

Priority axis: Public Passenger Transport

The vision for public passenger transport infrastructure was defined by the PPT Strategy as the fundamental strategic document for this area. The vision is described as “*infrastructure capable of operating quality integrated public passenger transport and non-motorised transport*”. The activities proposed by the MA OPII will significantly contribute to the accomplishment of this vision.

From the point of view of regional transport links, the Slovak territory can be divided into **four functional regions**:

- Bratislava and south-western Slovakia (the Regions of Bratislava, Trnava and Nitra),
- north-western Slovakia (the Regions of Trenčín and Žilina),
- central Slovakia (the Region of Banská Bystrica), and
- eastern Slovakia (the Regions of Košice and Prešov) (Fig. 1).

The natural catchment centres of these areas are the cities of Bratislava, Trnava, Nitra, Trenčín, Žilina, Banská Bystrica, Košice, and Prešov. Regional transport links usually reach beyond the territories of higher territorial units. With regard to internal transport links, these functional regions constitute relatively compact units where it is possible to effectively organise and integrate the different modes of public passenger transport.

Fig. 1 Functional regions with respect to regional transport links



Fig. 2 Cities with urban transport by rail



Identified problems and potential for development

A considerable part of the existing tramways in Bratislava and Košice is in poor condition, with line speed restrictions, increased noise levels and barriers. Tramway lines lack comprehensive preference solutions and automatic train path arrangements. Certain sections do not allow for safe operation of modern vehicles. At the same time, it is not possible to ensure adequate maintenance of low-floor vehicles, as the current equipment is not adapted to such performance in most cases.

In addition to the current shortcomings, there is a potential to replace densely operating bus lines with tram transport in terms of capacity, and to expand the trolleybus network by extensions and connections between line sections or loops, which would allow for more efficient transport service and replacement of bus transport with trolleybuses.

The proposed interventions in infrastructure aim at improving the existing condition through the modernisation and construction of new lines, and by improving the conditions of vehicle maintenance.

Vehicles are one of the basic elements of the transport system and determine its quality and quantity parameters. At the same time, they represent the first contact of passengers with public passenger transport, and can therefore substantially influence their decisions on the choice of the transport mode.

It should be noted in this context that the current situation mainly with regard to rail vehicles of urban public transport (trams, trolleybuses) is unsatisfactory not only in terms of energy consumption, but also in terms of reliability, accessibility and comfort – and hence, attractiveness for passengers. Today, Bratislava and Košice dispose of a minimum number of low-floor trams and electricity recovery systems. The average age of existing vehicles is over 20 years.

The current trolleybus fleet is also outdated, the share of low-floor trolleybuses is small, and the situation is similar with regard to modern electrical equipment with energy recovery systems. The average age of vehicles is 12 to 19 years. The only exception is Banská Bystrica which renewed most of its trolleybuses in 2011.

The deployment of new, low-floor and energy-efficient vehicles in urban public transport (UPT) by rail will not only increase the accessibility of public transport by disabled passengers, comfort, and time saving for passengers, but will also reduce traction electricity consumption and related costs. Thanks to modern traction equipment enabling energy recovery, new energy-efficient vehicles can save part of traction energy compared to outdated vehicles. This will also reduce the failure rate of vehicles and thus increase the reliability and attractiveness of public passenger transport.

Terms of Support

The support for potential projects will depend on the existence of a comprehensive strategic plan for sustainable transport development in cities and regions (master transport plans, sustainable urban mobility plans) examining the appropriateness of transport solutions, their economic justification, and the sustainability of individual projects and of urban public transport as a whole.

The provision of support for the renewal of urban public transport vehicles will depend on the implementation of measures to ensure the preference of vehicles on routes designated for this purpose, in particular measures aimed to minimise delays at cross-roads and cross walks controlled by traffic light signalling, and to create lanes dedicated to public transport vehicles.

Modernisation and construction of tram and trolleybus tracks including UPT preference and connection to other forms of UPT and non-motorised transport

Supporting public passenger transport in the City of Bratislava

The City of Bratislava is an important national and international transport hub and a key economic, political and administrative centre. The UPT system within the city is currently made up of a network of tram, trolleybus and bus lines which are complementary to each other, and part of bus transport is complementary to tram and trolleybus transport. The geographical conditions, such as the Small Carpathians barrier and the Danube River, the residential and industrial layout of urban areas, and the

resulting different development of Bratislava on the left and the right banks of the Danube constitute a major obstacle in terms of transport.

While UPT in most densely populated parts of the city on the left bank of the Danube River is ensured by a network of tram and trolleybus lines, the situation is different on the right bank of the Danube. The Petržalka district was previously developed as a predominantly residential area. It currently accounts for about 115 thousand inhabitants, and it is one of the most densely populated areas in Slovakia and in Central Europe. Urban public transport in Petržalka is secured exclusively by bus transport on existing roads. The city has failed to implement the planned construction of a high-capacity backbone rail transport system for decades, which resulted in low competitiveness of UPT in this district.

