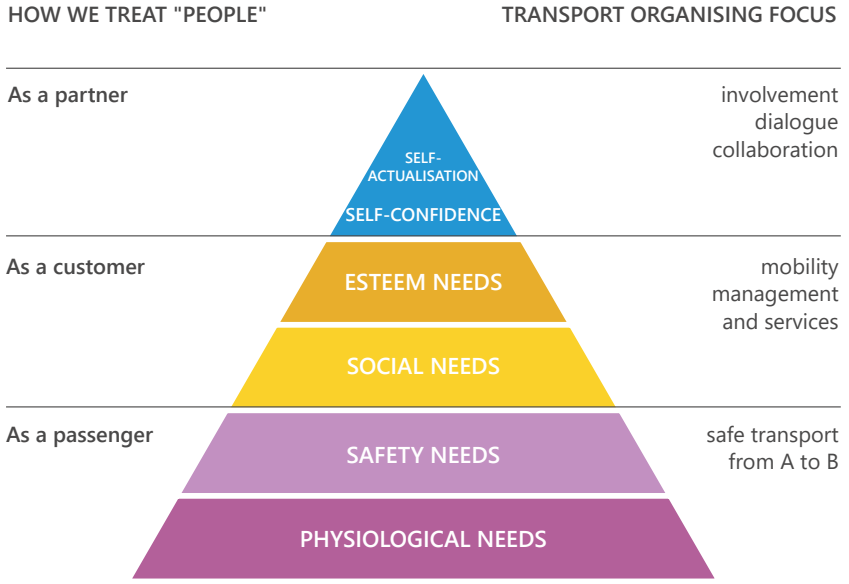
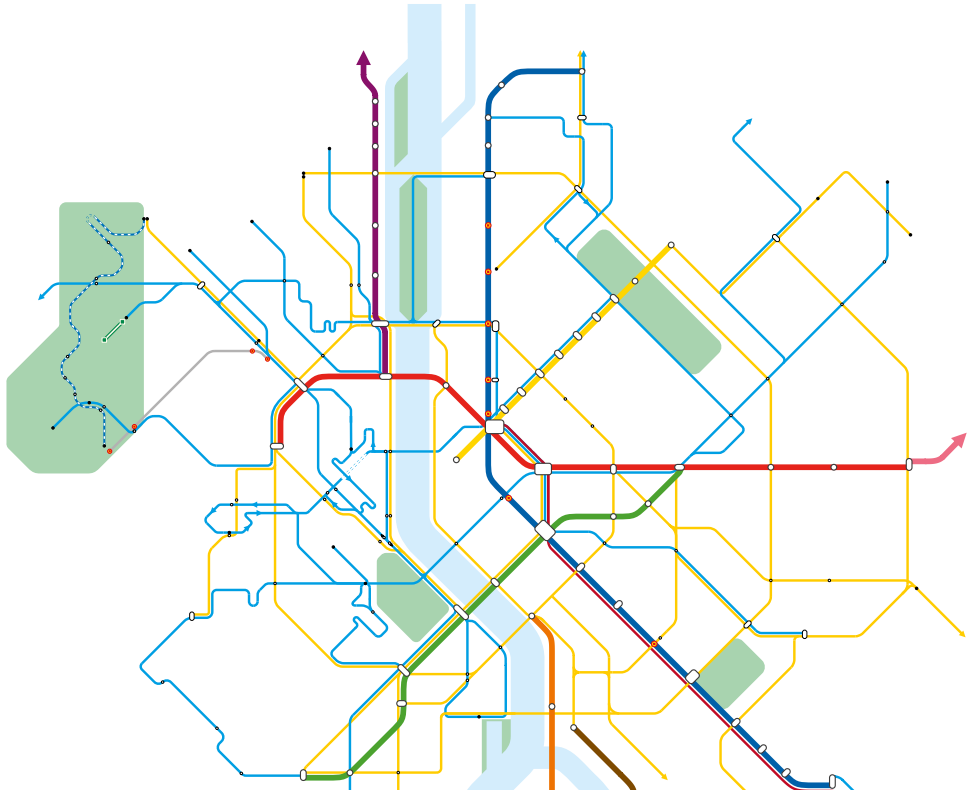


Figure 13: Passenger - Customer - Partner transport management approach based on Maslow's pyramid analogy

B.5 INTERVENTION AREAS

The Mobility Plan groups the development measures that can be linked to the strategic objectives of the integrated approach in the traditional technical areas of transport into four transport intervention areas, namely:

- improved network connections;
- attractive vehicles;
- services that enhance the customer experience;
- effective governance.



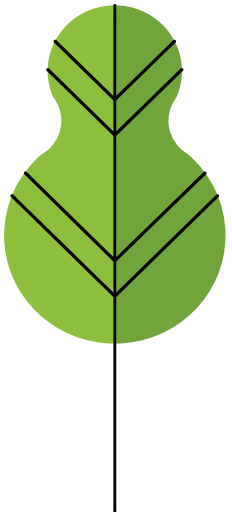
IMPROVED NETWORK CONNECTIONS

REALLOCATION OF PUBLIC SPACES, MAKING THEM LIVEABLE, INTEGRATION AND SAFE AND RELIABLE DEVELOPMENT OF NEW AND EXISTING TRANSPORT NETWORKS, DEVELOPMENT OF PASSENGER-ORIENTED INTERMODAL CONNECTIONS

As the daily transport arena of Budapest and an essential element of the urban environment, well-maintained, barrier-free and up-to-date infrastructure that is safe and accessible in terms of operation, maintenance and development must be provided on a permanent basis.

The objective of integrated infrastructure development is to rethink the use of public space, reallocate urban space and calm traffic on residential streets. It aims to address both the disproportionality of the transport network and to create an attractive, healthy,

liveable urban environment, ensuring an accessible, comfortable and passenger-friendly transport network. In the design and implementation of transport network improvements, it promotes network solutions that do not attract additional traffic and do not increase, but rather reduce, existing environmental pressures. The revised networks will help to develop destinations and services brought closer based on the 15-minute city principle. Convenient mode-switching points and interoperable transport systems will improve the competitiveness of walking, cycling and public transport modes, and provide easy access to shared mobility services, improving both the mobility and environmental situation of the city. By making better use of existing infrastructure, it is necessary to create liveable and orderly public spaces and community areas where all modes of transport are safely accessible and usable. To make public spaces more liveable, public space planning should promote the greening of the city.



ATTRACTIVE VEHICLES

DEVELOPING A COMFORTABLE, ACCESSIBLE, PASSENGER-FRIENDLY FLEET TO RAISE SERVICE STANDARDS, AND ENCOURAGING THE UPTAKE OF GREEN VEHICLES AND ENVIRONMENTALLY FRIENDLY TECHNOLOGIES

The urgent task is to put in place and operate environmentally friendly, modern, comfortable and safe public transport vehicles that are accessible to

Flagship 1 – Boosting the uptake of zero-emission vehicles, renewable & low-carbon fuels and related infrastructure (Sustainable and smart mobility strategy COM (2020) 789 final)

all, replacing the ageing fleet in a timely manner. In the procurement of vehicles, emphasis should be placed on ensuring a high level of service quality to best serve the needs of public transport users in the capital and its conurbations by providing an accessible, barrier-free, healthy and clean travel environment while offering climate neutrality and reliability. A climate-neutral, net-zero emission, state-of-the-art technology, energy-efficient vehicle that provides a high level of service (i.e. comfortable, accessible, clean and reliable, thus running on time and arriving on schedule) will make public transport more attractive. Active travel should be encouraged through modern digital technology tools. In order to provide passengers with vehicles of the right quality, a modern service, operation and maintenance background is also needed.

In line with EU directives, future developments will also aim to reduce the environmental impact of public transport vehicles in Budapest, in particular by providing a fleet of new, climate-neutral vehicles with advanced technology. The fleet of suburban public transport vehicles should also be upgraded in a similar way to the urban fleet. Suburban rail transport in Budapest should be phased out of diesel and bus transport should gradually switch to climate-friendly and then climate-neutral vehicles. In addition to renewing the public transport fleet, the greening of vehicles providing alternative services (car-sharing services, municipal services, taxi and city logistics services) and all other vehicles in the city should be encouraged through appropriate regulatory measures to ensure cleaner air in Budapest.

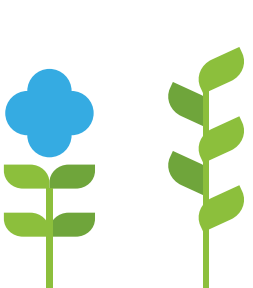
CUSTOMER EXPERIENCE-ENHANCING SERVICES

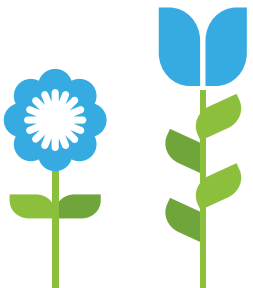
AN EFFICIENTLY ORGANISED AND INTELLIGENT, TRANSPARENT, WIDELY ACCESSIBLE, INTEGRATED TRANSPORT SYSTEM

The EU cannot rely exclusively on technological solutions: immediate action to adapt our mobility system is necessary to tackle climate change and reduce pollution. Multimodality takes advantage of the strengths of the different modes, such as convenience, speed, cost, reliability, predictability, and in combination, can offer more efficient transport solutions for people and goods.

Improving the quality of services and making them customer-centric not only benefits transport users, but also affects the lives of city residents and users.

Advances in digital technology are creating new opportunities for the integration of services, to achieve a Mobility as a Service (MaaS)-based framework. Services need to be integrated, customer-experience enhancing and partnership based, which is a challenge for transport users, drivers and organisations and their staff who are partners in the transport system. Urban freight transport must also be put on a sustainable footing. Measures will be taken to improve customer experience, comfort, reliability and punctuality, reduce the number and duration of transfers, improve access to information, accessibility, freedom of mode choice, to broaden the service offering and its accessibility, and promote new environmentally friendly means of transport.





EFFICIENT GOVERNANCE

CONSISTENT REGULATION, COOPERATION AT NATIONAL, REGIONAL AND CITY LEVEL

> The Commission is putting forward a comprehensive set of measures listed in this strategy's action plan to put the EU on the path to creating the sustainable, smart and resilient mobility system of the future and bringing about the fundamental changes needed to achieve the objectives of the European Green Deal. These efforts can only be successful if there is sufficient commitment by all those concerned, namely European institutions, Member States and their authorities at all levels of government, stakeholders, businesses as well as citizens. (Section 111. Sustainable and smart mobility strategy COM (2020) 789 final)

The transport space extends well beyond the city limits, there are no administrative boundaries to physical mobility: the road continues, the vehicle goes on, the traveller is not influenced by the scopes of responsibilities of the different institutions. Passengers want transport services to be accessible and tailored to their needs; to cover the capital and its city region, and to provide a reliable and comfortable travel experience in a coordinated way. Mobility should be accessible as a single service. For the passenger, the transport system should be integrated, taking into account the needs and changes in needs.

The complex systems of the modern city operate effectively in a shared governance structure, in partnership and with common goals. This requires continuous consultation between institutions and data-driven decision-making.

Those responsible for service provision, transport operators and transport organising authorities must cooperate at their level. Within the framework of common rules, each operator can define its tasks, which it is responsible and obliged to carry out, and regularly review the common rules.

Integrated scheduling, a uniform tariff and passenger information system can only be achieved with the necessary coordinated governance framework.

This requires not only an institutional framework for an integrated mobility system, but also a framework for cooperation.

To ensure the efficient functioning of a quality mobility system, stable, sustainable and predictable financing frameworks are also needed.

B.6 OPERATIONAL OBJECTIVES AND MEASURES

The complex urban problems and challenges outlined in detail in the previous chapters can only be improved through well thought-out, complex measures, which is why the Budapest Mobility Plan defines a total of 11 areas of action (operational objectives) in four intervention areas, focusing on three priority strategic target areas.
The conceptual structure of the target system is illustrated in Figure 13 below.

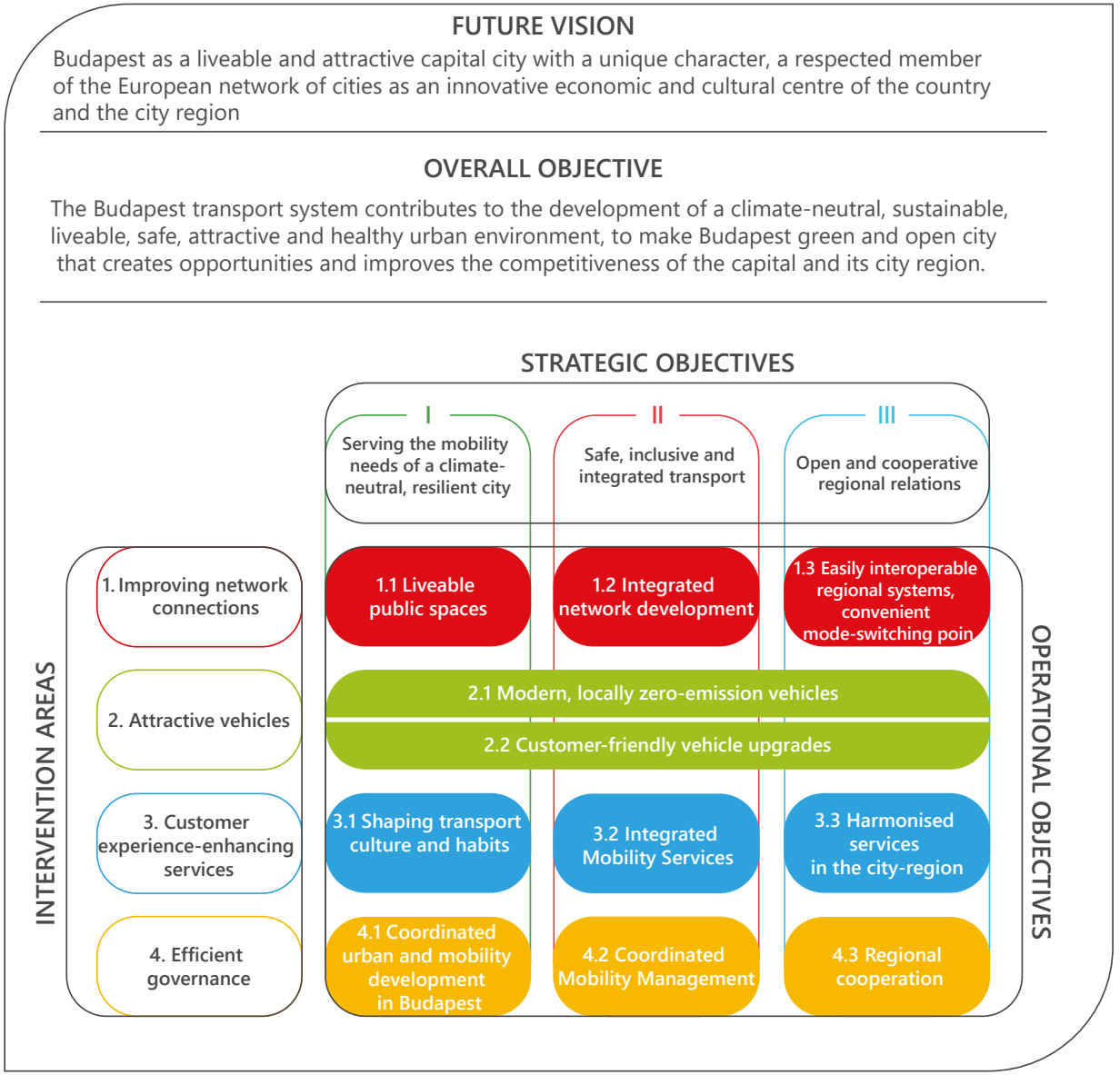


Figure 14: Operational objectives aligned with the strategic objectives and areas of intervention

1.1 INTEGRATED NETWORK DEVELOPMENT

the street belongs to everyone. Creating liveable public spaces by ensuring the reliable and safe operation and modernisation of transport networks, public space reallocation and greening, creating infrastructure that meets equal opportunities criteria, calming traffic and limiting through-traffic.

1.2 INTEGRATED NETWORK DEVELOPMENT

building an accessible, comfortable, passenger-friendly transport network by creating smart urban connections, developing the network to reduce traffic imbalances, continuously improving public transport infrastructure and service quality, and standardising parking conditions.

1.3 EASILY INTEROPERABLE REGIONAL SYSTEMS, CONVENIENT MODE-SWITCHING POINTS

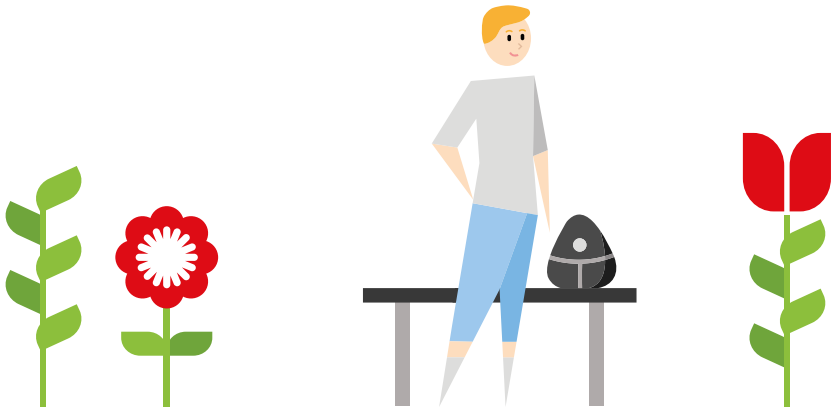
creating convenient travel chains by creating integrated transport networks, efficient mode-switching points, interoperable systems, passenger-centred development of intermodal transport links, creating conditions for safe travel, improving intermodality (including access to shared mobility facilities) and tourism links.

2.1 MODERN, LOCALLY ZERO-EMISSION VEHICLES

the renewable public transport fleet of Budapest contributes to cleaner air in the city by developing a climate-neutral public transport fleet, increasing the energy efficiency of the fleet, promoting climate-friendly vehicle technology and reliable maintenance.

2.2 CUSTOMER-FRIENDLY VEHICLE UPGRADES

comfortable, barrier-free travel with new public transport vehicles, renewing the fleet with accessibility features, making it suitable for carrying bicycles on board and provision of digital tools to support active travel.



3.1 SHAPING TRANSPORT CULTURE AND HABITS

Providing a cultured, clean transport environment and promoting informed mode choice and changes in mobility habits through up-to-date information and customer-oriented communication.

3.2 INTEGRATED MOBILITY SERVICES

advanced solutions and services will increase customer satisfaction by exploiting the potential of digitalisation, intelligent systems, flexible services, including facilitating the sustainable operation of urban freight transport and supporting the use of micromobility devices.

3.3 HARMONISED SERVICES IN THE CITY REGION

standardised passenger information services, integrated timetables coordinated between operators, a common uniform tariff system serving the city and the metropolitan area.

4.1 COORDINATED URBAN AND MOBILITY DEVELOPMENT IN BUDAPEST

developing transport together with the city by setting up a system of transport governance and rules to support common goals.

