

Riga Metropolitan Area Mobility Spatial Vision

FINAL REPORT

„Elaboration of the Riga Metropolitan Area Mobility Spatial Vision”

ID No. RPR/2018/2/NSB-Core



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INTRODUCTION

The development of transport, in particular the construction of the Rail Baltica railway, is a catalyst for mobility change in Riga, in the Baltic States, as well as in the entire Northern European - European corridor. Rail, as in the middle of the 19th century, has caused an ongoing transport revolution.

The Report includes a vision of the spatial development of international (external) and mutual (internal) accessibility of the Riga metropolitan area.

The territory of the Riga metropolitan area corresponds to that defined in the territorial planning documents of Riga Planning Region (hereinafter - RPR) – *Riga metropolis is seen as space of the economic and social movement functionally closely linked to the capital. Riga Metropolitan area consists of the city of Riga, together with the neighboring different-sized cities (Jurmala, Olaine, Jelgava, Baldone, Salaspils, Ogre, Tukums and Sigulda) and Pieriga district municipalities, where everyday commuting of the population is highly expressed.*

The report “Spatial Vision of Mobility for Riga Metropolitan Area” is prepared within the project “North Sea Baltic Connector of Regions (NSB CoRe)” (hereinafter - Project), which aims to improve the sustainable accessibility of the Eastern Baltic Sea Region (EBSR) to freight and passenger transport, ensuring the development of the transport corridor networks and multimodal connections.¹

National, regional and local stakeholders, responsible for mobility issues in the metropolitan area, have been involved in the process of developing the Riga metropolitan area mobility spatial vision - Ministry of Transport, Directorate of Road Transport, JSC “RB Rail”, “Eiropas Dzelzcela linijas”, JSC “Latvijas Valsts celi”, JSC “Latvijas Dzelzceļi”, JSC “Rīga International Airport”, JSC “Rīga International Bus Terminal”, VASAB Secretariat, Municipal Ltd "Rīgas satiksme", RPR administration and RPR municipalities, similar purpose projects (SUMBA, MAMBA) and transport experts, associations and activist groups.

Report looks at Riga and Pieriga Mobility Plan approved in 2010, Transport Development Guidelines 2014-2020, etc. transport sector documents as well as the RPR Sustainable Development Strategy 2014-2030.

Riga metropolitan area mobility spatial vision ought to be integrated into the processes of the international, national, regional and local policy making, spatial development and transport development planning.

The report is available in Latvian and English. The report was prepared under the contract of SIA “Grupa93” concluded on the procurement “Elaboration of the 'Riga Metropolitan Area Mobility Spatial Vision” (ID No. RPR / 2018/2 / NSB-Core).

¹ https://www.uudenmaanliitto.fi/en/projects/nsb_core_north_sea_baltic_connector_of_regions

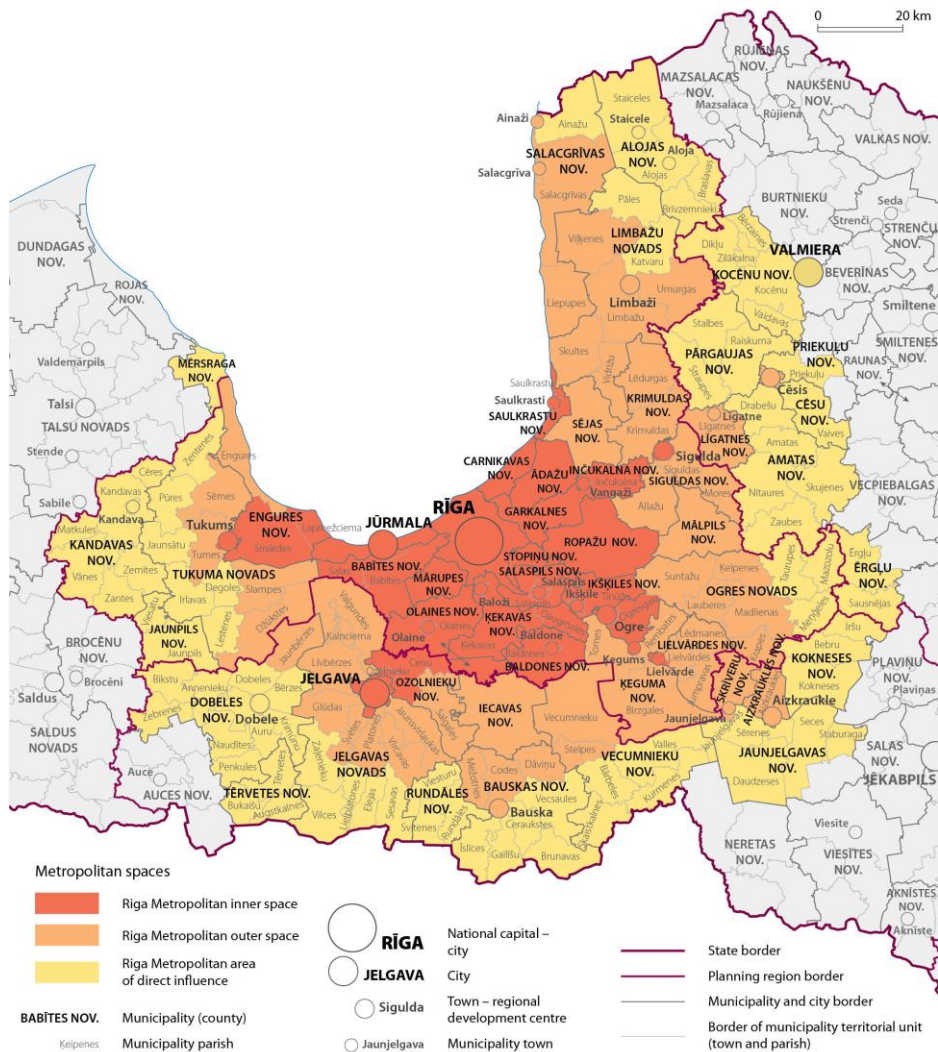
The territory of Riga metropolitan area

Spatial vision has been elaborated for the area of impact of the Riga city and corresponds to that defined in the territorial planning documents of Riga Planning Region– Riga metropolis is seen as a space of the economic and social movement functionally closely linked to the capital. Riga Metropolitan area consists of the city of Riga, together with the neighboring different-sized cities (Jurmala, Olaine, Jelgava, Baldone, Salaspils, Ogre, Tukums and Sigulda) and Pieriga district municipalities, where everyday commuting of the population is highly expressed (Figure 1).

Riga metropolitan area is divided into three spaces²:

- Riga Metropolitan Area inner space - Riga, directly adjacent and close areas;
- Riga Metropolitan Area outer space - the circle of metropolitan centers - Tukums, Jelgava, Dobele, Ogre, Sigulda, Limbaži, Cesis, Valmiera and their adjacent territories;
- Riga Metropolitan Area of Influence - direct functional territories in Zemgale, Vidzeme, and Riga Planning Regions mainly around transport corridors

Figure 1 Territory of the Riga Metropolitan area mobility spatial vision



G93, Action plan for development of the Riga Metropolitan area, 2019

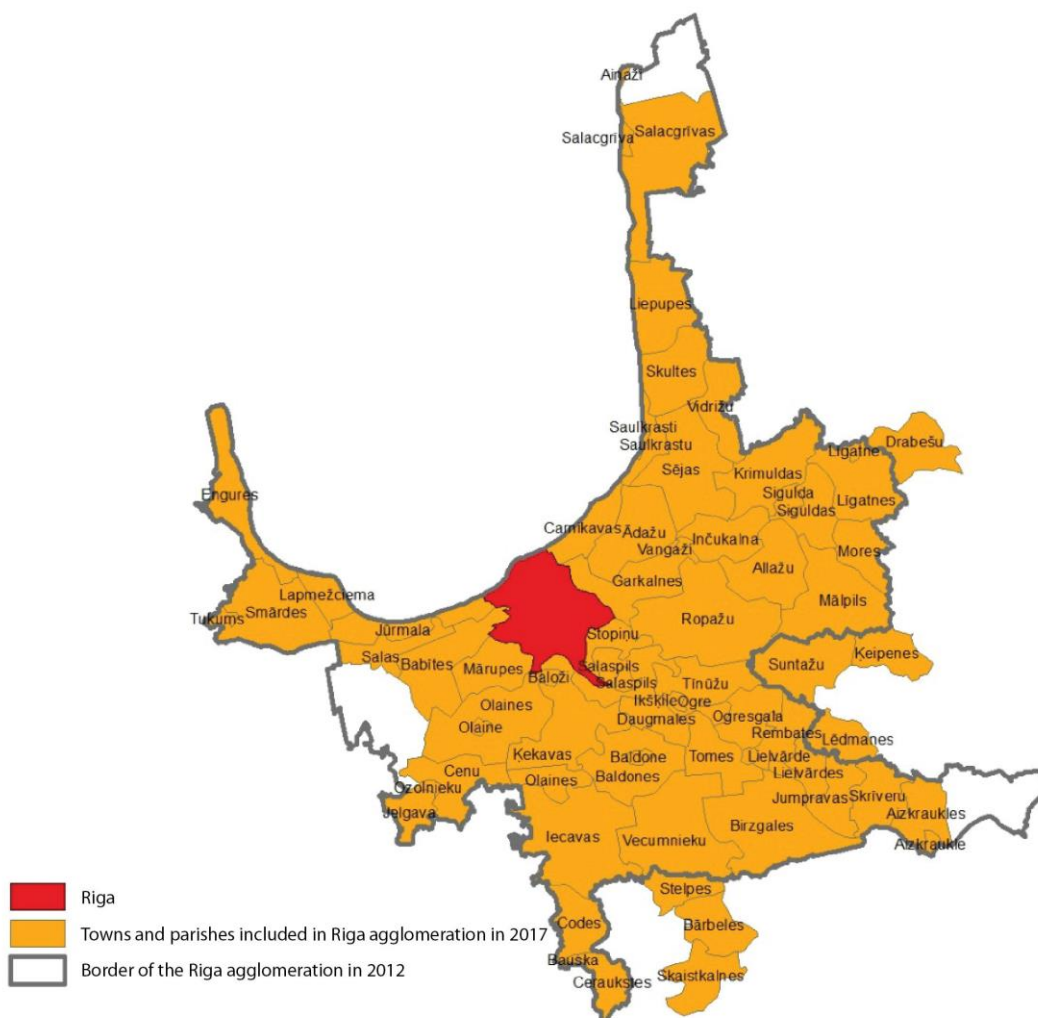
² RPR Rationale for Action Plan Development

The inner metropolis consists of Riga, Jurmala and the nearest 11 municipalities. They are characterized by positive population growth (consisting not only of positive migration balance from Riga and other Latvia, but also positive natural growth in several municipalities), high population concentration, high average population income, high number of enterprises per 1000 inhabitants. In the inner metropolis the most intensive building development has been observed in the last decade, and the residents of Riga, changing their permanent residence from Riga to the suburbs, lowered the values of the demographic indicators of the capital.

The outer metropolis forms a circle around the inner metropolis, including 23 local municipalities and Jelgava. The area is characterized by large internal differences. Common features are the increased income level, increased concentration of the population, and most importantly - greater labor force commuting to Riga, in comparison with rest of the Latvia.

The Riga agglomeration area has grown by 299 km², but the population has decreased by 26395 or 2.4%, compared to 2012, as recognized in the study “Clarification of Riga Agglomeration Boundaries” carried out in 2017 when the first study on the agglomeration of Riga was carried out.

Figure 2 Research at the University of Latvia comparing the interrelations and interactions of populated areas between Riga and other municipalities within agglomeration in 2012 and 2017



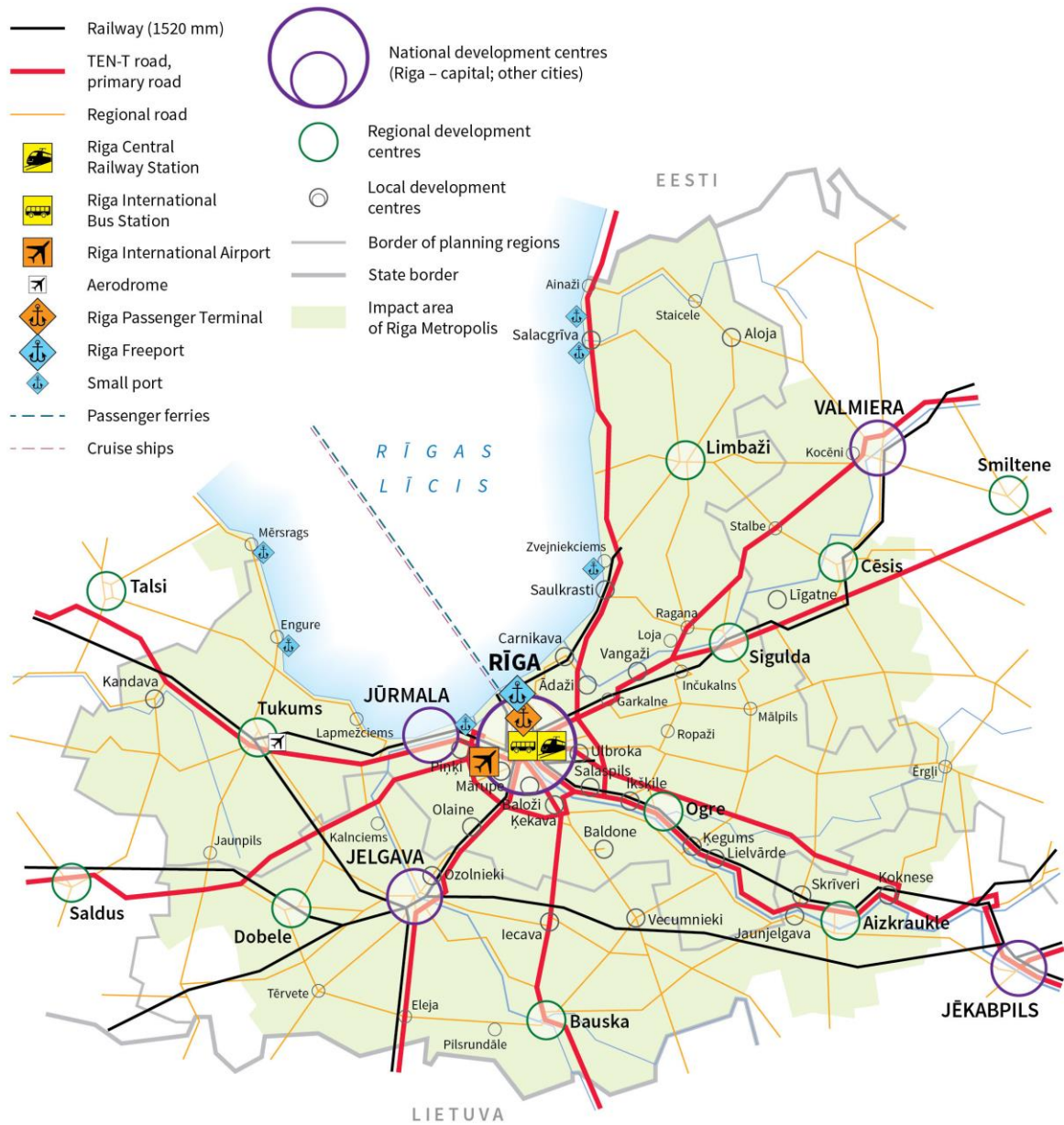
Source: Department of Human Geography, Faculty of Geography and Earth Sciences, University of Latvia, Riga Agglomeration, November 30, 2017, Riga

1. OVERVIEW OF CURRENT SITUATION

Riga is an important transport hub for Northern Europe, the Baltic States and Latvia.

Riga and its area of influence are crossed by Trans-European Transport Networks (TEN-T) roads (here is the densest state and municipal road network in Latvia), 1520 mm gauge railway lines of strategic importance, Riga International Airport, several small aerodromes, Riga port and four small ports, Riga International bus station, Riga passenger port, public transport infrastructure of Riga and regional cities.

