



56 m-long CAF URBOS tram on a refurbished section on Budapest's tramline 1
Photo: Simon Nyiró, BKK

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Managing Transportation

The SMART-MR project's 6th international workshop was held in Budapest on the 12th and 13th of June, 2018. The workshop organised by BKK Centre for Budapest Transport took place in the "New City Hall" of the Hungarian capital and it was discussed how transportation in a metropolitan region can be managed.

Circa 50 participants from eight metropolitan regions, such as Oslo and Akershus (Norway), Gothenburg (Sweden), Helsinki (Finland), Ljubljana (Slovenia), Rome (Italy), Porto (Portugal), Barcelona (Spain) and Budapest (Hungary) took part in the sixth workshop of the project's seven workshops, in the framework of which presentations were held about the regional institutions of the Hungarian capital and its surroundings, about BKK's institutional structures and roles, the Hungarian capital's mobility strategy (Budapest Mobility Plan, BMT) and also about the UN's sustainable goals. Proje-

ct partners presented their best practices in transport organising and covered different topics about mobility management in roundtable talks, focusing on the regional institutional cooperation, demand responsive transport (DRT), mobility as a service (MaaS), shared transport solutions and autonomous vehicles. A site visit was also organised to try and gain insights into Budapest's public transport system. The presentations, the site visit and also



Participants of the 6th SMART-MR workshop
Photo: Per Kristersson



SMART-MR (Sustainable measures for achieving resilient transportation in metropolitan regions) is an Interreg Europe project running from April 2016 until March 2021 with a total budget of approximately EUR 2.2 million.



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Good practice in Barcelona

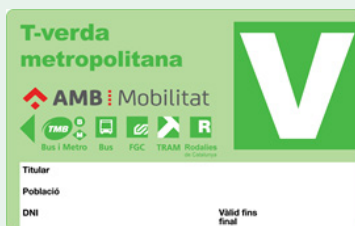
Green Ticket (T-verda metropolitana)

Àrea Metropolitana de Barcelona (AMB) and Autoritat del Transport Metropolità (ATM) promote a new transport ticket to encourage people to retire their old and pollutant vehicles.

Citizens who retire their old car/motorcycles (without environmental sticker) can get the Green Ticket, which is a 3-year free pass for all public transport (ATM zone). The only condition to keep the ticket is the prohibition of buying another vehicle (even with environmental sticker).

The basic and necessary conditions for getting the green card are the following:

- Being a registered resident in one of the 36 metropolitan municipalities.
- Having got rid of a light diesel vehicle up to Euro 3 (manufactured before 2005), or gasoline or gas up to Euro 2 (manufactured before 2000) and motorcycles type pre-Euro or Euro 1.
- Not having bought any new vehicle for 6 months before the date of scrapping, nor after the mentioned loss during the period of validity of the Metropolitan Green Card.



This practice encourages citizens to retire their old and pollutant vehicles and to use public transport, instead of buying a new private vehicle.

This initiative helps to reduce pollution and to improve the metropolis' air quality; at the same time, it represents a real alternative when restrictions on the circulation of polluting vehicles start to be applicable in the metropolitan Low-Emission Zones (ZBE).

Users pollute less and at the same time get used to moving with public transport in the long run (valid for 3 years). Therefore, this measure



Dr. Janez Nared welcoming the workshop | Photo: Simon Nyiró, BKK

Interreg Europe, platform for a fruitful cooperation

Dr. Janez Nared, Lead Partner, SMART-MR

The idea of the Interreg Europe program is to help regional and local governments across Europe to develop and deliver better policy by creating an environment and opportunities to share solutions. In the framework of projects, such as the SMART-MR project, they are able to exchange their experiences and good practices, as well as create a network of experts, which can transfer those good practices to their regions.

All of the workshops organised within the project are thus new steps taken in the field of mutual learning, by which new knowledge can be acquired and, even more importantly, new relationships can be created between the participants.

By the involvement of experts, partners are able to better identify challenges, state-of-the-art, good practices, drivers and barriers. Experts contribute to mutual learning, support cross-sectoral approach, but at the same time, they are part of the process by getting ideas from their counterparts across Europe, by bridging skills and knowledge gap, by disseminating knowledge and by creating a common understanding among the participants.

Putting experts at the fore is the crucial element in providing a smarter future. They contribute to a policy change on a daily basis. They are the ones who know the processes and trends and, most probably, they know how to address various challenges.

Their cooperation within the Interreg Europe platform gives them a unique opportunity for professional growth, capacity building and networking.

This is an opportunity also for all of the partner regions, which can generally take advantage of people's potentials, strive for the most suitable solutions and avoid mistakes by learning from the others' success and failure, and by providing innovative, acceptable and prudent solutions, resulting in successful and resilient metropolitan regions with a high quality of life.

The workshop aiming at transport management in Budapest in June 2018 was a good example of this process. By attending the workshop sessions, the participants could learn from each other and by testing Budapest's transport system, they were inspired by several ideas on how the services of public transport in their regions could be improved. At the same time, they provided some valuable comments to BKK Centre for Budapest Transport, the host organisation on how to improve their services.

The SMART-MR project's success can be attributed both to the dedicated partners and also to the numerous enthusiastic experts who are willing to share their knowledge and participate in the project events. Many thanks for your effort and for all the experiences by which you contribute to the project.



Dr. Kálmán Dabóczy (Ph.D.), BKK's CEO speaking at Budapest's New City Hall
Photo: Simon Nyirő, BKK

Official welcome by the CEO of BKK, Dr. Kálmán Dabóczy

Dr. Kálmán Dabóczy, BKK's CEO welcomed the participants of the 6th SMART-MR workshop. He gave a short introduction about BKK Centre for Budapest Transport, established in 2010, which is acting as a responsible mobility manager of the city, providing strategic planning and organising public transport services and based on sustainability principles, harmonising travel demands. As a result of the past years' development and innovation, Budapest has managed to join the customer-oriented metropolises' league, which has an efficient transport governance system with an integrated mobility manager, a sustainable urban mobility plan (SUMP) and a public transport system that provides better services and an integrated transport infrastructure with more connections and attractive vehicles and, furthermore values quality and innovation. A responsible mobility manager has to be committed to helping citizens to become smart travellers with reasonable mobility choices, and be aware of and implement the latest trends in mobility, such as the e-mobility, automation, public participation, mobility as a service and sharing based mobility.

