DEMO-EC
Interreg Europe

European Union
European Regional
Development Fund

Joint regional analysis of the current situation/

SWOT-Analysis

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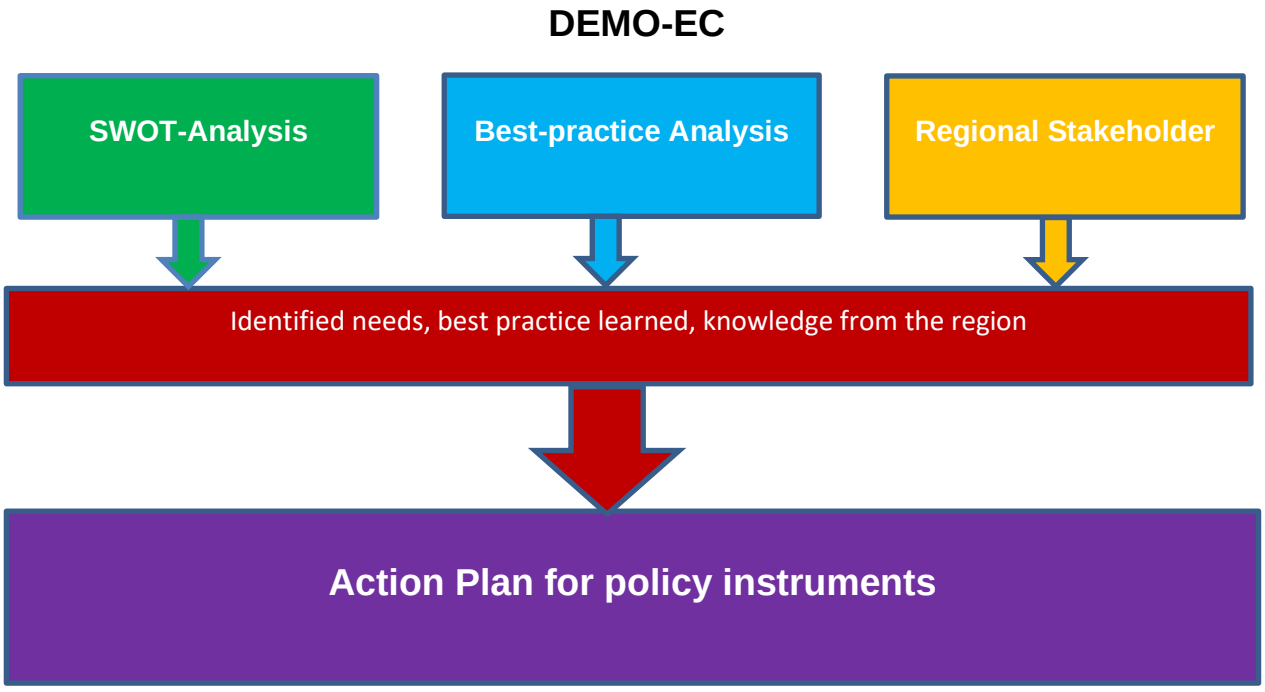
0 Overview of DEMO-EC

Main objective is the development of Action plan, which will be reached through the following steps:

1. SWOT-Analysis: Comparison of partner regions of their strength and weaknesses
2. Identify best-practices and lessons learned from partner
3. Involvement of regional stakeholder
4. Development of recommendation for the action plan to improve policy instruments



1 Introduction of SWOT-Analysis within DEMO-EC

The population of cities increases in Europe, which is a big challenge for the organization of transport in urban areas. For environmental friendly transport and to reduce CO2-consumption the alternatives for normal cars have to be introduced. A crucial aspect is to foster the combination of different environmental transport modes like public transport, cycling and also new arise mobility solutions. One way to combine these modes is a mobility management approach. The challenge here is that in city administrations a lack of instruments and unclear responsibilities exist. For successful implementation of mobility management also different actors and user groups has to involve like companies and inhabitants as end users.

DEMO-EC fosters low-carbon transport in cities through integration of mobility management by combining the fields of mobility behaviour change, governance, e-mobility, car reduction, walking, cycling and public transport.

The objective of SWOT-Analysis for DEMO-EC is to provide an overview of territorial situation in the regions. The analysis is structures on agreed five topics of partners include relevant aspects of mobility management: Governance/participation, Car reduction, Public transport, E-Mobility, Behavior change.

For each topic partner provide short description of territorial situation. After this they describe and concentrate esp. on **strength and weaknesses**. These are internal factors can be influenced through the partners. **Opportunities and threats** are external factors cannot be influenced by partners but have to take in consideration as factors that are favorable or unfavorable for improvement in these fields. So they are not in focus. The results for each topic are summarized in the SWOT Matrix.

The main idea is to have brief description of each partner region, which is comparable through similar structure to create the basis for further exchange of experience.

2 Analysis of partner regions

The SWOT analysis is a management tool used for strategic planning. Within DEMO-EC project, the tool is used to analyse the regional framework conditions in the participating partner regions along the topics governance/participation; e-mobility, car reduction, public transport an change of behavior. The term "SWOT" is an acronym for Strengths, Weaknesses, Opportunities, and Threats. Specifically, in-house strengths and weaknesses as well as externally stored opportunities and threats are collected.

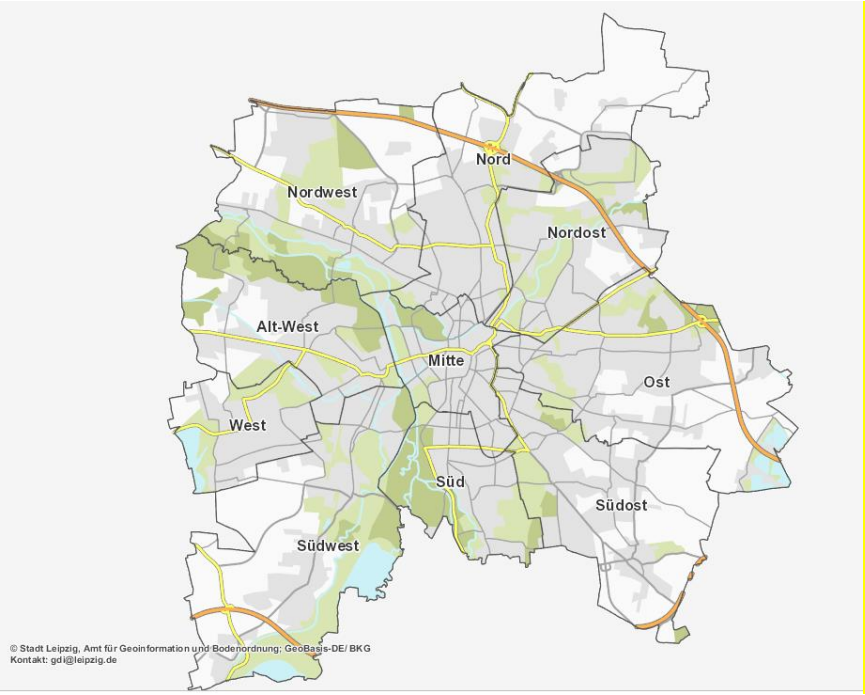
2.1 PP2 – City of Leipzig

2.1.1 Overview

The development of Leipzig is characterized by change: 15 years ago still "urban shrinkage" was in the center of the discussion, today the discussion is about the strong population growth and the associated challenges for urban development. With the strong influx of young people, the mobility behavior in the city is also gradually changing. The use of a vehicle is no longer so strongly coupled to the ownership. "Multimodality" – and so the use of different means of transport for different needs - increasingly appears as a future topic of urban mobility. Today we assume that Leipzig will continue to increase in population in the next few years and in future could exceed the number of 600,000 inhabitants again. The demand is aimed primarily at inner-city neighborhoods, which are refilling, becoming denser and younger. The daily paths can and have to be organized differently in these neighborhoods so that the quality of life will survive. We can’t afford that car traffic increase as much as the number of inhabitants. That is why we are orienting our growth towards a mixed-use city of short distances. The development and consolidation of residential areas, the location of new schools and the strengthening of small-scale trade and retail in the neighborhoods should contribute to traffic avoidance. At the same time, we want to specifically support the interest in new forms of mobility: Good connection in public transport, the development of pedestrian and bicycle traffic as well as carsharing enable multi-modality and help to ensure that even more free space for parking is not used.

Important goals have now been achieved. The superordinate connection of Leipzig to the railway network is well on its way, the S-Bahn has gone into operation after completion of the City Tunnel and the motorway ring leads the large-scale through traffic around the city. In addition, the tangent quadrilateral is completed except for some measures substantially and also from the “Mittlerer Ring” could be built in the north of the city with the relocation of the B 6, a part that contributes to the relief of Georg Schumann Street.

City of Leipzig



Basic data about population

The dynamic population development of the previous years continues. By the end of 2016, 579,530 people had registered their main residence in the trade fair city. Leipzig's population grew in 2016 to a large extent by immigration. On balance, 13,193 people moved in more than away.

Economic background

Leipzig - in the heart of Europe

- logistic hub to the markets of Europe
- high competence in relation to Eastern Europe
- By ICE:
  - ➔ 1 hour to Berlin
  - ➔ 3 hours to Hamburg, Frankfurt

Inhabitants in the region

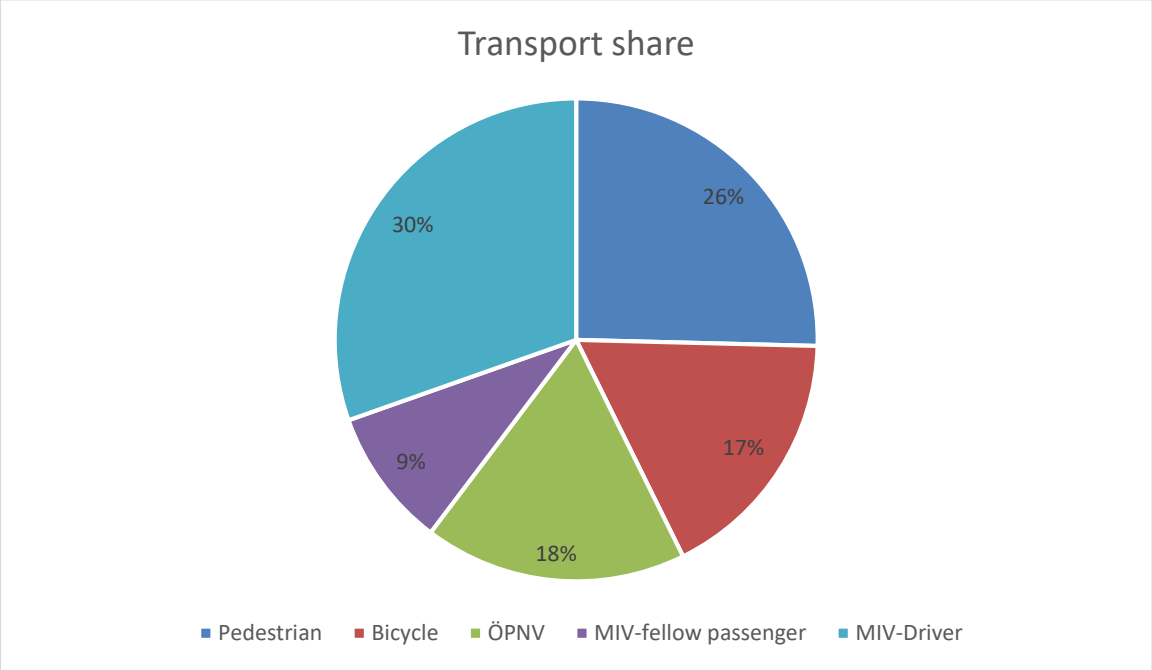
- Leipzig / Halle region: 1.7 million inhabitants
- Perimeter of 60 kilometers: approximately 2.8 million inhabitants
- Perimeter of 100 kilometers: approximately 6.8 million inhabitants
- Perimeter of 250 kilometers: approximately 28.6 million inhabitants

Modal Split

Mobility profile for City of Leipzig

Mobility of the persons

Specific traffic	3.6 way/person, day
Daily time in traffic	68,5 min/person, day (all ways)
Average travel time	19,5 min/way
Average travel distance	5,6 km/way (all ways)
Car availability	441 car/1.000 inhabitants
Bicycle Availability	905 bicycles/ 1.000 inhabitants



2.1.2 Governance and Participation

Traffic planning decisions affect all citizens. Thy benefit from good connections and city-friendly roads, because they are exposed to the environmental impact of traffic and your accident hazards. In addition, they participate in the financing as passengers, residents or taxpayers. Last but not least is a well-functioning, quality designed and inexpensive to operate and maintain the essential transport system Condition for the economic power of the city. However, the interests and concerns are distributed differently. All in all, innovative participatory procedures are used in Leipzig for concrete traffic planning, the design of new street spaces or public spaces. Moderated workshops or multiplying panels or forums of interest are convened, for example, at the invitation of the local district councils or on request from the political area to advise planning, the construction technology or diversion during the construction period. In

this case, the earlier the participation process begins, the better the opportunities to consider citizens' interests and to improve the planning and / or its implementation. This contrasts with the often-lengthy planning process for complex projects, while the interest and commitment of those involved in planning often only increase with the prospective realization. Here, in future participation procedures, new priorities are to be set in the planning mediation, for example, by already planning intentions in appropriate procedures are discussed at an early stage with those affected by the future planning. In this way, possible interests can be identified in good time and better taken into account in the further planning. The internet has proved to be an appropriate medium for interested citizens to communicate the planning steps and phases in Leipzig.