Figure 3 Current transport situation in the Riga metropolitan area



1.1. Aviation

Air transport in Riga is the only way to quickly reach international destinations. Riga International Airport is positioning itself as a Eurasian flight hub that connects Riga with the rest of Europe and 100 destinations worldwide.

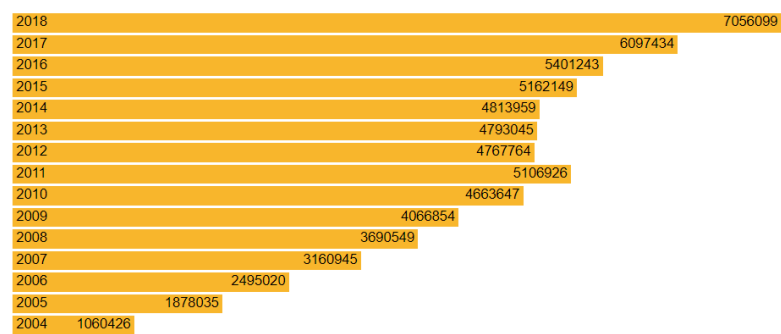
Starting modernization and development of the infrastructure of Riga International Airport³, related to raising safety requirements, reducing environmental impact and increasing airport capacity, brave goals were predicted - seven million passengers will be served in 2020 (including passengers from Eurasia), eight and a half million passengers in 2024, ten million in 2027, and 14 million passengers in 2036.

The forecast for the increase in the number of airport passengers is fulfilled even quicker, and already in 2018 the target of 2020 - 7 million passengers – is exceeded.

The development of Riga Airport infrastructure is ongoing – after completion of the 5th and 6th development

phases the area of Riga International Airport will be more than four times larger and will be able to serve up to 12 million passengers per year.

Figure 4 Passenger statistics 2004 – 2018 of Riga International Airport



In the field of air traffic management, the main challenge in the upcoming years will be to gradually reduce the unit cost of services as required by EU regulation, while maintaining a consistently high level of service security.⁴

Latvian national airline AirBaltic has maintained its status as the most punctual airline in Europe, the second most punctual airline in the world in 2018. Jurmala Airport develops as alternate aerodrome for AirBaltic Corporation airplanes landing near Tukums.

With the realization of the Rail Baltica project, the Riga metropolitan area will get the airport and Riga center high-speed train connection and the Rail Baltica railway station at the airport. Significant multimodal transport hub of aviation, express train and city bus lines will develop in the airport area in Marupe municipality.

³ Riga International Airport Strategic Development Plan 2012-2036

⁴ Guidelines for Transport Development, updated version approved by the Cabinet of Ministers on 27 February 2018 No.73

There are 23 electric trainsets and 18 diesel trainsets used daily for passenger transport. Transportation takes place on five railway lines in Latvia: Riga - Tukums (via Jurmala), Riga - Skulte (via Carnikava, Saulkrasti), Riga - Valga (via Sigulda, Cesis, Valmiera), Riga - Aizkraukle (branches to Madona, Rezekne, Daugavpils) and Liepaja (via Olaine, Jelgava).

Four international trains to Moscow, to St. Petersburg, to Kiev via Vilnius and Minsk and to Minsk are also coming from the Riga Central Railway Station.

According to the updated strategy of JSC “Pasazieru vilciens”, the goal is to increase the number of trips to 25.7 M during the three years following the replacement of the rolling stock for electric trains. The following tasks are set: introduce interval schedule, keep train fulfillment at least 55%, maintain cost on seated kilometers at existing level, become the best public service provider in the transport sector and maintain accuracy at 98.6%.⁵

Purchasing new passenger trains will provide passengers with comfortable trains. The Latvian state plans to invest EUR 259 million between 2019 and 2024 for the purchase of new electric trains, spare parts and maintenance equipment, as well as for the construction of a train depot.⁶

Railway Infrastructure (1520 mm)

Railway infrastructure - railway stations, platforms, train sets, communications system - has not changed significantly since the 1970s and 1980s:

- A small part of the 1520 mm gauge rail network is electrified and the existing system is depleted, resulting in high emissions, high fuel and rolling stock operating costs;
- No track connection to Riga International Airport;
- The rail infrastructure (platforms, etc.) for passenger services is not relevant to modern requirements;
- Limited railway bridge capacity can limit the development of the activities of the Riga Port on the left bank of the Daugava (Bolderaja, etc.). Riga's strategic goal is to release the center of Riga from freight transportation.

The goals of SJSC “Latvijas Dzelzceļš” are the provision of modern passenger infrastructure, the development of environmentally friendly and safe domestic freight transport by rail, keeping and increasing the role of Latvia in global cargo flows and attracting new markets and cargoes, including the Central and Eastern European countries and China in a much wider context.⁷

- Until 2021, the modernization project of the Sarkandaugava – Mangali – Ziemeļblazma section of the Riga railway junction envisages the construction of a second track, modernization of the microprocessor centralization, because of which the movement of passenger trains according to the schedule of regular intervals and cargo flow to ports will be aligned.
- The development of railway passenger transport also requires appropriate upgrading of the station and stop infrastructure. Currently there are upgraded passenger platforms at 27

⁵ Strategy updated in 2018 February 5 <https://www.pv.lv/lv/par-mums/strategija/>

⁶ Minutes of the Cabinet of Ministers No.51 of 5 November 2018 (46§) “Informative Report” On Purchase of New Electric Trains "and Order Draft" On State Budget Long-Term Liabilities to the Ministry of Transport for New Electric Trains"

⁷ Here and below The Indicative Railway Infrastructure Development Plan 2018-2022.

passenger stations and stops, up to 2022, 38 passenger stations and stop points are going to be upgraded.

- A number of rail infrastructure improvement measures, including priority upgrading of the Garkalne railway station infrastructure, will be carried out to ensure the host country support (UVA) tasks and to meet the logistics requirements within NATO operations (Atlantic Resolve, etc.).
- To make trains operation more efficient JSC “Latvijas Dzelzceļš” plans integration between the signaling and communication systems, traffic planning and control systems.
- Ground purification from historical pollution with oil products, as well as the implementation of measures to reduce noise emissions, arrangement of degradable objects belonging to LDz (in November 2017, the LDz has 352 economically unused, environmentally degrading buildings with a total area of 41,524 m²).
- Currently, electric locomotives have been used only in suburban passenger traffic; freight transport is entirely on diesel-powered locomotives. Electrification of the railway network Daugavpils - Krustpils and Rezekne - Krustpils - Riga lines (300 km) in the first stage until 2023., which strengthens the international competitiveness of the transit corridor.

In 2011, “Latvian Railway” conducted research to develop of the Riga Port on the left bank of the Daugava River, to direct cargoes from the Riga center to Bolderaja by another route, as well as to increase the capacity of the railway network on the left bank of the Daugava and evaluated two freight routes to Bolderaja - one from Krustpils line, the other from Jelgava line.⁸ More advantageous was the route from the Krustpils line, which envisages the construction of a new railway bridge over the Riga HPP and the construction of a new railway line on the left bank of the Daugava parallel to the Riga bypass (A5). Project implementation is postponed and will be carried out in the long term.

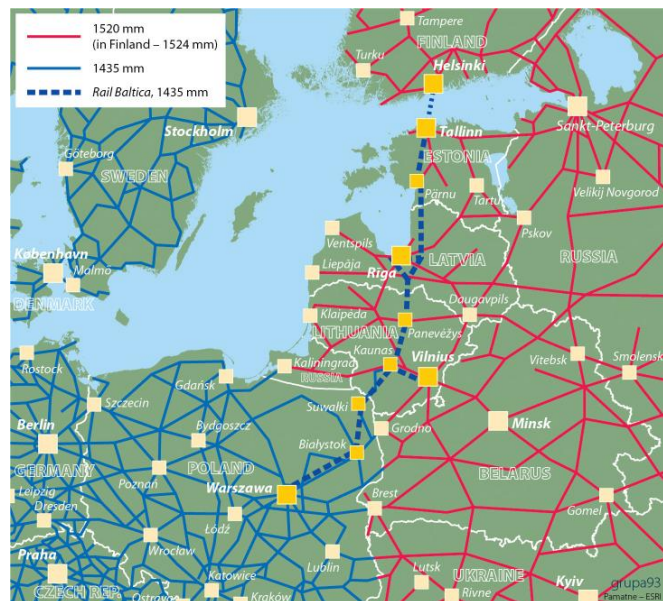
⁸ SIA "Konstruktionsgruppe Bauen Latvija", Ltd. "AC Konsultācijas", Ltd. "Estonian, Latvian & Lithuanian Environment", Construct group Bauen Kempton AG, EPG Eisenbahn- und Bau-planungsgesellschaft mbH Erfurt, Research of the Daugava left bank railway route to the port territories and international airports “Riga”, Riga, 2011

Project Rail Baltica

Rail Baltica infrastructure project will integrate the Baltic States into the European gauge (1435 mm) railway network, connecting Tallinn, Pärnu, Riga, Panevezys, Kaunas, Vilnius and Warsaw, and in the long term indirectly Helsinki (Figure 6).

Rail Baltica is already designed to become a part of the EU TEN-T North Sea –Baltic Core Network Corridor, which links Europe’s largest ports of Rotterdam, Hamburg and Antwerp – through the Netherlands, Belgium, Germany and Poland – with the three Baltic States, further connecting to Finland via the Gulf of Finland short sea shipping connections with a future fixed link possibility between Tallinn and Helsinki.

Figure 6 European and CIS rail system networks



Further northbound extension of this corridor shall pave the way for future connectivity also with the emerging Arctic corridor, especially in light of the lucrative prospects of the alternative Northern Circle maritime route development between Europe and Asia. Furthermore, the North Sea–Baltic Corridor crosses with the Baltic-Adriatic Corridor in Warsaw, paving the way for new supply chain development between the Baltic and Adriatic seas, connecting the Baltics with the hitherto inadequately accessible Southern European markets. In a similar fashion, Rail Baltica shall strengthen the synergies between North-South and West-East freight flows, creating new transshipment and logistics development opportunities along the Europe and Asia overland trade routes.

Rail Baltica will cross the Riga metropolitan area⁹. Rail Baltica stations at Riga Central Railway Station and Riga International Airport, a new Rail Baltica railway bridge will be built by 2023. The other stages of Riga and Pieriga are planned to complete by 2026.

Rail Baltica trains in Latvia will move:

- A passenger line from the border of Estonia via the Riga Central Railway Station, via the Riga International Airport to the border of Lithuania;
- a cargo line from the border of Estonia through the intermodal freight terminal in Salaspils to the border of Lithuania (without passing through the center of Riga); a branch to the international airport “Riga”.

⁹ The track has been approved by the Cabinet of Ministers Order No. 467 “Acceptance of the European Standard Public Use Rail Baltica Infrastructure Line for the Construction”

Rail Baltica is a TEN-T priority project, an important project in the North Sea-Baltic transport corridor¹⁰ and a national interest object in Latvia¹¹ that will promote mobility of the inhabitants by using a safe, modern, fast and environmentally friendly transport which would in turn create a potential for new development, jobs and increased competitiveness.

In the context of the construction of Rail Baltica, significant transport and public space reorganization is planned in the center of Riga to rebuild the Riga Central Railway Station as a multimodal public transport hub and its surroundings to improve public space and improve connections between parts of city and the left bank of the Daugava, incl.:

- The railway embankment along the bus station will be dismantled and the railway will be deployed on the scaffold bridge;
- Pedestrian and bicycle connection between the banks of the river Daugava will be established;
- The railway embankment below the station will be dismantled and a new street connecting Elizabeth and Timoteja streets will be built, etc.

The reorganization of transport in the center of Riga affects the areas around the Central railway station ~75ha area and important transport and pedestrian attraction objects. Reconstruction works need to be aligned with JSC “Riga International Bus Station”, city public transport and minibus, Central Market (Figure 7), Daugava promenade, etc. development plans.

Figure 7 Riga Central Market territory development



“Baltex Group”, Ltd., project of Riga Council City Development department “1st phase of the Riga Central Market territory development”, 2017

New opportunities offered by Rail Baltica to Riga center:

- Riga multimodal transport hub with connected traffic flows;
- Integrated local, regional and international passenger transport;
- Maximum comfort, speed and safety of pedestrians, including upgraded underground railways, urban space improvements;
- Fast connection of Riga center with international airport “Riga” – Rail Baltica shuttle train;

¹⁰ Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU

¹¹ Status granted by Cabinet of Ministers Order No. 468 “On the determination of the status of a national interest object for Rail Baltica, a European-wide public-use railway infrastructure”

- A significant impulse for the development of Tornakalns multimodal transport hub by improved reach of the Daugava left bank, including accessibility of the Academic Center of the University of Latvia.

Rail Baltica in the rest of Riga and Pieriga:

- safe (two-level) railway crossings for cars, pedestrians and cycling, saving the number of existing transitions;
- Renovated streets and roads, building overpasses over the railways;
- In the long term, the development of Rail Baltica regional train traffic.

Rail Baltica intermodal freight terminal in Salaspils

Within the Rail Baltica project, a transshipment infrastructure between the European rail gauge (1435 mm), the CIS track gauge (1520 mm) and the road will be built. Development of the territories of logistics and transportation service companies around the terminal is planned by attracting investor. Rail Baltica project plans to build cargo terminals in all

Figure 8 Rail Baltica Intermodal Freight Terminal Sketch



Source: Ministry of Transport

Baltic States - Pelemon multimodal freight terminal in Lithuania, Salaspils terminal in Latvia and Muuga terminal in Estonia.

The most significant cargo flow through the terminal is expected from Asia, especially from China (Figure 9).

Figure 9 Freight flow directions through the Rail Baltica intermodal freight terminal



The most significant changes in the Pieriga transport organization are expected with the construction of the Rail Baltica railway bridge over the Daugava (Riga HPP reservoir) and the increase in the volume of road freight traffic towards the ports on both banks of the Daugava River.

In order to use the benefits of two track gauge systems, in separate stages Rail Baltica is set in the existing railway corridors of Latvijas Dzelzceļi. In order not to disturb the functionality of the 1520 mm infrastructure, it needs to be reorganized:

- at Riga Central Railway Station, at Skirotava, at Preču 2 – Sauriesi, Tornakalns, and Zaslauks;
- to build a branch from Krustpils line to intermodal freight terminal in Salaspils;
- to build the Rail Baltica infrastructure maintenance point in Vangazi, Incukalns.

1.3. Roads and streets

Riga's metropolitan area has the densest road network. The biggest traffic intensity is in Riga and Pierīga. The TEN-T road network (except A9 Riga (Skulte) – Liepāja) connects Riga with the largest cities.

When Latvia joined the European Union, significant investments were made in transport infrastructure, most of it in Riga and its metropolitan area. New sections of the international highway Via Baltica reconstructed or built, Jelgava highway (A12), Daugavpils highway (A6), Jūrmala highway (A10), Valmiera and Vidzeme highway, left bank of the Daugava river with Latgale, Moscow highway to Koknese. Riga main streets and access roads to the Freeport of Riga reconstructed or built, Salu Bridge reconstructed and built Southern Bridge.