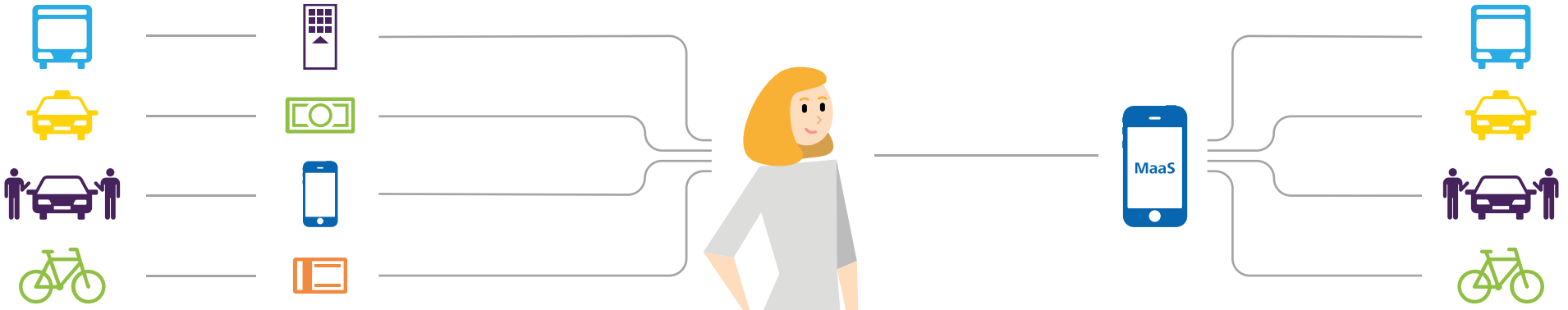
4.2 COORDINATED MOBILITY MANAGEMENT

developing a set of institutions and rules to support cleaner, more sustainable transport modes.

4.3 TERRITORIAL COOPERATION

City-regional transport management approach by helping to integrate regional and macro-regional systems.

It should be borne in mind that measures alone often have only a small impact, but their combined effect can be significant.

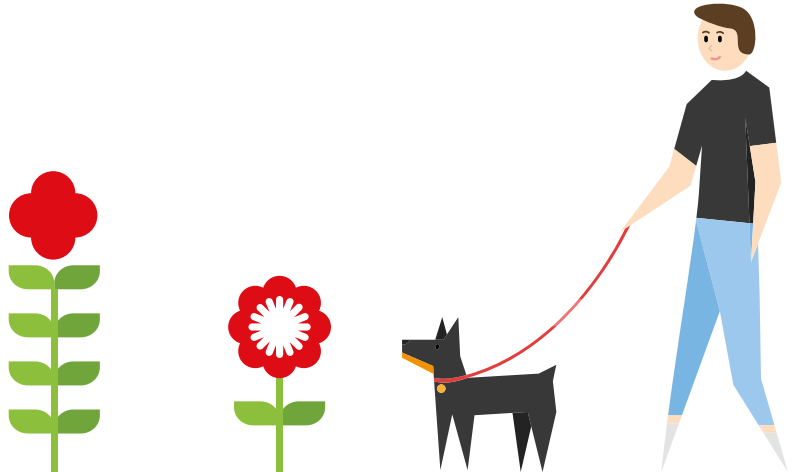


1 IMPROVED NETWORK CONNECTIONS

1.1 LIVEABLE PUBLIC SPACES

The street belongs to everyone. Creating liveable public spaces by operating and modernising transport networks in a reliable and safe way, reallocating and greening public spaces, creating infrastructure that meets equal opportunities criteria, calming traffic and limiting through-traffic.

The liveability of cities is greatly affected by air and noise pollution from traffic and excessive space use by cars. International experience shows that an integrated approach to transport development is needed, because the problems arising from individual car use cannot be addressed by increasing road capacity. Budapest is shifting through-traffic from residential and side streets to main roads and parking away from public spaces through targeted regulation and development of the road network and reallocation of public space. The remaining car use, which in some cases is essential, is kept within reasonable limits and its harmful effects are reduced by means of traffic engineering, traffic safety and traffic regulation (prohibition and encouragement) measures. In recent years, the city centre has begun to review the surfaces used for transport, increasing the role of public transport and non-motorised individual transport (cycling/walking), which reinforces the ambition to create liveable public spaces in the capital, with a gradual expansion of the area at the expense of areas for motorised transport. In this context, Budapest will reduce motorised traffic and therefore improve overall safety and road safety; will green public spaces, create and renew parks and green spaces; and reduce physical barriers to walking by creating attractive and comfortable mobility conditions for pedestrians. In the wake of the epidemic-related measures, it has been shown that residents demand safe and comfortable active and micromobility conditions as well as changes that are in line with the conditions for a liveable city.



The EU and Member States must deliver on our citizens' expectations of cleaner air, less noise and congestion, and eliminating fatalities on our city streets. By revising the Urban Mobility Package to promote and support these sustainable and healthy transport modes, the Commission will contribute to the improvement of the current European framework for urban mobility. (Section 37 - Sustainable and smart mobility strategy COM (2020) 789 final)

1.1.1 1.1.1 IMPROVING WALKING CONDITIONS, CREATING PEDESTRIAN LINKS OF URBAN STRUCTURAL IMPORTANCE

To make walking more attractive as a mode of transport, conditions for pedestrians need to be improved. The primary aim of the measure is to make Budapest barrier-free: to make conditions on short stretches of road to nearby destinations or at junctions and interchanges where walking is essential, friendly, accessible, comfortable and safe for all. As part of the complex road renovations, Budapest is helping pedestrians to move around by building pavements of sufficient width, lowering kerbs at intersections and crossings and where there are no designated crossing points. These measures, together with an increase in the number of pedestrian crossing points, will reduce the separating effect of certain road sections, improve safe crossing conditions and reduce vehicle speeds. The pedestrian guidance system in public areas will be completed to improve wayfinding. As pedestrians are essentially on street level, Budapest will build the missing surface crossings at intersections. It is not possible to fully replace the function of pedestrian underpasses below streel level, but the need to use them will be reduced by the provision of level crossing facilities where possible. In addition, there is an urgent need to renovate the quality and re-design the functionality of existing pedestrian underpasses, with particular attention to accessibility requirements.

Budapest is organising the pedestrian and bicycle-friendly public spaces in the inner city into a

coherent network, a liveable urban fabric, drawing on the experience and social support that recent developments have achieved in creating new architectural quality (e.g. the Heart of Budapest Programme, Széllkapu Park). Budapest is striving to make walking in the capital not a necessity but a welcome urban transport alternative, even if it can be achieved by a five-minute drive or a one- or two-stop journey. In improving walking conditions, special attention should be paid to the needs of people with reduced mobility, people with small children, people with luggage and baby carriages, and elderly people (sufficiently wide pavements to allow wheelchairs and baby carriages to turn around). Budapest is working to improve public safety (adequate street lighting or installation of surveillance cameras). In developing pedestrian infrastructure, Budapest is paying special attention to pedestrian protection. In addition to the elderly, children and other vulnerable groups, public safety issues affecting pedestrians also focus on improving women's sense of safety, as women make 18% of their journeys on foot in Budapest, compared to 12% in the case of men. This is why pavements in the capital will be designed to give pedestrians a real advantage over other modes of transport.

In recent years, new means of transport have appeared (scooters, e- scooters, skateboards, segways, etc.), which are used to a large extent for tourism. As micromobility devices are still typically used on pedestrian and, to a lesser extent, cycling networks, they should be increasingly oriented towards the use of cycling infrastructure.

1.1.2 1.1.2. CREATION OF PARKS AND PEOPLE-CENTRED REGENERATION OF EMBLEMATIC PUBLIC SPACES

Cities should use all means to increase their green spaces to reduce climate impacts. Both climate and environmental objectives are linked to urban management and development, green infrastructure and transport, so effective implementation of climate objectives requires a coordinated approach across these areas. In Budapest's Sustainable Energy and Climate Action Plan 2021, the "Adaptation Action Plan" includes increasing the quantity and quality of green spaces to improve carbon-sequestration

capacity. Contrary to the WHO recommendation of 9 square metres, the capital has only 6 square metres of public parkland per Budapest resident. The SECAP's green space target is 7 square metres per capita by 2030, i.e. an increase in green space of 1 square metre per capita would lead to a CO2 sequestration of 140 tonnes per year. In line with the SECAP's objective, the renewal of transport areas should focus on achieving the highest possible green space ratio, reducing motorised traffic and improving conditions for walking and cycling. In densely built-up urban areas and other public spaces lacking green space, there is an urgent need for public space cooling improvements to mitigate the urban heat island effect, which are particularly important for social groups living in more difficult circumstances with little or no access to the waterfront.

1.1.3 ENSURING EQUAL, BARRIER-FREE ACCESS TO TRANSPORT FOR ALL

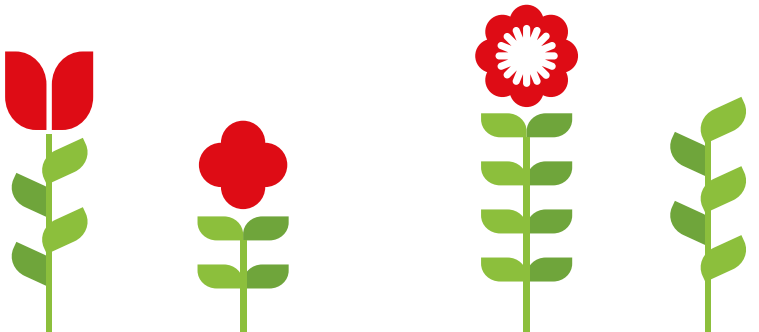
The primary role of accessible infrastructure is to ensure ease of use for all user groups. Often excessive and costly solutions with unnecessary differences in level, operational challenges and costly solutions should be avoided.

Accessibility is a basic requirement for new and reconstructed infrastructure as well as for modern vehicles.

In order to achieve equal opportunities, Budapest will not only remove physical barriers but also make info-communication accessible: it will renew voice-based passenger information, install special signs that are clearly visible and understandable (e.g. tactile signs at lowered kerbs; audible signs, green lanes as guide lanes, etc.). It will improve existing transport surfaces both on public transport and at facilities (stations, stops and terminuses) on the basis of a comprehensive equal opportunities review. In the light of this, it will organise the physical accessibility of equal opportunities to facilitate transport for all passengers (e.g. accessibility of street furniture for wheelchair users).

When designing and reviewing the fare system and the related travel discounts, it is essential to ensure access to public transport for the widest possible range of low-income Budapest residents, which is a basic condition for equal transport opportunities.

The economic shock has highlighted the need for affordable, accessible and fair mobility for passengers and other users of transport services. Indeed, whereas the single market in transport has increased connectivity, mobility remains expensive for people with low disposable income, and not sufficiently accessible for people with disabilities or reduced mobility, and those with low IT-literacy. (88 - Sustainable and smart mobility strategy COM (2020) 789 final)



1.1.4 INCREASING ROAD SAFETY; A FORGIVING MOBILITY ENVIRONMENT

In Budapest, around 50 people are still killed in traffic accidents every year. The EU directive calls for specific measures to be taken to bring the number of fatalities to zero (Vision Zero). Accident hotspots need to be identified and the main causes of accidents need to be analysed. Once the incidents that have occurred and the 'near misses' that have not occurred have been examined and evaluated, the necessary steps to improve road safety can be identified.

By taking a complex approach to the planning of public space renovations in the capital, Budapest is creating people-centred transport spaces where conflicts resulting from the layout of the infrastructure can be prevented, and the outcome of accidents caused by human inattention and vehicle error is less severe (forgiving environment[12]). In the Budapest Road Safety Strategy, "self-explanatory" surfaces, designed according to the category of road, provide everyone with the information they need to drive safely. Where the number of vehicle collisions and pedestrians run over by cars are on the increase, the maintenance authority carries out a road safety audit to make recommendations for changes to traffic alignment and the creation of a safe traffic environment. In addition to pavement and road surface improvements, which are essential for the safe movement of people, the Municipality of Budapest also renovates road signs on a programmed basis, paying particular attention to the most vulnerable groups: it reviews traffic regulations and the condition of traffic signs in the vicinity of kindergartens, schools and health facilities every year. In addition, Budapest is stepping up its cooperation with the authorities to enforce traffic rules.

[12] a forging environment - where the road and its surroundings are designed so that mistakes made do not necessarily cause an accident, and if an accident does occur, the consequences are minimised

The safety and security of the transport system is paramount and should never be compromised and the EU should remain a world leader in this field. Continuous efforts with international, national and local authorities, stakeholders, and citizens is key if we are to meet our goal of zero fatalities from mobility.(98 - Sustainable and smart mobility strategy COM (2020) 789 final)

1.1.5 ESTABLISH TRAFFIC CALMING AND RESTRICTED TRAFFIC ZONES

The integrated development of the road network will create a balanced and proportionate network that eliminates spatial disparities, reduces centralisation, controls and dampens vehicle traffic according to environmental conditions, and ensures smooth, undisturbed traffic flow and reduced congestion. In order to improve liveability and traffic safety, Budapest is extending a differentiated system of speed restrictions to the city's road network.

In particular, traffic calming measures will be introduced in public areas where the most vulnerable groups (elderly, sick, children) are more likely to be affected than average, for example in the vicinity of educational and health care institutions.

Budapest is striving to reduce through traffic in the Inner City Zone by creating the necessary conditions for this, even by banning through-traffic in certain critical sections and zones (e.g. banning through-traffic in the city centre, district centres and local residential areas). In the city centres, more space is being given to active modes of transport typical of a liveable city. In Budapest, the place of car parking is not public space, and the capital is the first to reduce public parking capacity in the inner city, introducing short-term public parking to meet customer needs, with pricing in line with supply and demand. In the area of mitigation and restriction, Budapest will also seek to differentiate regulation according to time periods (e.g. temporary or permanent restrictions) and to maximise territoriality (e.g. extending mitigation to temporary and outer districts).

1.1.6 1.1.6. PROTECTION OF LIFE AND PROPERTY, CRIME PREVENTION TOOLS AND FACILITIES

Budapest has a zero-tolerance policy against violence on public transport vehicles and at bus stops, and does not allow anyone to be afraid to walk on the streets because of poor public safety. Budapest is doing its utmost to make the capital not only liveable but also safe. In crime prevention, a distinction must be made between violent crimes affecting different social groups that require specific action (violence and robberies targeting vulnerable social groups such as the elderly, children, or sexual harassment, mostly affecting women), and the mobility manager works with law enforcement to combat them. Budapest is progressively improving the surveillance and security systems in public areas, on public transport and at mode-switching points by ensuring the continuous maintenance of CCTV cameras and the recording of the camera footage. This includes the installation of cameras in public areas with poor public safety indicators, at stops during line development and at lifts between underpasses and street-level stops. To improve public safety on public transport services, Budapest will also install security cameras at stations of the public bicycle-sharing system and at P+R car parks.

1.2 INTEGRATED NETWORK DEVELOPMENT

To build an accessible, comfortable, passenger-friendly transport network by creating smart urban connections, developing networks to reduce traffic imbalances, continuously improving public transport infrastructure and service quality, and standardising parking conditions.

Budapest manages and develops the city's transport network and hubs in a complex way, coordinating the needs of all transport modes. It aims to fill missing links in both public transport and the road network, with a strong emphasis on the missing links in the cycling network.

1.2.1 A COMPLEX APPROACH TO MODERNISING ELEMENTS OF THE EXISTING MOBILITY SYSTEM

In the preparation and planning of public space rehabilitation and revitalisation projects in the capital (including the reconstruction of affected roads, bridges and structures), Budapest aims to achieve comprehensive change by reviewing traffic patterns and needs in a complex approach, rather than by maintaining the traffic pattern and making refurbishments (e.g. replacement of road surface layer). This will involve reallocating public space in line with the needs of the times and reducing the impact of climate change, redesigning the entire cross-section where necessary, providing sufficient space for footpaths, roads, green spaces which are crucial for pedestrians, cycling and micromobility as well as for public transport. This will be done on the basis of a coherent approach, but modernisation will also require a regulatory environment and measures that keep pace with technological developments. Budapest will base the necessary transport safety interventions on traffic and accident data and, where necessary, build noise barriers and walls to reduce the environmental impact of traffic. In order to avoid the urban heat island effect, Budapest will seek to maximise the proportion of green spaces and trees in the development of existing and new transport surfaces.

Sections of the public transport network (trams, metro, HÉV suburban railways, heavy rail) that have not been upgraded so far are being upgraded by Budapest and the relevant ministry, with a special focus on safety and accessibility. The land-cutting effect of rail lines will be reduced by replacing level crossings, and infrastructure elements that have been previously upgraded will be gradually renewed on the basis of their life cycle. To ensure sustainability, it will put in place a continuous renewal funding scheme to maintain the condition of the lines. These investments will be made in an integrated approach, coordinated in timing and funding with the construction of new lines, the provision of platform accessibility and rolling stock procurement, with the ensuring of energy supply conditions and relevant regulations.

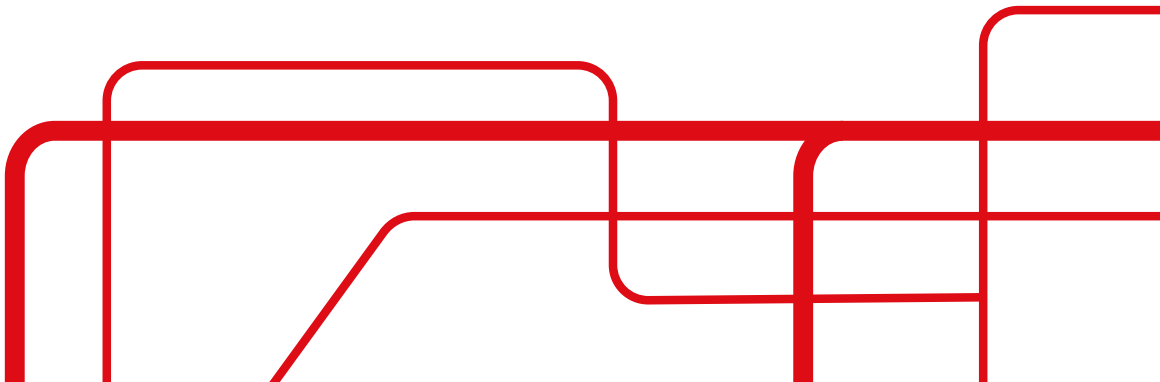
To reduce the daily use of private cars, Budapest is continuously and substantially prioritising public transport. Increasing use of public transport is encouraged through attractive services such as direct services, high-speed segregated tram tracks, bus corridors, bus lanes, traffic priority or the promotion of off-wire trolleybus operation taking advantage of the trolleybus network and infrastructure. It ensures safe conditions for active and micromobility by reviewing the traffic alignments of the Budapest road network, by reallocating road surfaces and by creating zones with calmed traffic.