Mr. Dabóczy spoke about the word SMART, which is often linked to ITS but in his sense the smartest thing is not the technology, but to learn from each other, even if people do not agree or understand each other completely. Communication and knowledge sharing are key factors; we should build bridges to connect people. The winner of innovation is the one who can find relevant information sources, can implement the best practices and can share the knowledge, data and these practices with each other. This kind of networking can bring together participants and as a result, a scientific cluster can be formed in the world. "Today's topics, like decarbonisation, MaaS, transport management are very important but it is crucial to be able to work together also for the very basic values, such as life quality and environment, besides the above-mentioned values", declared the CEO. He emphasised the importance of research and innovation projects, such as the SMART-MR project and the importance of acquiring each other's good practices. He finally wished participants a very fruitful communication and knowledge transfer, in the framework of which they can share their know-how they have globally because everyone will be richer with the experience and ideas in the end.

promotes a new model of sustainable mobility, discouraging the ownership of cars and motorcycles.

The service is managed by the AMB, and it has proved so successful that the Generalitat de Catalunya (regional government) has decided to adopt it and extend it to the rest of the territory with the name of T-Verda.

Good practice in Budapest

Integrated mobility management in Budapest

The Municipality of Budapest as the competent authority for local transport established BKK Centre for Budapest Transport as an integrated transport authority for managing transportation issues in Budapest. BKK as a public company manages tasks and activities such as strategic mobility planning, road safety, public transport, strategic road management and maintenance, parking, taxi services as well as passenger information. Through the cross-sectoral integration of all transport modes, BKK functions as an integrated mobility manager. Following reorganisations in the past few years, transportation is managed by four companies: BKK and its subsidiaries: Budapest-Közút (Public Road Manager), BKÜ (Budapest Transport Customer Relations) and BÖK (Budapest Municipal Debt Management). Budapest Közút is responsible for management, operation and maintenance of roads and bridges, BKÜ is responsible for ticket sales and ticket control, while BÖK is responsible for penalty fare debt management.

Creating an integrated transport authority ensures a holistic approach to mobility as a whole, instead of sectoral views. It also helps to make tasks and responsibilities clear. BKK is responsible for all travellers regardless of the purpose, the aim or the mode of transport. Travel demand is influenced based upon sustainability principles, real society demands and reasonable economic costs.

Good practice in Göteborg

ElectriCity – cooperation on tomorrow’s public transport

How do we create preconditions for sustainable and attractive public transport? What types of new opportunities arise for urban planning when noise and exhaust fumes disappear? In Gothenburg, Sweden 15 partners from industry, academy and society are now working together to develop, test and demonstrate new solutions for the future. This cooperation goes under the name of ElectriCity. The testing and evaluation of electric bus operations are central parts of ElectriCity. On 15 June 2015, a new bus service – route 55 – started to operate between the two campuses of Chalmers University of Technology in Johanneberg and Lindholmen. The three demo buses run on renewable electricity and are extremely energy-efficient, quiet and entirely emission-free. On board the buses, passengers have free access to the latest technology. The bus stops at Teknikgatan on Lindholmen. Quiet and emission-free public transport can operate in areas currently closed to traffic, thus opening up new scope for planning in cities and towns. Apart from the three all-electric demo buses, the route is also served by a number of electric-hybrid buses powered by electricity for about 70 % of the route.

By collaborating with a large and varied group of stakeholders, new solutions can be developed: not only an electric bus route but also urban planning, research etc., by which a more holistic approach can be created to facilitate change.

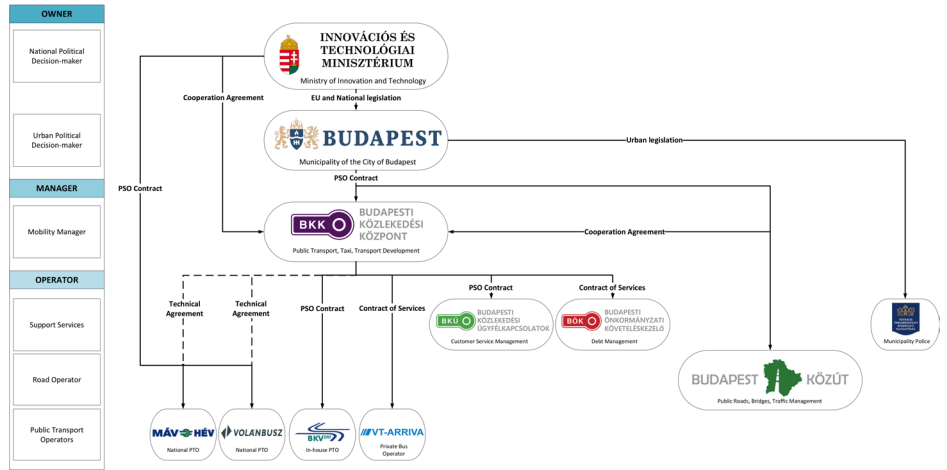


Photo: Volvo ElectriCity

Regional institutional structure for transport organisation in Budapest’s metropolitan area

Dr. Zsolt Denke (Ph.D.), senior public transport expert, BKK

Transport Organizing Task Performance Model of Budapest on 1st of June 2018.



Public transport institutional framework

In Budapest's metropolitan area, the order, the decision making process and the fulfilment of public transport services are depending on the type of the service, which can be local or suburban ones.

Hungary is based on a two-level administrative structure regarding public transport services. Local municipalities are responsible for local transport, while the state is responsible for regional transport. In Budapest's metropolitan region, both types are available: in the city, BKK is the competent authority on behalf of the Municipality of Budapest, while the Ministry of Transport orders suburban services in the metropolitan area. In Budapest, there is an in-house public transport operator (BKV) and one-third of the bus services are tendered out. The suburban services are operated by state railway companies (MÁV-START, MÁV-HÉV) and by the state-owned regional bus company (VOLÁNBUSZ). Decisions related to the tariff for the inner city services is made by the Municipality of Budapest while for the suburban services by the Ministry of Transport. There is a government decree regulating the tariff discounts (also the local ones) nationwide. The State Government grants fare subsidies for these discounts as a compensation. Additional local discounts are decided by the Municipality of Budapest. The cost of service in Budapest (which is not covered by fare box revenues and fare subsidy) is covered directly by the Municipality of Budapest and indirectly by the Hungarian Government (through the municipa-

lity). The cost of the suburban services is covered by the Ministry of Transport.