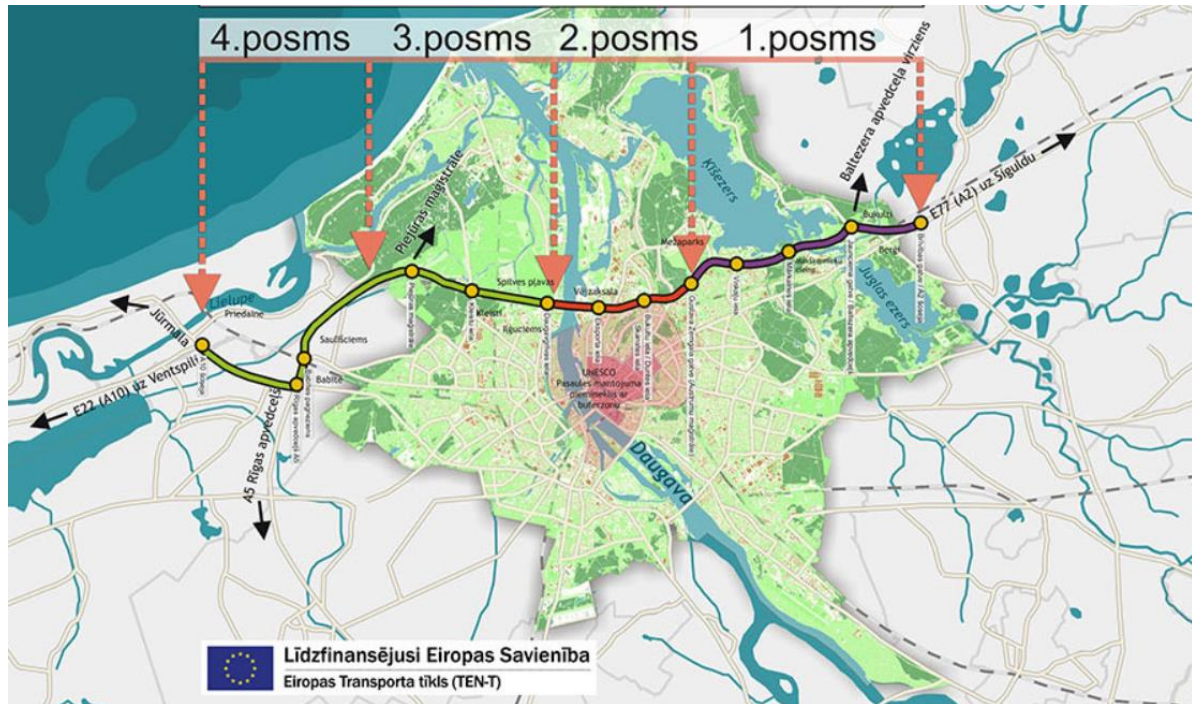
However, much of the regional and local roads and city streets have not been improved since the end of the last century. There is a lack of bicycle infrastructure and pedestrian infrastructure in Riga and in the cities of the Riga metropolis region, and little public transport lanes in Riga.

Riga and Pierīga Mobility Plan¹² concluded that for improvement of the long-term functioning of the traffic and transport system real investments are needed, and recommended the option with rare major roads and streets plan structure, including the building of the considerable arteria – North transport corridor. The option has a major positive impact on the functioning of the transport system and a positive value in the cost-benefit analysis, but North Transport Corridor requires the greatest investment - 75% of the total costs of the option and has the most adverse environmental impact. As a second option was the variant with a denser structure of the main roads and streets and it considered the building a smaller Hansa bridge closer to Riga centre. The results of the cost-benefit analysis of this option was not as positive as the first one.

The length of the North transport corridor is 30 km. The road will cross the Daugava River at place where river is ~400 m wide and the possible solution of the crossing is not yet decided – a tunnel or high bridge. A technical project has been elaborated for the first section, for others – sketch designs (Figure 10).

¹² LET106-1 Riga and Pierīga mobility plan, final version, dated October 18, 2010

Figure 10 North Transport Corridor



Source: <http://www.rdpad.lv/portfolio/ziemelukoridors/>

The North Transport Corridor project is included in Riga's long-term project list, and further implementation of the project depends on financial capacity of Riga City Council, substantial financial investments in a project of such scale, as well as other transport priorities in Riga.

Other major municipal transport infrastructure projects in Riga:

- Construction of a multimodal transport hub in Tornakalns, between Vilkaies Street, Vienības Gatve and Jelgava Street, which will fulfill the P&R function for transportation from Jelgava direction;
- Completion of the Eastern Highway in Sarkandaugava, reconstructing Tvaika street and constructing the Tvaika street overpass over the railway;
- Skanstes tram line – construction of a new tram line from Skanste, Kundzinsala and Ciekurkalns parts to the city center;
- 4th stage of South Bridge construction – construction of the section to Ziepniekkalns (Valdeku street) for servicing transport from Jelgavas direction;
- Construction of the promenade on Mukusalas Street from the Salu Bridge to the Akmens Bridge, etc.

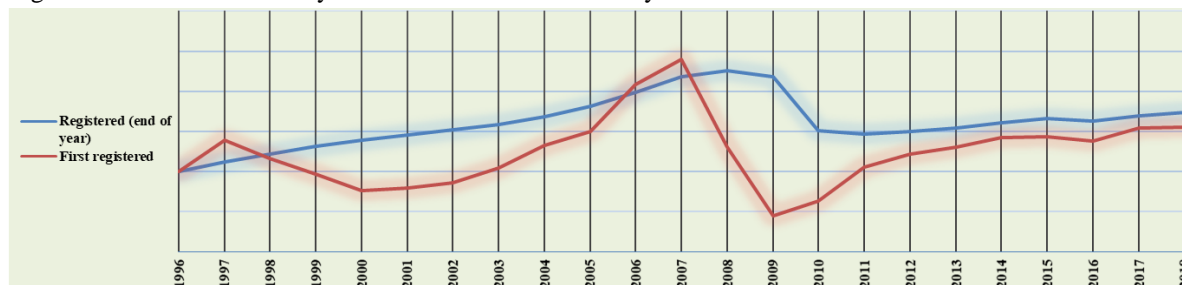
Major future road projects in Riga metropolitan area:

- Construction of the Ķekava bypass;
- Reconstruction of Vidzeme Highway A2 section from Vangazi to Incukalns;
- Reconstruction of Via Baltica (E67) / Riga Bypass Baltezers - Saulkalne (A4) for 4 lane highway with two level crossings in Garkalne, Ropazi and Salaspils municipalities; In the long run, the bridge over the Riga HPP reservoir;
- Construction of the extension of road Tinuzi - Koknese (P80) / E22 Eastern introduction in Riga to Slavic Circle;
- Reconstruction of Riga bypass (A5) in Babīte and Marupe.

1.4. Vehicles

There are 808 thousand registered and technically tested vehicles in Latvia, including 645 thousand passengers' cars (80%), of which 202 thousand in Riga.¹³

Figure 11 Road Traffic Safety Directorate data on vehicle dynamics



Note: "By 30.12.2009 Cabinet of Ministers introduced a new rule in „Vehicle Registration Regulations” - vehicle removal from the register. The vehicle is removed from the register of vehicles in the following cases:

- If the vehicle is permanently registered in a foreign country and this fact is confirmed by the information from the foreign register or by foreign register service issued document;
- If the vehicle five years has not done the technical inspection of vehicle and there has not been any registration activities in the register of vehicles."

Since 1st of July 2016 vehicle is removed from register if the vehicle three years has not done the technical inspection and there has not been any registration activities in the register of vehicles.

The largest number of cars was in the pre-crisis period in 2008, after which the registration of new vehicles decreased significantly (Figure 11).

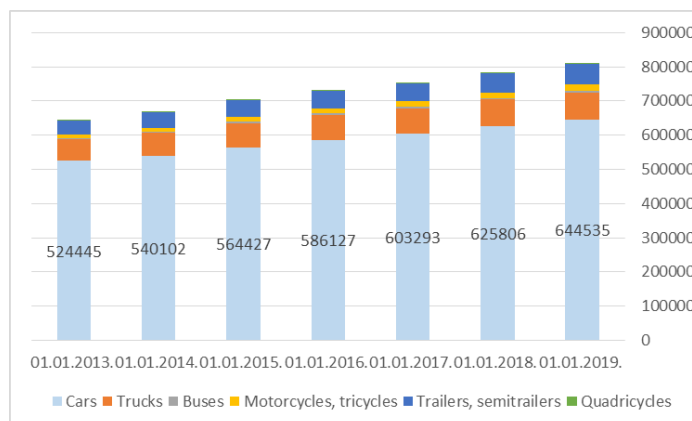
Over the last five years, the number of cars on the streets and roads has been gradually increasing (Figure 12).

Motorcycles account for 3% and buses for 1% of vehicle traffic participants.

Trucks make up 10% (80 thousand) and trailers and semi-trailers - 7% of vehicles (59 thousand).

With the growing number of cities (urbanization) and environmental quality requirements, more attention in the future will be paid to the release of urban centers from freight transport and the reduction of light traffic.

Figure 12 Road Traffic Safety Directorate data on technically tested vehicle dynamics



In Riga, the development of the Sustainable Mobility Action Program of the Riga Transport System was launched, which is based on the Riga Sustainable Development Strategy 2030 with the aim to reduce the intensity of road transport and air pollution in the core of the city. Pedestrian - cyclist - public transport - private transport - freight transport – forms a hierarchical system in the core of the city.

¹³ CSDD, 01.01.2018. <https://www.csdd.lv/en/vehicles/statistics-of-registered-vehicle>

One of the alternatives to consider is the creation of an area of charge for private transport in the city center, taking over the practice of European cities.

1.5. Freight flow

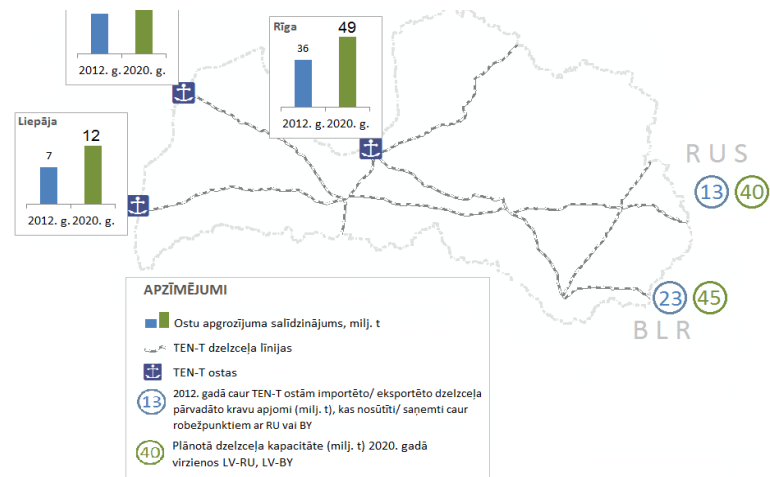
Major investments in ports, railways and roads have been invested in transit routes. Guidelines for Transport Development 2014-2020 foresee that in 2020 the cargo flow through ports will increase. (Figure 13).

Transit volumes in 2017 have returned to the level of the late 1990s and early 2000s.

Main reasons:

- sanctions between the European Union and Russia;
- downward trend of oil products and coal freight (these cargoes make up about 30 million tons in 2017) as they are more often transported through Russian ports.

Figure 13 The current and future flows of freight volume. Source: Ministry of Transport



The rest of the cargo is diverse, transported to different destinations - Belarus, Scandinavian countries, Black Sea and Central Asia, including China, Japan, South Korea, India, Iran, etc.

Figure 14 Dynamics of Cargo Freight Volume 2007 - 2017



Ministry of Transport, Inese Helmane "Freight Distraction: The transit sector is trying to survive", LV portal, 6th of June, 2018

Cargo received in Riga Freeport from 35952 k t in 2014 fell to 28995 k t in 2017. In 2018, cargo volumes in ports started to increase. Latvian companies collaborate with European logistics companies, and engage in international trade chains.

In the long term, freight structure will change, due to decreasing use of coal for electricity generation, also expected by international climate targets. For some time Riga has to reckon with the rail freight movement through the center, because the former coal cargo transshipment site at Eksportosta, after completing the 2nd stage of Krievu Sala terminal, is transferred to left bank of Daugava.

According to the Central Statistical Bureau, freight transport in ports and railways is decreasing, but road freight transport is increasing.

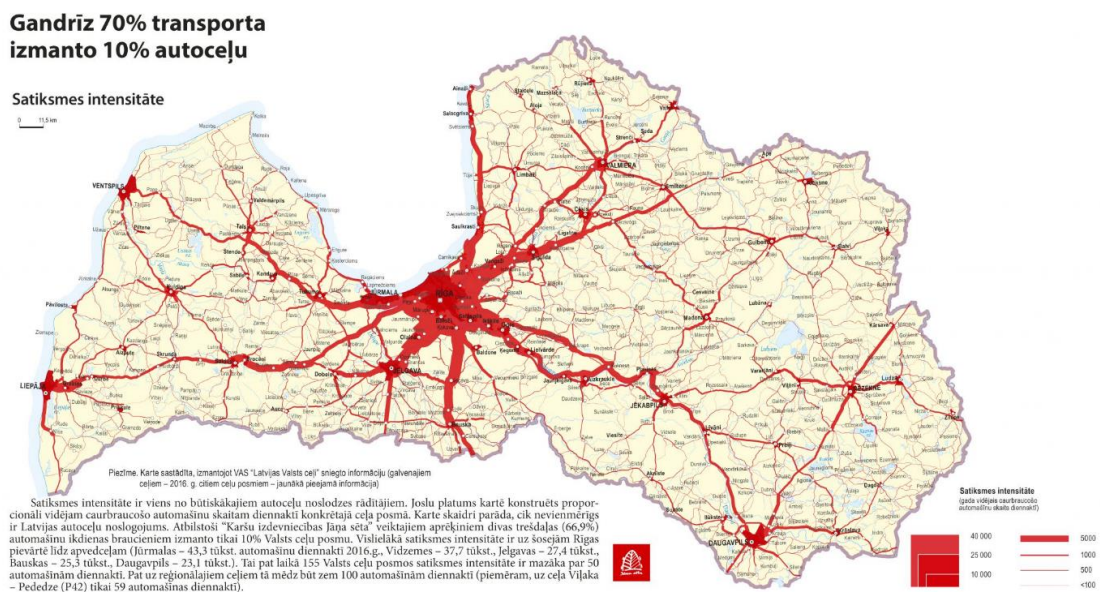
Trucks will continue to play an important role in short and medium-distance (less than 300 km) freight flow. In the Riga metropolitan area, freight transport uses TEN-T corridors as well as access roads to ports and to railways. Freight transport will increase significantly after intermodal freight terminal construction in Salaspils, with integrated European and CIS track gauge systems, Via Baltica, and national roads (see also 13 page).

1.6. Public transport

According to the Public Transport Services Act, public transport vehicles are those involved in the provision of public transport services (bus, tram, trolley, train, buses).

Inhabitants every day or every week go to Riga from Pieriga and from remote areas of Riga Metropolis influence territories for work, study or services. Those who use private cars need to spend a lot of time in congestion; road entries in Riga are the busiest (Figure 15).