1.2.2 MODE-SWITCHINGE SHIFT POINTS DESIGNED WITH A COMPLEX APPROACH

Budapest wants to ensure that transfers cause the least possible loss to public transport users in terms of space, time, cost and convenience. In parallel with the renewal and upgrading of the capital's fixed rail network, the creation of mode-switching points (in the neighbourhoods of Aquincum, Cinkota, Hűvösvölgy), P+R parking and B+R storage facilities in the outer districts of the city, which allow for a comfortable, safe and predictable change between individual (motorised and non-motorised) and public transport modes and access to the districts by public transport, will continue, primarily along the high-capacity fixed-rail public transport lines (metro, tram, HÉV suburban railways), mainly at the terminuses or

intermediate stops outside Hungária Ring Road, on the basis of individual studies. Existing institutional sites (sports facilities, shopping centres) with free capacity during working hours should also be examined to increase the number of P+R spaces. The interconnection points of the multi-level rail network should be upgraded to high quality intermodal hubs and the potential for interoperable connections should be explored. The possibility of installing accessible passenger toilets will be explored in the design and redevelopment of interchanges to improve public cleanliness and passenger comfort. Common corridors and route sections for parallel tram, bus and trolleybus lines will allow for shared platform transfers and traffic priority, while reducing the sector's road use. Where traffic and road cross-section conditions justify, Budapest will provide shared bus and bicycle lanes as part of its cycling infrastructure. At the intersections of the public transport trunklines and the main roads of the road network, it will provide short-term stopping sites (K+R, Kiss and Ride) where a car or non-public bus passengers can get on or off.

Urban bicycle use in general and the MOL Bubi public bicycle-sharing system in particular will be made more convenient with the installation of new bicycle racks and bike storage facilities, especially around shopping centres, institutions, schools and interchanges, both in urban and suburban areas. Active mobility will also be promoted by the installation of additional (micro)mobility points, where access to and safe storage of mobility equipment can be concentrated. Budapest will gradually establish a network of mobility points that can be developed both functionally and modularly, where additional functions related to passenger and freight transport will be available.



1.2.3 DIRECTLY CONNECTED PUBLIC TRANSPORT NETWORK

Some of the tram sections in the capital that were removed when the metro network was built in the 1970s and 1980s are to be replaced by the creation of missing links in the city centre's fixed-rail network. Budapest is implementing these connections in a multi-line, interlinked and then diverging system, giving priority to intersecting and overlapping lines, and designing terminuses accordingly. The new lines will be organised in a coherent system in cooperation with the existing metro network, taking into account in particular the traffic patterns (e.g. different stop allocation) and economic justification (e.g. if the transfer of passengers to the metro is uneconomic as a whole) of any surface rail links that may be developed in parallel with the metro. Improvements that restore the integrity of the city's rail network may be supported as long as they improve accessibility, contribute to the alleviation of road traffic on the main routes in the city centre, do not increase the congestion in the city centre and do not contribute to further centralisation of the city. Connecting the isolated elements of the tram network will allow for high quality, non-transfer services, and P+R parking and B+R storage at stations on the outer sections. The metro network in its current form does not reach all the outer districts and therefore needs to be extended towards the city limits, the elements of which will be determined by feasibility studies and economic calculations.

As well as restoring missing or previously dismantled network links, the public transport track network operating as a single system requires the development of some new links.

A coherent network of tracks will thus eliminate the current island operations and allow the development of branching and interweaving line groups that cover a large area, while providing an attractive service and sufficient capacity for passengers on a common section. This is also true for the elements of the heavy-rail network that can be integrated into urban traffic, in addition to the high-speed rail (metro-HÉV suburban railways) and tram networks.

Due to the lack of transversal lines bypassing the centre, many trips burden the radial routes and the city centre, even when the actual destination is not there. The development of transversal fixed-rail links can help to relieve traffic burden in the most congested neighbourhoods and intersections by improving the areal distribution of traffic. In addition to the above-mentioned tasks concerning the tramway network, the unused elements of the Budapest rail network (e.g. the circular railway) can be integrated into the fixed-rail links by means of modifications in line with the Budapest Agglomeration Rail Strategy, thus improving heavy-rail links to the capital.

The trolleybus network is also an excellent way to cover new direct routes, partly by expanding existing infrastructure as needed and partly by building on the potential of off-wire operation.

1.2.4 1.2.4 FILLING GAPS IN THE TRANSPORT NETWORK, CONNECTING CUT-OFF URBAN AREAS, DANUBE CROSSINGS

Although Budapest is supporting the development of road traffic reduction instead of the previous plans, which focused on the significant expansion of radial capacity and the handling of as much traffic as possible, the reasonable and more spatially balanced load of the road network, the replacement of unjustified burden on the residential-service road network, the creation of development opportunities in the transition zone, and the relief of congestion in the inner districts of the city also require the construction of new connections. In addition, the replacement of missing links in the transverse direction will relieve congestion on the internal road network and avoid congested district centres, which will then be free of transiting car traffic; this should be achieved in conjunction with an integrated development of public transport and the basic cycling network.

New Danube crossings are also needed to relieve traffic congestion in the inner parts of the city, to gradually remove through car traffic, to create new links between the outer district centres, to significantly reduce traffic congestion on Danube bridges and the associated road network. The construction of new Danube bridges and the development of the surrounding areas will create a more balanced, less centralised urban structure. The missing links in the transport structure of Budapest, such as the new Danube bridges planned between Csepel-Albertfalva (as a continuation of Galvani út in Buda) and Újpest-Aquincum, could also be the pillars of the city's circular transport links. If the necessary funds are available, the preparation of the investment of the missing road infrastructure elements can start. The construction of the missing smaller-size pedestrian and bicycle bridges crossing the Danube branches could significantly extend the recreational network of the Danube Zone (Óbuda Island, Molnár Island).

Where main roads with high daily traffic volumes and railway lines separated from urban public areas for life safety reasons, as well as road-rail level crossings, isolate the urban areas concerned during closures due to train passage, the separation effect of the high-traffic or closed lines can be overcome by building grade-separated crossings as part of individual infrastructure development projects.

Transit rail-freight traffic through the city ties up capacity on the affected railway lines and causes significant environmental pollution for people living along the line. It is in the City's interest to ensure that rail transit freight traffic is accommodated with the least disruption to the public and, where it cannot be avoided, that the environmental impact on the public is compensated. The possibility of diverting non-Budapest transit rail freight outside the administrative boundaries of the city should be explored, by means of a new bypass railway line ("V0") outside Budapest.

1.2.5 1.2.5 A COHERENT, SAFE AND COMFORTABLE URBAN CYCLING NETWORK

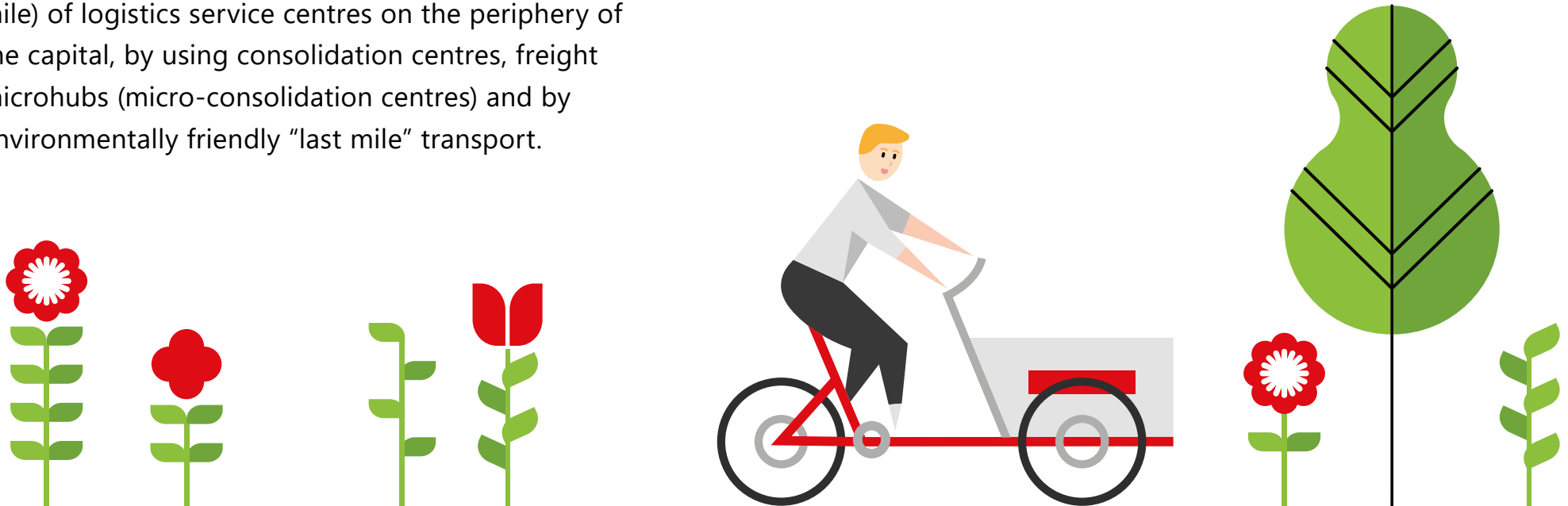
In recent years, the number of journeys made by bicycle in Budapest has grown dynamically, and cyclists have become a natural part of transport and of public spaces. The replacement of significant detours and safety hazards in main road lanes by appropriate routes will further promote cycling. To this end, Budapest is tackling the fragmentation of the main urban cycling network linking neighbourhoods and providing agglomeration and regional connections, as well as the shortcomings of sections that are in a poor state of repair, outdated, inconvenient, dangerous, and cause conflicts with pedestrian traffic and parking. The city connects the urban cycling network to the public transport network, including transfer points, and standardises the registry, management and maintenance of the main cycling network.

In order to eliminate existing disadvantages facing cycling, to make it safer, to connect parts of the network, and to continuously modernise and develop the network, Budapest takes into account the aspects of cycling in all public interventions, improves its situation and network connections. On routes not covered by other projects, specific interventions will improve cycling conditions. Enhancing the safety and comfort level of cyclists is essential to increase the uptake of cycling, for example among women, children and the elderly.

1.2.6 1.2.6 DEVELOPING AN INFRASTRUCTURE FOR A MODERN URBAN LOGISTICS SYSTEM

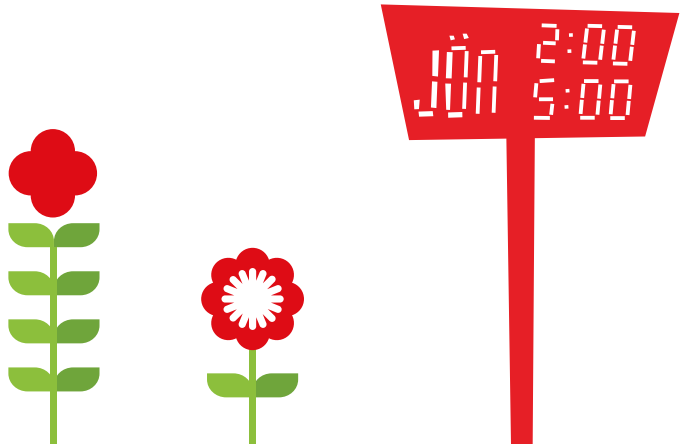
In order to ensure that freight-flows to and within Budapest are environmentally friendly, efficient and in the interest of the capital, the infrastructure conditions for sustainable freight transport and loading must be provided. The development of a modern city logistics system requires the use and provision of metropolitan and district areas for logistics purposes in the Transitional and Inner Zones (for the purpose of transhipment, consolidation and the creation of loading areas). The environmental and freight traffic pressure on the city can be reduced by improving the long-distance connections (long mile) of logistics service centres on the periphery of the capital, by using consolidation centres, freight microhubs (micro-consolidation centres) and by environmentally friendly “last mile” transport.

Part of the urban logistics system are the end points serving the retail trade, the designated loading points, whose lack of capacity due to increasing use, outdated signage and regulation are becoming a growing problem in the urban fabric. Budapest is paying particular attention to developing digital support systems for urban transport, optimising the use of designated loading areas in public spaces, especially for basic services, and measuring their utilisation. It will establish a predictable system of densely located and accessible loading bays to ensure well-planned city centre logistics, efficient and rapid loading and service of demand points.



With the growth of e-commerce and the rise of working from home, logistical needs have changed, with an increase in the volume of parcel and food home deliveries.

In order to meet the changing needs of public space use, Budapest is developing public spaces with changing functions over time (within a day, a given area can be used as a parking lot, loading area, taxi rank and short-stopping area for couriers and parcel carriers), which allow for better use of public spaces, dynamic servicing of logistical needs and facilitate orderly stopping and loading.) To support parcel transport, Budapest will develop an open and collaborative (integrating different service providers) network of parcel points in the capital at major public transport hubs, mobility points and P+R car parks.



1.3 EASILY INTEROPERABLE REGIONAL SYSTEMS, CONVENIENT MODE-SWITCHING POINTS

Developing convenient travel chains out of integrated transport networks by creating efficient mode-switching points, interoperable systems, passenger-centred development of intermodal transport links, creating conditions for safe travel, improving mode-switching (including access to shared mobility) and touristic links.

The majority of people on the go do not travel in a single mode: there is no such thing is as pedestrian, cyclist, bus rider, car or taxi user only, individuals combine or alternate between these modes, optimising their journey from origin to destination in space and time. They therefore travel in what is known as a travel chain, or by choosing different modes of transport from time to time. Budapest is reducing the number of transfers and providing modern, fast and safe mode-switching points for the convenience of users. Interoperability also requires the integration of timetables, tariffs and passenger communication between the transport modes and systems concerned.

1.3.1 PROMOTING THE URBAN INTEGRATION OF LONG-DISTANCE AND SUBURBAN TRANSPORT, MODERNISING INFRASTRUCTURE

While domestic heavy-rail traffic passes through the city, rail transport is not an integral part of the capital's public transport. The developments of the past decades have mainly affected suburban and long-distance sections, and the railway infrastructure within Budapest (tracks, power supply, signalling equipment, infrastructure, stations and stops) is extremely degraded and limited in capacity.
In addition to the remedial interventions, the traffic parameters of the railway lines need to be modified and new stops should be deployed to meet the traffic needs of the city and linked to the urban transport network. In order to reduce the number and improve the quality of transfers, a joint approach should be taken to the integration of suburban railway lines with urban fixed-rail and domestic rail lines. In order to ensure smooth journeys, an interoperable network will be created by linking the tracks of some fixed-rail modes, which currently operate separately: it is the vehicle, not the customer, that "transfers" from one line to another, reducing transfers and journey times, and making the travel experience more comfortable. In line with the principles of the Budapest Agglomeration Rail Strategy 2021, fully interoperable modes of transport will be developed along the major urban axes and along the permanent high passenger flows, following a common route.

1.3.2 1.3.2 IMPROVING TRANSFER AND INTERMODAL CONNECTIONS BETWEEN SUBURBAN AND URBAN TRANSPORT

When designing the public transport network, the aim is to reduce the number of transfers per trip. But transfers and mode changes cannot be eliminated completely, so Budapest is striving to create simple, fast, transparent, passenger-friendly intermodal hubs that provide convenient customer movement and subordinate other functions of the interchange to this. Budapest will therefore relocate the transport operational and terminal functions that can be provided elsewhere, and will develop the non-transport commercial and other urban functions in a way that does not disrupt passenger flows. The above

solutions differ from those of the larger intermodal hubs, where it is not possible to avoid many lines of several modes meeting at a single hub. Such nodes are mainly located at the intersection of suburban rail lines (heavy rail and HÉV suburban railways) and at the intersection of railways and urban public transport trunk lines (metro, tram and bus lines with backbone roles). In designing transfer hubs, Budapest takes into account passenger flow characteristics, reducing the number of transfers per passenger, increasing the number of connecting transfers points along with the comfort level of transfers, reducing walking distances and differences in height level. When designing and redeveloping transport hubs, the city will examine the possibility of installing accessible toilets to improve public cleanliness and passenger comfort. In the rail network, in line with technological developments, the number of stops should be increased by adding new stops or relocating existing ones as required, thereby improving the internal permeability of the rail network by improving the current terminal station system, providing additional services, using the transversal rail lines for passenger transport and creating as many lines as possible to avoid passenger transfers. Urban integration will also be enhanced if long-distance trains and buses also serve one or two intermediate urban hubs with high traffic volumes before the terminus.

For journeys from the outskirts of the city, starting with private or shared cars, it is advisable to provide a possibility for mode-switching as close to the point of departure as possible, with P+R parking facilities constructed near the suburban train stations in the agglomeration. For cyclists, B+R storage facilities should be provided at commuter rail stops, and micromobility points for micromobility equipment. Budapest will build high-capacity car parks on the urban congestion zone boundaries, organised on the urban fixed-rail network (mainly along the access motorways, main roads, Virágpiac, Káposztásmegyer, Újpalota, Marchegg bridge). However, it is much more efficient if the travel chain does not start with the car, or if it does, it is transferred to the fixed-rail lines in the agglomeration.

1.3.3 IMPROVING TRANSPORT LINKS BETWEEN THE CITY AND THE AGGLOMERATION, MODERNISATION OF LINES OUTSIDE THE CITY LIMITS

To reach the city centre and district centres from existing suburban lines without the inconvenience of transfers and time loss, the suburban fixed-rail networks need to be upgraded. This requires the reconstruction of existing HÉV suburban railway lines to provide urban rapid transit services, accessibility improvements and the provision of P+R car parks at several locations along the access roads, both inside and outside the administrative boundaries of Budapest.

The current infrastructure is not able to cope with the densification of stops and reduction of headways on the Budapest rail network, so in order to increase capacity, it is necessary to modernise traffic management; to build underpasses and other structures, to increase track capacity, to remove bottlenecks and to improve the associated track and signalling equipment and station/stop servicing facilities. The above interventions will allow for the desirable 10-15- minute peak-time headways (more frequent on the interweaving section) instead of the current 20-30 minute or less headway. In the long term, the railway system within Budapest should be made interoperable by revising the function of the terminus stations and reintegrating the railway operational areas that can be freed up into the urban space.

In suburban bus transport, the routing and timetable of services should be coordinated, where rational, with urban rail services to provide a feeder function. In the absence of fixed-rail lines, bus services should be separated from other road traffic wherever possible or organised on alternative routes that allow faster access.

1.3.4 DEVELOPING NATIONAL AND REGIONAL CYCLING LINKS

In addition to the development of the main urban cycling network, the agglomeration network also needs to be developed, as cycling is becoming increasingly important for commuting and tourism in Budapest: more and more people are cycling regularly into the city or making day trips around their homes; weekend tourism and the number of foreign tourists is also increasing noticeably. Intermodal hubs and their B+R storage facilities need to be created to provide convenient connections for cyclists, and additional pedestrian and cycling links need to be developed in the Danube Zone, as the islands and semi-natural riverbank strips along the Danube in northern Budapest and along the Danube's Ráckeve Branch are difficult to access and their green space potential is not being exploited.