Cooperation in Budapest’s metropolitan area

There are contractual relationships between the authorities' two levels on tariff and service integration.

A cooperation for tariff integration between authorities started in 2005. The existing agreement on Budapest's integrated tickets and passes was signed in 2010. Integrated tickets and passes are valid on local services ordered by the Municipality of Budapest and also on the suburban and regional services within Budapest ordered by the Ministry of Transport.

Since 2016, there has been a new agreement concluded between and by the competent authorities on special suburban rail and bus services. These lines serve both the city and the metropolitan area but they have a stronger role within Budapest than the previously mentioned regional services. These services were previously ordered by the Municipality of Budapest, while nowadays they are ordered by the Ministry of Transport. The agreement regulates the smooth change of competent authorities to keep services to continuously remain part of Budapest's integrated transportation.

Further service integration

The replacement of services in case of service disruptions is part of the transport service integration, which is a good practice in Budapest (e.g. during the reconstruction of Budapest's national railway line or during the reconstruction of metroline M3). In the framework of the integrated passenger information system

(FUTÁR), bus departure displays in bus stops used by local and regional buses indicate both local and regional bus departures. BKK's customer service centres sell not only its own tickets but also regional tickets (of MÁV-START and VOLÁNBUSZ). A fully integrated tariff and ticketing system in the metropolitan area is planned to be implemented in the future.

Good practice in Helsinki

HLJ2015 – Agreement on Regional Infrastructure Development Projects

As a part of the Helsinki Region Transport system plan (HLJ2015), 14 municipalities of the region made the proposal on 16 most important infrastructure projects to develop the transport system of the Helsinki region. It was made within a large-scale planning project with multi-level and cross-sectoral participation process in close cooperation with land use and housing sectors. Projects were named in the agreement signed by and between the State and Helsinki region municipalities, in which also the funding was agreed.

Mobility management in Budapest

Patrik Tóth, innovation associate, BKK

Budapest, as the capital of Hungary, is the region's economic, touristic, social, educational and transport hub. With its 1,75 million inhabitants, it is the largest city in Hungary, covering 525 km² land and being surrounded by 80 further municipalities accommodating 0.8 million additional inhabitants, together forming the Budapest metropolitan region.

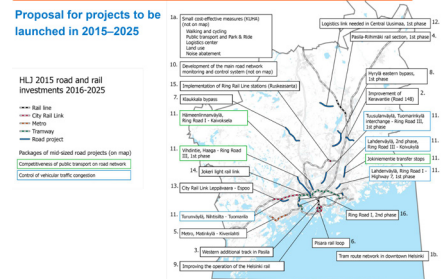
The specific public transport tasks include planning, integrating, regulating, tendering, awarding, promoting, managing as well as controlling public transport-related tasks. The originally founded system was slightly changed in 2016; BKK continues to perform transport organising as well as strategic and supervisory road management tasks on behalf of the Municipality of the City of Budapest, while road operation and maintenance duties were transferred to Budapest Közút Zrt, an autonomous company that has a separate public service contract with the municipality. BKK's two further subsidiary companies have been involved in transport organising: the collection of parking fee and public transport penalty fare debts was assigned to Budapest Municipal Debt Management (BÖK Kft.) in September 2016, while Budapest Transport Customer Relations (BKÜ Zrt.) has been managing customer relations tasks in cooperation with BKK since May 2017, in addition to providing internal support services to BKK.

The city has a dense transport system including 4,500 km road and 3,320 km public transport network, 5,000 taxis and 2,200 public transport vehicles, carrying 5 million passengers on a daily basis. The vehicle fleet has been improved to a great extent for the last 8 years. The average age of the vehicles is constantly decreasing, while the proportion of the low floor vehicles is continuously improving. For the last few years 1,000 low-floor, air-conditioned, state-of-the-art buses have been put in service in Budapest. New vehicles are running on metro lines 3 and 4, while new trams and trolley buses have also been procured. In the modal split, public transport has a 45% share, car transport 35%, walking 18% and finally biking only 2%. The goal for 2030 is to increase green transport modes from 65% to 80%.

BKK as Budapest's responsible mobility manager is in charge of all travellers regardless of the purpose, the aim and the mode of transport. There is no absolute priority among transport modes. BKK does its best to harmonise the demand/supply ratio of transport modes, based on real time information and long-term strategic values. The travel demand is to be influenced based upon sustainability principles, real society demands and reasonable economic costs.

BKK Centre for Budapest Transport was founded by the Municipality of Budapest in 2010 as the competent integrated transport organiser with responsibilities covering public transport, cycling, walking, public road and bridge infrastructure management, parking and taxi services as well as transport development pro-

Infrastructure development projects on a map



HLJ 2015 and its proposal for infrastructure projects are a strategic plan taking an overall view of the transport system in the Helsinki region. The preparation of HLJ 2015 has been closely linked to the preparation of the Helsinki Region Land Use Plan and the Housing Strategy was included in it. The plan helps to ensure the flow of traffic also in the future in all the 14 Helsinki region municipalities. The high rate of population growth in the region poses challenges for transport and the urban structure. The goal is to enable sustainable growth. The agreement also targets to equalise decisions on infrastructure projects between municipalities and it ensures funding from the state.

Good practice in Ljubljana

Integrating regular and school bus lines in Grosuplje and Škofljica

In most of the suburban municipalities, there are two parallel settings for local bus transportation: regular buses and school buses.

Regular bus lines and bus stops are registered and controlled at a national level. Contracts with service providers and subsidies are long-term. Schedules are fixed and publicly published. Everybody can use them by paying a ticket, but buses are mostly not a preferred way of transportation.

School buses, on the other hand, are commonly in municipal domain. Contracts are usually annual, schedules and bus stops are adaptable to schools' needs and are not published. Only pupils can use them and the service is paid for by the municipality.