Figure 15 Average traffic intensity on roads

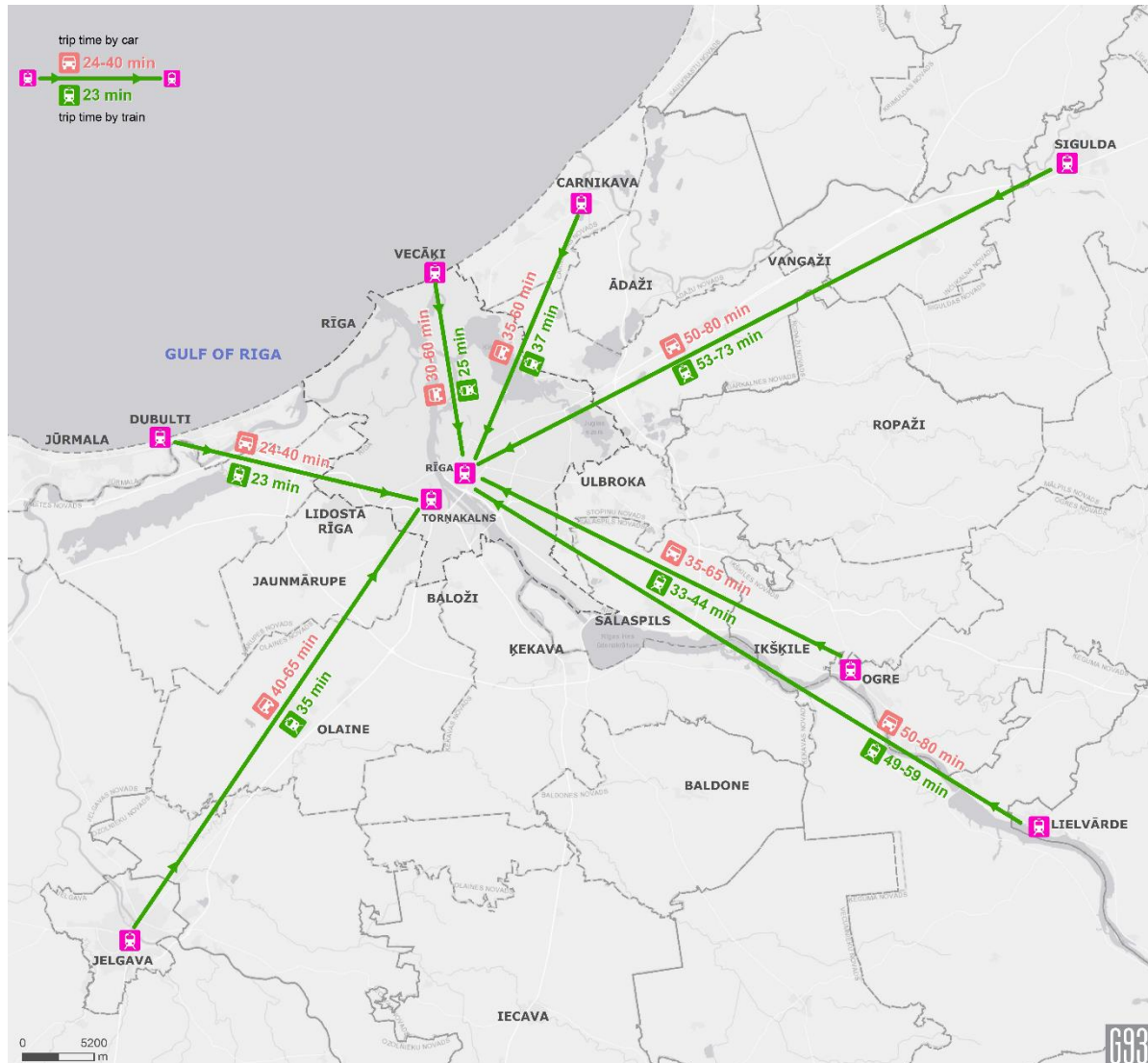


"Karšu izdevniecība Jāņa sēta", Ltd., based on SJSC "Latvijas Valsts ceļi" traffic intensity data for 2016 – 2017,

Those who use the train can better plan their journey time. The train provides accurate, fast and predictable getting to Riga. Time spent with a private car to Riga can be the same as

taking a train or even a few minutes faster from some directions (Sigulda, Carnikava) or even half as long, if the traffic jams (Figure 16).

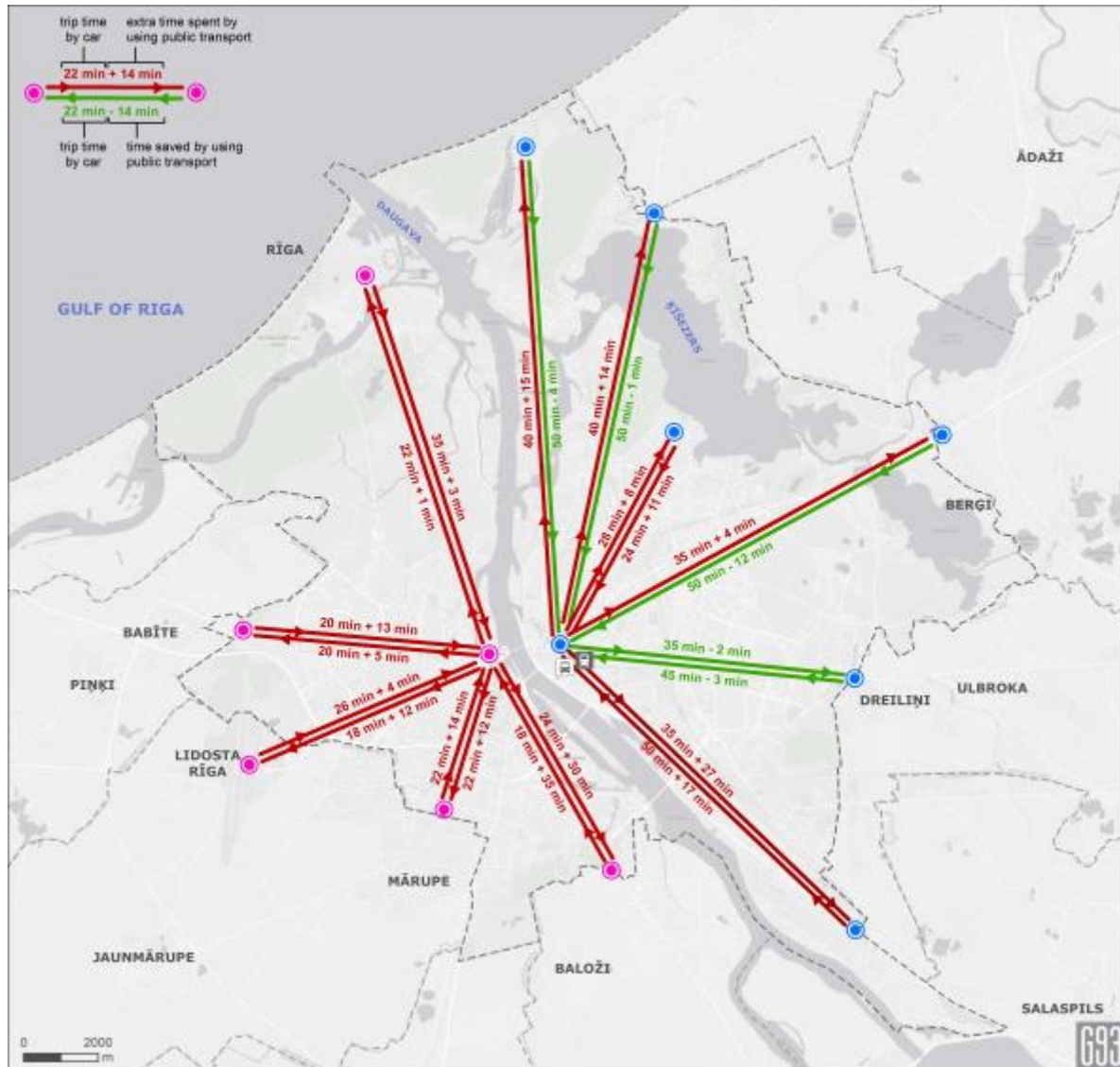
Figure 16 Time spent traveling by train or private car between Riga and other regional centers



Time spent in Riga city public transport (bus, trolleybus) still does not give time savings in all directions, because of a lack of public transport lanes. (Figure 17). There are 18 public transport lanes in the city of Riga (13 January, Aleksandra Čaka, Merkeļa street, Brīvības street, etc.).

The public transport facilitated driving conditions are now on six streets (11. Novembra Embankment, Augusta Deglava Street, Avotu Street, etc.). Driving priority for the tram is currently set in 46 city streets.

Figure 17 Time spent with Riga public transport or private car in Riga, at 8 am



Riga city public transport

In the future, public transport will play a greater role in reducing amount of private passenger cars, especially in the center of Riga.

There are 8 trams, 17 trolleybuses and 56 bus routes in Riga. Overall, the municipal vehicles (trams, trolleybuses, buses) of “Rīgas satiksme” Ltd. takes about 45 million kilometers a year and carries about 150 million passengers. “Rīgas satiksme” manages more than 6,000 car parks in Riga. The company also provides other services: retro trams in summer and bicycle tours.¹⁴

The Riga Transport Development Thematic Plan states that “Public transport fleet in Riga is being renovated and modernized; innovations (a time ticket) are introduced to enable the

¹⁴ “Rīgas satiksme”, Ltd.

development and improvement of the level of public transport services". Public transport lanes will be extended.

In the future, the role of passenger car mobility services will increase - shared-use cars (CarGuru, etc.), new-generation taxi services (Uber, Taxify), combined driving practices. Without re-designing private transport flows (as well traffic limiting and calming measures), the new mobility services alone do not reduce traffic intensity, but only take up less parking.

Concept for passenger and bus transport

Main problems:

- Unsatisfactory quality of regional and local road infrastructure;
- Insufficient level of service on roads and streets leading to low road safety for different user groups (cars and trucks, public transport buses, cyclists, pedestrians);
- Congestion during heavy traffic hours in Riga and Pieriga;
- Unsatisfactory quality of road and street maintenance during the winter period;
- High level of mobilization at traditional mobility habits;
- In today's digitalisation, there is a lack of e-services that necessitate receiving services on-site and using transport.

One solution is to increase the role of public transport, improve its efficiency and relevance to the needs of the population.

In the five months of 2018, the route network has been reduced by 1.035 million km, incl. Riga Planning Region - by 605 thousand km. Currently, the Riga metropolitan area is served by 60 operators on local bus routes and separately on interurban bus routes, with a mileage of 72 million km per year.¹⁵

In recent years, a number of improvements have been made to interurban regional and local bus routes:¹⁶

- Buses of category M3 are replaced by smaller buses of category M2¹⁷, which are more economical to operate on low-passenger routes; In 2018, M2 buses accounted for 28% of the total number of buses;
- Possibility for non-cash payments on 219 routes;
- Subscription tickets for 500 regional routes;
- Campaign "Don't Smell Yourself - Take a Ticket" and video surveillance systems on 157 buses;
- Latvian Family Honor Certificate "3+ Family Card".

In 2017, compared to 2016, the number of paying (who are not exempt from the fee) passengers has decreased by 2%, while in the previous two years the number of passengers decreased by ~ 5%.

¹⁵ Road Transport Directorate data for October 2018

¹⁶ Informative Report "On Additional Financing for Public Transport Services in 2018"

¹⁷ There are 9 seats on the M2 bus, including the driver, and the total weight of the bus <5 t

1.7. Sea and river transport

Riga Freeport (TEN-T Port), small ports of Engure, Salacgriva and Skulte are located in Riga metropolitan area. The Riga Freeport provides mainly ship and passenger service, cargo, transport and forwarding operations. The main activity of small ports is the export of timber cargoes, also the export of mineral resources, fishing, fish processing and tourism.

Regular passenger transportation is performed only from Riga Passenger Port, where in 2017 there were 743 thousand passengers (75% of Latvian port passenger turnover).

Ferry traffic from Riga to Stockholm is provided by the shipping company AS Tallink Group. Starting with 2017 ferries run daily, which significantly increases cargo turnover and number of passengers. AS Tallink Group plans to modernize Riga passenger port, including construction of new terminal building, hotel, office building.²⁰

Every year 70 - 80 cruise ships, representing more than 20 different cruise operators, arrive at Riga Passenger port. In 2017, 85 cruise ships with 86 thousand passengers entered Riga.

Trends show that the global cruise market has been growing steadily over the last decade. The main cruise generating countries in Europe in 2015-2017 are Germany, Great Britain (with Ireland) and Italy. From 2013 to 2017, there were 42 cruise companies in the Baltic Sea with a total fleet of about 80 cruise ships. In 2017, 2 497 ship arrivals and 5.05 million cruise passengers were registered in the Baltic Sea. The highest number of passengers was in the ports of Copenhagen (850 thousand), Rostock (641 thousand) and Stockholm (600 thousand). The largest number of cruise ship arrivals was in the ports of Copenhagen (325), St. Petersburg (319) and Tallinn (311).

Until now, smaller-sized cruise ships have arrived at the port of Riga: the average length of the ship in the world - 300 m, in Riga - 199 m, the average gross tonnage in the world - 110 thousand tons, in Riga in 2017 - 42.8 thousand tons, in 2018 - 35 thousand, the average number of passengers per ship in the world - 3100, in Riga in 2017 - 1011.

As concluded in a study²¹ conducted by the Freeport of Riga in 2018, **the number of cruise passengers** arriving at the port of Riga in the optimistic scenario **can almost double**. Currently, two passengers' terminals operate in Riga - Riga Passenger port and Krievu sala:

- Two ferries and two cruise berths are used at the Riga Passenger Terminal, which is located on the right bank of the River Daugava near Vanšu Bridge, the main advantage of Riga Passenger port. Maximum length of the vessel: 110 m and 295 m; the maximum draft of the ship at berths: 8.6 m, 7.9 m and 7.6 m.
- There are two berths at the terminals of Krievu Island Terminal, located on the left bank of the Daugava River, 13 km from the center of Riga. Cruise ship passengers have been carried by bus to the center. Completing the 2nd stage of Krievu sala terminal, there is an enhanced environment that also has a positive impact on the passenger berth. In the summer of 2018, seven cruise ships with a total number of 16 873 passengers arrived at the terminal. Maximum length of the vessel: 300 m; Maximum allowable draft: 13.2 m.

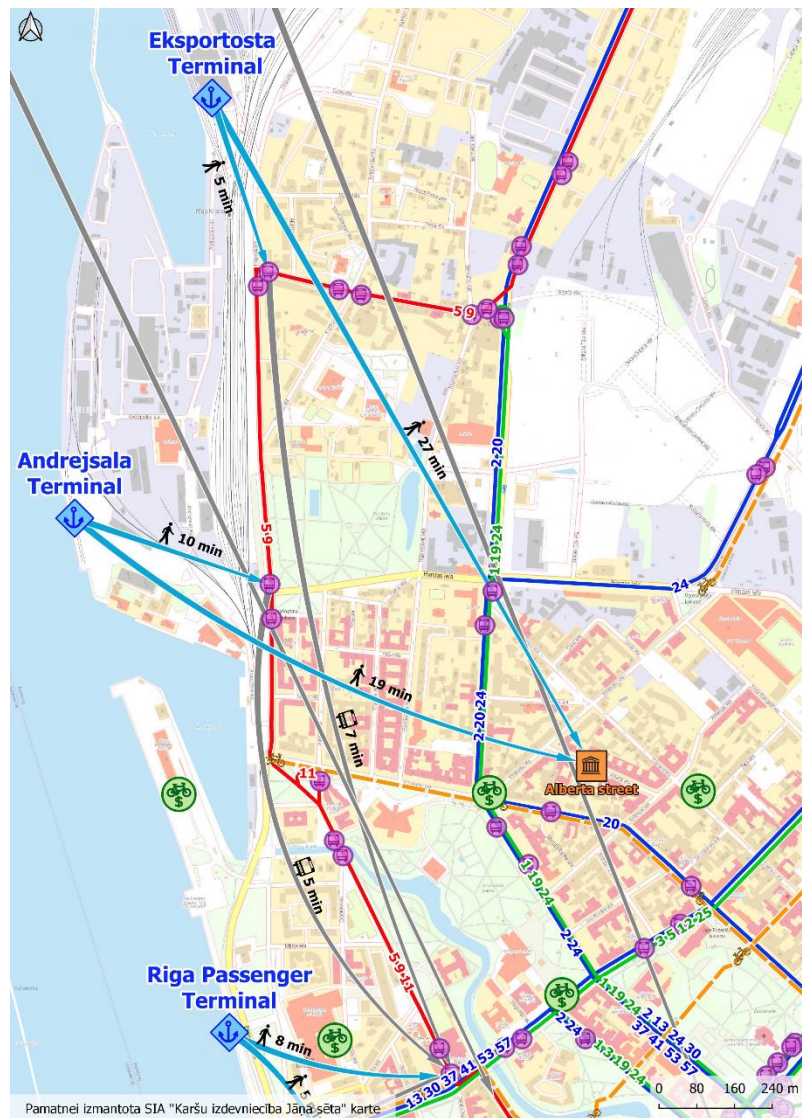
²⁰ <http://www.rigapt.lv/> and LETA, «Riga Passenger Terminal» earned last year € 1,243 million”, May 3, 2018, TVNET Portal

²¹ Freeport of Riga Authority, SIA “Grupa93”, “Identification and Evaluation of Cruise Terminal Placement Based on Sustainability Aspects”, 2018

Three more cruise ship terminals can be developed at the Freeport of Riga:

- The Exportport Terminal, located on the right bank of the Daugava, instead of the Riga Trade port. Total length of three berths: 618 m; maximum draft of the vessel: 9.9 m, 8.8 m and 8.7 m; maximum ship length - 250 m, width - 35 m;
- Andrejsala Terminal, located on the right bank of the Daugava River in Andrejsala. Total berth length: 230 m; maximum allowable draft of the vessel: 8.5 m; maximum length of the ship - up to 210 m.
- Ķīpsala Terminal, which would be located on the left bank of Daugava next to Kipsala beach. The potential for the development of this terminal is low, as there are no port infrastructures at all, large capital investments are needed, transport organization is very complex, the depth of the river does not allow to accommodate large vessels, possible problems with power supply capacity and impact on Ķīpsala landscape.