1.3.5 DEVELOPING THE WATERBORNE TRANSPORT NETWORK AND ITS SERVICE INFRASTRUCTURE

The Danube is underused as a transport option for public transport. The river currently has a triple waterway function: it is heavily used for international river-cruise and local sightseeing boat traffic, but lacks commuter traffic use. In order to compensate for this, Budapest will, subject to the availability of the necessary resources, establish new piers, both inside and outside the administrative boundaries of the capital, served by scheduled services, and create conditions for regional navigation and waterborne public transport. Land use will be reviewed and proportioned to the triple function, and space will be created for the waterborne operation of certain city logistics functions.

Scheduled public riverboat services can play a role in crossing the Danube and in short-distance journeys, mainly as a substitute for a bridge or a transversal public transport link.

For transport requiring fast navigation, Budapest is exploring the creation of ports that can accommodate rapid passenger transfers at any water level, with riverbank facilities located in easily accessible locations, close to public transport stops and quality intermodal facilities. Where new inner-city ports are built, they will be coordinated with public space developments, improving pedestrian access. The development of waterborne transport will be accompanied by improved access by boat to tourist attractions linked to the Danube, by creating better cooperation between commuter and touristic navigation. A proposal for a system to accommodate Danube cruise ships (pedestrian-only access in the city centre, remote bus parking and passenger boarding-exiting process, additional services), which minimises road traffic in the city centre, will be drawn up on the basis of a complex study.

1.3.6 IMPROVING ACCESS TO BUDAPEST LISZT FERENC INTERNATIONAL AIRPORT

Given the scale of the passenger and freight ground handling traffic at Budapest Liszt Ferenc International Airport, it is not economical to provide a separate urban rail link to the airport, but it is possible to use the existing heavy-rail network. The only effective way to serve the airport by rail is to have a station integrated into the long-distance and suburban rail network. Direct access from many parts of the country is an essential aspect of improving airport connectivity. The optimum solution is a route that is linked to a national rail trunk line and that can serve as a branch of the high-speed rail network in the long term. The development of an integrated suburban rail network from the city and the west of the country can also provide good access to the airport. Until the fixed-rail link is established, the urban bus service linking the airport to the city centre will need to be continuously upgraded.

The airport is now not easily accessible from the city by road, because the segregated roadway and height restrictions are a source of many road conflicts. The road access will be facilitated by the joint arrangement of the segregated access road and the bordering Gyömrői út, the reconstruction of the junctions, the provision of dense access and exit facilities, and the removal of the height restriction. The road to the airport will thus be able to fulfil its original function, while becoming a safer, higher-capacity urban artery serving the affected neighbourhoods and providing attractive urban development opportunities.

2 ATTRACTIVE VEHICLES

2.1 ADVANCED, LOCALLY ZERO-EMISSION VEHICLES

Budapest's renewable public transport fleet contributes to cleaner air in the city by developing a climate-neutral public transport fleet, increasing the energy efficiency of the fleet, promoting climate-friendly vehicle technology and reliable maintenance.

New technologies in vehicle development and traffic control will play a key role in reducing greenhouse gas emissions. Improving the energy efficiency performance of vehicles, supporting the introduction of sustainably produced fuels, electric and other new zero-emission propulsion systems will reduce transport emissions. Budapest will encourage innovative, environmentally friendly developments in both public transport and private transport fleets.

2.1.1 IMPROVING THE PUBLIC TRANSPORT FLEET, PROCURING LOCALLY ZERO-EMISSION VEHICLES

In surface public transport, despite the improving trend, there is still a significant proportion of old, obsolete and polluting vehicles: 27% of buses, 71% of trams and 52% of trolleybuses are outdated. Metro vehicles are modern, except for the Millennium Underground (metro line M1). Suburban transport is characterised by a high number of motorised trains that have reached the end of their useful life (HÉV suburban railways). The tram sector is characterised by an increasing number of ageing vehicles, while the average age of the bus fleet is also high and the share of environmentally friendly propulsion modes is low.

From an environmental point of view, the most urgent action is in the bus sector, where Budapest is phasing out outdated polluting vehicles with a EURO 5 or lower rating and replacing them with non-polluting vehicles. The aim is also to develop a fleet of comfortable, low-floor, modern and reliable vehicles with alternative propulsion, energy-efficient and environmentally friendly types, taking into account the ever-changing

needs of passengers (e.g. e-chargers). In the context of fleet renewal, Budapest will phase out outdated buses older than 15 years by 2026. Under the EU's Climate Neutral Europe Directive, diesel vehicles must be phased out from transport completely by 2050.

Diesel buses can be replaced by electric buses or trolleybuses, as required by the EU's Clean Vehicles Directive. Increasing the share of trolleybuses with off-wire capability will allow more flexibility in service configuration, and the existing trolleybus infrastructure will also provide a platform for the installation and expansion of electric bus operations. Technological progress could blur the boundaries between the different sub-sectors that still exist today, i.e. bus and trolleybus operations could in the longer term evolve into an optimised mode of operation, with some vehicles using overhead wires at terminuses and on busy sections, and off-wire mode on branch sections. Budapest is developing its rolling stock strategy for the coming years along these lines.

Due to the high average age of the current fleet and the low proportion of low-floor vehicles on the high-capacity rail network, it is essential to rejuvenate the tram and HÉV suburban railway fleet and to renew it continuously and at regular intervals. This will ensure that adequate service levels are maintained and improved, and energy efficiency is increased with vehicles that have energy recuperation capability.
The tram fleet will be 75% low-floor by 2040. A further objective is to replace the outdated fleet of the Millennium Underground (M1 metro) with modern new vehicles adapted to specific operating conditions. By promoting environmentally friendly modes of transport, Budapest is also aiming to procure a fleet of vehicles with sufficient capacity for passengers switching from car to public transport. In the case of motorised trains, which are becoming the dominant mode of interoperability in commuter rail transport, the purchase of more multi-voltage electric vehicles is necessary.

In order to ensure that waterborne transport also plays an appropriate role in urban and suburban public transport, Budapest will, subject to the availability of the necessary funds, modernise its waterborne fleet by acquiring a new fleet of high-quality vessels with a modern propulsion system, capable of adapting flexibly to weather and water conditions, offering higher speeds, fast mooring and manoeuvring, and providing the level of comfort expected in public transport for decades to come.

For all other service providers (suburban bus, rail, airport link) operating in the Budapest area, a gradual replacement of vehicles is required, taking into account the relevant directives. Budapest shall also introduce a regulation favouring environmentally friendly modes for taxis operating on the capital's roads, as described in section 2.1.3.

2.1.2 MODERNISATION OF FLEET MAINTENANCE BACKGROUND AND DEPOT UPGRADES

Modernisation and upgrading of the transport fleet and equipment also includes the operation of new, higher-technology vehicles with specific technological requirements, sometimes linked to advanced propulsion systems, and the modernisation of vehicle depots to make them more energy-efficient, and to allow innovative vehicle development. In connection with network extension projects, Budapest will review the location and longer-term role of depots. The expansion of the tram network and the procurement of modern vehicles requiring new technology will also require the construction of new tram depots, which will allow the number of depots to be rationalised. Budapest will design site developments with a view to economies of scale and will build new depots in line with urban planning.

2.1.3 PROMOTING CLIMATE-CONSCIOUS RENEWAL OF THE CAPITAL'S NON-PUBLIC TRANSPORT VEHICLE FLEET

To reduce air pollution in Budapest, in addition to public transport vehicles, company fleets, goods vehicles, taxis and private cars should also be replaced by environmentally friendly vehicles.

With the environmental classification bans, support for the use of environmentally friendly alternative propulsion vehicles (electric, hydrogen and hybrid technologies, human-powered vehicles, cargo bicycles) will be progressively emphasised. As part of this support, Budapest will build the infrastructure needed to charge the alternative fleet, together with the expansion of the energy network capacity, and will establish regulations for their use (driving, storage, parking, fuel purchase) and encourage the eco-friendly modification of public service vehicles and company fleets. As regards the technical standard of taxis, the aim is to promote the use of environmentally friendly alternative propulsion vehicles (electric, hydrogen, hybrid and CNG technologies) and to increase their share, to promote e-taxi services through incentives, tax and other benefits and to install integrated electric charging stations at as many taxi stations as possible. Budapest will also encourage the climate-conscious renewal of the non-public transport fleet as described in section 4.1.2.

2.2 CUSTOMER-FRIENDLY VEHICLE DEVELOPMENTS

Convenient, barrier-free travel with new public transport vehicles, renewing the fleet with accessibility features, making it suitable for transporting bicycles and using digital tools to support active travel.

The measures under the operational objective will improve accessibility, increase the reliability of services and increase the proportion of accessible vehicles. When renewing the fixed-rail fleet in the future, Budapest will take into account plans and ideas for interoperability, preventing vehicles from becoming a barrier to the development of network integration for decades to come.

2.2.1 DEVELOPING AN ACCESSIBLE PUBLIC TRANSPORT FLEET

Despite significant recent improvements, much of the capital's transport system is still not barrier-free. The problem is most acute on the tram, high-capacity HÉV suburban railway and commuter train networks, where upgrades are underway, while the trolleybus network is still not resolved. Through continued procurement and investment, Budapest aims to achieve a 50% accessibility rate for tram and 100% for trolleybus services by 2030.

In the framework of accessibility, Budapest gives priority to the procurement of vehicles that can safely transport the widest possible range of baby carriages and wheelchairs. The vehicles will be able to identify themselves, their route number and their stop position audibly to visually impaired passengers.

2.2.2 2.2.2 OPERATING AND DEVELOPING A PUBLIC BICYCLE-SHARING SYSTEM, EXPANDING CYCLING SERVICES

The MOL Bubi public bike scheme, launched in 2014, was renewed in 2021. Its development has two directions: expanding the bicycle-sharing system to meet growing demand and increase territorial coverage, and developing it with new technologies, including alternative propulsion systems. Based on operational experience, Budapest is continuously expanding and extending the public bike-sharing system in the capital.

To encourage everyday cycling, Budapest provides bicycle storage facilities for daily use in all residential zones of the capital. In city centres and district centres, in institutional, service and work areas, and near the entrances to public institutions and other traffic-attracting facilities, bicycle storage facilities and other micromobility points will be provided (see Section 3.2.2).

2.2.3 MAKING PUBLIC TRANSPORT VEHICLES SUITABLE FOR TRANSPORTING BICYCLES

Budapest provides the possibility to transport bicycles on public transport vehicles. It will create the conditions for reliable bicycle transport combined with public transport throughout the whole territory of the capital, starting with the possibility of taking bicycles on board in less busy periods and/or on lines with suitable vehicles, with particular attention to touristic and recreational lines. The measure may be extended at a later stage depending on the usage level of the system. In addition to the gradual adaptation of the existing fleet and the expansion and upgrading of their capacity to carry bikes on board, new bus, tram, trolleybus and metro acquisitions will also be considered to ensure that bicycles can be accommodated on them. At stops served by bicycle-friendly lines, Budapest will ensure that the stops and platforms are accessible for cyclists.

3 CUSTOMER EXPERIENCE-ENHANCING SERVICES

3.1 SHAPING TRANSPORT CULTURE AND HABITS

Ensuring a cultured, clean transport environment and promoting informed mode choice and changes in mobility habits through up-to-date information and customer-oriented communication.

Budapest aims to ensure that the city is liveable , and taking care of the present, the past and the future is key to this endeavour. To achieve a sustainable balance of transport modes, Budapest provides services to help transport users find the optimal transport solutions for their daily journeys. The liveability of the city depends on the organised implementation of travel needs (public transport, carpooling) and the use of environmentally friendly means. Thoughtful travel planning (e.g. combining travel goals and motivations) and informed mode choice are key aspects of mindset formation. As part of its transport culture, Budapest considers it important to promote public health and cleanliness, preserve transport assets and protect our heritage.

3.1.1 ENCOURAGING A CHANGE OF ATTITUDE AND CONSCIOUS MOBILITY, COMMUNICATION

Budapest helps road users to become aware citizens of a liveable and green city through information, continuous awareness-raising campaigns and active communication activities, with an emphasis on setting an example and raising awareness of the individual and social benefits at a social and individual level. In the face of increasing climate risks and rising energy prices, Budapest offers solutions and alternatives for travellers to not only save money but also reduce transport pollution, combining individual and social benefits (carsharing, carpooling, active modes, public transport). In its communication, information is conveyed in an easy-to-understand way through multiple channels, with the possibility of providing feedback. It will organise special campaigns for specific days of the year dedicated to transport, based around the themes of partnership, listening to each other and safe transport. Budapest listens to all road users, exploring different transport habits, for example by age, gender or other social characteristics, to deliver targeted messages and attitudinal change, offering

personalised solutions. It organises awareness-raising events for both drivers and passengers to draw attention to customers in need of assistance (e.g. large families, cyclists, customers using wheelchairs, people with dogs or other pets). Encourage and support the development of workplace mobility plans and support their implementation to promote the sustainability of the significant level of commuter transport. Workplace mobility plan measures alone are not expected to reduce car use and should be complemented by measures to limit car use in the workplace.

The Vision Zero fatality target cannot be achieved through infrastructure measures and regulation alone. Budapest will continue to strive to keep its infrastructure well maintained, but to reduce the number and severity of accidents, it also needs the partnership of individuals. This can be done through targeted campaigns, training at local and national level and effective controls to raise the level of road safety culture, in addition to providing adequate infrastructure.

Mobility patterns and consumer behaviour are changing. These changes are being reinforced by the COVID-19 pandemic and are being largely facilitated by digital solutions. Teleworking, video-conferencing, electronic commerce, the uptake of shared and collaborative mobility services, all contribute to the ongoing transformation of mobility. (30 - Sustainable and smart mobility strategy COM (2020) 789 final)

3.1.2 PUBLIC SAFETY, PUBLIC HEALTH AND SANITATION IN URBAN TRANSPORT

Budapest has a zero-tolerance policy towards atrocities against its passengers and staff. It will identify statistically dangerous conditions and improve the infrastructure (e.g. street lighting, surveillance camera system, emergency communication devices, increased police or security patrols, repurposing of unused real estate, etc.) in places (stops and vehicles) where public safety is considered to be at risk.

In order to improve public safety, the transport organiser shall cooperate with the relevant public authorities to prevent atrocities, verbal or physical harassment and violence against customers during their journeys. The aim is to ensure that neither its staff nor its customers are subjected to assault, violence or offences against their dignity. Everything the mobility manager does is done with special attention to the most vulnerable and disadvantaged groups.

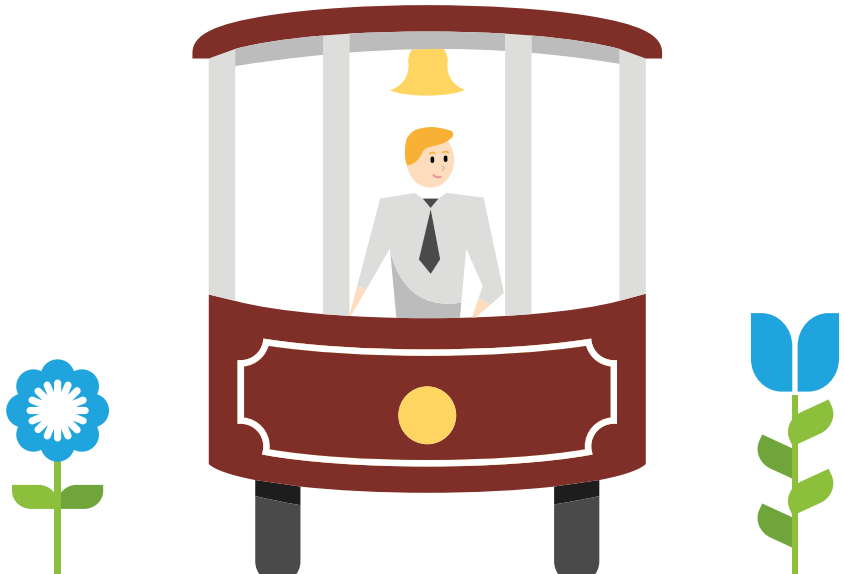
Budapest ensures the environmental hygiene and public safety of transport systems at a level that allows everyone to reach their destinations in a healthy and cultural environment.

It also encourages people living in and visiting the capital to use public transport by improving hygiene conditions in partnership with users, as well as modernising vehicles and routes. Respect for travel terms and conditions is also a firm requirement, in addition to - and partly in the interests of - the basic principle of public transport for all. Failure to do so is detrimental to the legitimate interests of other passengers and discourages customers from using public transport. Transport service providers therefore expect and monitor compliance with the conditions of travel.

The Municipality of Budapest pays increased attention to the cleanliness of public spaces, including busy transport hubs, local public transport vehicles and traffic surfaces.

3.1.3 PROTECTING OUR TRANSPORT HERITAGE

Budapest's transport history is marked by numerous world-class innovations that have shaped the capital's identity, and Budapest is expanding access to the preserved legacy that we must collectively protect. By renovating and preserving, and where possible occasionally displaying, all those vehicles and facilities that are no longer available to travellers on a daily basis, Budapest is helping to raise the transport awareness of the younger generations.
It also takes care to maintain with due diligence the equipment that is still in use.



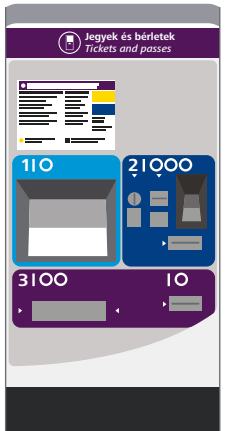
3.2 INTEGRATED MOBILITY SERVICES

Advanced solutions and services will increase customer satisfaction by exploiting the potential of digitalisation, smart systems, flexible services, including facilitating the sustainable operation of urban freight transport and supporting the use of micromobility devices.

Seamless multimodality enabled by digital solutions is vital in urban and sub-urban areas. Increasing pressure on passenger transport systems has boosted demand for new and innovative solutions, with various transport services being integrated into a service accessible on demand, following the Mobility as a Service (MaaS) concept. (36 - Sustainable and smart mobility strategy COM (2020) 789 final)

The aim of the measure is to put the interests of users first and improve the quality of the single service provided to them. Service objectives must take precedence over operational considerations. Smart and digital solutions make public transport more attractive and improve the conditions for using different modes of transport through integration. The introduction of affordable, integrated, accessible and passenger-friendly solutions, independent of the organiser and the service provider, is particularly important in the current climate and economic challenges.

With the expansion of modern IT services, the mobility choice becomes transparent, the travel chain can be well planned, and individual needs can be flexibly managed. The Municipality of Budapest strives to ensure the interconnectivity and cooperation of ITS systems, smart solutions and transport-related applications, and to prepare for the use of the communication links and IT cooperation enabled by C-ITS.



3.2.1 DIGITALISATION AND THE USE OF MODERN TECHNOLOGIES IN TRANSPORT MANAGEMENT

The development of information technology opens up new possibilities for the organisation of transport. Demand-driven public transport services and Mobility as a Service (MaaS), which put the customer's needs and interests first, require the use of advanced IT systems, IoT technology and the potential of C-ITS. Advanced digital technology is already available to most users through smart devices, with a wide range of applications to support their daily journeys. Solutions that address all transport user groups (e.g. shared journey planning) are needed to provide a more attractive mobility offer. Rapid technological change, including advances in self-driving vehicles, artificial intelligence and their implications for urban transport, need to be continuously monitored. As these technologies mature for everyday use, Budapest will develop the infrastructure requirements and regulation for self-driving vehicles.