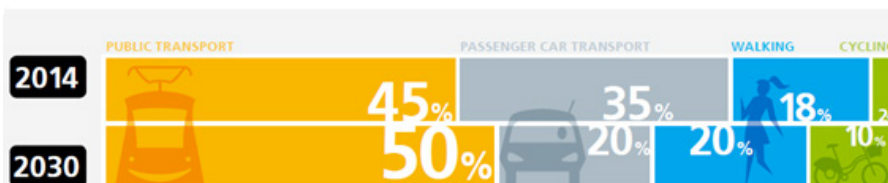
There are two ways to combine those two systems:

a) School bus operators could apply for special permit from the national authorities to carry also other passengers. Still, the timetables are not publicly published and are adapted to primary school needs only.

b) School buses are fully integrated in PPT system. All buses can be used by pupils and all other passengers.

In Grosuplje, Škofljica and some other municipalities, they took the second option. Before the changes in 2013 on most of the local lines there were only three to five daily regular connections and three departures for school pupils only. In 2013, all the departures have been integrated into the PPT system. In Grosuplje and Škofljica additional late afternoon and evening departures have been introduced, as well.

In this way more people are able to use buses (high school students, employees, the elderly etc.), with the similar municipal investment, the number of daily bus connections has doubled, school pupils can use buses for afternoon or evening activities for free, as well and bus lines are available in journey planners.



Modal shift targets according Budapest's mobility strategy

BKK's current flagship projects:

- Reconstruction of metro line M3, Hungary's busiest rail line, carrying 500,000 passengers on a daily basis. The work is performed in 3 phases; the first phase is currently being carried out. The reconstructed section is successfully replaced with articulated buses having a 45-second frequency, with replacement trams and by other measures,
- Tramline 1 is being extended from Fehérvári út to Kelenföld railway station, reaching a big intermodal node in Buda,
- Renovation of the Széchenyi Chain Bridge, the oldest bridge in Budapest,
- Development of metro line M1 with two new stops, new vehicles and accessibility,
- Planning of the northern extension of metro line M3,
- Road developments with integrated approach,
- Reconstruction of the Budafok tram depot,
- Procurement of new trams and trolleybuses,
- Planning of the connection of metro line M2 with suburban rail line H8.

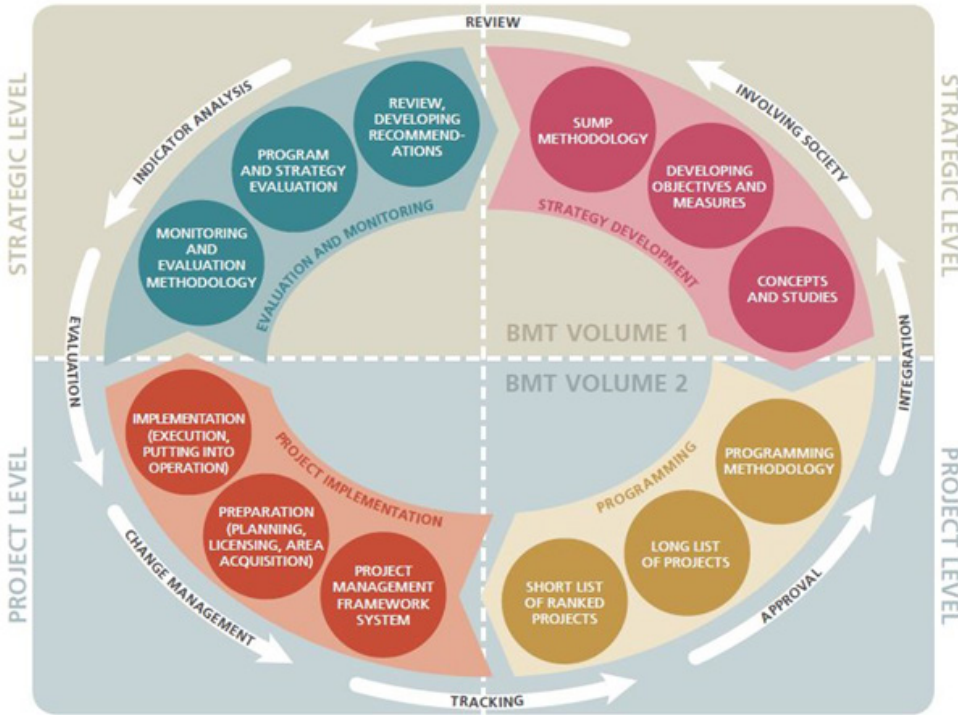
Furthermore, BKK is strongly involved in international activities, specifically in policy making and adoption, professional networking and in R+D+I projects. A responsible mobility manager has to be committed to helping citizens to become smart travelers with reasonable mobility choices and be aware of and implement the latest trends in mobility.



Photo: Dávid Nyitrai, BKK

SUMP planning in Budapest

Tünde Hajnal, innovation expert, BKK



Good practice in Oslo/Akershus

Residential parking in Oslo

Street parking outside the city centre has mostly been free of charge for everyone. In residential neighbourhoods close to the city centre, with limited street parking for residents, the parking situation has been challenging because of a high number of parked cars by commuters.

After a few years with smaller test areas in the city, the final scheme for residential parking was presented to the politicians in the district councils. Nine (out of 15) districts decided to implement the scheme (five in the whole district, four in some streets in the district). Most of these are quite close to the city centre. The implementation started in 2017 and it will finish in 2018.

With a resident card (an electronic system based on the registration number of the car), (approximately 300 Euro/year, and 26 Euro/month) residents can park their cars in the residential parking places in the streets within their district. Visitors can pay for parking (1 hour = 3 Euro). EVs and hydrogen cars park for free.

The practice reduces the possibility to use your private car for commuting in an effective way. The possibility is still there, but because of the parking fee, the commuters are forced to consider other means of transport to work.

The parking situation for residents has also improved. This reduces unnecessary driving to try to find a vacant spot. This will again reduce emissions.

Most of the districts where the residential parking scheme is being introduced are close to the city centre/in urbanised areas where the residents also have good public transport and the possibility to walk and cycle to their everyday activities. The 300 Euro yearly fee to park in what used to be free parking spots might push people who are not dependent on their car in the direction to sell it.

Streets not filled with cars can be used to improve the facilities for people who are walking, cycling and

The Budapest Mobility Plan (BMT), based on the Budapest 2030 Urban Development Concept, is Budapest's transport development strategy for the period of 2014–2030, prepared in the spirit of sustainable urban mobility planning.