Figure 19 Location of the Exportosta and Andrejsala terminals in relation to Riga city public transport and bicycle infrastructure and walking distance to the nearest tourist attractions



Investments in the future are necessary for infrastructure development and modernization in both existing and potential terminals, as well as for improvement of connections with Riga city transport.

The potential of small ports is to promote economic development in coastal areas. Already, small ports are trying to develop yacht infrastructure. Skulte and Salacgriva ports are located next to the planned Rail Baltica railway line, which in the long term can significantly change cargo flow in the region, as well develop ferry traffic. There is a need to develop road (or rail) connections between the small ports and the Rail Baltica railway regional points.

Inland waterways in the Riga metropolitan area (Lielupe, right branch of downstream Lielupe river, Buļļupe, Daugava and its right bank offsets) are used only for limited tourism trips. It can be said that there is no river transport in the Riga metropolitan area. There is a lack of

berths. Waterfront management limited by strict environmental and nature conservation legislation.

1.8. Cycling

Bicycles:

- are one of the most cost-effective modes of transport (after walking)
- is the most environmentally friendly mode of transport
- helps to reduce street congestion, reduce CO2 emissions and promote energy efficiency,
- bike is used for everyday trips, active recreation, traveling, sports;
- cycling has a positive impact on human health,
- A significant number of employees are involved in the production of bicycles and their accessories, bicycle transport (mail and cyclists) and in the provision of services (rent, bicycle rental, apps, etc.).

The promotion of cycling meets a number of EC priorities (eg CIVITAS 2020, ELTIS, Sustainable Mobility Plans, European Structural and Investment Funds, Horizon 2020 and COSME). The European Commission develops a European Union strategy for cycling²² and incorporates it into the European Commission's work program, will form a focal point for cycling and calls for the cycling dimension to be included in regional plans and projects.

Cycling can be an essential part of an efficient, sustainable transport system if it has an appropriate urban transport infrastructure. The basic principles of bicycle infrastructure: safety, including visibility, priority signs, speed reduction in dangerous places, separation of cycling from other traffic; continuity of the cycling network; directness; attractiveness and comfort, which is, sufficient width, quality cover, additional information signs and indications.

When planning a continuous network of bicycle infrastructure, it is important to know and take into account the main starting points, destinations and connections with other modes of transport, especially public transport, so that cyclists can travel longer, partly also using public transport.²³

In 2016, 23% of the population in Latvia cycled at least one day a week. Bicycle activity is increasing every year; cycling is becoming more popular. Bicycle recreation and sports trips are becoming a popular leisure activity. *See Velokarte.divritenis.lv, a bicycle map of Latvia, which has been created*

Figure 20 Cycling paths, sports tracks and tourist routes



²² The strategy is scheduled to be presented at the Velocity conference in June 2019, which will take place in Dublin, Ireland. Working version “Blueprint for an EU Cycling Strategy Draft Version -March 2017” https://ecf.com/sites/ecf.com/files/Blueprint%20for%20a%20EUUCS_draft%20March%202017_0.pdf

²³ Informative Report of the Ministry of Transport on the Informal Council of Ministers of Transport, Telecommunications and Energy of the European Union, 7 October 2015

on the initiative of the Latvian Cyclists Association in cooperation with local governments. The Road Traffic Safety Directorate and the Latvian State Police support the creation of the map. Technical solution and maintenance is provided by KurTuEsi.lv. (Figure 20)

The objective of the cycling development plan 2018.-2020²⁴ is to promote the development of cycling and to increase use of cycling in everyday life. To achieve this, there have been identified two directions of action:

1. Cycling infrastructure, its planning and management;
2. Promotion and education.

Goal - by 2020, 30% of Latvia's residents are cycling at least one day a week. Additional funding from the state budget is not provided for the implementation of the plan; the plan is implemented within the framework of Ministry of Transport, Ministry of education and Science, Ministry of Economics, and local government budgets, in the following way:

- research on cycling in the country, obtaining data describing cycling and cycling infrastructure at national and environmental dimensions;
- activities in the framework of international projects developing the EuroVelo 10 cycling route; EuroVelo 11; EuroVelo 13 and Green Ways;
- amendments to regulatory enactments regulating the carriage of bicycles in public transport;
- Update of the Latvian Standard “Road Design Rules. Part 9: Cycling Road LVS 190-9; 2015”;
- marketing and educational activities.

Two Eurovelo routes go through Riga and Riga metropolitan area – No.11 and No.13. The Eurovelo No.10 route enters the Metropolitan area and passes through Ergli, Sigulda and Cesis. The Greenways project develops cycling routes on the former railway embankments (former trains to Rujiena, Ergli and Gulbene, etc.)

1.9. Pedestrian infrastructure

In the practice of world cities, the walkability index is increasingly used. It depends on the suitability of the built street environment for pedestrians, the connections of pedestrian routes in the cities, or the barrier prevention (including interactive traffic lights, frequent pedestrian crossings, etc.) and calming the road traffic.

In recent years, pedestrian infrastructure in Riga and Riga metropolitan area has improved significantly. For street reconstruction projects, requirements are set for comfortable pedestrian movement for different age and physical restraint population groups. Here are some examples:

- Adazi village Gaujas street: Sewer hatches, gums located outside the carriageway in pedestrian islands,

Figure 21 Gaujas street in Adazi after reconstruction, 2018



²⁴ Approved by Cabinet Order No. 389 “About the Road Traffic Development Plan 2018 - 2020” on August 14, 2018

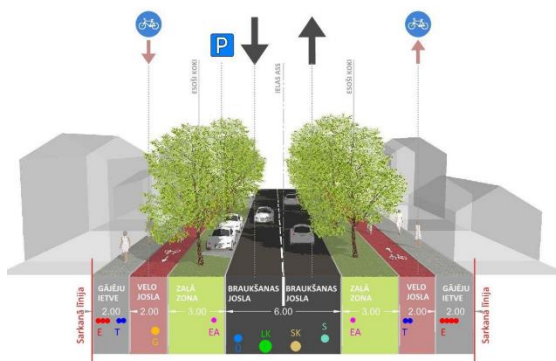
greenery. Stops equipped with telephone charging sockets. As the riding part is on the same level as the pavement, other materials and colors, greenery, safety islands are used for cyclists and pedestrians safe. Due to non-standard solutions, additional public outdoor space has been obtained. Levelled-up rotation circle (serving as a higher ramp), which is important for Adazi, where special transport (National armed forces and NATO vehicles) moving to Adazi military training site using public roads.

- Rotation Circle of Lauku Street in Salaspils: The circle is built at the intersection of existing streets and planned streets, taking into account safety and convenience requirements for road, pedestrian and cyclist.
- Sigulda's identity-thematic planning: transport and pedestrian connections have been analyzed based on the location of populated centers, traffic-generating objects and public transport stops, offering different categories of street profiles, highlighted bicycle and pedestrian connections, mobility points.

Figure 22 Rotation Circle of Lauku Street in Salaspils, 2018



Figure 23 Sigulda Identity Thematic Plan (V.Laurs, 2018)



Other examples: pedestrian street - section of Brivibas street in Ogre, cycle path Ciemupe - Ogre, Sigulda railway station, reconstruction of Stacijas street in Tukums, pedestrian and bicycle path Carnikava - Gauja with bridge over the river Gauja, etc.

The goal is to create a great urban environment quality that can compete with the quality of life offered by a personal car.

In order to make people more often refuse to use a private car in the city, it is necessary to have a convenient, fast public transport, a safe street, etc. availability of equipment (rent, shared use) and qualitative public outdoor space (streets, squares, environmental objects, squares, gardens, parks, greenery) and outdoor cafes for cafes, commercial street trade stands, various services.

One can imagine how the public outdoor space will change in the future. As the proportion of electric motors increases and transport decreases, the urban environment becomes quieter. It is more pleasant to stay there; besides transport, there are talks and music sound.

The biggest change in pedestrian and bicycle traffic in the near future is expected in the center of Riga city center around Riga Central Railway Station, bus station, Central Market, due to Rail Baltica project.

1.10. Mobility hub

The original aim of the Park & Ride²⁵ (for example, Rīgas satiksme plans P&R and has already opened its first parking lot in Ulbroka in 2012) was to relieve the center from private transportation. The creation of large infrastructure objects without harmonized modifications in the urban environment does not produce expected results. Drivers who choose not to drive in the center leave the car at the molls or other parking close to public transport, while P&R parking stays empty. Therefore, Riga Municipality is considering the new P&R if extra co-financing can be possible to attract. Faster and budget-supplementing solutions are removing street parking and creating paid parking spaces.

The new municipal park is planned by the Riga Municipality in Torņakalns at the railway project “Construction of a multimodal transport hub” in the territory between Vilkaines Street, Vienības Gatve and Jelgavas Street; the project also envisages the introduction of a regional bus transfer point. The Rail Baltica regional train stop will be nearby in the future.

The idea of mobility nodes or hubs is known in the world for years. The purpose of the mobility point is to facilitate the transition from one mode of transport to another, to provide a convenient connection between destinations and to provide a diverse support infrastructure (directions, mobility support services, apps, etc.) for the 'last kilometer'. Several modes of transport (train, road, public transport) are located together; it has a bicycle and pedestrian infrastructure up to the surrounding shopping, entertainment, leisure and other services. Shared cars, bicycles, scooter rental services, smartphone apps that collect public transport routes, transport services, and services available in the area can be developed over time.

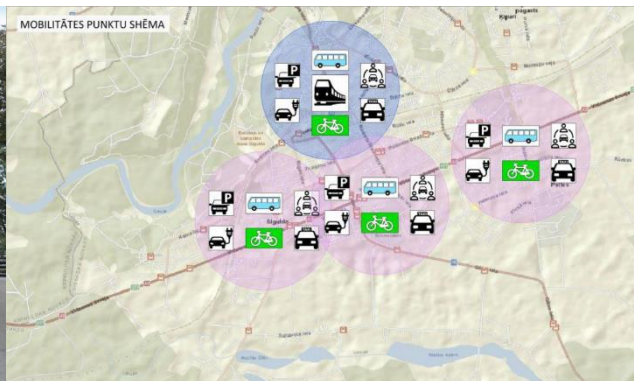
In the Riga metropolitan area, mobility points naturally had formed at railway stations, where a bus is available within a 5-minute walk, parking lots, taxi parking places are available, shopping facilities - railway stations in Riga, Sigulda, Salaspils, etc.

Figure 25 Sigulda Railway Station and Bus Station



www.travelnems.lv

Figure 24 Planned Mobility Points in Sigulda



Sigulda Thematic Plan. Transport

In the form of a pilot project, a mobility point at the junction of important transport arteries in the territory of the former VEF manufacture area is being implemented in Riga.

²⁵ Park&Ride – accepted designation for parking lot

1.11. Roles of key stakeholders

During the development of Riga Metropolitan Area Mobility Spatial Vision, the roles and tasks of the major stakeholders in solving mobility problems in Riga metropolitan area have been identified. Most of them represents national level, although Riga municipal transport company plays an important role. Also important there are the groups of society that represent the mobility of the new generation.

The Ministry of Transport is the body responsible for transport.

Important institutions in the railway sector are:

- The State Railway Administration, responsible for railway transport orders, railway infrastructure and rolling stock, issuing carrier licenses, and developing a railway environmental policy.
- The State Railway Technical Inspectorate executes state administration functions in supervision and control of railway technical operation;
- State Joint Stock Company “Latvian Railway” is a railway infrastructure manager and logistics service provider;
- subsidiary company of the SJSC "Latvian Railway" “Latvian Railway Infrastructure” Ltd. ensure continuous development and improvement and maintenance;
- subsidiary company of the SJSC "Latvian Railway" JSC "LatRailNet" performs the essential functions of a public railway infrastructure manager - decision-making on the allocation of capacity, allocation of train paths, including both the identification and assessment of access, and the allocation of individual train paths, and the decision on infrastructure charges;
- Latvian Railway” company „LDz Cargo” Ltd. is the largest transit and transport company in Latvia and the largest rail freight carrier in the Baltics and „LDz logistics” Ltd. is a logistic company arranging international export, import and transit deliveries by rail in the territories of the Baltic and CIS countries;
- JSC Pasazieru vilciens is the sole inland public railway passengers transport service provider in the whole territory of Latvia. Company provides transport services and maintains train fleet and depots;
- Eiropas dzelzceļa līnijas, Ltd is a state-owned capital company, in charge of implementation of 1st stage Rail Baltica activities in Latvia, also implementing Rail Baltica construction in Riga central station section and Rix section;
- JSC “RB Rail” is a transnational joint venture founded by governments of the Latvia, Lithuania and Estonia. RB Rail is the central coordinator of the Rail Baltica project, including responsibility for railway construction in the rest sections of Latvia, marketing, submission of applications for European Union co-financing, etc.

Rail Baltica implementation directly or indirectly influences all mentioned institutions. Stakeholders of future mobility points at stations are JSCS “Latvian Railway” in cooperation with municipalities.

Important institutions in the road transport sector are:

- Road Transport Administration, State Ltd. implements public policy in the field of passenger and freight transport - licensing of entrepreneurship in the field of road transport (commercial carriage by road), co-ordination of access to the road transport market, etc.;

- SJSC Latvian State Roads provides management of the state road network, administrates the State Road Fund, etc.;
- SJSC Latvian Motorway Maintenance plans and conducts daily road maintenance works and products building materials (dolomite crushed stone, crushed gravel and prepared sand);
- Road Safety Directorate (JSC "Ceļu satiksmes drošības direkcija") deals with vehicle registration, driver qualification examinations and issuing driving licenses, provides road safety audit and general supervision;
- Riga planning region, in accordance with the Public Transport Services law, RPR prepares proposals for regional routes and the volume of public transport services on regional routes;
- Municipalities or republic status cities and their municipal enterprises (like municipal company Riga Traffic, Ltd.) organize urban public transport services, plan and develop streets, stops, squares and public outdoor spaces;
- Merchants provide passenger and freight transportation services.

Main institutions in the aviation sector are:

- SJSC Riga International Airport – main air traffic centre in this region offering regular passenger, cargo and postal delivery to the cities of Europe and world;
- JSC Latvian Air Traffic is a national regulatory authority;
- JSC Air Baltic Corporation is a national airline.

Main institution in the maritime transport sector are SJSC "Maritime Administration of Latvia", which does safety monitoring of ships and ports. Municipalities and port authorities develop and maintain port infrastructure, and attracts maritime passengers and freight operators.