2.1.3 Car reduction

There are many reasons for cycling promotion. Leipzig's topography offers cyclists little resistance due to the low heights development. The region is relatively less exposed to the wind than cities closer to the coast. The climate is warm temperate and relatively dry. Vehicle availability is relatively high with 751 bicycles per 1,000 inhabitants and the vehicle-specific costs per kilometer driven are relatively low compared to other means of transport. Cycling keeps healthy and increases fitness and is a safe means of transport with user-friendly design of the traffic facilities, safe vehicle and regular traffic behavior of road users. The frequently mentioned disadvantages, such as weather dependence, limited transport options and higher risk of injury in the event of accidents, can already be compensated today by appropriate vehicle developments and safety accessories. Cycling is particularly cost-effective compared to MIV or public transport. A bicycle, which is used for four years, costs in this time in the middle price segment approx. 700 to 1,200 euro. A car with average annual mileage costs around 500, - € per month in the lower middle class. Public transport annual pass for the urban area is also very cheap and cheaper than the cost of half an average tank of fuel compared to the cost of a car of around 45, - € per month (as of March 2011). Legally, there is no restriction on the use of the bicycle (no driving license required), so it is open to all sections of the population and age groups. For people with reduced mobility, there are some special vehicles. Since driving a bicycle does not require any authorization or proof of the knowledge of the StVO, special conditions are attached to the safety and ease of understanding of cycling facilities in order to ensure a safe traffic flow for all road users. A further development of the existing traffic facilities to a modern standard is to be implemented sensitively especially when switching from cycling to walkways or common walking and cycling paths for driving on the road. If necessary, this should be accompanied by appropriate public relations work in order to avoid misunderstandings and to find acceptance among car and cyclists. Again, transport planning is a process that spans several years. The same applies to the expected increase in electrically operated bicycles and special bicycles with increased speed and space

required for driving and parking. Their use in everyday and recreational traffic requires a review and, if necessary, adaptation of the cycling infrastructure that is currently not designed for this purpose.

2.1.4 Public transport

The public transport network in Leipzig consists of five S-Bahn lines of regional importance, 13 tram lines and more than 20 city and regional bus lines. It is supplemented by further regional trains. Passenger numbers in public transport have been rising steadily for many years. From 124 million liner transport cases in 2007 to around 150 million today, even though the share of public transport in the modal split stagnates at 17.6%

The S-Bahn Central Germany connects the cities in the conurbation Leipzig / Halle and the surrounding area, with Leipzig being the center of the S-Bahn network. With the completion of the 2013 City Tunnel and the new central S-Bahn stops in the city center, suburban S-Bahn traffic and, in particular, relations with the region have been sustainably strengthened. Important locations such as the city center, the exhibition grounds and the airport are easier to reach thanks to new direct connections. The new regular line is used at rush hours in 5-minute intervals. In the course of the planned qualification of the S-Bahn offer, further stops will be added and rebuilt barrier-free and the links to the other modes of transport improved.

The Leipzig tram network is radially aligned to the city center and covers a large part of the area of settlement. The lines are served during rush hours on weekdays in 10-minute intervals, otherwise in 15-minute intervals. The LVB vehicle fleet will be progressively modernized and equipped with additional barrier-free vehicles. In 2015, 97% of journeys were carried out on weekdays with barrier-free low-floor vehicles. At the weekend, all rides can already be served by low-floor vehicles. The tram stops are currently 63% barrier-free and thus cover around 85% of all driving relationships. Gradually, the stops will be equipped with dynamic passenger information.

The city bus network was redesigned in 2010 with the project "Netz 2010" and strengthened in particular by cycle consolidation and line optimization. The city buses supplement the tram network as an approach road on the tangential connections and also take over an important supply function for residential and work places without connection to the local rail passenger transport (SPNV). In city bus transport, all trips are made by using modern low-floor vehicles. 31% of all bus stops have been developed barrier-free so far. Further demand-based forms of mobility, such as e.g. the call-line taxi and the district bus "Grünolino", complement the regular city bus.

The city of Leipzig is a shareholder of the Central German Transport Association, an area of just under 2 million inhabitants in central Germany with a common tariff for public transport. With the launch of new ABO

tickets, the price system was further developed in 2012 and communication and publicity measures were implemented. An important milestone continued to be the opening of the service center in Petersstraße (inner City) 2011. Here, the various mobility services of LVB as well as of car sharing and bicycle rental companies are bundled in one place. Strong population growth means that the public transport network is increasingly reaching its capacity limits, which causes unpunctuality and loss of attractiveness.

With the "Leipzig Central Station East Side" project, local and long-distance traffic by rail and road are better connected. Here, a long-distance bus terminal with 12 stops will be rebuilt by 2018, which is available for the growing long-distance bus service and coaches.

2.1.5 E-Mobility

To promote intelligent mobility solutions and in particular electromobility, the city council of Leipzig passed resolution VI-DS-01293 "Leipzig - City for Intelligent Mobility" on 16.09.2015. On the basis of this, an action and implementation concept were drawn up (VI-DS-03289 Decision DB OBM on 07.03.2017, Council meeting for information on 12.04.17).

This includes a total of 45 packages of measures, both ongoing and medium to long-term, such as:

- The creation of a demand-oriented charging infrastructure concept (charging infrastructure in public space, in semi-public space and on private land.) → This overall concept should serve as the basis for a coordinated development of the charging infrastructure.
- the prospective conversion of the LVB bus fleet to electric powered vehicles. → Here, the LVB work in parallel on a municipal electric bus concept for Leipzig.

Other important urban decisions and frameworks related to the establishment of mobility stations, electric mobility and car sharing are:

- Decision RBV-967/11 of 12.10.2011 on the establishment of car sharing
- Decision DS-V / 2340 DB OBM on 03.07.2012, establishment of mobility stations in the public traffic area; on 20.09.2012 note by the city council (BS / DBV 482/12)
- Urban Development Plan Transport and Public Space VI-DS-00523 of 25.02.2015
- Car sharing in the framework of the European Energy Award (R) - Replacement of old service vehicles, Decision VI-DS-00960 DBM OBM on 20.10.2015
- Establishment of flexible car sharing in Leipzig from 2018 (Decision No. VI-DS-04166)

With the installation of a total of 28 mobility stations in the years 2015-17 under "Leipzig mobile", charging facilities for e-vehicles and car-sharing sites (including 4 electric carsharing) were created in the public area. There are currently 56 charging points at the 28 mobility stations, 51 of which are freely accessible but with a time limit of 4 hours and 5 reserved for ECS (part car) with no time limit

There is also a network of charging stations of the Leipziger Stadtwerke, including 7 charging stations (14 charging points) in the area of the city center (Promenadenring, including a fast charging station at the main station). In total there are about 200 charging points available in the public area in Leipzig.

Furthermore, there are approximately 145 car sharing (CS) stations in Leipzig with almost 300 vehicles (teilAuto) usually on private land. The aim of the CS company is the establishment of another 60 car sharing stations in the Leipzig city area until the second half of 2019 and the increase in the share of electric vehicles within the fleet.

As part of the establishment of flexible car sharing in Leipzig from 2018 particular electric vehicles are promoted. The goal is a staggered increase in the share of electric vehicles in vehicle fleets (2018: 20%, from 2019: 30%, from 2020: 40%, from 2021: 50%). Linked to this is the development of the necessary charging infrastructure for e-car sharing.

2.2 PP3 – Sinergija

2.2.1 Overview

In the text, the outline description is focusing only on the national level as the policy for Slovenia is The Operational programme which covers the whole Slovenia.

Slovenia (official name: Republic of Slovenia) is a European country with a geographical position in the far north of the Mediterranean and in the far south of Central Europe. Slovenia borders to the west with Italy, in the north with Austria, in the northeast with Hungary and in the east and the south with Croatia.

According to the 2011 census, Slovenia has 2,050,189 inhabitants. Slovenians account for 83% of citizens, while the majority share of the constituted and prescribed national minorities is as follows: Hungarians (0.32%), Italians (0.11%) and Roma (0.17%).

Slovenia lies at the junction of the Alpine, Mediterranean, Pannonia and Dinaric worlds. Area 20,273 km² ranks Slovenia among the medium-sized European country. Length of the state border is 1,382 km, of which 921 km of land, 413 km inland and 48 km sea borders. Slovenian Adriatic coast is 46.6 km. The capital city is Ljubljana, which is the economic, cultural and political center.

The majority of Slovenian transport system consists of about 15,000 km of roads, 1,200 km of railways, 3 airports and one international port. Road traffic is growing at an annual rate of 3-4% and about 90% of all transport (goods and people) take place by road. In the context of the National Motorway Construction Programme was built 236 km of motorways, 323 km are under preparation or construction. Railways comprise about 1200 km, of which only 500 km are electrified. Most railways were built in the 19th century and therefore are not suitable to meet today's needs.

Its geographical location and historical circumstances make Slovenia an intensively transport and transit area and the crossroad of two major pan-European corridors, i.e. corridors V and X, which were determined at the European conference of transport ministers on Crete in 1994 and in Helsinki in 1997 (CEMT – Conférence Européenne des Ministres de Transport). This division is mentioned because it is most familiar in Slovenia.

In Slovenia, the trans-European network or TEN-T, this is divided into a comprehensive and core network, runs on the same routes as the aforementioned pan-European corridors.

Basic Economic Information about Slovenia

Slovenia became a member of the European Union on 1 May 2004, and in 2007 it adopted the euro, which increased its international competitiveness. Today, Slovenia is one of the successful countries with an educated workforce, a digital orientation, an attractive logistics position and a clear awareness of the constant adaptation to the new and changing conditions of the international environment.

Slovenia represents a relatively small market, since its population is just over 2 million inhabitants. Regardless of this fact, the Slovenian economy is successful and positive results are recorded. Slovenia has been a successful economy since the time of the former Yugoslavia, and with its independence, it started to actively operate in the international environment. Slovenia showed a constant average economic growth of 4%, but it declined in 2008 due to the global financial crisis.

The economic growth in Slovenia, which is being encouraged by an increasing number of factors, accelerated in the first quarter of this year, while gross domestic product was up 5.3% year on year, the highest growth since the second quarter of 2008. Thus, movements from last year, which was the most successful after the beginning of the crisis, according to data on business operations. GDP exceeded the average level of 2008. With continued growth in exports, household consumption, and investment in equipment and machinery, this year construction activity began to grow. GDP growth again significantly exceeded the euro area average (1.7% year-round) by continuing the three-year period of faster growth and, consequently, the lagging behind average development in the EU.