BKK Centre for Budapest Transport is responsible for Budapest's transport strategy

planning. The SUMP planning process started in 2012, by reviewing the formal strategy. After a large-scaled institutional and public discussion was carried out, the BMT's objectives and measures were approved by the City Council in 2015. Based on this essential policy, the SUMP's programming part, which contains the assessment and the schedule of the transport project has been finished in 2018.



using public transport (e.g. separate lanes for cycling or buses).

The scheme is also a source of income for the municipality.

Good practice in Porto

Governance changes in Public Transport System in MR of Porto

In August 2015, Área Metropolitana do Porto (AMP) became the competent Transport Authority for public inter-municipality passenger transport services, road transport lines that intersect more than one municipality and which are wholly or mainly developed in the metropolitan area of Porto.

The Porto transport network is constituted by:

- Metro do Porto, metro in seven municipalities of the metropolitan area of Porto with six lines;
- Urban Trains in Porto, 82 stations, within a radius of 60 km around the Porto city and four different lines, covering six municipalities of the metropolitan area;
- STCP, public transport operator operating buses in six municipalities of the metropolitan area of Porto;
- 34 private bus operators,

However, with regard to municipal lines (with origin, destination and integral route in a single municipality), the municipalities assumed themselves automatically as transport authorities and with regard to public operators (Metro do Porto, STCP and train) the competence remained in the sphere of the State.

In this sense, AMP promoted a new management model with the following objective:

Improving citizens' mobility in the metropolis of Porto through greater efficiency and sustainable management of the public passenger transport service, as well as the universal access and quality of services, economic, social and territorial cohesion, balanced development of the transport sector and intermodal coordination.

In pursuit of this strategy, AMP has established a broad collaborative platform structured in agreements,

According to the general goals of Budapest 2030, Budapest's transport must improve the competitiveness of the town and its region and must also contribute to establishing a sustainable, liveable, attractive and healthy urban environment. The operational goals required for achieving the strategic objectives (liveable urban environment, safe, predictable and dynamic transport services, cooperative regional relations) appear in four areas of intervention: infrastructure, vehicles, services and the governance system, i.e., more connections, attractive vehicles, better services and efficient governance.

The approximately sixty measures serving the operational objectives cover all urban modes of transport and sub-sectors (from walking to cycling and public transport to individual transport, also including parking, freight transportation, taxi services as well as technology- and IT-based developments) with a systematic, yet differentiated approach, and also manages complex issues such as the developments concerning the river Danube (bridges, waterborne transport), tourism needs and public space improvements.

The BMT Budapest Mobility Plan – First SUMP (sustainable urban mobility planning) is the basis of Budapest's transport development strategy and has a multimodal holistic approach. This strategy was prepared in line with the EU requirements for the programming of development resources in order to be prepared for applying for EU funds supporting urban transport. The transport development projects of the next two EU financing periods must serve the realisation of these objectives.

According to the consequences of the institutional analysis, in the course of the following years, the SUMP planning as well as the transport organisation's institutional background should be extended to regional level.

On 21 February 2017, the European Commission revealed the finalists of the 5th Sustainable Urban Mobility Planning (SUMP) Award, and Budapest Mobility Plan was among the three finalists that showed excellence in integrating freight in the development of their SUMPs.

Workshop description and results

The workshop titled "Managing transportation" was aimed at sharing experiences among the project's metropolitan region partners, searching for good practices and possible knowledge exchange and finally deepening the knowledge starting from the inventory.

The meeting was organised in three sections: plenary sessions with speeches by partners and experts; four roundtable sessions for small groups; and a site visit examining Budapest's public transport system. The first morning of the workshop titled "Managing transportation" was dedicated to a plenary session, in the framework of which an overview of the situation could be gained in Budapest's metropolitan region as well as the different partners' good practices related to the workshop topic could be learnt. Afterwards, four roundtable sessions were organised to discuss

the most relevant topics in small groups emerged from the analysis of the 6th Inventory. At each roundtable session, workshop participants were divided into four parallel groups and each group was dedicated to a table with a moderator and administrator provided by BKK.

The following topics were discussed during the roundtable sessions:

- Table A: Institutional questions, strategies, policies
- Table B: Mobility as a Service (MaaS), data related questions, ITS
- Table C: Demand responsive transport (DRT), public transport, bus fleets,
- Table D: Shared solutions, autonomous vehicles,

Each topic relates to one (or more) of the following priorities from the mobility strategy BMT:

- Efficient governance - Table A
- Better services – Table B, D



Photo: Simon Nyirő, BKK

- Attractive vehicles – Table C
- More connections – Table C

The workshop's participants agreed that the backbone of the metropolitan region's transport system should be public transport – also in the long term – in the framework of which some good examples could be identified in Budapest. Public transport should be accessible, reliable and comfortable. It is also planned in the long term that public transport should be decarbonised, which means mainly to phase out diesel buses. This, however is not so easy at the moment, as the current electric bus operational models have a lot of uncertainties. Nonetheless, the metropolitan region's mobility strategies count on having zero emission buses by 2030. In the meantime, CNG buses could be a temporary solution.

An important option for decarbonising transport is to enhance walking and cycling as soft transport modes. It is even better to reduce transport needs for example, with the help of new communication methods, working from home, etc.

Photo: Dávid Nyitrai, BKK



With the future development of autonomous vehicles, parking problems could be partially solved, however road transport will not be reduced. The same applies also to electric cars, which do not mitigate congestions. Car sharing could be a good way to increase the efficiency of car transport and combined with autonomous vehicles, it could be a good solution for lower density areas. Autonomous vehicles are already available in public transport (mainly in the subway system), where a good example in Budapest is the M4 metro line, which operates driverless cars without platform screen doors.

There is a need for integration between the city and region regarding transport management, between different sectors and also between service providers. A new way of integration is realised in the Mobility as a Service (MaaS) system, where a joint platform has been set up to integrate the planning and management of trips together with ticket purchase and validation.