There are other stakeholders important in the development of the mobility solutions in Riga Metropolitan area:

- International organizations, such as VASAB (Vision & Strategies around the Baltic Sea) - 11 Baltic sea Region intergovernmental cooperation on spatial planning and development. They can make projects on large-scale transport infrastructure and public transport system improvement in Riga;
- Project sponsors (for example, Nordic Council of Ministers' Office in Latvia, and others);
- Educational institutions such as Transport and Telecommunication Institute, Latvian Maritime Academy, etc.;
- Municipalities and their companies in Riga Planning Region;
- Associations and experts in the field of transport - Association "City for People" (City for pedestrians, cyclists and public transport passengers!), Latvian Cycling Association (founded with the aim to promote the development of everyday and tourism cycling as a convenient, economical, healthy and environmentally friendly way of transportation in Latvia), drone manufacturers, etc.

2. TRANSPORT AND MOBILITY PLANNING

The flagship initiative for a resource-efficient Europe under the Europe 2020 (A strategy for smart, sustainable and inclusive growth²⁶) supports the shift towards a resource-efficient, a low-carbon economy, increasing the use of renewable energy sources, modernizing the transport sector and promoting energy efficiency.

Following a 2013 review of TEN-T policy, the ultimate objective of TEN-T is to close gaps, remove bottlenecks and eliminate technical barriers that exist between the transport networks of EU Member States.

The new core TEN-T network will be supported by a comprehensive network of routes, feeding into the core network at regional and national level. Projects of the comprehensive network is to be finished by 2050. The TEN-T Core network has to be built to 2030. One of the TEN-T priorities is innovative technological solutions to make it accessible to all citizens and to create a safer, sustainable, low-carbon and energy efficient system.

The EU White Paper on Transport²⁷ set the target to halve the use of 'conventionally-fueled' cars in urban transport by 2030; phase them out in cities by 2050. Transport has become more energy efficient, but EU transport still depends on oil and oil products for 96% of its energy needs. This makes the transport sector vulnerable to the growing imbalance between global oil demand and supply.

Concerning the railway sector, the aim of the White Paper on Transport is to complete a European high-speed rail network, triple the length of the existing high-speed rail network by 2030 and to maintain a dense railway network in all Member States.

As regards to railway, by 2050., the goal is to triple the length of the existing high-speed rail network by 2030 and maintain a dense railway network in Member States. By 2050 the majority of medium-distance passenger transport should go by rail. By 2050, connect all core network airports to the rail network, preferably high-speed; ensure that all core seaports are sufficiently connected to the rail freight.

European Common Aviation Area should be completed until the end of 2020 by introducing modernized air traffic management systems. By 2050, when the number of EU air transport operations is expected to double, airport capacity optimization has to be done, to avoid imposing excessive burdens on EU operations which could compromise the EU role as 'global aviation hub'. In other cases, (high speed) rail should absorb much medium distance (up to 300 km) traffic.

In aviation, low carbon fuels should reach 40% by 2050; also by 2050 reduce EU CO₂ emissions from maritime bunker fuels by 40% (if feasible 50%).

It is necessary to achieve high security, safety, environmental protection, and the enforcement of labor standards and the elimination of piracy in shipping. By 2017, the International

²⁶ COM(2010) 2020 final

²⁷ Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system (COM(2011) 144 final) https://ec.europa.eu/transport/themes/strategies/2011_white_paper_en

Convention for the Control and Management of Ships' Ballast Water and Sediments will enter into force.

The EU must play a leading role in the security and safety of all modes of transport worldwide. By 2050, the number of fatalities on the roads must reach zero.

Continuous mobility services or multimodal door-to-door travel should be established, including the development of smart systems and their use for interoperable and multimodal planning, information, online booking and ticketing.

As cities are very densely populated and people often need to move over short distances, cities have a greater potential to switch to low-carbon transport systems. This can be achieved by improving the possibilities for walking, cycling, public transport, and the introduction of vehicles using alternative fuels as soon as possible.²⁸ Already since 2009, the European Urban Mobility action plan is being implemented.

By 2013 the mobility was integrated into the transport sector, highlighting individual mobility issues in cities. The Commission's initiatives on urban mobility are seen as high added value actions. So far, the European Commission's support has been channeled through following communications:

- Action Plan on Urban Mobility (COM (2009) 490 final);
- "Together towards competitive and resource-efficient urban mobility" (Brussels, 17.12.2013, COM (2013) 913 final). It is complemented by an annexes out the concept of sustainable urban mobility plans, as well as four working documents on urban logistics, urban access rules, the deployment of intelligent transport systems in urban areas and urban road safety.

Urban Mobility Action Plans should also cover urban agglomerations to tackle congestion, poor air quality, noise emissions and high CO₂ emissions.

Starting with 2017, the European Commission is developing a comprehensive approach, considering that traditional mobility is changing. Digitization, automation and alternative energy sources and technologies, as well as the sharing and circular economy and societal needs continue to drive these changes. However, such changes can also be disruptive. While they create new jobs, they can also make others obsolete. They call for new skills, good working conditions and need anticipation, adaptation and investment.

In the line with the European Strategy for Low-Emission Mobility²⁹, the Commission has adopted a Mobility Package (agenda, legislative proposals and initiatives) for the management of commercial road transport in the European Union.³⁰ It is the largest amendment of the EU road transport regulations, which covers many sectors operational aspects. The Commission presented the 'mobility package' initiatives in three parts.

- Communication Europe on the move: An agenda for a socially fair transition towards clean, competitive and connected mobility for all, 31.5.2017. Brussels, COM(2017) 283 final), including:

²⁸ Together towards competitive and resource-efficient urban mobility (COM(2013) 913)

²⁹ COM(2016) 501

³⁰ <http://www.europarl.europa.eu/legislative-train>

- Long-term plan to deliver clean, socially fair and competitive mobility to all Europeans;
- 8 legislative initiatives with focus on road transport and aim at improving the functioning of the road haulage market; enhancing the employment and social conditions of workers; and promoting smart road-charging in Europe:
 - Access to the road haulage market and access for industry to passenger and freight companies
 - Leased freight vehicles
 - Tolls and electronic toll collection
 - Rules for driving and rest time
 - Posting of workers
 - Taxation of vehicles
 - CO₂ monitoring and reporting of heavy vehicles
- a number of non-legislative accompanying documents, presenting EU policy support measures designed to accelerate the shift to a sustainable, digital and integrated mobility (for example, investment funding for infrastructure, research and innovation and collaborative platforms).
- Communication Delivering on low-emission mobility, European Union that protects the planet, empowers its consumers and defends its industry and workers, (Brussels, 8.11.2017 COM (2017) 675 final). It consists of:
 - a Communication outlining the steps to make clean mobility a reality. It includes the battery initiative, to ensure that new vehicles and their components are produced in the EU;
 - an Action plan proposing investment solutions for the trans-European deployment of alternative fuels infrastructure;
 - a set of 4 legislative initiatives, targeting road and combined transport, which aim is strengthening CO₂ emissions standards for new cars and vans from 2020, promoting clean mobility through public procurement, stimulating combined use of trucks and trains, barges and ships for the transport of goods and, finally, promoting the development of bus connections over long distances;
 - a report on the assessment of the need to review Regulation (EC) No 1222/2009 on the labelling of tires with respect to fuel efficiency and other parameters.
- European Commission, Communication on Europe on the move - Sustainable Mobility for Europe: safe, connected, and clean (Brussels, 17.5.2018 COM (2018) 293 final):
 - Safe mobility - a Communication presenting a strategic Action plan on road safety for 2020-2030. It includes two legislative initiatives on vehicle and pedestrian safety and on infrastructure safety management;
 - a Communication on connected and automated mobility to promote EU autonomous and safe mobility systems. It is accompanied by two legislative initiatives establishing a digital environment for information exchange in transport. The first establishes a European maritime single window environment, and the second introduces a framework of an electronic communication system for freight transport;
 - Clean mobility - Legislative initiatives on CO₂ standards for trucks, on their aerodynamic, on tire labelling and on common methodology for alternative fuels price comparison; they are accompanied by an Action plan for batteries. These measures reaffirm the EU's objective of reducing greenhouse gas emissions from transport and meeting the Paris Agreement commitments;

- a legislative initiative to streamline procedures for advancing the trans-European transport network.

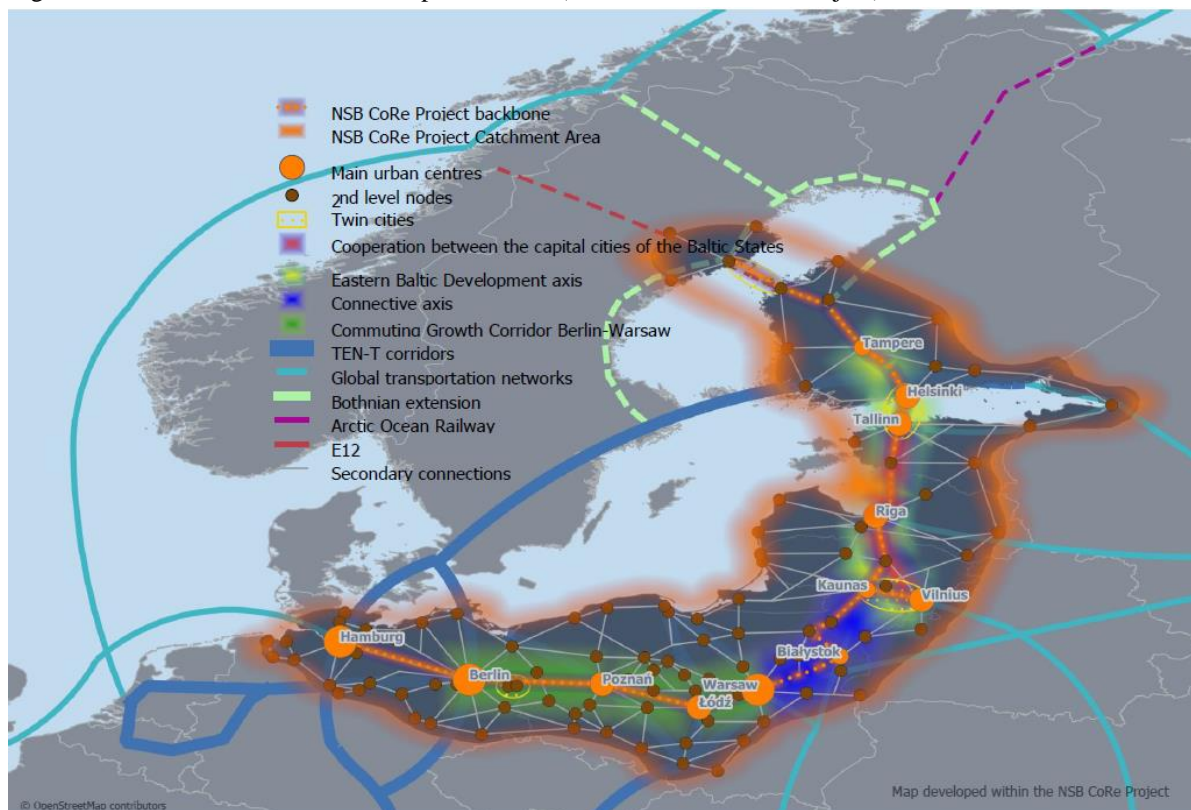
EU Strategy for the Baltic Sea Region targets a ‘macro-region’ and focuses on:

- Transport priority objectives - to improve external and internal connections;
- Improve cooperation on transport infrastructure planning;
- Maritime safety priority objective - to develop as a leading maritime safety region;
- Maritime priority goal - model region of the maritime navigation.

In long-term territorial development spatial vision of the Baltic Sea Region (BSR) for 2030, VASAB³¹ aimed to improve of internal and external accessibility and defined the following actions:

- Reduce cross-border barriers in primary (TEN-T) and secondary (interregional) networks in BSR countries
- Integrate the BSR transport network by:
 - Rail Baltica corridor;
 - TEN-T network corridor linking ports (including Riga),
 - road connection and border crossing infrastructure on the EU external Latvia-Russia border,
 - road and rail connection from Latvian ports to Russia and Belarus and further to the Far East, Central Asia and the Black Sea,
 - air links to the north and east of the BSR,
 - motorways of the Sea.

Figure 26 North Sea - Baltic corridor spatial vision (VASAB, NSB CoRe Project)



³¹ Intergovernmental multilateral co-operation of 11 countries of the Baltic Sea Region in spatial planning and development, guided by the Conference of Ministers responsible for spatial planning and development

Within the framework of the project “North Sea Baltic Connector of Regions (NSB CoRe)”, VASAB is developing a Joint transnational SPATIAL VISION on regional development, logistics and mobility of the North Sea Baltic corridor, where Riga is marked as one of the main urban centers (Figure 26).

The Sustainable Development Strategy of Latvia 2030 envisages “Creating equal living and working conditions for all inhabitants, regardless of their place of residence, promoting entrepreneurship in the regions, developing quality transport and communication infrastructure and public services”. Action group “Energy efficient and environmentally friendly transport policy” set rail transport as a priority in regional and international traffic. As well, important is development of greener and better quality public transport infrastructure.

Transport Policy Guidelines 2014-2020 define the transport policy objective as a competitive, sustainable, co-modal transport system that provides high quality mobility by efficient use of resources, incl. EU funds:

The vision of a sustainable transport system:

- High-quality transport infrastructure (good roads, electrified railway, convenient connection of TEN-T with cities, Riga Airport as the central air traffic center in the region);
- High level of traffic safety;
- Transport and logistics services, which create preconditions for the development of other sectors, provide jobs and a significant contribution to the growth of exports of services;
- Available public transport, which provides accessibility all over the territory of Latvia (convenient, integrated public transport system, achieving mutual coordination of bus and rail transport).

Riga and Pieriga Mobility Plan³² developed in 2010 was the first initiative to develop a common transport system policy for the capital and suburban areas. The goals of the single transport system development defined in the plan for the next 20-30 years³³:

- To ensure the most efficient use of the existing transport system and its equipment in Riga and Pieriga, with an emphasis on soft measures and reconstruction of existing infrastructure, rather than on the construction of new infrastructure.
- Develop an efficient, attractive and competitive public transport system. Environmentally friendly transport, incl. electrified and rail transport, set as priority transport.
- Improve the structure of roads and trunk roads to prevent its fragmentary character.
- Improve road safety without compromising adequate reach.
- Ensure multi-modal reach of territories.
- Improve the linkage of Riga Freeport with the network of urban, national and international (TEN-T) transport infrastructure.
- Provide transport links between Riga International Airport and Riga City as well as other major regional centers.

³² Ministry of Transport and Witteveen + Bos, Riga and Pieriga Mobility Plan. Final Report, Oct 18, 2010.

³³ Approved by Riga and Pieriga Mobility Plan Development Steering Committee, 15.01.2010.

Figure 27 Traffic infrastructure spatial structure of Riga Planning Region



Karte izstrādāta Norvēģijas finanšu instrumenta 2009.-2014.gada programmas Nr.LV07 „Kapacitātes stiprināšana un institucionālā sadarbība starp Latvijas un Norvēģijas valsts institūcijām, vietējām un reģionālām iestādēm” projekta „Latvijas plānošanas reģionu un vietējo pašvaldību teritoriālās attīstības plānošanas kapacitātes palielināšana un attīstības plānošanas dokumentu izstrādāšana” (Nr.4.3.-24/NFI/INP-002) ietvaros.
Riga Planning Region Sustainable Development Strategy 2014-2030

Riga Planning Region Sustainable Development Strategy 2014-2030 defines Mobility as still developing a common transport system, whose core consists of all kinds of public transport networks that ensure geographically regular accessibility within the time conforming to the daily mobility requirements, in which the region is a united working and living space.

Objectives of the transport and mobility in the Riga Planning Region are:

- Strengthening of common infrastructure networks of the internal and external accessibility;
- Development of the integrated and functionally differentiated public transport network;
- Strengthening of internationally important N-S, E-W connections and nodes;
- Integrated network of the coastal and inland waters connections,
- Development of urban internal transport and its connections.