The growth in foreign demand and the improvement of the competitive position continue to encourage the strengthening of exports and the associated activity in manufacturing and certain segments of market services. Export trends also relate to revenue growth in some segments of market services, in particular for transport and computer services. With a further increase in the number of arrivals, Overnight stays of foreign tourists increased in hotels and restaurants.

Significant improvements in the labour market situation and a high level of consumer confidence are key factors for further growth in private consumption (4.0%). Employment growth continued in the first quarter (2.6%), and the number of employees was almost 25,000 more than in the same period last year. Employment is increasing in almost all activities, after a longer period of time, it is also more pronounced in construction, while short-term expectations remain at the highest level since the onset of the crisis. Year-on-year growth in average wages remained moderate, while wages were similar to employment as compared to the previous year in most activities. Positive conditions in the labour market have affected the further improvement of consumer confidence, which is at the highest level this year. Consequently, the growth of private consumption continued.

Year-on-year inflation was 1.5% in May, and is largely the consequences due to higher prices of energy products and services as a reflection of supply factors and the strengthening of demand. Growth in service prices is associated in particular with the strengthening of private consumption.

Some facts on Slovenia:

Population of Slovenia	2.060.814
Area	20.273 km2
The capital city	Ljubljana (288.307 inhabitants in 2016)
GDP 2016	39.769 mlrd EUR
GDP per capita 2016	19.262 EUR
Other major cities	Maribor, Celje, Kranj, Koper, Novo mesto, Velenje, Ptuj
Currency	Euro
Real GDP Growth Rate 2016	2,5 %
Country indebtedness 2016	79,7% of GDP or 31,307 mlrd EUR
Registered unemployment rate 2016	11,2 %
Average monthly salary 2016	1.613,73 EUR
Income tax 2016	17%
VAT 2016	General rate 22%, reduce rate 9,5%
Foreign trade 2016	Export: 24,903 mlrd EUR, Import: 24.064,5 mlrd EUR
The biggest trading partners 2016	Export: Germany, Italy, Austria, Croatia, France Import: Germany, Italy, Austria, Croatia, Hungary
Inflation 2016	0,5

Map of the country:

Modal Split:

In 2016, the Ministry of Infrastructure commissioned a survey of travel habits with the aim of upgrading and modernizing the national transport model for passenger transport throughout Slovenia. The project was completed in July this year (2017). According to the ministry, modernization was urgently needed due to the age of the data, since the last survey was carried out in 2003 and was covered only by the area of the broader Ljubljana region.

The 2016 survey showed that, in all twelve statistical regions, by far the majority of the population use the car, but the differences between the regions are noticeable. By car, 73 percent of the routes in central Slovenia are made, 75 percent in the Zasavska region and the coastal-Karst region, 87 percent in south-eastern Slovenia and 84 percent in the Carinthia and Pomurje regions.

Most cycling is in central Slovenia (5 percent of all routes), while cycling in Carinthia, Zasavje and the coastal region is virtually unavailable. The highest percentage of walk is in the Zasavje region (18 percent), and the least in the coastal-inland region (6 percent). In Zasavje, they are mostly driven by train (4 percent), and the use of the train is negligible in the Pomurska and Koroška regions. The bus is mostly driven in the coastal-inland region (8 percent), and the least in the Pomurska region (1 percent).

In 2016, the survey on travel habits of the inhabitants was carried out at the level of Slovenia, and in 2003 only for the households of the wider Ljubljana region. Although this is not the same pattern, a rough comparison of both shows trends in the last decade.

Thus, a comparison of the surveys of 2003 and 2016 showed that residents in central Slovenia are traveling more. In 2016, on average, they made 3.1 journeys per day, and in 2003 they were 2.9. At the same time, the share of traveling travelers increased, as 89 per cent of the population travelled in 2016, and in 2003 only 79 per cent. The share of travel to work has decreased from 26 percent to 23 percent, and from school to 13 percent to 10 percent, which means that the share of travel for other purposes has increased, for example, leisure, shopping and other.

2.2.2 Governance and Participation

Role of Participation and Governance in Political Process

In Slovenia, we have already gained some practice and experience in strategic planning traffic but not sufficiently. Strategic national and local documents (spatial, environmental and development) have otherwise uniform intent of achieving sustainable transport, but this led to a lower hierarchical level documents and actions as a rule lose. Without strategic frameworks and comprehensive vision at all levels of transport planning there are no mechanisms for determining priorities for the allocation of adequate resources and a comprehensive assessment of the contribution of certain traffic measures to achieve these objectives.

The majority of the strategic transport decisions in Slovenia are formed within the spatial planning documents. They mainly focus on transport infrastructure. Transport system and its controls are not treated comprehensively in spatial planning documents and are absent of strategies for individual elements of the transport system, such as public transport, cycling, walking, parking, etc... Just as the individual parts of the transport system are presented diffuse, also financial resources are scattered, which are mainly intended for the construction of infrastructure for road motor traffic, although this hierarchy of sustainable transport modes has not the leading role.

For measures, we decide without a comprehensive assessment. We are focused on increasing the capacity of road infrastructure, resulting in motorized transport further increases, decreases quality of life, great use of budget funds in the state that does not significantly improve: people are traveling more, spend more money on mobility and lose more time in traffic jams.

Decision-making process is often not transparent, in some areas there is a marked lack of qualified personnel.

The experience with SUMP in Slovenia significantly changed traffic planning in the municipalities in the direction of sustainable development. The key point is the strong political support for SUMP and its implementation. The involvement of the public and key stakeholders has been recognized within SUMP process as a significant momentum and was transferred to the level of individual projects.

Responsible Bodies for Transport and Mobility

The state provides public regular passenger transport other than public regular transport in urban transport as a public good with economic and public service on the basis of a public tender awarded concessions to favoured bidders services.

The Government of the Republic of Slovenia determined by the concession act concession area, the type and scope of services, the method of provision, the conditions for ensuring standards of accessibility to public regular transport, transport prices and quality of transport services and other elements of the concession act in accordance with the law.

The Directorate before granting concessions determines the need for transport (timetables) during the calendar year and not more than twice a year with the schedule changes it into line with the actual needs of the transport.

The establishing and implementing single ticket it is managed by Government of the Republic of Slovenia.

The Ministry of Infrastructure is responsible for transport in the Republic of Slovenia, established for the implementation of tasks in the field of rail, air, transport and maritime transport, navigation on inland waterways and road transport, except the safety supervision of road transport, tasks in the field of transport infrastructure and cable installations, tasks in the field of the energy sector and mining, and tasks in the field of efficient use and renewable energy sources.

Another problem is also no legal obligation of the mobility planning process when planning for sustainable mobility. There is no legal definition of SUMP though. We follow the European guidelines.

When doing so, we are faced with the irrational use of land, loss of quality agricultural land and land critical to the protection of natural values and natural resources, high costs for infrastructure and utilities, moving core urban activity in the suburbs, environmental pollution and the loss of regional identity.

The Government of the Republic shall establish appropriate legal and financial basis for the development of sustainable mobility planning. The problem is presented because at the local level has not yet been adopted provisions that would contribute to better planning of urban transport. The Government of the Republic of Slovenia for the time being has not been responsive so far.

Another point of view is the insufficient integration of the sustainable mobility planning in the all relevant political initiatives and defining the key indicators for sustainable mobility planning by government, the state should also establish the state base with the cities' data. There are the lack of the financial initiatives and lack of knowledge among the representatives responsible for sustainable mobility planning. The general public is not enough involved into the planning process and there is a lack of different methods how to work with them and recruit and activate them.

Involvement of Stakeholders from different Functional and Spatial Levels

As mentioned below the stakeholder involvement is not a general practise in Slovenia yet. Only the SUMP process has started with the participation of the different stakeholders no matter if they are coming from different functional area or spatial levels.

With regards that in Slovenia only SUMP for municipality are developed (thus at the municipal level), we cannot talk about regional SUMPs (these are the exception rather than the rule). In this case we can speak only about the involvement of key stakeholders from the hinterland on the municipal level, which represents in Slovenia the settlements within a radius of 5-10 kilometres outside the city centre. In this radius small settlements and villages are included that make up the suburban part of the city and are characterized by daily commuters.

Organization of Public Participation Processes

Regarding that Slovenia has no regions according to the law, only statistical regions, it is hard to expose only the region of Pomurje. On the other hand, in this region, we are faced with a lack of information and real implemented activities that would contribute to analysis of the state of stakeholder involvement. With the regards to the involvement of stakeholders in the city of Ljutomer and despite the fact that it is located in the least developed region of Slovenia, has quite specific and the most common experience in this field.

Namely, Ljutomer is the first Slovenian city, which has acceded to mobility planning according to the guidelines for SUMP. Slovenian professional public is definitely here for the first time in a concrete way got the insight into what constitutes the optimal engagement in the planning process. In the preparation of the strategy proposal sought to include the widest possible range of stakeholders, taking into account the size of the city and the selection of key institutions that operate in the city itself or they are in any way related to the operation of the municipality. Therefore, the representatives of various public have been invited in the different stages of the SUMP process and participated in the several different events and occasions.

The public can be divided into professional and the general public, all of which were related to municipal levels of performance. When recruiting the stakeholders, they used of various tools of public involvement. Among other things, the use of printed material (newsletter), internet (municipal site dedicated to SUMP), interviewing individuals (questionnaires, interviews with key individuals), organization of information events (exhibitions, public debates), the integration of selected stakeholder groups (focus groups, study tours) and integration of larger groups (open-air events, the debate on the vision of traffic).

Municipality Ljutomer this year is preparing amendments of SUMP. In the preparation of both documents has followed the national guidelines for the preparation of a SUMP, which were prepared on the basis of European guidelines and adapted to local conditions.

During the preparation of a SUMP the municipality of Ljutomer was first confronted to develop the plan in cooperation with internal and external stakeholders. Stakeholders have been selected in various key areas, which are in any way related to sustainable mobility. Since Ljutomer is the small town where people in the community know better than in larger cities, stakeholder involvement had no major problems. They have been connected mostly by emails and phone calls.

This approach has been applied to all additional municipalities across Slovenia in 2016 and 2017.

Incentives and Regulations to foster Governance and Public Participation

National government in Slovenia was involved in EU SUMP movement since 2004, has had limited role until 2010. Meanwhile it financed 2 national SUMP projects, established SUMP platform, and has a very ambitious plan for 2014-2020.

→Strengths and weaknesses in public participation process

Strengths:

- Inclusive and effective process
- Easier to reach consensus on decisions in small municipalities
- Quick implementation of measures in small municipalities
- Preconditions for active travel
- Changes in planning practice
- Smaller number of decision makers and practitioners - easier consensus in smaller municipalities
- Flexibility - quicker decisions and visible results in smaller municipalities
- Measures (even smaller) have bigger effect
- Strong community spirit - strong public support in smaller municipalities

Weakness:

- lack of good practice, guidance, higher level support
- car based travel habits
- access for all
- limited capacity, knowledge and resources,
- weaker position against higher and neighboring administrations
- difficult to influence regional and national systems (roads, PT, education)
- Money for implementation
- Traditional way of transport planning and design on national roads

→Strengths and weaknesses in governance structure

Strengths:

- Capacity building: to acquire know-how and share expertise: e.g. National ministry has organized training for SUMP development and systematically trained about 90 people for managing the SUMPs;

- National ministry facilitates processes and make funding available; and promote the uptake of SUMPs.

Weakness:

- no tradition in SUMP so far
- still traditional planning culture
- strong opposition - traditional experts
- unsustainable trends for 20 years
- no demand from cities

2.2.3 Car reduction

In general, in Slovenia we still have problems with speeding inside urban areas (settlements, cities):

- According to that there are still locations on our roads, where we need to reduce speeds of motor vehicles with physical measures,
- Based on foreign experience (Netherlands, Germany, Austria), we began to install traffic calming measures, especially over last 20 years,
- Over those years, we have found that identical measures may not have the same results - due to different mind-sets in different countries.