The creation of BudapestGO has made journey planning and ticket purchasing more convenient, time-based ticketing has become available, and with the development and expansion of the system, shared mobility, taxi services, parking and even city logistics services will become available in addition to public transport services. In Budapest, the current paper-based technology will be replaced by contactless digital solutions, with a wide range of sales channels (internet, apps, bank cards, ticket machines), in order to meet the needs of the customer. The effective interplay of these digital channels will ensure the conditions for the implementation of a modern electronic ticketing system.

In addition to the digital ticketing system, Budapest is also focusing on increasing travel efficiency. The state-of-the-art traffic management system ensures that transfer connections are made in the event of delays, while efficiently managing traffic disruptions and providing real-time information on the current

traffic situation to the Mobility Information System. In the event of disruption, it informs the passengers concerned of the situation, the measures to be taken to remedy the problem and the possibilities to avoid the disrupted section, optimising the use of the space and time of the road areas shared with private transport. The use of traffic-sensitive control solutions will ensure that public transport is prioritised in a timely, flexible manner, minimising losses and providing a predictable and reliable service for passengers, while helping to optimise the utilisation of the existing fleet. Real-time information for route choice, traffic management through variable message signs, parking management, coordinated demand-driven traffic management, unified recordkeeping, the databank, and extensive use of operator databases all contribute to predictable and efficient traffic management.

The European Union's standardisation policy aims to promote open data, Intelligent Transport Systems ("ITS") and multimodal route planning.

BKK processes, aggregates and analyses the transport and mobility data generated by the various data collection methods and makes it publicly available in different formats. The integrated collection, management and analysis of large amounts of urban transport data, the continuous monitoring of transport infrastructure and services, and a better understanding of the needs of users will allow the development and operation of a more reliable, safer, greener and more efficient transport system than today. The development of information technology in urban transport management will also enable the provision of a range of modern, integrated services: unified internet and Wi-Fi services, Bluetooth-based on-board passenger counting, intelligent traffic management, data-based optimisation of traffic light programmes, integrated sales channels, traffic monitoring, data-based congestion forecasting and congestion analysis, incident detection and management, more efficient control, integrated and dynamic traffic information, traffic calming and control-based protection

of inner city areas, dynamic parking and traffic management. The electronic ticketing system will supply up-to-date usage data based on the analysis of transactions, which will provide information to improve the quantity and quality of service, and make targeted marketing activities for specific user groups possible.

> Digitalisation will become an indispensable driver for the modernisation of the entire system, making it seamless and more efficient. Europe also needs to use digitalisation and automation to further increase the levels of safety, security, reliability, and comfort, thereby maintaining the EU's leadership in transport equipment manufacturing and services and improving our global competitiveness through efficient and resilient logistics chains.
> (7 - Sustainable and smart mobility strategy COM (2020) 789 final)

3.2.2 DEVELOPING SHARED MOBILITY SERVICES

In Budapest, car-sharing schemes aimed at increasing car occupancy are helping to alleviate congestion in inner-city areas, congestion in public spaces and the resulting environmental consequences. In carsharing, the same amount of vehicle use is matched by fewer vehicles, i.e. less parking demand, so less use of public space is needed, while users can satisfy their mobility needs more cheaply. Car-pooling and car rental are also forms of car- sharing. .

In addition to car-sharing, several other means of transport services are available in the capital, including shared micromobility services (scooters, mopeds, etc.). An important element of shared services is the MOL Bubi public bicycle system operated by the city. In Budapest, the vast majority of shared services are organised on a market basis. The Municipality of Budapest is working on the physical and digital interconnection of the different systems: mobility points are being developed to provide integrated mobility for an increasing number of actors in a regulated environment.

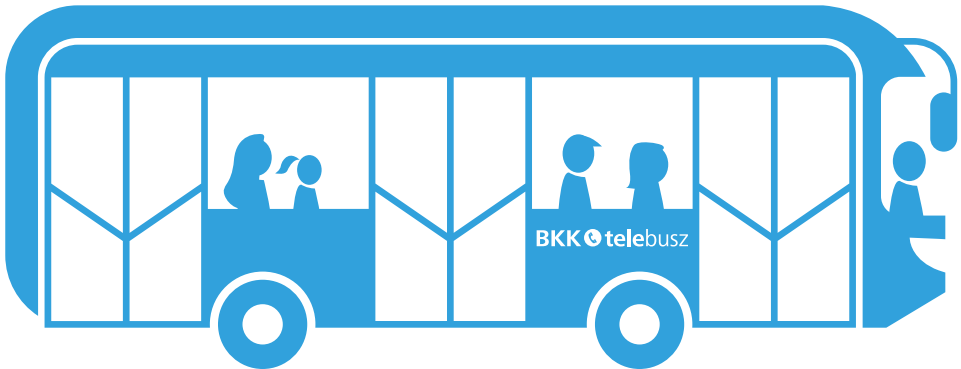
The national legislation currently deals with only one segment of shared services, the development of rules for an integrated public car rental system, with the framework completed in 2022. In the short term, Budapest will create the adequate regulatory framework, harmonised with other aspects of urban development, and in the long term, it will organise shared services into a single mobility offer - under the Mobility as a Service (MaaS) framework.

3.2.3 EXPANDING DEMAND-DRIVEN PASSENGER TRANSPORT SERVICES

Not all urban transport needs can be served by scheduled services (for example in areas with low population density or during off-peak periods).

In such cases, the alternative to private motorised transport is public demand-driven passenger transport, where the service is operated only when and where it is needed. In this way, existing lines are not overloaded with vehicles during periods of low traffic, and demand-responsive services reach smaller suburban residential communities by complementing and extending the core network. In the capital, the review and extension of the demand-driven services already in operation is ongoing and is being carried out according to a programme. On-demand services are a conscious and forward-looking approach to both service optimisation and service development.

The Commission will look into ways to ensure that passenger transport-on-demand (taxis and private hire vehicles) can become more sustainable and deliver efficient services to citizens while maintaining a smoothly functioning single market and addressing social and safety concerns.(38 - Sustainable and smart mobility strategy COM (2020) 789 final)



3.2.4 DEVELOPING STANDARDISED TAXI SERVICES IN BUDAPEST

According to the registration data, on 1 January 2023, the number of vehicles eligible for the passenger taxi service in Budapest is almost 5,500. The majority of taxi drivers are contracted partners of one of the 11 taxi companies in Budapest, but almost 10% of taxi drivers are independent "freelance" operators. The appearance of taxis is uniform and their fares are the official price.

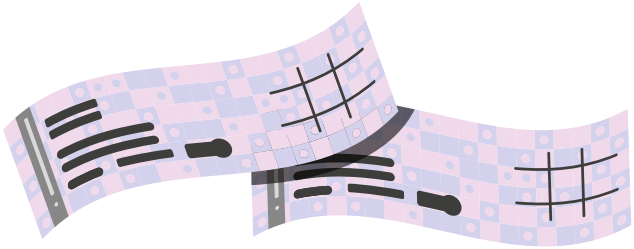
The amendment to Government Decree 176/2015 (VII. 7.) on Taxi Services, in force from 3 November 2022, allows the mobility manager of the local authority to organise taxi services in connection with the public transport service (e.g. the inclusion of independent operators in the demand-driven service). This intermediation activity of the mobility manager is not considered as dispatching service activity.

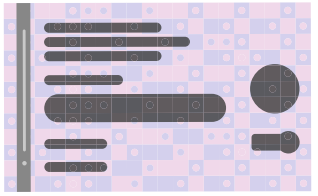
By making use of the legal opportunity created by the Government Decree, BKK, as the mobility manager of Budapest, has been given the means to reconcile the objectives of the city and its residents (reducing environmental pollution, avoiding congestion, complementing public transport), the interests of potential passengers (avoiding excessive waiting times, reasonable prices, availability of vehicles for passengers with reduced mobility and guide dogs) and the interests of operators (profitable operation, predictability). International studies have shown that the above aspects can be optimised by adjusting the average number of services per hour and a healthy supply-demand balance. In addition, Budapest will create the possibility to order taxis in the BudapestGo app. Requirements for the greening of taxi vehicles are set out in section 2.1.3.

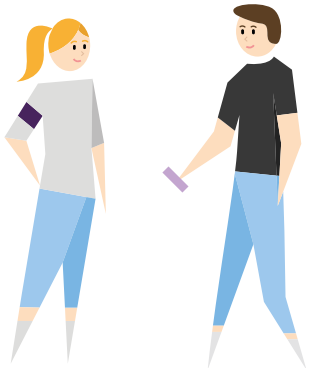
3.2.5 DEVELOPING MOBILITY CUSTOMER RELATIONSHIPS

In Budapest, for decades, transport users were treated as passengers, with transport management focused on getting passengers around the city. In recent years, with the creation of BKK, the capital has made great efforts to provide transport users with information, improved services and attractive public transport by treating them as customers. Further enhancement of the customer experience is ensured by establishing, maintaining and developing partnerships with customers.

Online administration is playing an increasingly important role in customer service, as the majority of customers now communicate with their transport organiser and service provider by e-mail or via an online feedback interface. More and more customers who prefer a personalised service are opting for multifunctional customer service centres that are more suited to today's needs, where they can manage other customer service issues at the same time as buying tickets and passes, rather than the lower-functionality, sales-only ticket offices. The rationalisation of the personal sales network, induced by the change in sales channels and essential for a more cost-efficient operation of the transport institutional system, will focus on multifunctional in-person service points that are better adapted to future expectations in the longer term. Budapest will give special attention to the needs of people with disabilities (people with reduced mobility, visually impaired, hearing impaired, other disabilities) in the design of its customer service points. The proliferation of online services has also changed customer expectations in terms of customer service, and BKK will therefore, in addition to organisational and process development measures, continuously improve online customer service channels to speed up response times and to provide more functions







and processes online, depending on the type of cases and the possibilities available.

The Freight Traffic Online Information (TOBI) System provides a one-stop shop for requesting freight-traffic and protected-zone access permits in Budapest. Budapest is committed to further developing the TOBI system, including an online information interface for access restrictions with an interactive address search with a map interface, integrating information on available designated loading points in Budapest and later real-time occupancy data. Pending the implementation of the improvements, the process of applying for the access permits can be further accelerated and simplified by extending partial automation mechanisms and issuing individual permits. Through the integration with the national toll system, national and Budapest routing and payment of tolls could be requested and managed in one integrated system, creating a true one-stop shop for countrywide freight transport.

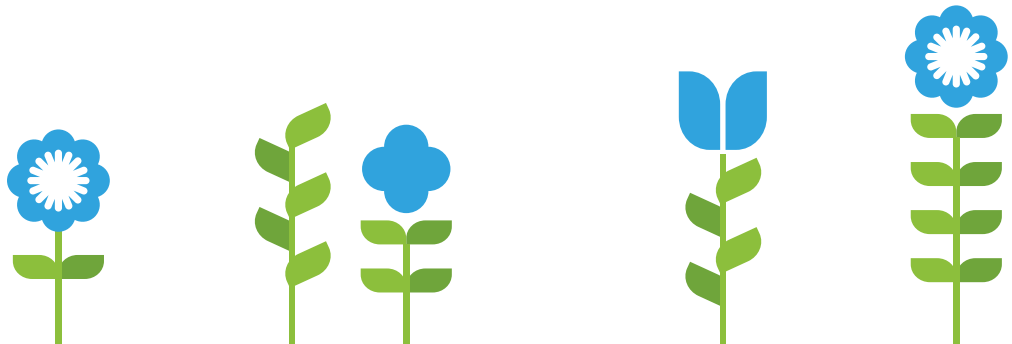
3.2.6 PUBLIC PARTICIPATION IN MOBILITY PLANNING, PROJECT IMPLEMENTATION AND OPERATION

By involving its citizens and using the tools of community participation, Budapest ensures that everyone has a say in setting the objectives and actions that affect their neighbourhood. In this way, all the activities of the capital's transport system that can bring about tangible change for its citizens are also implemented using the tools of social participation. The opportunity for everyone to have their say will lead to better customer service, transparency, building trust, better decision-making through the assessment of risks and needs, increased commitment, acceptance of planned interventions and a higher level of awareness.

To ensure participation, Budapest conducts surveys, regular forums with interest groups, professional and civil society organisations, and professional dialogue. Cooperation with professional and civil society organisations includes support for common causes (such as promoting the resumption of stalled investments) or lobbying for the financing of potential development ideas. A more actively involved population in public affairs is developing a sense of ownership, which also facilitates maintenance tasks. The participatory process is accompanied by mutual learning and attitude formation, which in the longer term helps to achieve urban and transport development objectives.

3.2.7 DEVELOPMENT OF DIRECT LOGISTICS SERVICES PROVIDED BY THE CAPITAL

Budapest, also sees its urban freight transport stakeholders as partners, just like those of the passenger transport sector, for direct business and residential logistics services. The expansion and development of the range of logistics services provided by the capital city is necessary to ensure that logistics operators carry out their activities in the interests of the capital city, and it should also be in their business interest to cooperate and follow the rules.



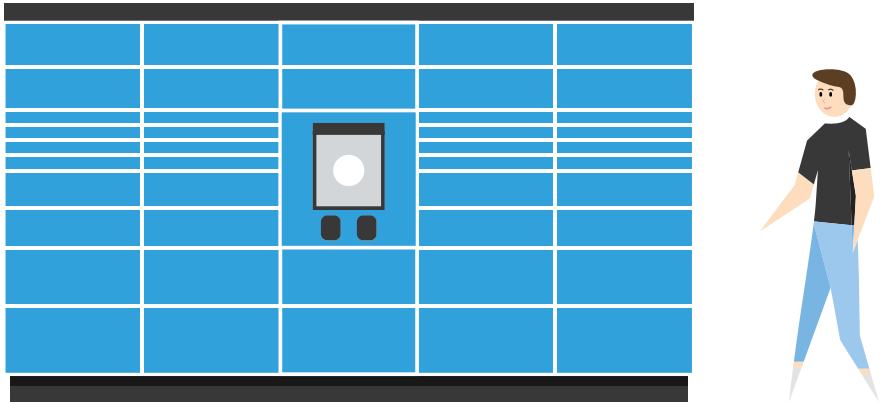
The capital city should cooperate with regional and urban logistics service providers to establish consolidation centres and coordinate their operations (competitive tendering, regulation).

The establishment and effective control of orderly public space use is necessary to create an well-organised streetscape, to ensure city logistics activities (public space regulation, kerb management, loading space use control, unauthorised occupation and parking management, maintenance of a highly visible road signage system, etc.), which also means savings for logistics participants (tidy working conditions, fewer conflict situations, less turnover of staff, fewer kilometres travelled, etc.).

By introducing an online static information system for the designated loading bays, followed by an IT system supporting dynamic information and usage (loading bay map database, occupancy information, trip planning based on current traffic, advance reservation, application of usage fees depending on occupancy level, etc.), Budapest provides a service that helps to organise and manage transport efficiently.

The development of the online issuance of access permits (the TOBI system is explained in more detail in section 3.2.5) will help to manage vehicles exceeding the limit in the city by providing route guidance, while tightening up controls (reinstating fixed and mobile camera systems, setting up control teams) will create a level playing field for urban long-distance transport.

Public and social acceptance is key for a successful transition, which is why European values, ethical standards, equality, data protection and privacy rules, among others, will be fully respected and at the heart of these efforts, and cybersecurity will be treated with high priority. (55 - Sustainable and smart mobility strategy COM (2020) 789 final)



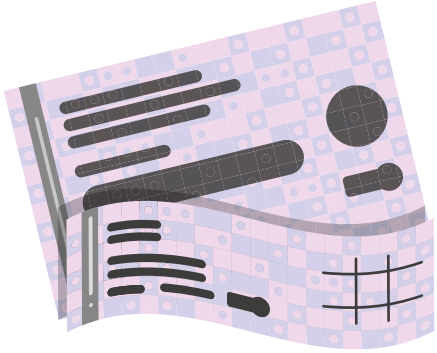
3.3 HARMONISED URBAN CITY-REGION SERVICES

Standardised passenger information services, integrated timetables harmonised between operators, a common uniform tariff system serving the city and the agglomeration.

The growing number of commuters from the agglomeration to the capital requires that transport services be harmonised and standardised not only within the city, but also between the city and the city-region. While road traffic is almost unaware that it has crossed the city border, in public transport the city border is often a marked boundary where several systems meet. A harmonised timetable and fare system, a common fare structure, standardised passenger information services and harmonised services are needed to ensure that public transport journeys across the city border are seamless, encouraging modal shift and contributing to the liveability of the region.

3.3.1 INTEGRATED FARE POLICY AND INTEROPERABLE FARE SYSTEMS

Today, isolated transport services operate the links between Budapest and its city-region, and so far, only individual and locally different solutions have been developed for their interoperable use. The basis for an integrated transport system is close cooperation between the city-region's ordering authority, transport organiser and service providers. An integrated, easily transparent system of fares across the whole metropolitan and suburban transport system, encouraging sustainable mode choice for all mobility groups, is needed to enable active and public transport modes to compete with individual private transport. Interoperability between fare systems and the creation of a regional integrated fare policy will make it smoother and more financially attractive for customers to use coordinated services from different operators.



3.3.2 INTEGRATED DIGITAL SALES SYSTEM IN THE CITY-REGION

The attractiveness and competitiveness of public transport also depends on easy access to mobility services, an integrated distribution system and a variety of available sales channels. Budapest will develop existing, but locally unique solutions into a coherent system, in partnership with relevant customers, operators and service providers, taking into account the most cost-effective and passenger-attractive solutions available, based on state-of-the-art technology.

3.3.3 STANDARDISED INFORMATION PROVISION AND MOBILITY INFORMATION SERVICES FOR ALL

Budapest is committed to providing information to all road users, including those who do not use public transport in and around the city. The high level of service provided by the transport services in the capital and its city-region includes the provision of continuous information to customers, prospective customers and partners, and real-time updates on individual, shared and public transport options. Budapest integrates transport modes and service providers so that the travel information system provides real-time, up-to-the-minute traffic information at key mode-switching hubs in the city and via online interfaces accessible through mobile devices. This will enable transport users to transform from vulnerable passengers to conscious travellers and from customers to partners. Personalised online and interactive on-the-spot information on modern communication tools will help them to make informed travel decisions. Instead of isolated information systems, Budapest supports solutions that provide freely shared information, in line with the EU Open Data Directive, which is also the basis of the Mobility as a Service (MaaS) approach. Accessible digital and IT tools also greatly facilitate easy access to transport for people with disabilities.