3. DEVELOPMENT TRENDS

The process of developing the Riga Metropolitan Area Mobility Spatial Vision asks questions:

- What does it mean – to be prepared for the future situation?
- How to see future opportunities and how to develop them to be better prepared?
- How to tell the future to the public?
- What can be the future mobility if new mobility services are connected to new and self-driving vehicles?
- How future societal behaviors and mobility patterns can shift (work, travel, shopping, etc.)?

Communication technologies evolve. This makes possible to improve vehicle movement and safety. The next generation of communication system equipment is being developed and implemented in the public transport system of trains and cars. For example, next-generation traffic lights that measure and regulate traffic flow, even capture traffic offenses. Public outdoor space is equipped with pedestrian and bicycle riders, information boards, etc., compatible with smart devices apps.

European automotive industry will have to master a paradigm shift from an automobile industry that sells and services vehicles to a mobility industry that offers myriad solutions for the transport of people and goods. Changing values from customer orientation to customer centricity, from environmental awareness to sustainable mobility, and from profitability to positive economic value add the “European way” will be fundamental. Mobility costs could decrease to €0.10 per kilometer use cases through technological advancements, new powertrains, and optimized shared-mobility services. Thus, lower-income groups can be reached. The usage of individual mobility by younger (under 18 years) and older age groups, as well as by people with partial disabilities, will also increase through advanced ADAS systems and, ultimately, connected and autonomous vehicles. Individual mobility will be accessible to a higher share of the population—up to around 90 percent (including disabled people, teenagers, and senior citizens), compared with the current 60 to 70 percent.³⁴

Since historical transport infrastructure (major roads, especially railway lines) is planned to bypass the settlements, to lower impact on the state of the environment and human health, the “last mile” or mobility services are needed around public transport stops.

Healthy, active and collaborative lifestyles come into society. Walking, cycling, driving together, sharing cars, bicycle, rent, use of walking acceleration tools

Figure 28 Mobility point. Its purpose is to facilitate the transition from one mode of transport to another, to provide a convenient connection between the purposes of the trip and to provide a diversified support infrastructure for the "last kilometer"



Bond Beter Leefmilieu initiative “Municipality for the Future” network of 20 organizations: <https://www.gemeentevordetoekomst.be/artikel/deelfietsen-deelauto-s-een-laadpaal-deinze-startte-een-mobipunt>

³⁴ Mc Kinsey Center for Future Mobility analysis, Mobility 2050
<https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/a-long-term-vision-for-the-european-automotive-industry>

(scooters, Segway, ect.). In urban areas, it is necessary to provide territory (space) for car share parking, bicycle infrastructure, more space for pedestrians and cyclists.

Internal combustion engines are replaced by electric, which means that transport is becoming more environmentally friendly, quieter. Electric vehicles in the private and public transport is likely to take in a substantial part already around 2040.

New freight logistics services in ports, manufacturing and including daily deliveries (drones deliveries, packers' box, and courier services) to deliver as fast, economical and accurate delivery as possible.

The world's population is growing and the population is traveling more often. The increase is largely due to the improvement of the middle-class economic situation in developing countries. Already now, the number of public transport and railway passengers has increased in Riga and the number of air passengers has increased at Riga International Airport.

Increasing extreme climatic conditions, military and terrorist threats require higher environmental and safety requirements for vehicle equipment, construction and operation of transport structures.

Permanent work is ongoing on future traffic patterns. Although their implementation may take a long time, self-driving cars and outboard trams in multi-level traffic have already been tested; the role of hydrogen in promoting the development of renewable energy and reducing carbon emissions, etc. is being studied, etc.³⁵

³⁵ EMzino_11092018_ENER.docx; Information report on the issues to be addressed at the meeting of the Council of Ministers of Transport, Telecommunications and Energy of the European Union on 18 September 2018

4. SPATIAL VISION 2030

4.1. Riga - North European metropolis, international cultural, scientific, business center, transport hub (external reach)

The development of mobility in the Riga metropolitan area is determined by:

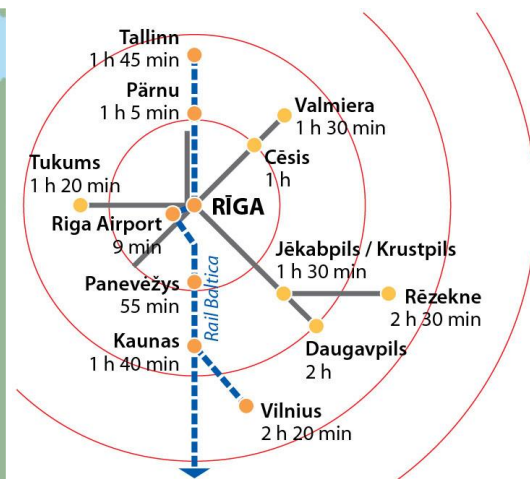
- the new Rail Baltica railway and infrastructure projects
- technology development,
- environmental quality objectives,
- development of public mobility and lifestyle.

Rail Baltica railway construction project will increase passenger and freight mobility, improve internal and external reach of Riga metropolitan area.

Figure 29 Rail Baltica Railway - Connector of the Baltic States



Figure 30 Estimated driving time on the railway network



Rail Baltica, the purchase of new modern trains and electrification of the existing railway will reduce driving time, “bring” Riga closer to other European cities, and create a **new, connected, common Baltic space for business, living and leisure.**

The rail link between the center of Riga and the airport will make international travel to and from Riga more convenient.

Riga will become a central multimodal transportation hub of the Baltics with the rebuilt Riga Central Railway Station. Riga center will provide connections for all modes of transport - connecting Europe with high speed Rail Baltica, connecting East by conventional rail, urban public transport, Riga International Bus Station, 10-minute direct rail connection to Riga International Airport, as well a 20-minute drive connection to Riga passenger port. Catchment area will grow tremendously, and enormous cooperation possibilities will emerge.

Riga will be **the most convenient transport hub in terms of mobility and public outdoor space** compared to European metropolises. Around the central train station there will be convenient bicycle and pedestrian infrastructure and mobility services, reduced private road traffic, improved public transport, pedestrian and bicycle connections between the center and the suburbs of Moscow, as well as the left bank of the Daugava and island Zakusala.

Figure 31 Rebuilt Riga Central Railway Station and Rail Baltica Station



Architecture competition, architects from Denmark - PLH Arkitekter in cooperation with COWI

In the context of priority and large investments in the center of Riga, the significance of such Riga transport projects as the Zemgale Bridge and the Northern Transport Corridor ought to be reviewed. Zemgale Bridge would only promote the transport of transit traffic in the center, which would be contrary to the efforts to free the center from private road transport. Meanwhile, the amount of investments required for the Northern Transport Corridor project is equivalent to the transport reorganization of the Riga center. Investment ought to be geared towards building sustainable transport with less environmental damage. The transport link to Europe will bring more economic benefits.

The second major multifunctional transport hub is forming in Riga International Airport in Marupe region with international air traffic, Rail Baltica international train traffic, availability of Riga city bus routes and extensive parking infrastructure and mobility services (taxi, shared car, rental points).

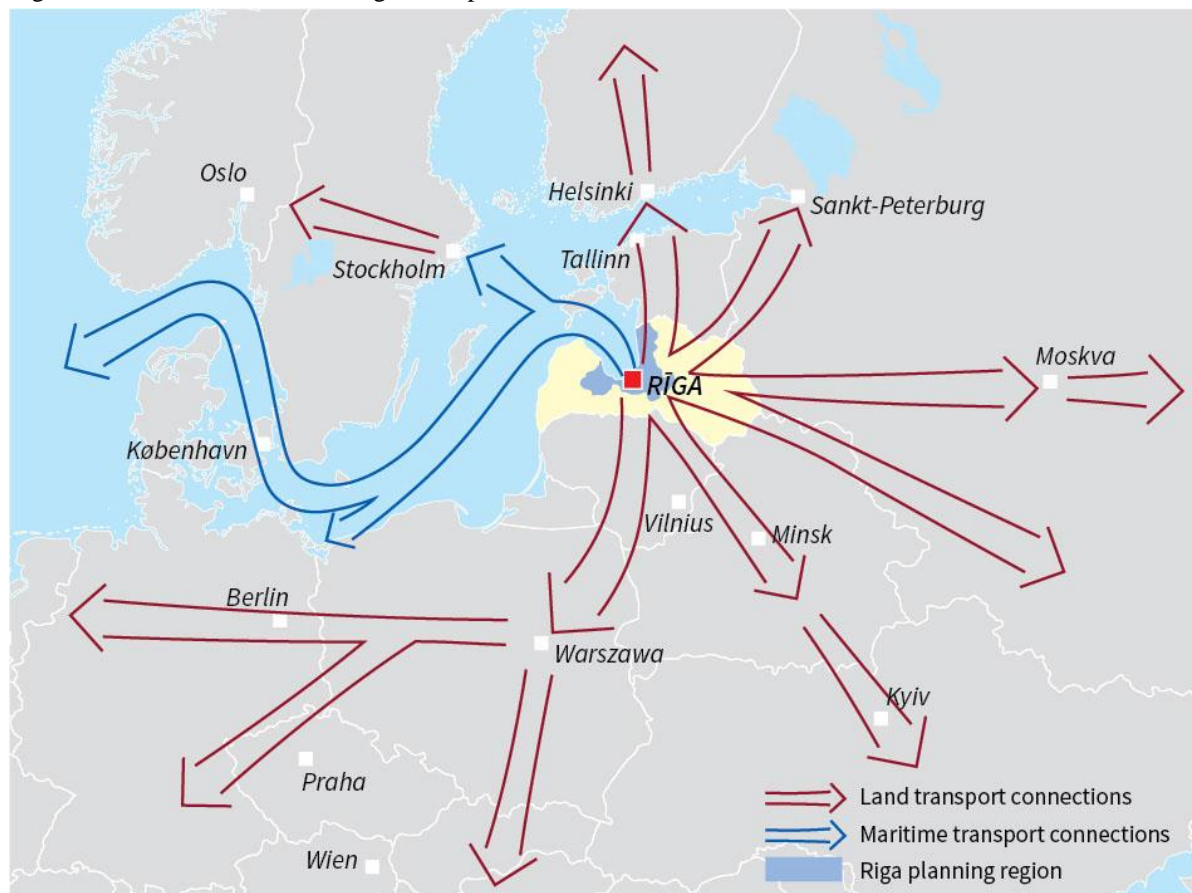
After implementation of the 5th and 6th airport development rounds airport capacity will be 12 million passengers per year. The number of passengers forecasted in the center of Riga is from 25.7 million train passengers in the network of Latvian Railway, 5 million train passengers in Rail Baltica network, Riga International Bus Station and public transport passengers, as well as residents and guests of the Old Town, Center and Moscow districts who use public outdoor space.

Intermodal freight terminal in Salaspils municipality with integrated infrastructure of both gauge railways and TEN-T road network (Via Baltica) will attract new investments to Riga and its surroundings. Multimodal freight terminals built within the framework of the Rail Baltica project in all three Baltic States (Pelemonas, Salaspils, and Muuga Terminal in Lithuania) will facilitate cargo attraction to the region.

In connection with the construction of a cargo terminal in Salaspils and international cargo handling it is essential to build the following infrastructure:

- Major highways - Via Baltica (E67) / Riga bypass (Baltezers - Saulkalne (A4)) reconstruction of a 4-lane highway with two-level crossings, as well as a new bridge over the Daugava (Riga HPP reservoir) and the connection between left bank of the Daugava and the Riga bypass (Salaspils -Baby (A5)), Eastern enter to Riga (E22) to Slavic Circle;
- Reconstruction of the existing railway at the stages where it touches Rail Baltica and the construction of a new infrastructure at terminals;
- Port access roads, in the long term also developing the left bank of the Daugava 1520 mm rail connection with the terminals of the Krievu Island in Riga Freeport.

Figure 32 External reach of the Riga metropolitan area



Ship routes important for the development of the Riga metropolitan area covers the Baltic Sea (except the Gulf of Bothnia) and ports in Sweden, Poland, Germany, Denmark with the exit to the world's ocean through the Danish or Baltic Strait. The Riga Freeport will develop as a multifunctional port that “fully exploits the benefits of Freeport status and ensures sustainable economic development”³⁶. Within the port, the Riga Passenger Port is developing, building

³⁶ Riga Freeport Development Program 2010-2018

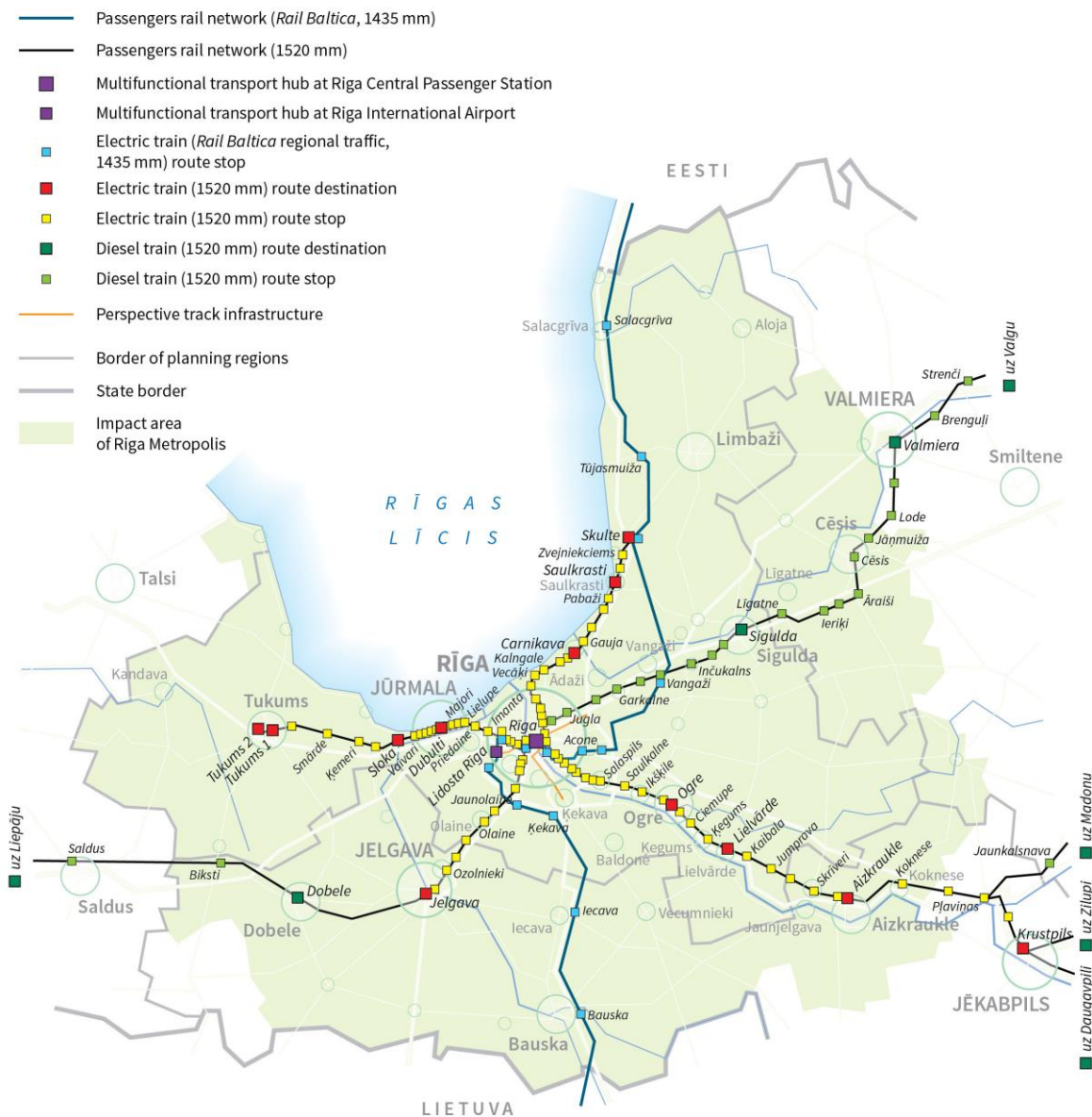
new terminals in Andrejsala, and at Exportport and establishing connections with city transport. Small ports are suitable for both business and tourism. Yachting, water activity centers and public infrastructure are developing around the ports (waterfront infrastructure, binding cultural and service facilities).