Role of Cycling

The fact that Slovenia is not in the final quarter of the cycling development rankings in the EU, it is solved by the fact that it is, according to data for 2012, taken into account by the European Cycling Federation in its report issued in 2013, the country in which most bicycles were sold per capita in the EU. We also took it well with regard to the tourist development of cycling, while in the last quarter, among the members of the EU, the share of cycling routes and the activities and influence of cycling organizations on transport policy are our share. Thus, in terms of the development of cycling as an integral part of the transport system, we were listed after to Hungary, the Czech Republic and Slovakia in a society of cycling undeveloped Mediterranean and Baltic states.

There is no better way for cyclists in cities where, due to problems with car parking or the increasing costs of using a passenger car, the number of riders is increasing. Indeed, a comprehensive and high-quality network of bicycle connections, one that would be comparable to those in the most advanced cycling cities in Denmark or the Netherlands, does not yet have any Slovenian city.

Slovenia is a small country with various landscape where cycling has been always privileged. The National Cycling Network Development Strategy in the Republic of Slovenia which has been in force since 2005 focuses on the development of safe and comfortable cycling infrastructure, especially the long distance national cycle routes. The document adopted by the Ministry of Transport aims to double the number of trips made by bicycle in the country. Therefore, the cycling mode share could rise from 6.7% in 2005 to approximately 14% in a near future. The Ministry of Infrastructure is planning to adopt a new national cycling strategy in 2017 focusing on a much wider range of themes.

Cycling Infrastructure (Bicycle, Lanes, Parking, Bike and Ride)

Individual settlements and larger towns in Slovenia mostly do not have sufficient and appropriate and interconnected bicycle connections to ensure the safe use of the bike for carrying out daily routes in the entire settlement and its surroundings.

In settlements and in their immediate surroundings, the wheel allows the user a greater radius of movement than hiking, successfully replacing the use of a car in shorter routes, and can offer greater door-to-door access and save time. By balancing the construction of a network of remote travel cycling links, we provide the riders with a freer and more efficient use of their free time and a more intense, healthier experience of the environment. In the envisaged spatially located corridors of the national cycling network, cycling links connect places and other natural, cultural and tourist attractive destinations. Within the settlements, a network of suitable cycling infrastructure needs to be established in such a way that it enables safe, fast access to all the objectives within the settlement and to the goals within a 5-km range around the settlement.

Within the framework of legal solutions, there are several basic types of bicycle surfaces in Slovenia:

- Cycling lane,
- Cycling path,
- Cycling road,
- Cyclists on the road with motor traffic.

Here below summarized some facts on Slovenian cycling based on the national strategy just from 2005. No other input available for the newest data.

Cycling surfaces in the Republic of Slovenia are largely unconnected. The basics for completing plans in this area are relatively small, but the national strategy and transport policy encourage the development of non-motorized traffic, cycling infrastructure and the use of bicycles wherever possible and sensible. Individual parts of the envisaged national bicycle network are also going through settlements, where there are more and more mostly daily riders who have a clear source and goal. In Slovenia, there are approximately 1700 settlements along the national roads, with a total length of 1200 km, which represents one fifth of the total national road network. Apart from the larger towns, as a rule, settlements do not have pavements, bicycle paths, pedestrian crossings, traffic calming measures and other arrangements that would provide adequate traffic safety for the weaker road users. According to the Public Roads Act, the municipality is obliged to finance the construction of traffic surfaces, facilities and installations needed on the road, along the carriageway or above the carriageway of the state road for safe traffic flow and regulation of the traffic regime in settlements, however, the Roads Authority of the Republic of Slovenia as the manager state roads and the municipality agree on joint financing for the regulation of these areas.

Thus, in the development program plan, until 2006, priority is given to the arrangement of roads through settlements, including bicycle areas, where individual local communities are ready to co-finance them.

Bike sharing system in all major cities in Slovenia (Ljubljana, Velenje, Murska Sobota and Maribor) is available.

It exists is in Murska Sobota city. In the frame of the project Establishment of the city center, the Municipality of Murska Sobota obtained an European funds for the automated system for renting bicycles. The project covers the system 'Take the wheel in one place and drop off at another."

The planned project on automated bicycle rental system is designed that a registered user can access the system through its identification, took a bike at one station and hung on the other. Accordingly, five automatic stations are planned to establish to rent bicycles, which would allow users to anywhere in the city take a bicycle, drive to the desired destination, and drop it at the finale station. As they say in the municipality, seeking thereby to encourage the use of bicycles and bicycle transport also enable those who do not have enough space or other reasons they are unable to store your bicycle at home.

In Slovenia, no bike sharing systems existed until the end of 2011 when the first modular bike sharing system was implemented in the capital city of Ljubljana. In Ljubljana the system was launched on the 12th of May, users are able to pick up one of 300 bicycles from 31 terminals covering an area of approximately 12 square kilometers in a network where the terminals are separated by no more than 500 meters. The system is hoping to tap into Ljubljana's 100,000 daily commuters of which 45,000 are students. This could revolutionize the way the capital tackles urban transport, and may see a big modal shift in favor of bicycles in a population of 275,000. It is expected there will be a knock-on effect to the rest of Slovenia, which currently has 6.9% of the population using bicycles as a main mode of transport.

In Velenje, a smaller city, all existing studies (e.g. from Italy, Austria, Barcelona, Paris, Chicago etc.) along with knowledge from existing schemes were put to use and combined in the implementation of the new bike scheme.

The central concept of many of the Bike Sharing / Public Bike systems is free or affordable access to bicycles in order to reduce the use of automobiles for short trips inside the city, helping to reduce traffic congestion, noise and air pollution. Velenje decided to use a system that will provide innovative technology solutions for rental services and a detailed system for tracking and control.

Velenje has implemented its new modular bike sharing system - System BICY. Residents are able to pick up one of 25 bicycles from 40 terminals at 5 city stations. System BICY was launched on the 18th of September 2012 and covers an area of approx. 3 square kilometers in a network where the terminals are

no more than 600 metres apart. The system encourages Velenje's 34,000 inhabitants to use a bicycle instead of a car for short trips.

Role of Walking, Walking Infrastructure (Pedestrian zones, Pedestrians surfaces), Incentives and Regulations to foster Car Reductions

It is especially in the last twenty years that traffic calming measures (all kind of devices, applications etc.) are also more and more frequent in Slovenia

According to our law, the traffic calming devices are physical, light or other devices and obstructions that (a) physically prevent the participants in road traffic to drive with inappropriate speed or (b) they warn them to limit the speed on dangerous road sections.

Physical obstructions in Slovenia could (only) be set down on regional national roads and community (local) roads inside the settlement/city (urban areas)

Usage of physical traffic calming devices is obligatory near schools, kindergartens and other objects, along which the speed is limited (due to traffic safety for all participants)

- In the past we already observed effectiveness of traffic calming measures on Slovenian roads,
- One of the aims of the research, which was done in Slovenia (from 2003 to 2005), was also to define real effect of speed reduction on different types of traffic calming measures across Slovenia,
- We selected 32 "typical" locations in Slovenia, where six different types of traffic calming measures appear,
- The main aim of this part of the research was to establish the effectiveness of different types of traffic calming measures,
- We preform hidden speed measurements with laser measurement instrument Riegl LR90-235/P were used,
- At that time, we also performed measurements of some other dimensions (e.g. precise dimensions of traffic calming device, dimensions of road elements and its surroundings, traffic counting, a questionnaire etc.).

In Slovenia, there is no general systematic approach towards walking management. Therefore, we chose only two highlighted case as follows:

Traffic calming area

In Ljutomer:

The establishment of Juršovka neighbourhood as an area of friendly traffic is one of the measures taken by the Municipality of Ljutomer identified in the SUMP 2012, by which the municipality has ranked among the top three integrated transport strategies in the EU in 2013. It is a pilot project for conversion of residential neighbourhoods in more user-friendly and attractive, with a high proportion of non-motorized travel. It tested good practice in the EU since the municipality has the ambition to become a model rearrangement of the future regulation of residential areas in Slovenia and this part of Europe. The basic principle of traffic rearrangement in Juršovka the reduction of the speed of motor traffic on all streets in the neighborhood of 30 km / h or less and create a secure environment for pedestrians and cyclists. Speed is calmed by rearranging street space - with strictures using designated parking or green islands. Intersections in the neighborhood have turned into a mini-roundabout, which reduces the speed, increases the safety of vehicles passing and reduces the attractiveness of transporting the cars.

Parking is allowed only on their own car parks and at the designated places on the roads, which are uniformly distributed throughout the village. The main street through the settlement has throughout a one-sided pavement. All other side streets are arranged as areas of light traffic without sidewalks, where the speed is so moderate (up to 10 km / h), that pedestrians and cyclists can safely use the whole width of the street. On the side streets are green islands equipped with a playground or benches. Low speeds enable safe cycling everywhere, without specially marked bike lanes. Restructuring project was held in regular communication with substantial involvement of residents of the neighborhood. They were carried out interviews, surveys, workshops and public disclosure. In the neighborhood traffic counts was conducted and speed information and establish a good data base to monitor the performance of the project in the future. The basic idea of conversion of neighborhoods in the area friendly transport, promote the use of sustainable transport modes in the municipalities, while energy savings and reduction of CO2 emissions in the foreground.

In Piran:

In the context of regulation of calming traffic in Piran Public Company ENVIRONMENT Piran l.t.d. performs free transport of passengers between parking Fornače - Tartini Square - Fornače, and twice a day to the cemetery in Piran. Free Shipping is performed by two buses that shuttles every 15 minutes. On Fornače and on Tartini Square in Piran are electronic displays, where customers can check the timetable (time of arrival or departure of the bus).

Pedestrian areas

In Ljubljana:

Currently, there are 21 streets in the Old Town of Ljubljana or in its immediate vicinity intended only for pedestrians and cyclists.

On the pedestrian area, the delivery can only take place within the specified delivery time in Ljubljana valid from 6:00 to 9:30. In 2007, for access to the pedestrian zone instead of non-electronic permits he city introduced electronic identification card in order to increase the effectiveness of the introduced technology for automatic access control with retractable bollards, which was a major part of this area carried out previously. It has also set up an electronic record of entries and exits as well as dwell time of cargo vehicles on the pedestrian area. To use the stabling places, the use of which requires a valid permit access to the pedestrian area to the payment of an annual or daily fee of which the amount determined by the competent authorities of the Municipality of Ljubljana.

The prescribed amount of fees for access to the pedestrian area promotes the issuance of annual permits, because the purchase of longer-term is favourable. Despite the payment itself the amount of fees for access to the pedestrian area is not comparable with the actual external costs by using his driving causing lorries. Environmentally friendly vehicles for the implementation of delivery in a pedestrian area otherwise exempt from tax, but without additional measures that lack of incentive airlines to actually use the environmental performance of the vehicle, when compared with other, non-organic vehicles, very high purchase price.

In Velenje:

In Velenje, local studio Enota has transformed an existing promenade into one of the city's most prominent thoroughfares. traversing the river Paka, the pedestrian zone extends from a parking garage, (also completed by Enota), before weaving its way through the existing urban fabric. as the path twists around the surrounding buildings, it gives rise to larger contained spaces, facilitating future expansion.

→Strength and weaknesses of cycling

Strength:

- Increase of cycling share

Weaknesses:

- Unconnected cycling infrastructure
- Danger cyclists

→Strength and weaknesses of walking

Strengths:

- Traffic calming increases the volume of non-motorized travel modes and changes in travel modes.
- Lower speeds and less traffic mean greater traffic safety and a better environment.
- Road closures do not cause traffic chaos - drivers are adjusted in a way that is not fully explained, but prevent congestion.
- Closure may result in increased traffic on adjacent roads, but this is conditional on the free capacity of these streets.
- Calming traffic and improving public space increases the improvement of the attractiveness of space.
- The withdrawal of motor traffic from shopping streets increases the income and value of real estate of these stores and also the increase the number of visitors and users on foot or by bike
- The cultural and local context is important.
- There is an evidence that bold decisions and good performance are the best recipe for overcoming obstacles.