The unbalanced development of urban areas contributes to growing individual car transport and an increased burden on the existing bridges over the Danube, especially during rush hours. The Old Bridge which was used for road transport, including UPT, was gradually put out of operation and was closed due to its poor, emergency condition. **To improve the current state of public passenger transport in the capital city, it is necessary develop a high-capacity ecological and segregated rail backbone transportation system for passengers. It is particularly important to increase the capacity and the speed of connections between suburban areas and the city centre, and between the centre and Petržalka district.**

Hence, the priority axis funds will be primarily used to continue in the construction of a new tram line within the section **Bosákova Street – Janíkov dvor**. The project follows up on the activities implemented during the programming period 2007–2013, which comprised the start of construction of the first phase within the section Šafárikovo námestie – Bosákova Street, including reconstruction of the Old Bridge. The implementation of this project will connect the current tram network of the City of Bratislava with Petržalka. The new line will enable segregated rail transport and the interconnection of pedestrian walkways and cycling routes through the Old Bridge. It will also save travelling time, and the project will help to increase the attractiveness of public passenger transport in the capital city of Slovakia.

The situation of urban public transport by rail in Bratislava will also be enhanced through projects of **modernisation of existing tram lines – coherent radials**. These projects respond to the poor technical condition of tracks with many restrictions, high noise levels and a lack of elements to increase the speed of trams. It is also planned to **reconstruct, modernise and build transfer terminals with interventions in the rail infrastructure** within the territory of the city.

All projects of urban rail transport will technically have to be solved as a standard tram track with gauge of 1000 mm without securing future switch to 1435 mm gauge.

Summary of planned actions concerning infrastructure:

- *construction of a new core transport line – tram line within the section Bosákova – Janíkov dvor, which will be able to take over a major part of passenger traffic in the direction of centre – Petržalka and back;*
- *modernisation of tram radials (Karloveská – Dúbravská radial, Vajnorská radial, Ružinovská radial, and Račianska radial);*
- *construction of a depot for repairs and maintenance of urban public transport rolling stock;*
- *construction of integrated passenger transport terminals with interventions in the railway infrastructure, including park and ride areas with links to public passenger transport.*

Supporting public passenger transport in the City of Košice

The UPT in Košice is formed by core tram, bus and trolleybus transport lines, and the bus service also serves as complementary transport in the city outskirts. Tram transport connects the centre with older city districts, and partially ensures tangential links. Trolleybus transport connects city districts in hilly areas with the centre, and bus transport is used for other transportation links. A specific element of this system is the fast tram line leading to U. S. Steel Košice, s.r.o. company.

The tram lines in Košice are outdated and have many restrictions. The condition of UPT by rail will therefore be improved through projects of **modernisation of existing tram lines – coherent radials**. These projects respond to the poor technical condition of tracks with many restrictions, high noise levels, and an absence of elements to increase the speed of trams.

The new integrated passenger transport terminals in the Košice Self-Governing Region are expected to reinforce the transport integration, enabling a more effective organisation of the different modes of transport.

Summary of planned actions concerning infrastructure:

- *modernisation of tram lines;*
- *construction of a depot for repairs and maintenance of urban public transport rolling stock;*
- *construction of integrated passenger transport terminals with interventions in the railway infrastructure, including park and ride areas with links to public passenger transport.*

Supporting public passenger transport in the City of Prešov

Prešov is the second largest city of the Košice-Prešov agglomeration, and its UPT consists of core trolleybus transport and predominantly complementary bus transport with comparable traction performance. The building of links between trolleybus lines will create space for extending the trolleybus transport network and for a more efficient use of vehicles within the different lines. The plans concerning trolleybus transport must be confirmed by local strategic documents, including assessment of their sustainability.

Summary of planned actions concerning infrastructure:

- *modernisation and construction of trolleybus infrastructure.*

Supporting public passenger transport in the City of Žilina

Similar to Prešov, trolleybus transport forms the core transport system in Prešov, and prevails over public bus transport in terms of transportation volumes. Certain weaknesses were identified in the trolleybus transport infrastructure and prevent its wider use. The current sub-stations do not allow for full use of electricity recovery in modern trolleybuses, and the existing elements of trolleybus lines slow down the running speed of trolleybuses. The insufficient connections between the existing trolleybus lines reduce their effectiveness. Bottlenecks should be eliminated by the **modernisation and construction of trolleybus infrastructure**.

Summary of planned actions concerning infrastructure:

- *modernisation and construction of trolleybus infrastructure.*

Supporting public passenger transport in the City of Banská Bystrica

Trolleybus transport forms an important part of the urban public transport system in Banská Bystrica, but its share in total transport is smaller than in the case of bus transport. The expansion of the trolleybus network or interconnection of the existing sections is a potential opportunity for development, resulting in a higher share of this ecological form of transport. The plans concerning trolleybus transport must be confirmed by local strategic documents, including assessment of their sustainability.

Summary of planned actions concerning infrastructure:

- *expansion of the trolleybus infrastructure.*

More detailed information on the operation and infrastructure parameters of urban public transport in the different cities, including identification of problem areas, is provided in the PPT Strategy.