A future challenge of transport management is to find the right mix between different transport modes, shared solutions and autonomous vehicles in order to cut greenhouse gas emissions and to create a liveable urban environment without limiting the need for mobility.

memorandum of understanding and delegation and sharing of competences that support the organisation and management of metropolitan mobility. The main entities involved are the central state (Environment Ministry + Mobility and Transport Institute + Mobility and Transport Authority), the private operators represented by their association (ANTROP), the public operators, the municipalities and, of course, the metropolitan area of Porto.

- One Transport Authority
With an inter-administrative contract for delegation of competencies it was possible to transform the 17 municipal authorities plus the metropolitan authority into one, resulting in a significant gain in efficiency, in optimising human, technological and financial resources, facilitating the standardisation of procedures and better articulation with transport operators.

- **Creation of Technical Management Units (TMU).**

The Delegation of Competence Agreement also provided for the creation of Technical Management Units (TMU). These TMUs make it possible for the State to delegate the competences to which they are committed to to the inter-municipal entities. An example is the TMU of municipalities served by the STCP network, a state-regulated operator, which, by means of an inter-administrative contract, will delegate the competencies of regulating, supervising STCP careers at TMU_STCP, coordinated by the Municipality of Porto and by the AMP and will include representatives of the other five municipalities where STCP buses operate.

- **Working groups (WG)**

Different WGs, involving different organisations were established, in order to share competences and develop common projects to reach the common goal.

The articulation of several players allows a shared vision for the mobility on MR level and enables MR's citizens to have an integrated public passenger transport system with an efficient and sustainable management.

Main results:

- Significant efficiency gains to the design level of networks and promotion of inter-modality, while optimising the cost calculation, according

to the type of needs and available resources.

- Amplification of the use of the ANDANTE (intermodal ticket system) to more operators and more territory areas.
 - Better information to the public (Move.me AMP app) – That allows the public to have access to integrated, public transport-related information.
 - Better planning - the transport model (under construction)
- Oversight – AMP as a transport authority will have the tools to see the gaps between planning and the reality.

ANDA – The new ticket system of the MR of Porto

ANDA is a ticketing system based on a mobile application developed by TIP-Transportes Intermodal do Porto (the enterprise responsible for our intermodal ticket system – ANDANTE), in collaboration with transport operators and the Faculty of Engineering of the University of Porto.

It is intended for public transport users in the Metropolitan Area of Porto. It is an investment of around two million Euros, fully granted by the Environmental Fund of the Ministry of the Environment.

At this moment ANDA is in the experimental phase (few selected lines and users).

It makes the ticket system much easier for the user: the passenger just needs to have an app on his or her smart phone and the payment is made after the end of the months based on its use and the algorithm developed for the system will present the most economical and cost-effective tariff solution for the customer.



Dr. János Zlinszky presenting in the meeting
Photo: Dr. Judit Albert, BKK

Transport management: the current global context

Dr. János Zlinszky, associate professor, Pázmány Péter Catholic University

The 20th century left humanity in an utterly unsustainable situation. Scarcity of natural capital – the foundation of the real economy – increases worldwide. Inter- and intranational disparities in the access to income, goods and services are growing due to the combined effects of resource scarcity, economic exploitation, and social injustice. All these cause an accelerating erosion of resilience, stability and security of the global domino-system of regions and states.

Between 2000 and 2015, the UN “Millennium Development Goals” ef-

fort successfully mitigated some key social symptoms through measures in education, healthcare, and aid provided to the poor. The subsequent UN “2030 Program for Sustainable Development” takes the next step, aiming at bringing about a radical change of the unsustainable system to a sustainable one. This comprehensive plan – unanimously endorsed in 2015 as UN Resolution A/RES/70/1 “Transforming our World” – is a system of 169 mutually supportive, interdependent targets arranged under 17 global “Sustainable Development Goals” (SDGs for brevity). Transport is an important sub-system of the whole. All targets to-

Good practice in Rome

Roma TPL: the company that broke the monopoly of public transport in Rome

Roma TPL is the second manager of Public Transport of Rome, which provides service mainly for “Peripheral Lines”, in compliance with a Service Contract awarded in 2010 by Rome, after a specific EU-level tender was launched.

 **SUSTAINABLE DEVELOPMENT GOALS**

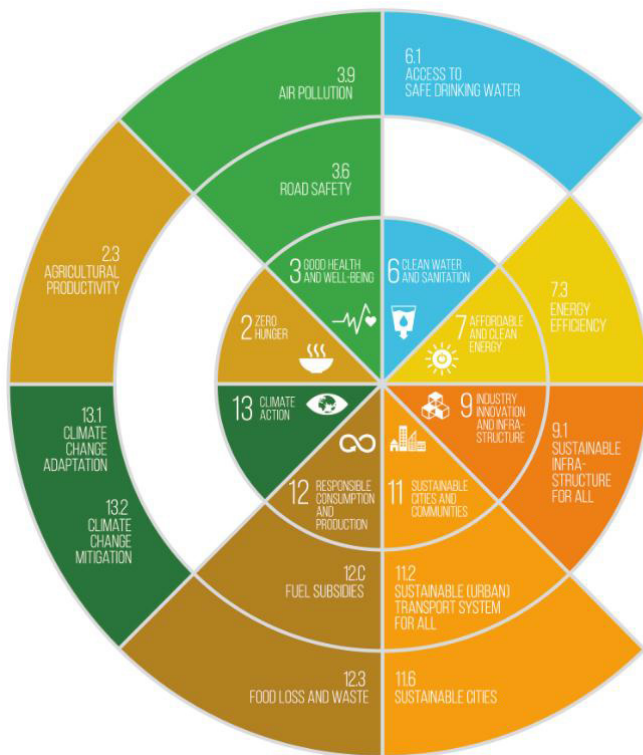


17 Sustainable Development Goals | UNDP

gether form a “watertight” program, based on and endorsed by science, to keep the sinking “ecosocial boat” we all travel in together afloat. Leaking, incomplete implementation of even a few targets can sink the whole ship. Fully implementing our SDG obligations may well be our last chance for peace and stability.