Weaknesses:

- Fear of traffic chaos
- Fear of extinction of space
- Moving activities from the city centers
- Weak trade-offs
- Poor technical solutions
- Defective control of the regimes
- The opposition of local residents, especially the owners of the premises.
- The opposition of traffic professionals and drivers due to congestion caused by the blockade.
- Public involvement often does not provide a solution.

Possible problems with mini roundabouts:

- unsuitable splitter islands construction (unsuitable design, construction - in correlation with posted traffic signs
- road markings (visibility and maintenance of road markings);
- visibility of central island (not just (with road markings) painted central island, better solution is mountable cobblestone island; the edge de-levelled by 2-3 cm);
- unsuitable width of driving lanes (before mini roundabout or inadequate widening of driving lanes before entering the mini roundabout);

- unsuitable design and construction (in some cases we notice lack of knowledge about mini roundabout design and construction);
- traffic rules violations (it is in connection with inadequate mini roundabout design and construction, especially splitter islands construction.

2.2.4 Public transport

Role of Public Transport

In order to get closer to the Slovene vision of regulating public transport, integrated and long-term planning, management and management of PT will be required. Its development has stalled in recent decades and its social role should be more defined. Therefore, the work of this extremely important area should be addressed more fully, strategically and in the long run. The entire transport system and PT with it would need a holistic vision of development, since the lack of this is caused by a competitive battle - the modality of complementarity between different modes (buses and railways) and between carriers at different spatial levels (state, regions, municipalities) weakens the competitiveness of the entire PPP offer. Such a development is also the most expensive for the country. Instead of fragmented measures, we should focus on more planned steps towards the desired state. We should be more concerned with the question of what PT will we have in 5, 10 or more years. Will we modernize the railways, will the future PT be based on buses, will follow the motorway cross, or will strengthen other development axes? Will it be competitive with other transport modes, or will it be used only by those who otherwise cannot travel? Which of the centres across the border are we trying to connect? How will we supply sparsely populated areas? We need to find answers to all of these questions, as it is an area that the most developed and developing countries of the 21st century devote priority attention and the majority of funds allocated for infrastructure.

The current situation in Slovenia is: Public transport is used by fewer people, railway and bus routes are being removed, existing lines are spatially and temporally uncoordinated, more and more settlements are inaccessible with public transport funds. The public transport system is becoming increasingly uncompetitive and inefficient, quality of life and mobility are deteriorating for a large part of the population, which leads to an increase in economic and social disparities. The latter problems are most evident in rural areas, which, in comparison with the city, is also neglected in terms of PT availability.

Only 17% of passenger kilometers in Slovenia are made with PT. Public passenger transport links/connections do not exist, or they are uncompetitive and inconsistent in time. PT must become an accessible, useful and competitive mode of transport for all population groups. It must take over most of the daily personal migration in urban environments, as well as between urban centers and peripherals. PT services must be of high quality (adequate speed, frequency, comfort and accessibility to bus stops, intermodality), but they must also be price-competitive with passenger cars on all routes.

Support for sustainable mobility therefore requires efficient, high-quality and affordable PT. Investments in the revitalization of PT are an important element of PT development, as well as other incentives (e.g. availability of stops, frequency of lines, uniformity of timetables, single tickets, intermodal centers or increase in the quality of PT services) and awareness raising. One of the important steps is the change in

the calculation of travel costs for workers in the private and public sectors. Currently, many cultural institutions of national importance cannot be accessed by PT modes. Similarly applies to protected areas of natural heritage and many other points, ways of spending free time. Therefore, the issue of PT access must be part of the management strategy of such institutions, areas and points. As such, the PT policy chapter should also be in place and receive appropriate state support.

Public Transport Operators and Fare System

The national rail operator Slovenian Railways (SŽ) runs both passenger and freight service and operates railway infrastructure including 60,000 m2 of warehouses. It also provides combined transport services, and has container terminals in Ljubljana, Maribor and Celje. In 2014, Slovenian Railways transported 18.8 million tons of goods and its trains travelled 4,278 million net ton kilometres.

Passenger trains connect all parts of Slovenia. The Slovenian Railways network is linked to all major European cities with modern InterCity and EuroCity trains.

Next figure shows the official map of Slovenske železnice rail network and all passenger train stations and stops, as well as stations limited to rail freight.

Map of Slovenian rail network:

Case from Ljubljana: Ljubljana Public Transport (LPP) is responsible for the safe, reliable and convenient public transport in the City of Ljubljana and the area of 16 suburban municipalities. 280 buses transport more than 200,000 passengers a day. Modern and environmentally friendly low-floor buses are controlled from the traffic control center of LPP using satellite tracking system buses. They have electronically controlled payment system, air conditioning, indoor and outdoor displays, digital information displays, video system for preventive prevention of violence, voice trailers for blind and visually impaired and equipment for

persons with disabilities. Passengers can enter more than 900 stops, the most frequently are equipped with displays arrivals of buses.

Interconnection with Other Modes of Transport

In Ljubljana:

More and more passengers of Ljubljana Public Transport (LPP) follow the trends in the major cities dictate intermodal travel, among other forms of travel; they can also travel by bus and at the same time with a folding bike.

Folding bike can be taken with the passengers on all city lines. More than 90% low-floor buses in the fleet of LPP allow quick and easy entry and exit, which can perform both the first gate and the middle door.

Slovenia recently introduced a multilateral passenger transport ticket, equipped with technology from NXP Semiconductors N.V. (Nasdaq:NXPI). The multilateral ticket is part of Slovenia's 15-month project aimed at simplifying public transportation. The new ticket unifies different means of transport, and integrates the use of regular rail and inter-urban bus transport in Slovenia and urban transport in the two largest Slovenian cities in a single system. The modernized and efficient system provides commuters more choice and convenience by enabling people to use different types of public transportation without having to buy separate tickets.

Incentives and Regulations to foster use of Public Transport

→Strength and weaknesses of public transport

Strengths:

- Geographical location
- Integration into the European land transport network, the TEN-T network
- Connection of the railway with the open sea with the developed port
- Favourable way of separation of freight (railways) from the port of Koper (60% of freight on the rail)
- Developed public transport in cities (Ljubljana, Maribor)
- The diversified railway infrastructure network for the development of rail passenger transport as a carrier for daily migrants to urban centres (LJ, MB ...)

Weaknesses:

- Poor JP coverage
- No regional connections with the major ones to interconnect the rural areas

- Less accurate PT
- Less trains and buses on weekends, on public and summer holidays, as well as at night
- No availability of cheaper and smart ticket
- Less organized parking lots P + R or the possibility of transporting bicycles with PT
- Communication between users and PT providers is poor
- Poorly integration of information technology
- Poor passenger welfare (less well-maintained stations, nice chilled and heated rooms, friendly staff, use of wireless internet)
- Poorly developed and unconnected public passenger transport
- Dispersed settlement of population and, consequently, expensive infrastructure that would meet the needs of public transport
- Great competition in personal / road transport
- Bad links in crossing
- Insufficient frequency of rides in the event of a passenger's greatest rush
- Longer travel time by public transport
- Poor coverage of terms outside of the passenger's greatest rush
- Reduced responsiveness of the system to the needs of passengers and local communities, as well as a great time interval in the timetable
- Insufficient coordination of timetables for crossing
- Limited and partly unregulated parking at stations
- Less competitive rail network and (in comparison with road) lack of organization of rail transport
- Obsolete railway infrastructure and non-compliance with TSIs
- Insufficient number of modern transport modes on the rail
- Deficient rail information system and inadequate passenger management
- A lack of national budgetary resources prevents long-term planning of the maintenance of the public railway infrastructure.

2.2.5 E-Mobility

Role of E-Mobility, E-vehicle use, charging infrastructure, Incentives and Regulation to support E-mobility

National energy program sets targets to be met and they are 40.000 electric vehicles and 3000 filling stations till 2020. In 2015 were in Slovenia 245 e-cars and 186 electric filling stations, more than half of it in the capital city of Ljubljana. There are national subsidies for buying electric vehicles – up to 7500 EUR for a new car. We have only data from year 2013, that every year are sold 500-700 e-bikes and 700 e-scooter.

152 charging stations are free of charge and 18 charging stations work on green energy from renewable energy sources.

Main supporting measures for the deployment of e-mobility:

	Support type	Amount of support (e.g. %)
Financial support at purchase	E.g. purchase tax exemption/reduction, co-funding for purchase by authorities	national co-funding for buying now electric vehicles is up to 7500 EUR
Financial support during use	E.g. Yearly tax exemption/reduction, reduced electricity costs	Yearly tax exemption
Non-financial support	E.g. Free parking, free charging at (semi)public stations, exemption/reduction road tolls/charging and congestion taxes, use of reserved lanes for public transport/carpooling, access to restricted areas (such as city centers), supporting consultancy, education and promotion of EV use	Free parking, free charging, access to city centers restricted zones

E-mobility best practice example of the region:

- Elektro Maribor (company for the distribution of electricity): made first 'quick charge‘ filling stations in Slovenia
- End of the year 2015, within the framework of the CEGC (Central European Green Corridors) project, Slovenia got 26 fast-charging stations, one every 50 kilometers along its entire motorway network.
- Municipality of Maribor
  - City of Maribor has recently open two charging station. One at the railway station and the other one in front of a mobility center. Filling station has possibility of charging e-bikes, e-

scooters and electric wheelchairs. At the train station are also two electric vehicles that can be borrowed for certain amount. This all can be done by phone app.

In Ljubljana the modernization of the city passenger transport fleet of 280 buses in the last five years has significantly contributed to comfortable travelling and simultaneously to an improved healthy living environment. Hundred new environment friendly buses bought in recent years, meeting the Euro 5 or Euro 6 standards, among them 36 methane buses for a nicer and healthier environment, cleaner air and lower noise levels, will convince even the most zealous advocates of travelling by private cars in urban areas. By setting up a methane filling station with Energetika Ljubljana we also obtained ideal conditions for our methane fleet.

Municipality of Ljubljana has in recent years updated and green their fleet. If a few years ago exposing their achievement of 10% of green vehicles in the city fleet were two years ago decided to green the majority of company fleet. In 2014 the Municipality of Ljubljana replaces the vehicles with petrol and diesel engines with environmentally friendly vehicles. From a total of 51 new vehicles 43 vehicles is driven by methane.

Ljubljana, from 1 July 2016 joins European cities boast of so-called car sharing system, car rental. In the vehicle fleet of Avant2GO system will initially be involved 30 cars exclusively on electric power, until the end of the year is expected to provide up to 50 vehicles. Plans until 2018 include the network as 500 cars in order to reduce the number up to 10,000 equity cars on the streets of Ljubljana.

→Strengths and weaknesses of E-Mobility

Strengths:

- Reduce user costs for vehicle
- Reduction of CO2, reduction of noise
- Short travel distances
- The Green Public Procurement Regulation is adopted

Weaknesses:

- Slow development of the infrastructure
- High costs of the vehicles
- Range restrictions
- Investment in electro grid
- Less charging stations
- Limited market
- poor and limited maintenance/services of the e-vehicles;

2.2.6 Behaviour change

Related aspects:

- role of environmentally friendly transport in mindset of target groups
- main needs to influence behavior for environmental-friendly transport
- incentives and regulations to foster sustainable mobility behaviour

In Slovenia there is a lot of incentives that address these topics. Most of them are related especially to mobility management and Sustainable Urban Mobility Planning (SUMP). The main purpose of a SUMP is to manage mobility. Mobility management is an important component of a SUMP which supports a participatory approach, sustainability to foster economic development, social equity and environmental quality, the integration of policy sectors, clear, measurable objectives and clear evaluation plans, value for money. Mobility management enhances the effectiveness of infrastructure measures and vice versa. Mobility management can serve as the “glue” for an integrative and participatory approach.

Here below are some elements of Mobility Management that are used when changing behavior.