Rail links with CIS countries and the Asian market keep the importance, using the North (via St. Petersburg, Moscow) and strengthening the Southern (via Minsk) rail corridors.

4.2. Riga - the capital of the country, regional culture, science, business center, transport hub (internal reach)

The Riga metropolitan area is characterized by commuting - daily or frequent trips to Riga from Pieriga and from remote areas for work, study or services.

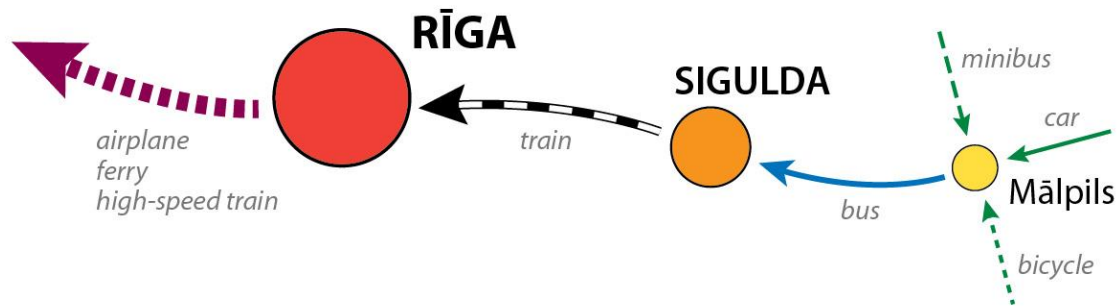
Figure 33 Track infrastructure after the establishing of Rail Baltica regional traffic



The **railroad network and train traffic** between Riga and the metropolitan area cities Jelgava, Valmiera, Jurmala, Tukums, Salaspils, Ogre, Sigulda, Saulkrasti, etc. will form the Riga metropolitan area **future transport structure / framework**.

Passengers getting to the train will be provided by regional and suburban bus services, to regional and suburban buses – by public and private sector-based mobility services, and by walking and cycling on comfortable reconstructed streets and roads.

Figure 34 Scheme for getting passengers to the train. Changing mobility habits



To facilitate the use of the train and to avoid duplication of bus and private traffic through Riga center, multi-functional mobility points at railway stations will be set up. They will be easily accessed by bus (e.g. train schedules coordinated by train movements), where you can park cars and bikes, call a taxi or a shared car and get a various mobility services.

Availability of commercial and household services in mobility points will save peoples time and will facilitate the change of mobility habits and give priority to train. For example, in Tukums, Sloka, Dubulti, Babite, Sigulda, Jugla, Olaine, Saulkrasti, Baltezers (considering moving a railway stop closer to Riga bypass / Via Baltica), etc. mobility points are needed. In areas without rail - at regional bus stations in cities smaller mobility points are needed.

The basis of the internal reach of the Riga metropolitan area will be the railway network of the Latvian Railway and passenger transportation by rail carried out by JSC “Pasazieru vilciens”. Major improvement needs:

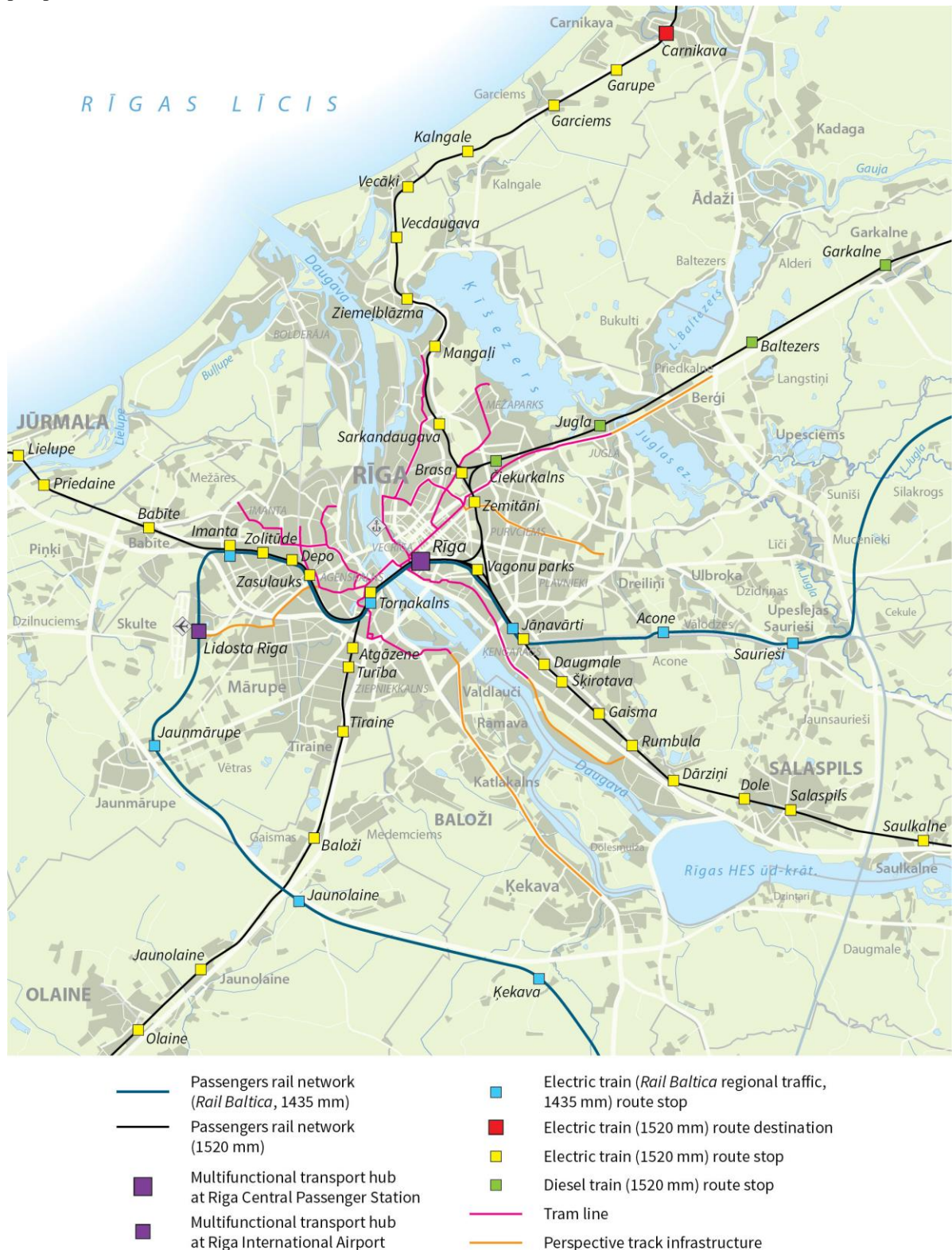
- Passenger transport takes place in modern trains;
- Train movement in the morning and evening pay hours will be intense, regular, and the safety of transportation will be improved thanks to the realized electrification project.

In the long term, by developing the Rail Baltica regional train traffic (Figure 33), the cities of Riga metropolitan area and Riga will get another rail public transport. The new railway will significantly improve the accessibility of the airport and the development perspectives of small regional centers and small ports (Skulte, Salacgriva).

In a longer perspective, the development of a denser rail infrastructure network in Pieriga should also be assessed, for example, extension of Riga city tram lines to direction of Adazi, Ķekava, Marupe.

Rail transport is also the main public transport mode in the city of Riga. Together with the tram line network and the future Rail Baltica regional train traffic, various parts of Riga are more conveniently connected with Pieriga and more distant centers of the metropolitan area.

Figure 35 Track infrastructure after setting up Rail Baltica regional traffic in Pieriga and development of desired perspective directions



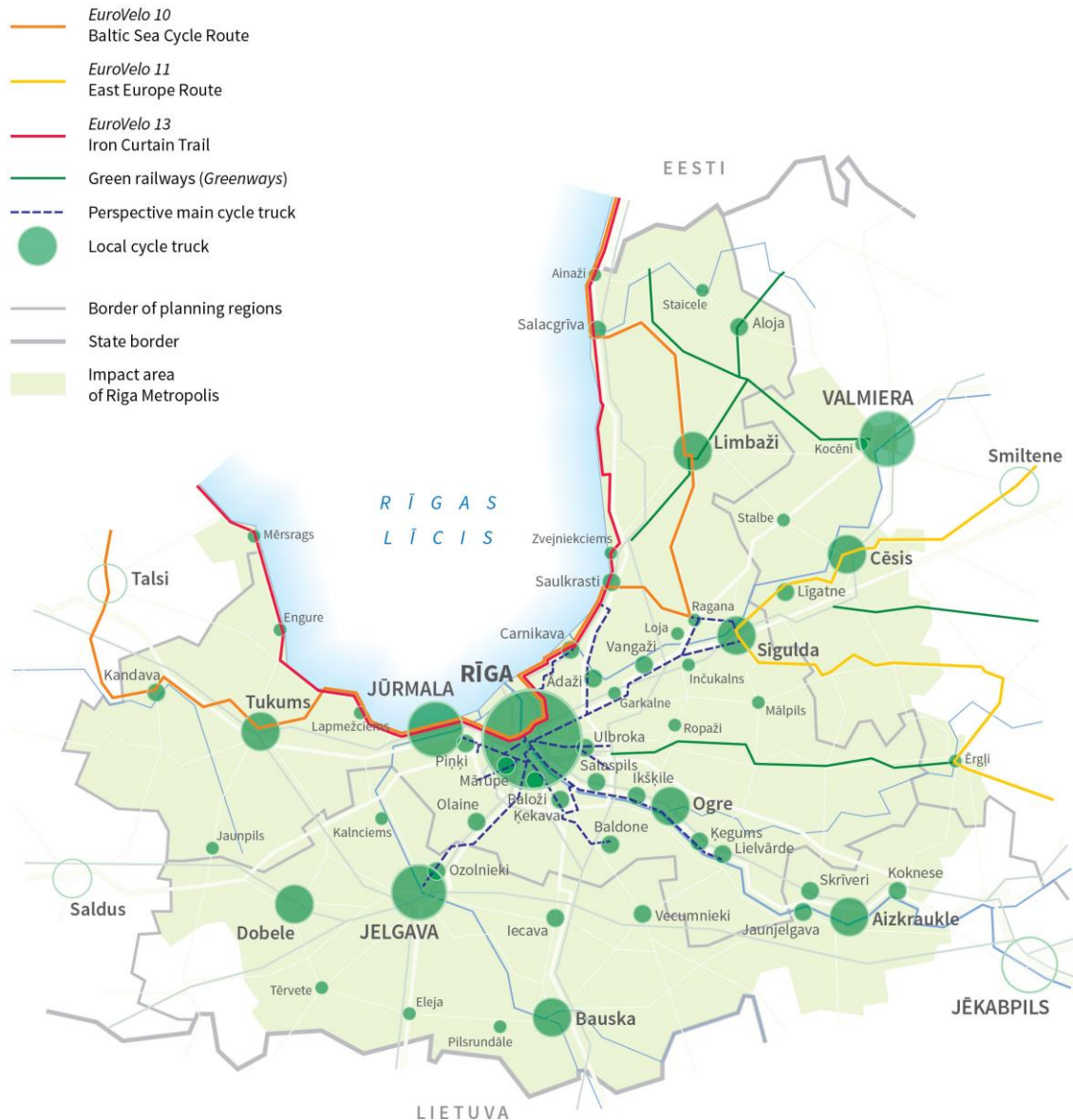
Riga and Pieriga will use a single ticket for train, interurban bus and "Riga Satiksme" city transport routes. Expected additions:

- People using single ticket can also pay for the shared vehicles services;
- Pupil transport should be linked to the single ticket system (educational institution as the destination of the journey).

Ideally, a single ticket for transport can be validated by an ID document (ID card) not to increase the cost of reconciling the IT systems of transport companies and make public transport more convenient for passengers.

New bicycle paths and daily bicycle infrastructure in the streets have been built according to Riga and metropolitan area municipalities bicycle plans. Bicycle connections with the suburbs of Riga have been extended creating a cycling infrastructure for recreational trips in the Riga metropolitan area. The inhabitants of the region use short section of it for everyday trips.

Figure 36 Development of bicycle infrastructure in Riga metropolitan area



For example, on the cycling route Riga-Jurmala section of Priedaine-Jurmala (bicycle bridge over Lielupe) has been built. There is a bicycle infrastructure in the section Ogre-Ikšķile, Ikšķile- Salaspils, and in the sections of Maskavas Street (Darzini, Rumbula), a bicycle connection between Riga and Sigulda, which is used daily in shorter stages (eg Vangazi-Inčukalns), but for tourism - also at all length, connection to Jelgava, including Olaine, to

Iecava, including Kekava, a branch to Baldone, Daugmale and Island Doles sala, with further connections to the right bank of the Daugava.

A comfortable and spacious pedestrian infrastructure in city centers has been built.

In the future, with shared-use cars (CarGuru, etc.), new-generation taxis (Uber, Taxify), cars used for driving together will reduce the need for parking.

In cities, more local ferry and boat traffic between riverbanks!

- The use of Daugava in Riga has changed significantly. Intensive boat traffic between the banks of the Daugava River and improved access to the waterfront.
- Ferry traffic between Vecmilgravis to Bolderaja districts in Riga, because it is possible to get from one to the other only by Vansu bridge, and the bridge is mostly traffic-congested.
- Ferry traffic between Bolderaja and Mangalsala in Riga, which links the sights of the cultural heritage (the Daugavgriva fortress, Kometfort, the fortifications of the fortress building in Mangalsala), and visits of the two Daugava moles.
- Ferry traffic between the banks of the Lielupe in Jurmala, because there are only two road bridges, among them 12 km.

Inland waterway connections to the coast of the Gulf of Riga have been established, one-day trips as tourist offers from the berths on the Daugava River (opposite the Old Town) to the Riga Gulf small ports and newly constructed quays, including inland waters (Lielupe, Gauja, Vecdaugava, Bullupe). In perspective, inland waterway between rivers Daugava and Gauja can be restored for promotion the water tourism in the Riga metropolitan area.

Development of the water tourism needs to expand small-scale maritime infrastructure – new berths, boat slippers and slipways in Salacgriva, Ainazi, Kuivizi, Zvejniekciems, Carnikava (Gauja), Riga (Bullupe, Vecdaugava), and Jurmala (Lielupe) in Ragaciems.

Improved mobility in rural areas of Riga metropolitan area

Along with improved connections with Riga, even in the countryside, people are not separated from international culture, education and business environment, from global events. Due to much more accessible high-speed, air and sea traffic, traveling from rural area to nearer or farther foreign countries is not a special event, but a business necessity or a familiar entertainment.

Private car, bicycle, supply and freight transport is important in the countryside everyday movement. Therefore, a qualitative local road network linking to the nearest rural service center, which offers at least a regional bus, is needed.

Good rural roads not only help rural people get to the nearest centers and Riga, but it also extends tourist routes and destinations.

A movement from the countryside to Riga for higher quality services and better paid work will remain. In order to promote the region's vitality in the long term, it is desirable to organize circular public transport routes - bus routes along the Riga bypass, which connect suburban rural areas (rurban), for example, Bergi with Sauries, and routes in the inner circle of the Riga border connecting parts of the city without crossing the center.

Figure 37 Riga metropolitan area mobility spatial vision