Two targets are directly transport-related: 11.2 aims to provide, by 2030, access to safe, affordable, accessible and sustainable transport systems for all, notably by expanding public transport, with special attention to the needs of those in vulnerable situations – women, children, persons with disabilities, and older persons; while 3.6 aims to halve, the number of

global deaths and injuries resulting from road traffic accidents by 2020. However, at least a dozen more targets have transport-relevance. Linked by one to three steps in a causal chain, some, like 13.1 and 13.2 for climate action, 3.9 and 11.6 for air pollution mitigation, or 2.3 and 11.a for rural productivity and access are greatly aided by progress in the field of target 11.2. Progress in others, like 7.3, 9.1, or 12.c, provides technological, infrastructural and economic support for an expanding sustainable public transport system. Exemplary transport management development in the EU is a political and moral imperative on a global scale.



... but many more have transport relevance!!! (2015)

„Transport services and infrastructure are essential to achieving most, if not all, the SDGs ”

The Service Level Agreement specifies the operation of the Peripheral Lines of the Municipality of Rome for eight years, for approximately 28 million km a year. This is about 20% of the bus transport service operated in Rome. The remaining 80% is operated by ATAC, which is the first manager of the Roman TPL.

The Company has a fleet of about 440 buses and involves a total of 1,900 people to operate the 83 peripheral lines of its competence. It has five depots in the city and is positioned, in terms of size, above the average Italian Local Public Transport companies.

The Company has ISO 9001/2000 Quality Certification and is committed to providing a professional service to users in a context of continuous improvement.

Roma TPL was the first example of a European tender in Rome to assign public transport and to break the monopoly of the incumbent ATAC owned by the municipality of Rome, which consequently had the contradictory role of controlling its own company. The plan was to divide the public transport service into 4-6 areas and request tenders for all of them but Rome’s next city administration did not continue the policy.

The Rome TPL Service Contract does not refer to standard costs, but provides, in addition to specific penalties related to factors of regularity and quality of service, remuneration proportional to the mileage output provided. It is a gross-cost contract.

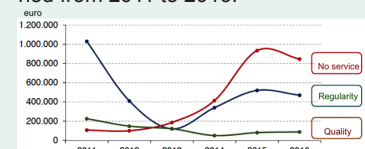
A positive result was a drastic diminution of the cost per bus-km, half of that of the ATAC.

Another positive aspect is in the monitoring of the services of Roma TPL by the mobility agency.

The Roma TPL buses have on-board GPS, cameras, and sensors at the door to count passengers’ boarding and alighting.

The mobility agency can check in real time whether scheduled services are being respected and apply penalties. There are no rewards for better service.

The figure shows the penalty applied to the Roma TPL during the period from 2011 to 2016.



Policy recommendations

One part of the workshop, the fourth roundtable session was dedicated to summarising the workshop by formulating policy recommendations incorporating the presentations heard, the results of the roundtables and the experiences gained at the site visit. The following major policy recommendations could be drawn from the workshop:

- Continue the subject of mobility at the EU program level. While policy learning platforms are not working well; more attention should be paid to and more money should be given to the transfer of good practices.

- In order to manage mobility in metropolitan areas better, a certain degree of integration is needed in the following areas:

- o Information: all the information should be gathered at one point in order to manage the transport system more efficiently.

- o Territories: some kind of integrated transport management should be established between the local and regional levels, because transport flows do not stop at city boundaries.

- o Sectors: an inter-sectorial in-

tegration should be established between different sectors, like spatial and transport planning.

- Public transport should be accessible to all people, paying special attention also to low demand areas.

- The public transport system should be fail safe, building on reliable backbone modes but at the same time having alternative routes, as well in order to avoid network breakdowns in case of line failures.

- A long term strategic vision is important, where transport planning can and should be relied on.

- Prioritising transport modes through pricing is important. We need an inventory and a clean vision. Priority should be given to sustainable and the active modes of transportation.

- Full integration of mobility is needed, including the bikes and pedestrians. The cycling system has to be integrated into the public transport system and travel distances have to be shortened.

- The city of the future can ensure its citizens door-to-door transportation without any private vehicles. This concept needs different sharing systems in addition to well-designed PT services.

- Payment systems (parking and congestion charge) could influence the demand patterns of travellers.

- Utilisation of streets and public spaces is important; more space for pedestrians and cyclists, less for cars and the number of public parking spots could be reduced. This is the way to make future cities.

- We should give travel plans for companies, and we should provide a good example for behavioural change. It is important to involve children at young ages, as well. We should make good first memories for them.

- Most of the European cities have good PT, but they still have congestion. The problem is the usage of cars. Reduced car use should be forced by the politicians and city managers. Pull-push methods for more attractive PT is a good way to reduce the level of car usage.





Part of the group on a tram figuring out what the best way is to get around during the site visit | Photo: Simon Nyirő, BKK

Site visit

There was a site visit included in the workshop in order to try out and gain insights into how transportation, especially public transport is functioning in Budapest. The visit's double aim was to let the participants get an impression of the city's transport situation and at the same time to have some feedback from them. The site visit was organised as a wayfinding challenge to make more interesting and to involve participants into the activity. The wayfinding challenge was an exciting site visit and a competition between groups with the aim to reach the best use of Budapest's public transport system. Participants were grouped into four teams of 8-10 people and each team was escorted by a local guide. Teams collected points based on the number of used modes of transport and lines. Extra points could be reached by crossing the Danube, using a replacement vehicle or using the longest tram in the world (CAF). In addition, sharing experience about the public transport system by providing feedbacks and photos were also awarded.

The four motivated groups started the site visit from Fővám Square. The first line was predetermined for all groups. During the site visit, the teams had to make a decision independently about the transfers, the lines and the modes with the help of the FUTÁR journey planning app, maps, timetables and other passenger information modes. The groups tested seven transport modes in total (bus, trolley bus, tram, suburban railway, underground, boat, walking) and in general, they

had a very good impression of public transport in Budapest. The density of the network, service frequency, vehicles, passenger information and communication channels impressed the teams. Three teams travelled on the M3 metro line's scheduled replacement bus and were predominantly very satisfied with the service level. Bilingual, passenger information dedicated to tourists was mentioned as an area, which requires to be further improved. One team encountered an unscheduled replacement on a trolleybus line, where the team was impressed by the speed of the organisational intervention of the replacement line. It was a hot June afternoon, therefore all teams had several comments about air-conditioning on the vehicles – positive comments when A/C was properly functioning, negative comments when A/C was not working appropriately. Consequently, a well-functioning A/C system is crucial for customer satisfaction. Boat transport (which is part of PT) amazed three teams. Teams criticised the presence of homeless people aboard vehicles and the lack of cycling infrastructure.