- Marketing sustainable mobility at the right spot: at home, in schools, at the place where you work (the signs on the pavements), for events
- Campaigns (Bike to work – Pripelji srečo v službo, Traffic snake game – involving about 95 primary schools, PešBus, BiciVlak)
- Integration of land use planning with sustainable mobility
- More effective use of the car: carsharing (in Ljubljana and Murska Sobota) and carpooling (the national portal for student carpooling Peljime.si)
- Integration of modes – same ticket for all public transport in a city, in a region, in a country – combined with bikesharing, carsharing (working well in Ljubljana with the e-cars and bikesharing, as well as in Velenje for bikesharing), etc.
- Integration of mobility information: mobility centers (established in Murska Sobota at the Touristic information center for dissemination of the moblity information, personal consulting so far), mobility coordinators, mobility offices, mobility apps (not often used in Slovenia as the offers is poor);
- The Stick: parking management (the best practice for Economic faculty in Ljubljana, managed within workplace mobility plan. Ljubljana has paid parking and parking restrictions) and congestion charging (not yet used in Slovenian cities);
- The Carrot: supportive infrastructure measures: bicycle paths, bicycle parking (very rare safe bicycle parking spots), pedestrian zones, shared space zones (not yet used in Slovenia, only traffic calming areas currently).
- Handbooks for developers: in Ljutomer the first municipality in Slovenia that has issued own cycling guidelines for the developers. All developers get this when applying for building permissions. Main

effect is much better bicycle infrastructure, awareness, mobility contracts, reduction of car parking spaces.

- Multimodality: in Ljubljana work well. In a catchment area there is a railway, bus and bike sharing stations.
- Workplace mobility plans: Municipality Ljutomer will gain the first Slovenian WMP within municipalities in the frame of MOVECIT project (INTERREG CE programme).
- Park and ride solution – not so smart:
- Building costs about 5000-20.000 Euro per parking space
- Plus maintenance, plus public transport
- Attracts car oriented businesses (shopping malls, filling stations, car dealers)
- Very ugly and space consuming
- Smart shared space solutions:
- Nice and smart roundtables
- Mobility and spatial planning, integration of the different aspects
- Traffic calming areas, Speed limitations, Pedestrian zones
- European mobility week

→Strength and weaknesses of behaviour change for environmental friendly transport

Strength

- Some of the campaigns are very advanced (e.g. Traffic snake game and Bike to work) and can include a large number of people;

Weaknesses

- Unused potential of mobility management in planning and design, there is no legal bases.
- Neglect accessibility in practice planning and architectural design.
- Strategic planning provides sustainable solutions that are lost with detailed planning.
- Unawareness of the importance of access by public transport to major traffic generators.
- A large proportion of public investment in the provision of parking facilities.
- Loss of awareness of the impact of the parking supply on the traffic situation in the cities.
- Type of foreign manuals for making mobility plan, which are not adapted to our conditions.
- Legislation does not provide such plans.
- Small businesses' motivation to participate.
- Not ready for real change in Slovenia.

2.2.7 References

https://ecf.com/what-we-do/cycling-all-policies/national-cycling-policies

Transport Development Strategy in the Republic of Slovenia, 2014

Dr. Aljaž Plevnik, Dr. Matej Gabrovec, Dr. Werner Gobiet, Dr. Marjan Lep, Trajnostno urejanje prometa na lokalni ravni, Ljubljana, 2008.

http://www.slo-zeleznice.si/en/passenger-transport/timetable/network-map

http://www.zurnal24.si/javni-sektor-na-elektricna-vozila-clanek-213430

http://www.elektro-crpalke.si/1/polnilna-mesta.aspx

Trajnostna mobilnost

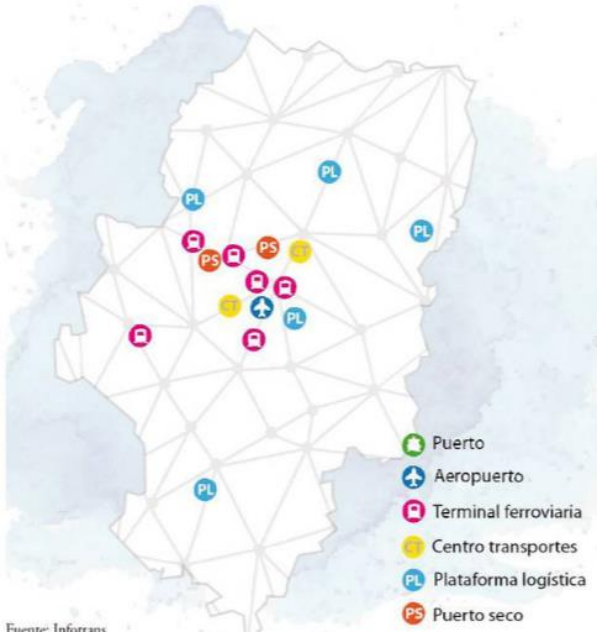
http://www.berlin.embassy.si/index.php?id=235

http://www.24ur.com/novice/slovenija/potovalne-navade-slovenk-in-slovencev-kdo-najvec-pesaci-kdo-kolesari-se-vozi-z-vlakom.html?focus=1

2.3 PP4 - FAMCP

2.3.1 Overview

- Surface in Km² Year 2017. Aragon 47,720m². (it represents 9.5% of the Spanish territory.)
- 731 Municipalities in Aragon Region (3 provinces). 95% with less than 2000 inhabitants
- More than half of Aragon population lives in Zaragoza and in its metropolitan area.
- 95% of Aragón is rural areas. Unemployment rate: 11,4% (Spain 17%) - Important hub for communications (+25million consumers in an area of 300km)



Number of total municipalities in Aragon 731

- Number of mountain municipalities 293, percentage of mountain municipalities compared to the total 40.1%.

Road network, in km: Total road network 11,624

- Roads in a roadway 10,787
- Double Roads 68
- Highways and freeways 612
- Toll Roads (Paid) 157

Railway lines, in kilometers: Total lines operated 1,324

- Airports of Aragon: Airport of Zaragoza Distance to the city in kilometers 10km /Airport of Huesca-Pirineos/ Airport of Teruel

Power installed in power plants according to type of technology, in megawatts:

- Conventional thermoelectric 1,101- Cogeneration 509 - Combined Cycle 1.863 - Hydroelectric 1,572 – Wind Solar-photovoltaic 167.

Number of people residing in Aragon by sex : Both sexes 1,308,563

- Men 647,206 Female 661,357

GDP in millions of euros. Year 2016: Aragón 34,687 M

Primary energy Consumption, in tons of oil equivalent. Aragon: Total 4,903 Tons: Natural Gas 1,132 - Petroleum products 1,588 - Renewable energies 1,056 - Coal 1,128.

Electric energy generated according to technology and type of fuel, in gigawatts hour: Total 15,496 GW (Combined Cycle 178- Coal Thermal 4,459 - Hydraulics 3,421 - Cogeneration and others 2,581- Wind Solar photovoltaic 304 - Waste and other renewable resources 324).

Passenger transport for thousands of travelers. Aragon 2015: **Urban transport**: By bus 119,868, By train-Cercanías 590 /**Interurban transport**: By bus 6,160, By rail (origin and destination) 4,584 ,Aerial (interior of Spain) 101 **/International transport:** Air 322.

Emissions in kilotonnes CO2 equivalent of greenhouse gases by activity category: year 2015: Total greenhouse gas emissions 16,416 (those that come from: Power Processing 11,441 , Industrial processes 977, Agriculture 3.483 , Treatment and disposal of waste 515)

Opportunities in general: *National and international projection of Zaragoza, placed at the four or five main cities of Spain, as much at productive level as tourist. Geographical situation and orientation towards the*

2.3.2 Governance and Participation

→Strength and weaknesses in public participation process

REGIONAL LEVEL: Region of Aragon

http://aragonparticipa.aragon.es/

Strengths:

- **The existence of a REGIONAL D.G. in charge of participation process:**

The General Direction of Citizen Participation, Transparency, Cooperation and Volunteering, under the Department of Citizenship and Social Rights, (Aragon Government) is in charge of designing and managing this strategy. Its mission is to foster greater involvement and participation of citizens in the construction and evaluation of public policies, promoting a strategy that, as a global and transversal project, encompasses all the Aragon Departments.

  - **Mission, objectives:** The Directorate-General for Citizen Participation, Transparency, Cooperation and External Action Provide, advise and accompany participation strategies citizens that involve the citizens in the design and evaluation of public policies.

    a) Towards the interior of the Government of Aragon,

    b) Support to local Aragonese entities

    c) Ideas and concepts of the future: "Open government" "Generate channels of information and participation adequate and accessible.

- **Encourage values, training, practices and awareness-raising to generate a shared discourse around transparency and citizen participation:**

  - Conferences and seminars
  - Training lines for elected, technical and citizens
  - Publications, communication and image.
  - "To promote the sharing of values, culture and practices democratic in the whole of society"

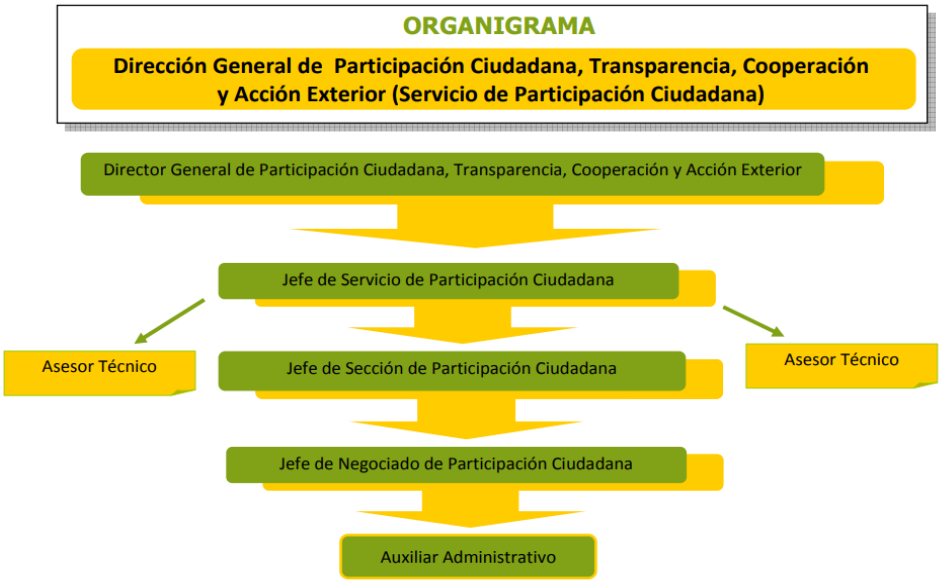
Weakness:

- It is still new and sometimes difficult to build a normative framework for Transparency, Citizen Participation and Good Government in Aragon

→Strength and weaknesses in governance structure

Strengths:

- governance STRUCTURED for all the organization of Aragon Region (horizontal) Organigram of the Aragon Department in charge of CITIZEN PARTICIPACION, TRANSPARENCY:



Model of Participation Process: (Information and public presentation, deliberation phase and return phase with the contributions of stakeholders.)

- New technologies, transparency and citizen participation. Towards open government **The portal** *Aragón Participa* has been built with the aim of facilitating universal access, regardless of the technical, physical, sensory or intellectual limitations of the people who consult it and the context of use in which they do it.
- Departments of citizen participation: The content is being updated, due to the changes ..These bodies are defined as permanent and permanent spaces of citizen participation, which assume functions of consultation, advice and proposals in certain public policies: (The presidency,Department of Presidency,Department of Economics, Industry and

Employment,Department of Finance and Public Administration,Department of Education, Culture and Sport,Department of Vertebration of the Territory, Mobility and Housing,Department of c itizenship and Social Rights,Department of Rural Development and Sustainability,Department of Innovation, Research and University,Department of Health)

- **The procedure for prior public consultation is provided for in Article 133 of Law 39/2015 of 1 October on the Common Administrative Procedure of Public Administrations. With the aim of improving the participation of citizens in the procedure of elaboration of rules, this article establishes that, prior to the elaboration of the norm, a public consultation will be carried out, through the web portal of the competent Administration**, which will collect the opinion of the most representative subjects and organizations potentially affected by the future rule on: a) The problems that are intended to be solved by the initiative. b) The necessity and opportunity of its approval.c) the objectives of the standard. d) Possible alternative regulatory and non-regulatory solutions.