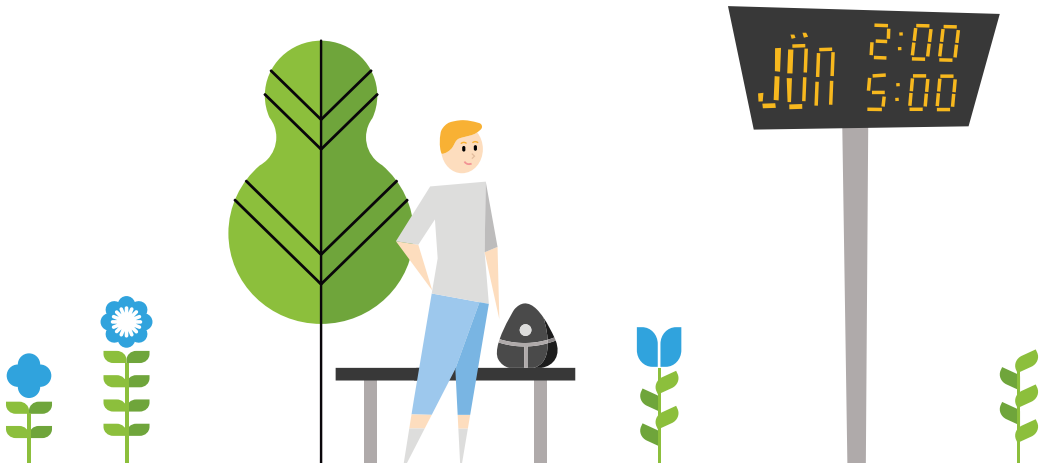
To meet changing needs and to raise service standards, Budapest is transforming its customer service centres at major transport hubs and high-traffic locations to provide a full range of integrated transport services. In addition to the electronic

ticketing system, the aim is to enable the integrated public transport services, the personal service of BKK and its partner operators MÁV-Start Hungarian State Railways, Volánbusz Regional Buses, shared transport operators, to be handled in a single customer service centre, thus providing access to customer services for companies and their customers without their own customer service points.

3.3.4 HARMONISATION OF URBAN-SUBURBAN PUBLIC TRANSPORT SCHEDULES AND RELATED SERVICES

The harmonisation of timetables between local and national operators aims to improve the convenience of transfers and minimise the time lost in order to have a timetable solution for the first and last "mile". An integrated timetable means that different services meet at transport hubs in a coordinated way or run in a coordinated way on their common sections, reducing transfer or waiting times, especially on services with longer headways or during periods with less service frequency. Much progress has been made recently in the coordination of timetables both within the city and in the metropolitan area, but there are still areas for improvement. The first step towards timetable integration is the development and availability of a common timetable interface and online, real-time transport service information.

By coordinating suburban and urban timetables and strengthening feeder functions, the urban sections of suburban railways can play an active role in Budapest transport. Integration can be achieved mainly by bus feeder services, with appropriate coordination of operating times, and by providing transfer connections to the first and last trains. The suburban train line numbering scheme already indicates to customers the striving for an integrated system. Integration also includes the harmonisation of travel terms wherever possible.



4 AN EFFICIENT INSTITUTIONAL SYSTEM

4.1 COORDINATED URBAN AND MOBILITY DEVELOPMENT IN BUDAPEST

Developing transport with the city by developing a system of transport institutions and regulations that support common goals.

Mobility development is an activity intertwined with urban planning, with a shared vision for achieving urban development goals. Cooperation is based on a continuous inter-institutional dialogue between development practitioners and decision-makers. The most important social guiding principle of Budapest is to make the city more liveable and to protect the environment, which requires cooperation between urban planners and, within this group, those involved in mobility services (passenger transport, freight transport). When planning developments, Budapest will seek flexibility to deviate from the relevant standards, where appropriate, and to request waivers to meet the return-on-investment indicators.

4.1.1 COORDINATION OF TRANSPORT DEVELOPMENT INTEGRATED INTO URBAN DEVELOPMENT

Budapest aims to achieve effective coordination of transport issues integrated into urban planning, between ownership, control and service levels. In addition to the institutional cooperation tasks, the practice of project development and project management based on strategic planning should be further strengthened as a prerequisite for efficient use of resources and implementation of plans. Close, strategic cooperation between BKK and the Budapest city management is needed on complex issues affecting both urban and transport development.

The urban development projects and the transport solutions they implement should serve the vision of a "15-minute" compact city, both in the sub-centres of Budapest and in the centres of the suburbs and major public transport hubs of the agglomeration. The conditions for decentralisation to promote the vision of a compact city need to be strengthened, in particular by developing knowledge-sharing in the districts (professional cooperation, permanent

forums, etc.). The institutional system must establish and enforce consistent zoning rules, coordinate the design of transport elements of urban development contracts with developers and enforce the agreements contained in the contracts. In order to serve urban real-estate developments by transport in an efficient and environmentally friendly way, an economic incentive system should be established to stimulate private capital activity in the areas desirable for urban development and to create a predictable development environment rather than ad hoc arrangements.

Budapest will encourage transport-oriented investments that support the city's strategic objectives, and will seek to conclude land-use planning agreements with real-estate developers that promote the development of public transport.

4.1.2 REGULATION TO ENSURE THE UPTAKE OF TRANSPORT SOLUTIONS THAT SUPPORT CLIMATE STRATEGY

In addition to carbon dioxide and other greenhouse gas emissions, the climate change impacts of mobility in cities include the serious problem of increasing paved transport surfaces at the expense of green surfaces. To achieve climate neutrality targets, Budapest is creating a regulatory environment that encourages a reduction in private car use and public parking demand.

Areas for regulation to reduce congestion (where vehicles emit more pollutants), traffic accidents and the environmental damage caused by transport, where the introduction of incentive and limitation measures is urgently needed: urban planning regulations for mixed-use areas, amendments to the Highway Code to allow traffic-calmed zones, regulations to reduce emissions, incentives for car-sharing, regulations to promote the environmental renewal of the private car fleet and the use of environmentally friendly fuels, and environmental

differentiation of regulations. Adequate preparation/ adaptation time is needed before the introduction of new rules.

The recovery from the crisis caused by the COVID-19 pandemic should be used to accelerate the decarbonisation and modernisation of the entire transport and mobility system, limiting its negative impact on the environment and improving the safety and health of our citizens. The twin green and digital transitions should reshape the sector, redraw connectivity and re-energise the economy.
(109 - Sustainable and smart mobility strategy COM (2020) 789 final)

4.2 COORDINATED MOBILITY MANAGEMENT

Developing a system of institutions and rules to support cleaner, more sustainable modes of transport.

The renewal and continuous improvement of Budapest's transport system requires a well-prepared governance system that is credible and in line with climate objectives to support change. The capital's current two-tier administration system, the fragmentation of responsibility for service provision is not conducive to an integrated approach to mobility issues. Budapest will improve the urban mobility system through coordinated planning and cooperation between the institutions implementing the plans.

4.2.1 TASKS TO ENSURE THE FUNCTIONING OF TRANSPORT IN THE CAPITAL

In Budapest, the cooperation and development of transport modes can be influenced not only by technical, but also by financial, economic and regulatory means. In order to achieve the city's vision, meet climate targets and coordinate day-to-day operations, transport policies need to be periodically reviewed and adapted, requiring a flexible, efficient and stable institutional framework, and a sustainable and predictable financing framework. The financing of the transport system must be predictable in the long term, on a normative basis, which will ensure proper and predictable management. In addition to the operational framework, the financing model should create the conditions for the implementation of economical, energy-efficient and self-sustaining improvements. The development and organisation of transport modes that are currently separate but part of the Budapest transport network and are not currently integrated into urban transport, but are part of the urban transport network, must be coordinated.

In order to distribute and spread out peak periods along the principles of the 24-hour city, regulatory instruments should be extended to the temporal distribution of traffic organising. This goes beyond transport planning in the strict sense and, by its very nature, also requires the involvement and coordination of education and employment policies (flexible working hours and school start times, senior citizens' hours in commerce, etc.).

4.2.2 URBAN MOBILITY REGULATION

Budapest will implement the developments in a coordinated manner, building on planning regulatory harmonisation within and between transport modes, including the use and demand management of roads and public spaces, Budapest regulations on micromobility, parking, city logistics, low-emission zones (LEZ), taxi services, sightseeing and tourist buses, infrastructure and services. The principles, detailed rules and actions for the elements of the development of the mobility system are set out in the sub-sectoral concepts.

PUBLIC SPACE USE

With a broader understanding of environmental pressure, short-duration use of roads and public spaces and low-impact modes (walking, cycling and public transport) and technologies (electric, renewable or hybrid propulsion) should be encouraged through economic regulators, while incentives that work against declared objectives should be removed.

Parking policy - and parking management as part of it - is part of transport policy, a strategic tool for shaping mobility flows, influencing mode choice and improving the quality of public space, which requires the creation of integrated public space management conditions for the city as a whole, in which parking, waiting and storage (residential, P+R and destination) can be managed in a coherent way. Within the framework of integrated management, the regulatory conditions should help to ensure functional cooperation between on-street and

off-street parking, to exploit the potential of P+R parking and to make the conditions for residential parking normative, including in the case of P+R parking in the metropolitan area. Without regulation of residential parking, the largest demand segment, which is currently outside the scope of influence, a desirable parking policy cannot be implemented.

The objectives to be achieved in parking regulation:

- keeping private car commuter traffic away from congested city centres, influencing mode choice and encouraging modal shift;
- improving the quality of public spaces, reducing and managing on-street parking;
- the relocation of long-term parking outside public spaces;
- a normative, scheduled solution for residential parking that also benefits users.

In order to achieve the parking regulation objectives, the following tasks need to be carried out:

- create the necessary institutional, legal and regulatory framework;
- provide the financial backing through the regulatory framework;
- put the business segment of parking management at the service of community goals;
- expand the areas covered by parking regulations;
- reduce on-street parking, increase the speed of turnover;
- differentiated regulation of residential parking and the removal of car storage from public space;
- make P+R parking more attractive and substantially increase its capacity;
- provide the necessary information and management support.

CITY LOGISTICS

A comprehensive city-logistics sub-sector strategy should elaborate the details of the institutional and service background, the establishment of urban service connections and the spatial and temporal regulation of logistics provision. The Budapest Freight Strategy and the forthcoming City Logistics Sector Strategy (Sustainable Urban Logistics Plan, SULP) should be regularly reviewed in the light of technological and network changes. A city logistics system based on modern principles will be achieved by aligning the interests of the actors in the logistics chain, developing the infrastructure elements supporting the current urban freight flows, expanding the range of logistics services in the capital and settling the regulatory and institutional framework. With a stronger role of the capital and BKK in city logistics (cooperation between the managing authorities, provision of direct business and residential logistics services, provision of infrastructure conditions), Budapest can assert its interests more effectively.

New trends have emerged recently in freight and parcel delivery, accelerated by the Covid-19 epidemic: the role of courier services, parcel carriers and direct door-to-door delivery is growing due to online shopping. The last mile of goods transport (and the associated inner-city transhipment and loading, point-of-demand services) needs to be organised efficiently, supported by Budapest with incentives, rules and regulated competition (business involvement) to ensure that this phase of transport is also carried out in a more organised and uniformly regulated way. Budapest favours the use of environmentally friendly modes of transport (cargo bikes, electric vehicles and alternative solutions) for last mile deliveries to reduce the environmental burden, supported by incentives, the logistical test use of public transport vehicles, network and sites and the development of a shared cargo-bike system. By introducing an incentive certification scheme (Certified Budapest Freight Transport System) entailing the registration of lorries under 3.5 tonnes, operators can be encouraged to transport goods in an environmentally friendly and compliant manner.

The network of loading bays and the associated regulation to support urban logistics has changed little for decades, while transport and loading practices have evolved. A renewed signage system for designated loading bays, coordinated parking and loading regulations, space consolidation, and predictable access can reduce congestion and traffic obstruction caused by stopping and improper stopping of freight vehicles, facilitate planning, and allow freight to load safely and close to the loading area. Using intelligent transport systems can shorten delivery times and reduce congestion.

By regulating the timing of city logistics (and related infrastructure and equipment improvements), freight transport within the capital can be shifted to off-peak (night-time) periods to ease congestion during morning and afternoon rush hours. In order to make night-time freight transport more attractive, Budapest will set up an incentive system: loading areas can be extended, new areas can be added, combined areas can be used (e.g. bus lanes, taxi ranks, etc.) and additional discounts can be granted on the night-time access charges.

Urban freight transport should be provided by low-emission urban trucks. The use of electric, hybrid, hydrogen and CNG technologies, using human-powered vehicles, will not only reduce emissions but also noise pollution.

DATA-DRIVEN DECISION-MAKING

The integrated collection, management and analysis of urban transport data, including public transport passenger data, cross-sectional and daily traffic-flow data of individual motorised transport, cross-sectional and daily traffic-flow data of micromobility devices, continuous monitoring of transport infrastructure and services, and better understanding of transport users' needs, will allow for a more reliable, safer, environmentally friendly and data-driven transport system than today. The integration of intelligent systems is also an essential part of the development of an environmentally friendly, advanced city logistics network.

Sustainable urban mobility planning should also include the freight dimension through dedicated sustainable urban logistics plans. These plans will accelerate the deployment of zero-emission solutions already available, including cargo bikes, automated deliveries and drones (unmanned aircraft) and better use of inland waterways into cities. (41 - Sustainable and smart mobility strategy COM (2020) 789 final)

TAXI SERVICE REGULATION

In the interests of passenger safety and traceability, Budapest supports and encourages independent operators to join a taxi dispatching and organising service (taxi company) by regulating taxi services in the capital.

On the basis of Decree 11/2022 (IV. 26) of the General Assembly of the Municipality of Budapest,

in the interest of efficient transport management, the Municipality of Budapest will enforce the data reporting obligations of companies providing passenger taxi services from 2025. The adopted legislation provides for the obligation to provide real-time data on the location of taxis and the starting and stopping of the taxi meter to the transport operator. The collection and processing of up-to-date data on taxi movements, turnover and the travel habits of taxi passengers will allow data-driven decisions to be taken in the regulation of the sector.

The measure opens up the possibility for Budapest and the capital's mobility manager to better integrate taxis into "MaaS" services by developing a single application for passenger safety and to make taxis part of public transport.

4.3 REGIONAL COOPERATION

Thinking in terms of urban transport management by helping to integrate regional and macro-regional systems.

The area of Budapest and its agglomeration is characterised by a disconnected administrative system, divided competences and fragmented transport systems, which are not conducive to transport integration. The institutional structure, which is far from European best practice, hinders joint systems thinking and the organisation of public services at regional level. A uniform ticketing system for public transport services in the capital and the suburbs is rudimentary within Budapest. To move forward, there needs to be much more organised and well-coordinated cooperation between Budapest and its wider urban area.

4.3.1 INTER-INSTITUTIONAL COOPERATION TO ENSURE INTEGRATED TRANSPORT IN THE METROPOLITAN AREA

Changes in the public transport governance framework have reduced the institutionalised framework for cooperation in urban and suburban transport in Budapest. In the coordination of urban and suburban transport development and in the regulation of public transport services, cooperation between the respective transport government and the Municipality of Budapest is intermittent or ad hoc. The long-term key to managing Budapest and agglomeration transport as a single transport area could be the establishment of a joint commissioning body, which would require a major - and time-consuming - transformation of the current fragmented institutional environment. The feasibility of the mobility plan therefore requires steps to be taken to build on the current governance structure to increase the degree of integration. Integration would be strengthened if the individual client actors (the Municipality of Budapest and, through it, BKK and the Hungarian state) jointly commissioned public transport services, not as a joint institution, but within a common and institutionalised framework and with a common

financing background. This structure could be further developed towards a fully integrated, single-body transport commissioning model. This model requires the establishment of a set of responsibilities and a comprehensive regulatory and contractual framework for the provision and financing of the tasks in the areas concerned. A related output of the common customer model could be, in line with the objective of the EU Single Transport Area, the development of regionally coherent transport services (timetable, fares, design, passenger information, etc.).

A regional transport management body to ensure better coordination between urban and suburban transport for daily commuters from the city-region could help to ensure cooperation between the authorities responsible for the service (the Municipality of Budapest, the relevant ministry and the municipalities concerned). The integrated fare system for Budapest and suburban public transport provided for in the law on passenger transport services will enable urban and suburban public transport to operate competitively by extending and developing the current fare structure.

To ensure that development and policy objectives are fully met, the cooperation of the decision-preparatory bodies established during the mobility strategy planning process should be maintained. The operation of a framework for institutionalised consultation processes (predefined participants, tasks and responsibilities, regular meetings, with a sufficiently regulated background) is a prerequisite for further sustainable urban mobility planning. The implementation of the BMT and the further maintenance of its professional content will be carried out by the existing Balázs Mór Committee as a forum for consultation between the institutions involved in the development of transport in the capital, which will ensure full transparency throughout the entire mobility planning and implementation process.

4.3.2 CITY-REGION MOBILITY REGULATION

A combination of economic and administrative regulation should be used to encourage the implementation of high-traffic-generating urban development projects by allocating fixed-rail lines to them and depending on the availability of transport coverage. Where a development with high mobility

demand is not located in an area with an existing high-capacity network, in particular fixed rail, it should be required to extend a suitable high-capacity line as part of the investment, and the investor should provide the necessary public funding.

Despite longstanding policy commitments for fair and efficient pricing in transport, progress has been limited. The ‚polluter pays' and ‚user pays' principles need to be implemented without delay in all transport modes. (...) The Commission will therefore pursue a comprehensive set of measures to deliver fair and efficient pricing across all transport modes.
(47 - Sustainable and smart mobility strategy COM (2020) 789 final)

Budapest's Freight Strategy a decade and a half ago created a system that keeps transit freight out of the city, but allows access to the city's manufacturing and logistics bases. The further development measure aims to regulate and influence the routing and timing of freight arriving in the capital. In order to displace heavy goods vehicle traffic and its destinations from the inner areas, the system will need to be made stricter from time to time. By reducing the number and length of radial routes serving the destinations, the relocation of sites in inner city logistics areas, which are largely served by 40 tonne loads, but which do not serve the city, should be encouraged. This process could be helped by increasing supply in the outer logistics ring around the city and by stepping up property development in the brown belt, as well as by building a transverse road link in the area concerned (it is an essential national task to avoid the need to enter the agglomeration for those whose destination is outside the area).

In addition to comprehensive regulation, continuous improvement of controls is essential. Controls should be progressively modernised by developing and operating a system based on intelligent technology, linking it to the toll system introduced on the main national road network and taking into account national experience. The concept is being implemented in small but continuous steps.

A draft concept for the regulation of the routes, departure and stopping points and waiting areas of buses visiting the tourist attractions of the capital was prepared with the involvement of the professional organisations concerned (tourism, operators, transport). A consensus-based action plan is needed to move forward.

Tourism should also be a priority in the development of waterborne transport. A balance between professional (commuters) and leisure use will ensure the sustainability of the system. Boat traffic should be linked to tourist sightseeing itineraries, and the conditions and business cooperation models with interested private operators should be developed.