At the end of the site visit, the teams stated that they had visited many interesting parts of Budapest. At the same time, they provided very important feedbacks for BKK about the level of the public transport service. During the two hours, each team completed at least 10 trips, all teams travelled on the world's longest tram and on driverless M4 and all teams crossed the river Danube in some way. The winning team completed 14 trips, rode on five

tram lines, two metro lines, two bus lines, a trolley line, a suburban railway line and finished the challenge with a pleasant boat trip.

Following major remarks, observations and suggestions were made by the participants after the site visit:

- Budapest's public transport system is well organised, is robust even during rush hours, so one can trust in it. The major transit lines run very frequently.

- The FUTÁR mobile application for passenger information and travel planning is very useful and easy to use. However, it could be further developed including the option of ticket purchase through the application.

- Metro line 4 is automated and its stations have no platform screen doors at the stations. Nevertheless, the metro line has been working without a single accident.

- Public transport service during the reconstruction of metro line M3 is well organised. The metro replacement buses run frequently with sufficient capacity and the passenger information system functions thoroughly.

- The public boat service on the river Danube is very convenient. There is no need to have air-conditioning on the boat: the river Danube functions as natural air conditioning for Budapest's citizens and visitors.

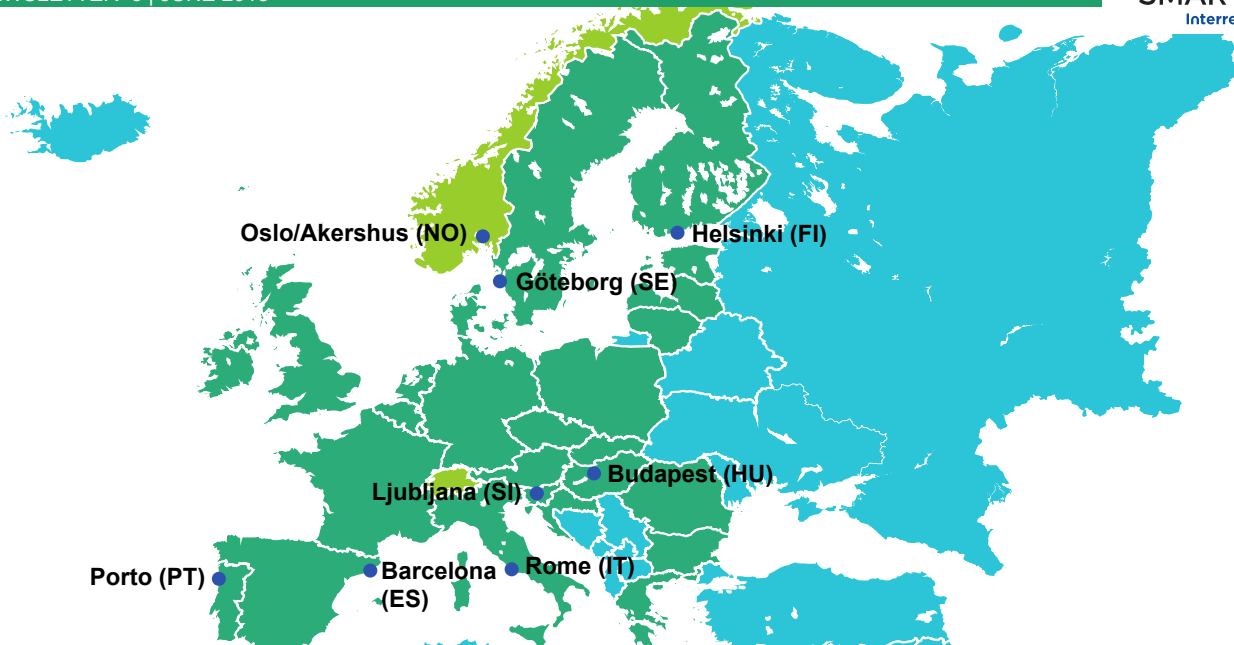
- Organising an unscheduled (operative) replacement service is very efficient.











- The ticketing system is not user friendly; it is set up in the interest of BKK and does not serve passengers' needs. A ticket should be valid for the whole journey, not a single trip. Bike-sharing should be integrated into the ticketing system.

- Passenger information should be further developed and made suitable for non-daily users, as well.

- Air conditioning and step-free access are key issues for delivering high quality public transport services. Some public transport services in Budapest still do not have the air conditioning system (e.g. reconstructed M3 trains) or there is still no step-free access.

- The cycling infrastructure is not good enough. Reducing the number of car lanes can free up space for bike lanes. (But what would happen if 'everyone' took public transport – would the city work?)



Metropolitan region	Partner
Ljubljana	Research Centre of the Slovenian Academy of Sciences and Arts 
	Regional Development Agency of Ljubljana Urban Region  RRA LUR <small>regional development agency of Ljubljana urban region</small>
Oslo/Akershus	City of Oslo, The Agency of Urban Environment  City of Oslo Agency for Urban Environment
	Akershus County Council  AKERSHUS County Council
Göteborg	Göteborg Region Association of Local Authorities  GÖTEBORGS REGIONEN
Helsinki	Helsinki Region Environmental Services Authority  HSY
Budapest	BKK Centre for Budapest Transport  BUDAPESTI KÖZLEKEDÉSI KÖZPONT
Rome	Metropolitan City of Capital Rome  Città metropolitana di Roma Capitale
Porto	Porto Metropolitan Area  amporto
Barcelona	Barcelona Metropolitan Area  AMB Àrea Metropolitana de Barcelona

Interreg Europe project SMART-MR (Sustainable measures for achieving resilient transportation in metropolitan regions) supports local and regional authorities in eight European metropolitan regions to improve mobility policies. It also aims to provide sustainable measures for achieving resilient low-carbon transportation and mobility in metropolitan regions of Barcelona, Budapest, Göteborg, Helsinki, Ljubljana, Oslo/Akershus, Porto and Rome. Project will be running from April 2016 until March 2021 and coordinated by Anton Melik Geographical Institute of the Scientific Research Centre of the Slovenian Academy of Sciences and Arts and funded by European Regional Development Fund.

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