- **The Aragonés Forum for Citizen Participation in the Local Area, created on February 1, 2011, is an instrument for debate and reflection on the local policies of citizen participation** for the promotion of democratic innovation and the exchange of experiences in the matter; is composed of the Government of Aragon, through the D.G responsible for citizen participation; the Federation of Municipalities Regions and Provinces FAMCP; and the Aragonese local entities that have adopted a formal commitment to the policies of citizen participation

Weaknesses:

- **In many processes, there is little participation of agents interested in topics.** Perhaps, because of the existence of few technicians / experts capable of providing regulations and / or changes to certain administrative queries.
- **No accessibility plan PMUS of Zaragoza yet!!! (the last was 2004)**

LOCAL LEVEL: Zaragoza City Level

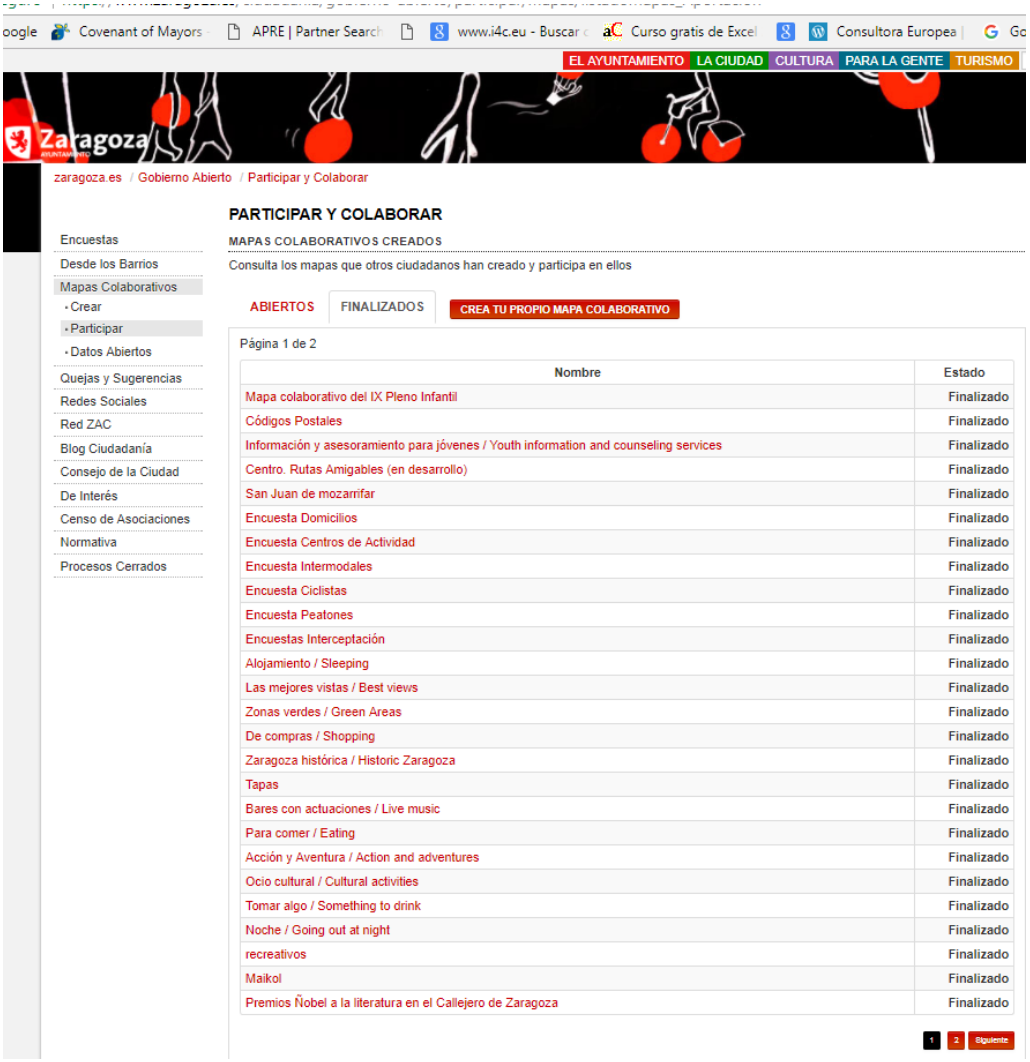
https://www.zaragoza.es/ciudadania/gobierno-abierto/participar/escuela-participacion.htm

→Strengths governance structure:

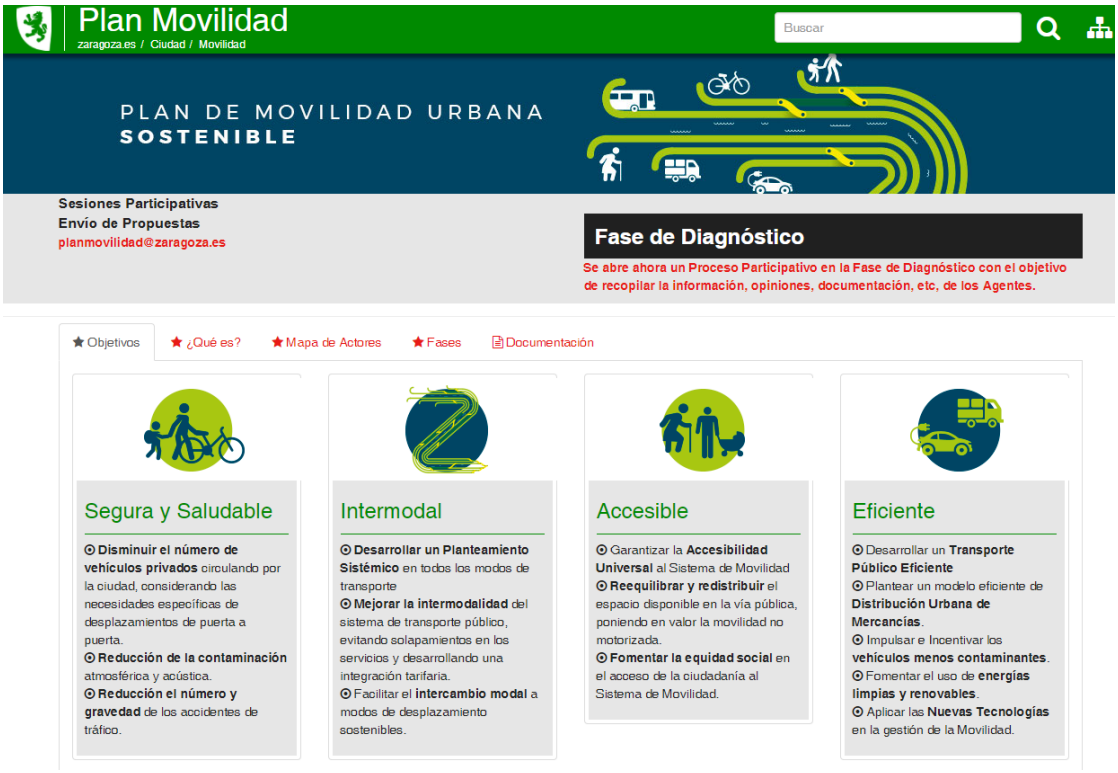
- **SCHOOL OF CITIZEN PARTICIPATION in the City of Zaragoza** : Advance and deepen the development of techniques of citizen participation in the City .Provide social actors with instruments and skills for collective action.
- The activities that can be carried out in the School of Citizen Participation during the course comprise **several courses, several Forums of Citizen** Debate and a Conference composed of several conferences and round tables.
- In the different neighborhoods a program of accountability face-to-face that launches the City of Zaragoza in the civic centers of the city. On a monthly basis, one of the councilors or council delegates of the government team meet with the citizens, attending to account for the actions of their area.
- The councilor presents for 30 minutes the main lines of action of his area of government, after which she/he will answer the questions on the subject of neighbors and neighbors. The agenda is published on the municipal website and is disseminated from fifteen days before each of the events.

→Strengths in public participation process:

- Collaborative Maps Created for different issues (at the portal website of town council): Access to the Collaborative Map Data that other citizens have created and participated.



- The **Mobility Plan of Zaragoza** is being under revision: the portal has information about the participation process. A Participatory Process is now open in the Diagnostic Phase with the objective of gathering the information, opinions, documentation, etc., of the different Agents. https://www.zaragoza.es/sede/portal/movilidad/plan-movilidad/#fases



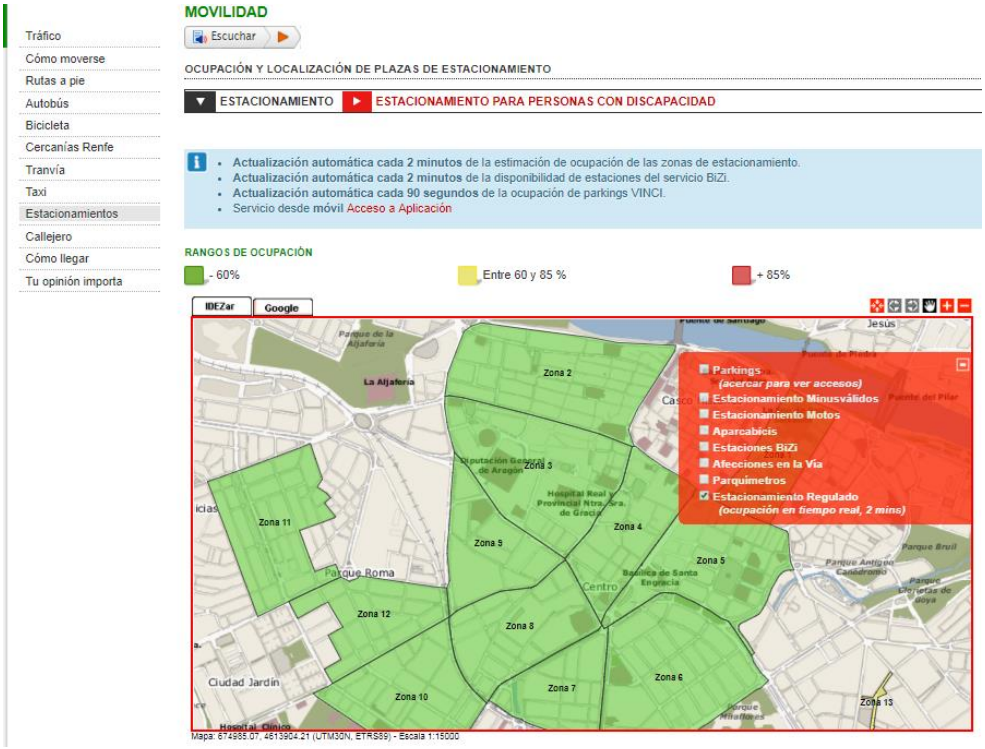
→Weaknesses

- **The participation can sometimes be promoted by the same sectors or the "assiduous" stakeholders "of interest**

2.3.3 Car reduction

Strengths

- Urban Mobility of people: The Plan of sustainable mobility of the area of Zaragoza with measures that encourage non-motorized urban mobility and installation of bicycle lanes
- Putting into service the streets 30km/h "pacific Streets"
- System of regulated parking in the central areas of Zaragoza.
- Program for the removal of architectural barriers on the sidewalks of Zaragoza.
- Installation of indicative panels and line frequency information systems of buses (Zaragoza)
- Existence of a management and coordination body such: the Transport Consortium of the Area of Zaragoza (CTAZ)
- More than 120 km of bike lanes!
- The Citizen Card of the City of Zaragoza innovation system for (bikes/buses/tram)
- Info on real time about parking for bikes (also for cars)