1 IMPROVED NETWORK CONNECTIONS

1.1 LIVEABLE PUBLIC SPACES

1.1.1 IMPROVING WALKING CONDITIONS, CREATING PEDESTRIAN LINKS OF URBAN STRUCTURAL IMPORTANCE

1.1.2 CREATING PARKS, PEOPLE-CENTRED REGENERATION OF EMBLEMATIC PUBLIC SPACES

1.1.3 ENSURING EQUAL, BARRIER-FREE ACCESS TO TRANSPORT FOR ALL

1.1.4 INCREASING ROAD SAFETY, A FORGIVING MOBILITY ENVIRONMENT

1.1.5 ESTABLISH TRAFFIC CALMING AND RESTRICTED TRAFFIC ZONES

1.1.6 PROTECTION OF LIFE AND PROPERTY, CRIME PREVENTION TOOLS AND FACILITIES

1.2 INTEGRATED NETWORK DEVELOPMENT

1.2.1 A COMPLEX APPROACH TO MODERNISING ELEMENTS OF THE EXISTING MOBILITY SYSTEM

1.2.2 MODE-SWITCHING POINTS DESIGNED WITH A COMPLEX APPROACH

1.2.3 DIRECTLY CONNECTED PUBLIC TRANSPORT NETWORK

1.2.4 FILLING GAPS IN THE TRANSPORT NETWORK, CONNECTING CUT-OFF URBAN AREAS, DANUBE CROSSINGS

1.2.5 A COHERENT, SAFE AND COMFORTABLE URBAN CYCLING NETWORK

1.2.6 DEVELOPING AN INFRASTRUCTURE FOR A MODERN URBAN LOGISTICS SYSTEM

1.3 EASILY INTEROPERABLE REGIONAL SYSTEMS, CONVENIENT MODE-SWITCHING POINTS

1.3.1 PROMOTING THE URBAN INTEGRATION OF LONG-DISTANCE AND SUBURBAN TRANSPORT, MODERNISING INFRASTRUCTURE

1.3.2 IMPROVING INTERMODAL AND MODAL CONNECTIONS BETWEEN SUBURBAN AND URBAN TRANSPORT

1.3.3 IMPROVING TRANSPORT LINKS BETWEEN THE CITY AND THE AGGLOMERATION, MODERNISATION OF LINES OUTSIDE THE CITY LIMITS

1.3.4 DEVELOPING NATIONAL AND REGIONAL CYCLING LINKS

1.3.5 DEVELOPING THE WATERBORNE TRANSPORT NETWORK AND ITS SERVICE INFRASTRUCTURE

1.3.6 IMPROVING ACCESS TO BUDAPEST LISZT FERENC INTERNATIONAL AIRPORT

2 ATTRACTIVE VEHICLES

2.1. ADVANCED, LOCALLY ZERO-EMISSION VEHICLES

2.1.1 IMPROVING THE PUBLIC TRANSPORT FLEET, PROCURING LOCALLY ZERO-EMISSION VEHICLES

2.1.2 MODERNISATION OF FLEET MAINTENANCE BACKGROUND, DEPOT UPGRADES

2.1.3 PROMOTING CLIMATE-CONSCIOUS RENEWAL OF THE CAPITAL'S NON-PUBLIC TRANSPORT FLEET

2.2 CUSTOMER-FRIENDLY VEHICLE DEVELOPMENTS

2.2.1 DEVELOPING AN ACCESSIBLE PUBLIC TRANSPORT FLEET

2.2.2 COMMUNITY BICYCLE SYSTEM RUNNING AND DEVELOPMENT, A EXPANDING BICYCLE SERVICES

2.2.3 MAKING PUBLIC TRANSPORT VEHICLES SUITABLE FOR BICYCLE TRANSPORT

3 CUSTOMER EXPERIENCE-ENHANCING SERVICES

3.1 SHAPING TRANSPORT CULTURE AND HABITS

3.1.1 ENCOURAGING A CHANGE OF MINDSET AND CONSCIOUS MOBILITY, COMMUNICATION

3.1.2 PUBLIC SAFETY, PUBLIC HEALTH AND SANITATION IN URBAN TRANSPORT

3.1.3 PROTECTING OUR TRANSPORT HERITAGE

3.2 INTEGRATED MOBILITY SERVICES

3.2.1 DIGITALISATION AND THE USE OF MODERN TECHNOLOGIES IN TRANSPORT MANAGEMENT

3.2.2 DEVELOPING SHARED MOBILITY SERVICES

3.2.3 EXPANDING DEMAND-DRIVEN PASSENGER TRANSPORT SERVICES

3.2.4 DEVELOPING A SINGLE TAXI SERVICE IN BUDAPEST

3.2.5 DEVELOPING MOBILITY CUSTOMER RELATIONSHIPS

3.2.6 PARTICIPATION A IN MOBILITY PLANNING, PROJECT IMPLEMENTATION AND OPERATION

3.2.7 DEVELOPMENT OF DIRECT LOGISTICS SERVICES PROVIDED BY THE CAPITAL

3.3 HARMONISED URBAN SERVICES

3.3.1 FARE POOLS AND INTEROPERABLE FARE SYSTEMS

3.3.2 INTEGRATED DIGITAL SALES SYSTEM IN THE URBAN AREA

3.3.3 ONE-STOP INFORMATION AND MOBILITY INFORMATION SERVICES FOR ALL

3.3.4 HARMONISATION OF URBAN-SUBURBAN PUBLIC TRANSPORT TIMETABLES AND RELATED SERVICES

4 AN EFFICIENT GOVERNANCE SYSTEM

4.1 COORDINATED URBAN AND MOBILITY DEVELOPMENT IN BUDAPEST

4.1.1 COORDINATION OF TRANSPORT DEVELOPMENT INTEGRATED INTO METROPOLITAN URBAN DEVELOPMENT

4.1.2 CLIMATE STRATEGY SUPPORTING TRANSPORT SOLUTIONS THE UPTAKEREGULATION

4.2. COORDINATED MOBILITY MANAGEMENT

4.2.1 TASKS TO ENSURE THE FUNCTIONING OF TRANSPORT IN THE CAPITAL

4.2.2 URBAN MOBILITY REGULATION

4.3. REGIONAL COOPERATION

4.3.1 INTER-INSTITUTIONAL COOPERATION TO ENSURE INTEGRATED TRANSPORT IN THE METROPOLITAN AREA

4.3.2 URBAN MOBILITY REGULATION

GLOSSARY OF TERMS, LIST OF ABBREVIATIONS MOVEMENTS:

BKK short name for BKK Centre for Budapest Transport

EFM abbreviation for the Budapest Uniform Traffic Model (see below for an explanation of the traffic model)

ITS

MOL Integrated Spatial Development Strategy

Bubi public bicycle-sharing system in Budapest

SECAP Sustainable Energy and Climate Action Plan - Sustainable Energy and Climate Action Plan

SKV Strategic Environmental Assessment (SEA)

SUMP Sustainable Urban Mobility Plan

SUMI Sustainable Urban Mobility Indicators

CONCEPTS, TERMS (IN THE CONTEXT OF THE BMT):

AGGLOMERATION

An agglomeration is a cohesive urban settlement system in which the centre and the surrounding settlements are characterised by close economic and infrastructural links. The largest urban agglomeration in Hungary is Budapest and its metropolitan area.

ACCESSIBILITY

The deliberate design or modification of the environment to assist people with reduced mobility for whatever reason in the activities in which they face barriers.

SUB-SECTORAL OBJECTIVES

The objectives of the different modes of transport (individual, public, road, rail, waterborne, air).

BUS CORRIDOR

A traffic lane reserved for the exclusive use of buses operating regular public transport services.

OVERLAPPING ROUTES

The lines have a common section, preferably with common stops.

DIAMETRICAL / DIAGONAL ROUTE

Public transport service that crosses the city centre with terminuses outside the central zone

FREIGHT TRANSPORT ACCESS FEE

A traffic control device which imposes a charge for entering a given area by lorry or driving through a given barrier. (Currently, the permit fee equals the amount payable to the road manager authorising the operation of a lorry with a maximum permissible weight exceeding the total weight limit as indicated by road signs.

B+R PARKING

Bike & Ride - Cycle and ride on. Bicycle storage facility with access to the public transport network.

CARSHARING

A telematically controlled passenger car rental service, flexible in time and space, providing registered users with shared access to a specific fleet

CITY LOGISTICS

Urban freight transport management and the organisation of trade-related traffic to reduce environmental impact.

C-ITS

Cooperative intelligent transport systems.

EURO EUROPEAN EMISSION STANDARDS

Legislation sets limits for acceptable levels of emissions from new cars sold in EU countries. Since 1992, emission standards have been set at increasingly stringent limits over time, with

separate limits for vehicles with diesel and petrol engines.

EUROVELO

A network of planned bike trails across Europe, as defined by the European Cyclists' Federation (ECF). The routes are intended for both cycle tourism and daily cycling. EuroVelo routes must have a defined standard of service and signage system. The trail of the Hungarian sections is also specified in the National Spatial Planning Act.

TERMINAL RAILWAY STATION

A station from which vehicles can only proceed by changing direction.

TRAFFIC MODEL

A tool for transport planning. Due to the complexity of transport networks, a single transport development project has an impact on the transport, social, economic and environmental characteristics of neighbourhoods and areas. Traffic modelling is a tool for analysing these impacts. Traffic modelling is the phase of traffic impact modelling where we model the decisions that result from the socio-economic environment that lead to people moving from place to place on a daily basis. Thus, the traffic flows generated in each area (district) the volume of movements, the volume of traffic moving from one area to another, the distribution of traffic by route and mode, and predict the expected impact of the measures.

TRAFFIC CALMING

Reducing the volume and speed of road vehicle traffic and influencing its composition by means of traffic engineering.

TRAFFIC CONTROL

Operational management of road and public transport to ensure that traffic flows smoothly and that any disruption is dealt with as quickly as possible.

BACKBONE (TRUNK) LINE

The public transport network serving an area with the largest capacity.

ROLLING STOCK

General designation of iron-wheeled vehicles used in track-based (fixed-rail) transport.

COMMUTER TRAFFIC

Traffic to and from the workplace and/or educational institution and traffic generated during work and/or school attendance.

TIME-BASED TICKET

A fare product whose price is proportional to the time spent travelling.

INDICATOR

An indicator or metric defined to measure an impact or process.

INTEGRATED NETWORK DEVELOPMENT

Developing the transport network in a way that takes into account the different sub-sectors and service providers.

INTERMODAL HUB

An intersection of different modes of transport providing a spatially organised transfer/ transhipment facility.

INTERMODAL TRANSPORT

An optimal combination of different modes of transport in an environmentally, economically and travel time-optimal travel chain.

INTEROPERABILITY, INTEROPERABLE SYSTEMS

Provision of seamless technical interoperability between different systems. Solutions to ensure interoperability between vehicle systems e.g. different track gauges, signalling systems, voltage

levels, pantographs, etc. The essence of such transport is the ability of the vehicle to use different track and infrastructure systems instead of the passenger changing vehicles during the journey.

MEASURE

A set of tasks assigned to a strategic objective to help achieve that objective. A single measure can be supported by the implementation of several projects. It is a means to achieve an objective from the perspective of the operational objectives and a goal from the perspective of projects.

IOT

Internet of Things. Clearly identifiable electronic devices that recognise information and communicate over an Internet-based network.

ITS

Intelligent Transportation System (ITS).

DESIGNATED LOADING AREA

Areas with signs according to Article 15 (6) of the Highway Code (no parking sign, additional signposted loading area, time and length restrictions

COMPACT CITY / 15-MINUTE CITY

A compact city is one in which the spatially balanced, well-partitioned urban structure is characterised by land use in harmony with the natural environment, the densely populated urban fabric is characterised by mixed land use functions, and the infrastructure networks serving it (transport, utilities, human services, green and blue spaces) are efficiently and sustainably designed and operate in harmony with each other, with continuous social and economic interaction. In the case of Budapest, the pursuit of compactness is not a matter of density but to determine the optimal density for the area.

CONSOLIDATION CENTRE (DISTRIBUTION CENTRE)

A logistics facility that is relatively close to the area served and from which a steady flow of goods is delivered to that area. Consolidation centres aim at a centralised reorganisation of certain freight transport activities involving urban traffic, in order to minimise the impact of the resulting freight transport on the city and its inhabitants, both in terms of traffic flows and adverse environmental impacts.

GUIDED LAND TRANSPORT

A combination of means of transport connected to a fixed-rail track, cableway and/or overhead contact line, where vehicles can only move in the direction of the longitudinal axis of the fixed route on which they are intended to travel, or possibly slightly off the longitudinal axis.

PUBLIC PASSENGER TRANSPORTATION

A transport system that is available to all those who meet the conditions of travel. Common sectors:

- *individual public transport (e.g. taxis, carsharing, public bicycles)*
- *public transport (public transport or mass transit).*

TRANSPORT CORRIDOR

The scene of traffic movements.

TRANSPORT MODE

Means of transport (pedestrian, bicycle, public, car, lorry, etc.)

TRANSPORT ORGANISER/ MOBILITY MANAGER

The competence centre for planning, organising and developing mobility in the city and its region, which is responsible for the development of public transport services, as well as for ordering and monitoring as well as liaising with customers, responsible bodies, and transport service providers.

TRANSPORT PLANNING

Consciously shaping the means of transport, infrastructure and their use, to develop future transport in a conceptual and detailed way, based on scientific methodological knowledge.

PUBLIC TRANSPORT

A mode of transport which is carried out by public transport vehicles (e.g. bus with a capacity of more than 9 passengers, etc.). Other commonly used term is mass transit.

"KISS AND RIDE" (K+R) STOP

"Kiss and Ride" – a short-term passenger car stop constructed near a public transport stop enabling the passenger to transfer directly to public transport

MAAS

Mobility as a Service: high level integration of mobility services, common interface (application), common fare structure andinformation.

MICROMOBILITY DEVICES

Micromobility refers to the use of light and small vehicles that travel at low speeds and are driven by the user personally. Micromobility devices include bicycles, e-bikes, scooters, skateboards and shared mopeds.

MOBILITY NEEDS

The need for people to move around in public spaces.

MODAL SPLIT

Share of utilisation of each mode of transport.

MODAL SWITCH

Changing from one mode of transport to another.

MOTORISED TRANSPORT

A collective term for travel options where the vehicle is powered by a power engine.

HEAVY RAILWAY LINE

Part of the national public rail network.

NON-MOTORISED TRANSPORT

Collective term for walking and cycling

P+R CAR PARK

"Park & Ride" car parks offer long-term parking and are constructed specifically for enabling users to change from a passenger car to public transport. No parking fee is charged in any car park marked with the P+R sign, unless the car park is guarded as an additional service. The guarding fee collected per calendar day for the additional service between 6 a.m. and 10 p.m. must not exceed the lowest local public transport fare.

PRIORITY

Importance, preference. Area of intervention for EU development projects.

FEEDER SERVICE

A public transport service which was designed to provide onward travel options by transfer to another, generally fixed-rail backbone line

S-BAHN

Widespread German terminology for suburban rapid rail (Schnellbahn)

FARE COMMUNITY

A common charging system based on uniform principles for different sub-sectors and service providers.

TRAVEL CHAIN

Sequential use of transport modes from origin to destination.

PROTECTED ZONE

An area designated as per 14 (1) n) of the KRESZ Hungarian Highway Code (with a sign prohibiting access from both directions), where access and parking are subject to conditions.

VISION ZERO

The EU road safety directive calls for the number of fatalities to be reduced to zero.

LINE

The route and stopping points of the service.

LINE MARKING SYSTEM

A uniform system of numbers and/or letter combinations used to distinguish between services published in the timetable.

ZERO EMISSION

No pollutant emission (e.g. during operation).

The text boxes contain guidelines from the documents underpinning the BMT, quotes that guide the planning process, with the source indicated.

IMPRINT

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BUDAPEST MOBILITY PLAN 2030

I. OBJECTIVES AND MEASURES
AGGLOMERATION ANNEX

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SITUATION ANALYSIS

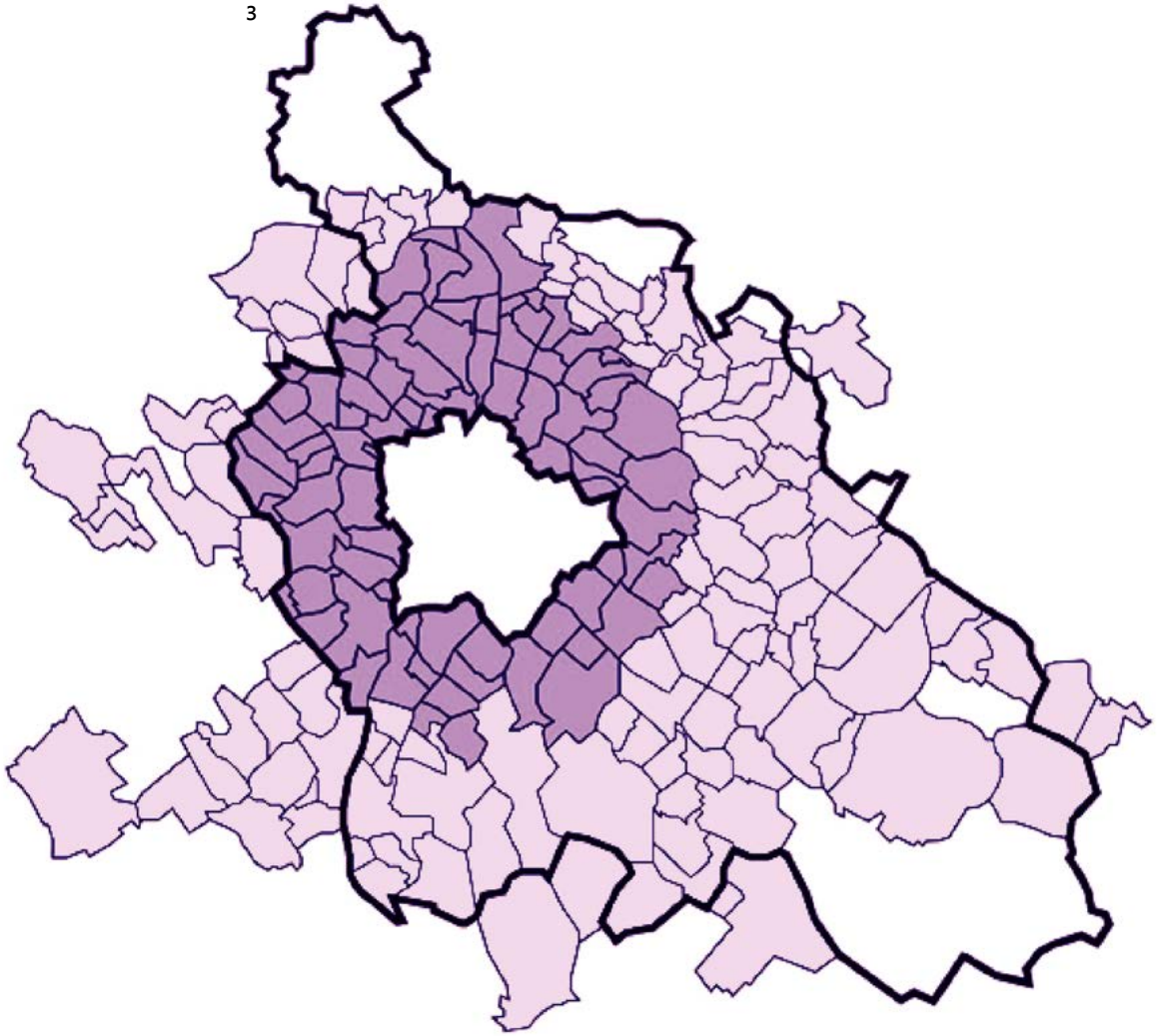
1. The population of the capital is falling, while the population of the municipalities in the metropolitan area is growing rapidly. According to Annex 1/1 of Act CXXXIX of 2018 on the Spatial Planning Plan of Hungary and Certain Priority Regions of Hungary, the Budapest agglomeration comprises a total of 81 settlements[1], with a total population of 2,609,747 in 2021. In 1990, these municipalities had a total population of 2,587,767 inhabitants, but the distribution of the total population between Budapest and its agglomeration zone has undergone a significant change: in 1990, the population of Budapest was 2,018,035, which decreased to 1,706,851 in 2021, while the population of its agglomeration zone increased from 569,732 in 1990 to 902,896 in 2021.[2]

Lakónépesség száma (fő)				
	Magyarország	Budapest agglómeráció		
		Budapest	Agglomerációs övezet	Összesen
1990	10 353 765	2 018 035 (19,49%)	569 732 (5,50%)	2 587 767 (24,99%)
2021	9 689 010	1 706 851 (17,62%)	902 896 (9,32%)	2 609 747 (26,94%)

Daily commuting in the Budapest area may in practice cover an area larger than the Budapest agglomeration as defined by law, and even larger than the Budapest functional urban area as defined more broadly.
A more precise mapping of the commuter flows from the surrounding municipalities to Budapest and vice versa is a necessary future task, and the focus of this strategic annex is on the Budapest agglomeration city-region as defined by Act CXXXIX of 2018.

[1] A functional city-region may cover a broader area, but there is no significant difference between the Budapest agglomeration as defined in the Act and a broader functional urban agglomeration in terms of a general, strategic-level description of the basic agglomeration mobility dynamics and related mobility development opportunities that are the subject of this Annex.

[2] Source of data: Hungarian Central Statistical Office (KSH) https://www.ksh.hu/stadat_files/fol/hu/fol0016.html, 1 January 2022; Last update: 14 September 2022; expected update: 15 September 2023



According to some forecasts, the total population of the Budapest city-region could increase by several hundred thousand by 2040 compared to the current level, whilst the population of Budapest will stagnate or slightly decrease, but by 2051 the population could decrease by 200,000, while the population of the Pilisvörösvár district, for example, could increase by 74%[4]. In order to ensure the vitality of the capital city and to serve its transport needs efficiently and sustainably, Budapest must do its utmost to ensure that the urban area's surplus population will in future be concentrated as much as possible, even entirely within the administrative boundaries of Budapest. This objective cannot be achieved by mobility measures alone: coordinated state-level and municipal measures beyond the BMT are needed to address housing difficulties.

[3] A broader functional Budapest urban area based on the BKK EFM (Uniform Traffic Model)

[4] Demographic projections of the Hungarian countryside until 2051, with special focus on the role of climate change in shaping internal migration - Lennert, József KSH, Területi Statisztika 2019/5

The transport challenges of the Budapest agglomeration are to a large extent generated by the demographic, spatial and housing factors of the urban area. The right mobility strategy responses to these challenges can be found, but without addressing the root causes, further challenges of this nature are likely to arise in the future. Removing the root causes (rather than transport-only solutions) that reduce mobility needs (or at least mitigate their increase) will also cost significantly less.

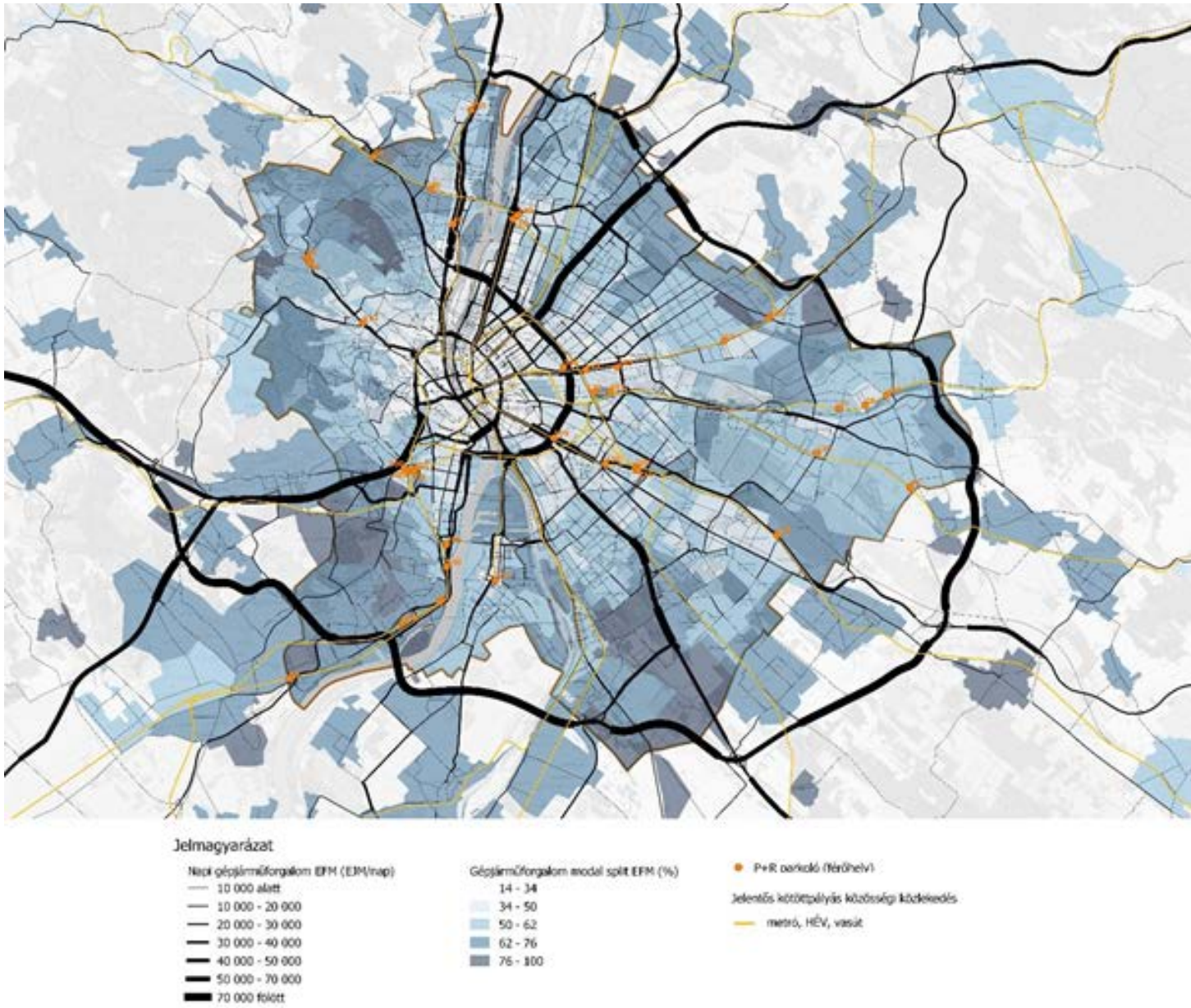
2. A higher proportion of people living in the agglomeration use private cars in Budapest than in the capital, which means a proportionally higher environmental burden.

According to BKK's latest modal split survey for 2021, approximately 60% of trips crossing the borders of Budapest are made by private car and 40% by public transport (based on trip performance), while only 40% of trips within Budapest are made by private car. The total length of trips staying in Budapest is approximately 60:40% of the total length of the Budapest section of trips crossing the border of Budapest. This means that half of the trips made by private car within Budapest originate from outside the city boundary, which places a significant environmental burden on the capital.

On an average working day, between 310 and 340 thousand vehicles cross the administrative border of Budapest in each direction, i.e. a total of 620-680 thousand individual vehicles. Assuming an average car occupancy rate of 1.2 to 1.3, this means a total of 780-860 thousand trips and half as many commuters. Of this traffic, 210-230 thousand vehicles per day need parking space in the capital[5].

[5] The source of the data is BKK's Unified Traffic Model (EFM) and the BFOA's study plan on the relationship between Budapest and the metropolitan area settlements surrounding the capital (May 2023)

The map below shows the typical daily traffic on the main roads in the capital. The high impact of the motorway access roads is clearly visible: the M1/M7 and M3 access roads together account for almost a quarter of the total individual vehicle traffic entering the capital from outside Budapest. A comparison of the daily traffic on each road with the space available in the P+R car parks in their vicinity shows that they can only provide parking for a fraction of the total daily traffic.



[6] Figure source: the BKK Uniform Traffic Model (EFM)

3. As the population of the agglomeration grows, the number of individual car trips in Budapest and the associated parking demand increases, leading to less efficient use of public space. P+R capacity can handle only a fraction of parking demand and their location is not always appropriate - there should be opportunities to switch modes as close as possible to the origin of the journey.

Currently, there are around 5,000 P+R spaces within the borders of Budapest, complemented by an additional 5,000 P+R spaces in the Budapest agglomeration. In Munich there are around 9,000 P+R spaces within the city limits and in Vienna around 10,000. In the Vienna agglomeration, on the other hand, the number of P+R spaces is several times higher than in the Budapest agglomeration, at 33,000.

4. On the supply side, suburban rail could provide a good quality alternative to road transport in many places, but much of the central government-operated suburban rail network in Budapest faces challenges in terms of journey times, capacity or comfort.

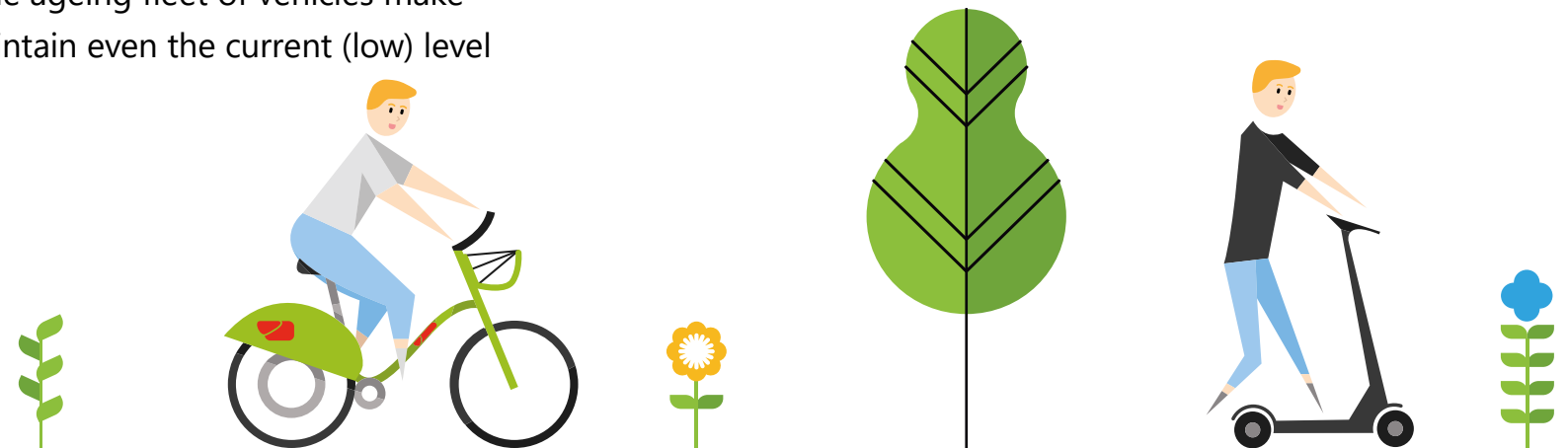
In Munich, which is the same size as Budapest, three times as many people travel by urban-suburban rail as in the Hungarian capital and its region. Today, half a million people use commuter rail in Budapest every day, but the reliability of services is sometimes hectic. Although most of the rolling stock is now modern, it often runs on 50- to 80-year-old rails on old infrastructure with outdated signalling equipment. An important objective is to double the number of people using trains and to increase rail use within Budapest. The basic rail infrastructure is already in place and the tracks cover the city, offering a wide range of connections to BKK services. However, there is a need to improve the reliability, predictability, frequency, transfer facilities, P+R and B+R capacity at stations along with passenger information services.

Today, Budapest can only be crossed by rail via the southern connecting bridge spanning the Danube, while the northern railway bridge can only serve the Esztergom line. In the future, even with the extension of the southern bridge, this will not be enough to serve trans-European lines, international traffic, east-west domestic long-distance traffic, Budapest suburban and freight traffic, for which the solution in the long term are the developments of the BAVS, and for freight traffic the V0.

In terms of the HÉV suburban railway lines, the H5 is the most acceptable, relatively direct and relatively frequent connection to the city centre, but for the other HÉV lines, transfers are required to reach the city centre. However, in the case of all HÉV lines, the poor state of the infrastructure (track and stations), the lack of accessibility, and the ageing fleet of vehicles make it questionable to maintain even the current (low) level of service.

The buses serving the Budapest metropolitan area are typically modern, comfortable vehicles, but their prioritisation is not always provided on all the necessary sections, making some of the routes concerned prone to road congestion. There is also a parallelism between suburban rail and suburban bus services on some sections, which represents a margin of efficiency that can be used to optimise existing capacity.

The development of each suburban city-region and the public transport network serving it should be examined separately, broken down by transport corridor, in view of local specificities, and specific development proposals should be finalised on the basis of such studies.



GOALS

The most important goal of the agglomeration related measures is that the Government, as the primary responsible party, complemented by the metropolitan area municipalities and the Municipality of Budapest, should provide answers and solutions to the above challenges that:

1) They are based on partnership and cooperation, not on dividing people living in the agglomeration and in Budapest, turning them against each other. They are complex, not purely restrictive packages of measures that create and improve the conditions and transport offer necessary for a modal shift.

2) In the short term, relatively fast and cost-effective implementation can be achieved in the years to decades before the delivery of major long-term developments (typically projects involving fixed-rail improvements).

3) In the long term, increase the use of rail (mainly at the expense of private car use) between Budapest and the agglomeration and within Budapest (with fixed-rail developments, which require significant resources).

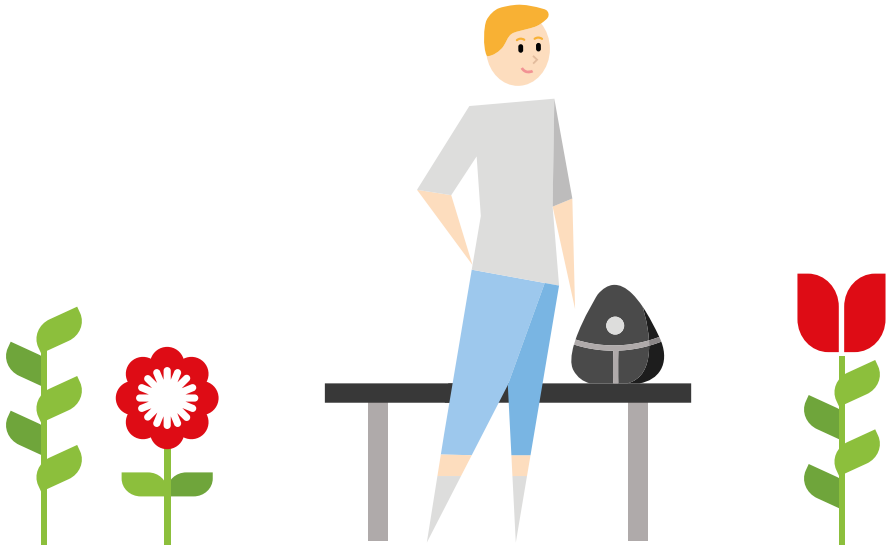
SOLUTIONS

1. Developing metropolitan area transport

I. Actions to be taken in the short and medium term

- A substantial extension and capacity increase of the bus network from the agglomeration to Budapest to provide a real and convenient alternative to private car use. Traffic engineering solutions should be put in place to ensure bus priority (bus lanes and "early green" signal priority). The City of Budapest is constantly striving to give priority to bus transport within the city limits.
- Increase the availability of fixed-rail public transport capable of taking up suburban traffic influx by optimising the feeder bus network and improving its coordination with fixed-rail services, complemented by demand-driven transport as required.
- Accelerate the implementation of the already prepared or planned improvements to the HÉV suburban railway system.

- Ensure better access to existing public transport stops and stations in the agglomeration through active and micromobility, and create new stops.
- Support ridesharing/carpooling systems and developing a carpooling app in order to increase the current average car occupancy rate of 1.2-1.3 persons, and to reduce the number of cars needed to transport the same number of persons. The measure can be combined with controls that, if properly monitored, would give a lane to the busiest cars on multi-lane roads (carpool lane).
- Immediate and short-term suburban rail developments (feasible by 2030) identified in the Budapest Agglomeration Rail Strategy (BAVS), subject to the availability of adequate public or EU funding.



II. Long-term developments

- Implementation of the suburban rail developments identified by the Budapest Agglomeration Rail Strategy (BAVS).
- Extension of metro lines not discussed by the BAVS to the city limits or beyond - these can be implemented mainly with government, possibly partly with EU funding; preparatory steps need to be continued for the M3 and started for the M4.
- Completion of the missing transversal road and public transport links in the outer zone and the area of the city border, in order to avoid unnecessary transit traffic in the inner and transition zones of the city.

2. In the short and medium term, development of P+R and B+R parking combined with public transport

I. A large number of P+R and B+R car parks should be set up as close as possible to the starting and end points of journeys in the metropolitan area, in cooperation with the local municipalities and the government. In the vicinity of the city border and in the more inland areas of Budapest, it is only

exceptionally recommended to increase P+R capacity near high-quality, fixed-rail public transport stops. B+R developments that promote micromobility should typically have an advantage over P+R developments because of their lower space requirements and higher cost-effectiveness.

II. P+R parking can be provided in areas without fixed-rail connections, provided that the quality and quantity of bus services are sufficient.

3. In the short and medium term, developing fare integration along with digital and integrated products

A simpler, more price and comfort competitive fare structure should be created, so that both long-distance and suburban journeys only require the purchase of a single fare product (even online), which is not linked to the operator or mode of transport, but to the journey. In order to properly serve digitalisation needs, it should be ensured that customers can access all relevant digital mobility services within the Budapest metropolitan area by downloading a single, easy and quick-to-use application and creating a profile. The Municipality of Budapest is ready to cooperate and take the necessary steps to achieve this.

4. Fine-tune financial incentives where possible

Most of these will require changes to national legislation, but it is possible to continue the uniform parking policy started in 2022 by analysing the effects and international examples, and for example making the M0 motorway free (so that some transit traffic does not pass through Budapest) could reduce the number of vehicles on the capital's roads. A review of the national tax policy on company cars is recommended to ensure that the incentives for commuters are not distorted by hiding part of the individual and social costs of private car use. At the same time, it should be ensured that the tax conditions for public transport passes as a benefit are more favourable.

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Agglomeration Annex

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