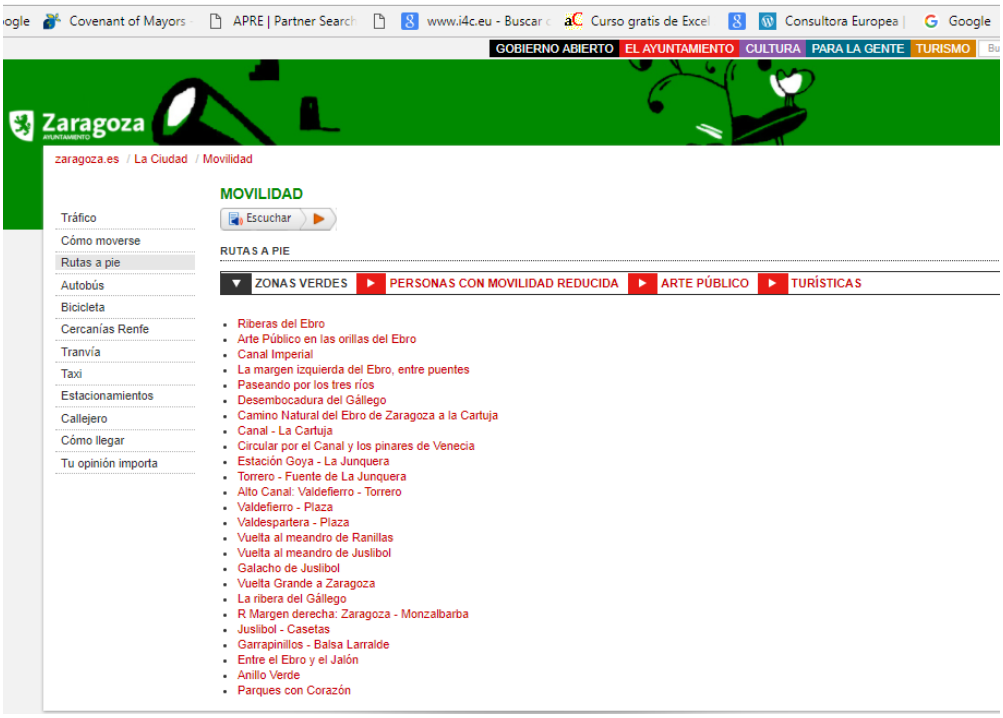
- Bicycle, complementary and integrated with public transport (everyday citizen use 1/10)
- Connection of cyclable infrastructure with centers of economic activity :Rural roads of Zaragoza localities and tourist, cultural or natural areas.
- Analyze the cycling network in its entirety (continuity, geometry, intermodality and connections).
- Promote municipal competences in the field of urban mobility, broad social and political consensus, regulatory framework, Bizi, etc.

Weaknesses cycling:

- Predominance of motorized traffic in the middle cities and Zaragoza which penalizes pedestrian traffic and bike ussers.
- Lack respect mobility(bicycle) causes pedestrian traffic.
- Lack of data on evaluation performed actions.
- There is no definite impulse to complete the infrastructure (bicycle paths, public bicycle system).
- Lack of culture in the use of the bicycle. Incomplete network, inadequate maintenance ...
- Segregation lanes feeling of insecurity potential users.

Strength of walking

- Program for the removal of architectural barriers on the sidewalks of Zaragoza.
- Installation of indicative panels and line frequency information systems of buses (Zaragoza)
- Implementation of a north-south tram line
- The Plan of sustainable mobility of the area of Zaragoza with measures that encourage non-motorized urban mobility
- Available information about walking mobility in zones of interest (in Zaragoza Portal) “Green zones” , also for people with reduced mobility, citizens and tourists.
- Change of sensitivity of the administrations in the management of the pedestrian space.
- Redistribution of public space in favor of pedestrians.
- Also in residential and commercial neighborhood areas in the long term, progressive elimination of parking surface, reduce average daily vehicular intensity .



Weaknesses of walking:

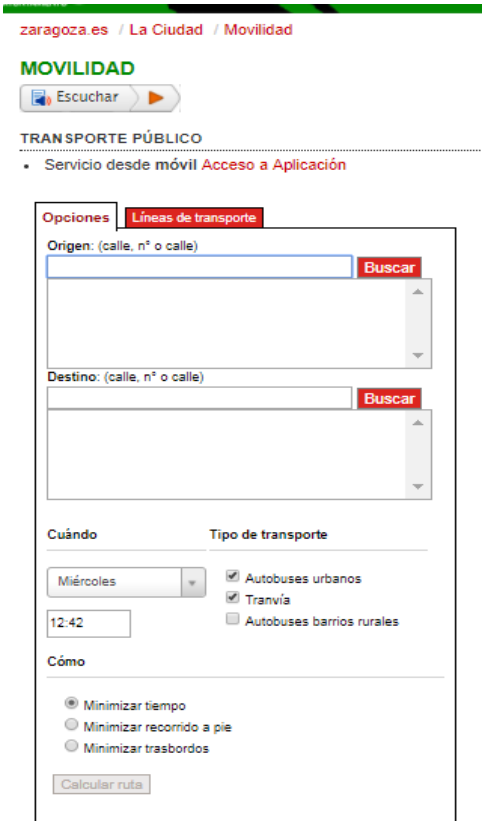
- Decrease number of services (buses/shuttle) proximity of bus stops with the tram route.
- Poor public transport connection with Zaragoza airport: Need to subsidize services/flights to maintain a minimum demand
- Lack respect mobility (bicycle) causes pedestrian traffic.
  Sometimes lack of social awareness campaigns. (vehicles vs. pedestrians).
- Lack of street furniture and pedestrian services.
- Some cases: lack of pedestrian accessibility for aging.

2.3.4 Public transport

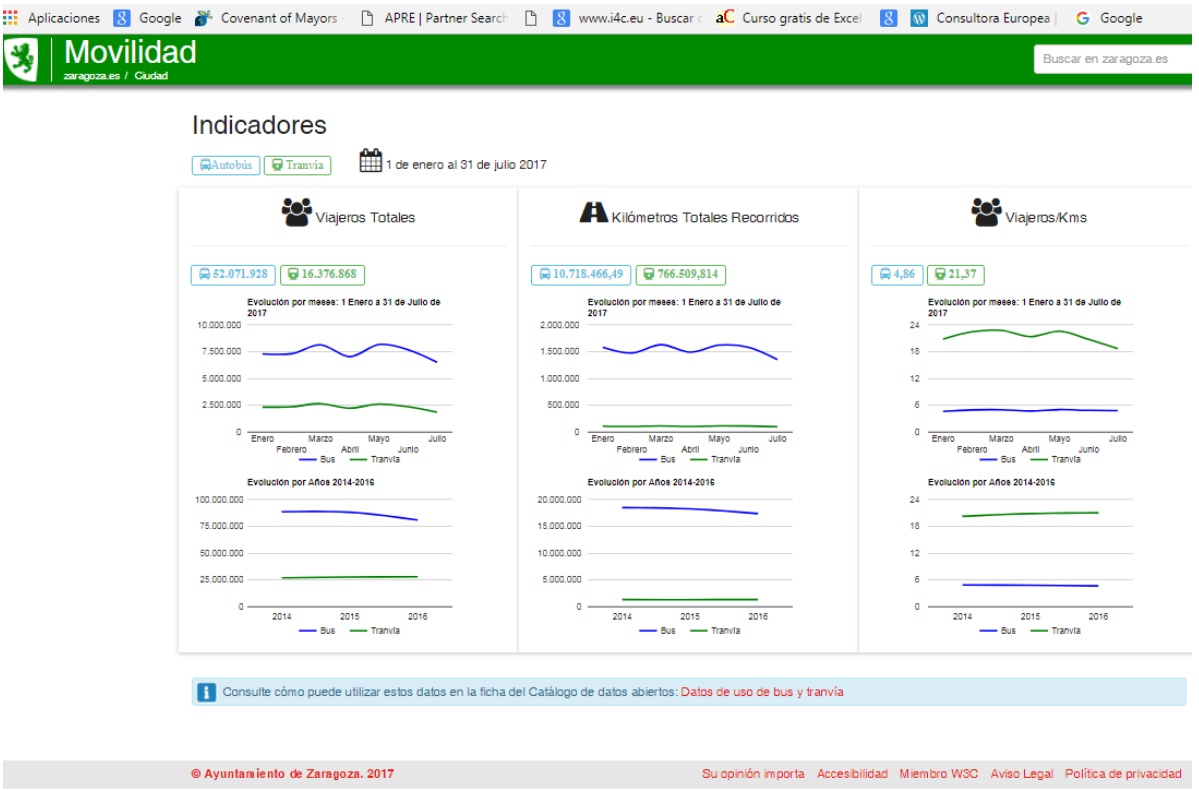
→Strength and weaknesses of public transport

Strength

- Existence of 8 electric Buses (new acquisition of electric buses, the tendency to change the bus fleet)
- Existence of TRAM (new), rental bikes, regional trains.
- Information on how to get around Zaragoza using public transport and bus/bicycle lanes connection



- Information in time about data of users of public transport at the portal/web City Council for BUS and TRAM



- APP real information on tram time and buses.
- High awareness in the City to improve day by day (routes of buses of lines adapted to reals needs)
- Project Taxi Adapted - 2017 - 89 adapted taxis - adjustment of use BUS PMRS
- The City Council has just signed with other seven Spanish cities, the manifesto For the Right to Mobility, which seeks to promote sustainable and inclusive mobility for all people.
- Compliance with accessibility legislation.

Weaknesses of public transport

- Most of the motorized modes of transport (BUSES) used to people and goods consume non-renewable energy (fuels) which HAS to be imported from the outside of Aragon
- Line 1 of the Tramway, high occupancy peak hours (contractual ratios, frequency and capacity).
- The intermodality of the metropolitan area should be improved.
- Current tariff integration requires a review of functionality system.
- Sector Taxi discontent.

2.3.5 E-Mobility

→Strength and weaknesses of E-Mobility

Strengths:

- Use of the technology to plan displacements with time, verifying the supply of places of parachutes available in destination.
- Extension regulated surface parking.
- Support for the electric vehicle to improve air quality.
- Impulse of public electric vehicle systems (cheap rental system).

Weaknesses:

- Lack of new vehicles less polluting + advance of non-motorized modes in the city (hybrid/electric).
- The motorizations of the vehicles: next phase of electrification, hybridization and Euro VI.
- Need to Incorporate new technologies in the management of mobility.
- Need of the management of a network of recharges of electric vehicles in the city.
- Analyze new systems of direct communication with vehicles by establishing a partnership of intelligent systems with intelligent vehicles.

2.3.6 Behavior change

→Strength and weaknesses of behavior change for environmentally friendly transport

Strengths:

- Increase use of the bicycle every year.
- Positive change towards promoting the supply network of less polluting fuels and energies.
- Improving intersections, signaling, frequencies and travel times of Public transport.
- Developed information and awareness campaigns in favor of the use of Public transport “case of Mobility Week September 2017).
- Alternatives related to mobility from the promotion of gender equality: Zaragoza was the first city in the use of traffic lights “for all” in the year 2011> example of project for which the citizenship should feel proud.

Zaragoza fue pionera en los semáforos paritarios -

Weaknesses of behavior

- The gender perspective is not introduced in the analysis of the different themes that make up the PMUS (new mobility plan) and therefore it is very difficult to know the differences in urban mobility between women and men.
- Different uses of motorized and non-motorized modes are detected by men and women: currently do not consider safety from a gender perspective.
- Sometimes use of sexist language, stereotyped image and development of analysis of information aggregated by sex.
- lack of normative security, ignorance of the rules and lack of collaboration by the municipal mobility agents.
- Lack of road safety and protection in certain areas of the urban fabric (intersections, pedestrian crossing, bus stops, bike lane, traffic lights insufficient, etc.).
- Social habits that prevail the use of modes of transport towards the attracting centers that guarantee the "door to door" in the shortest possible time (the private car).
- The absence of bicycle lanes causes them to travel through undue and dangerous areas. • The perception that cycling is not safe penalizes its use citizenship.

- Difficulty of safe access in the school environment because vehicles motorized private are in double row.
- Lack of awareness of the issues of prioritization of public roads in all users. This generates danger, accidents, bad coexistence and conflicts.
- Lack of control over vehicles that circulate in restricted-access streets.

2.4 PP6 – Genoa

2.4.1 Overview

Territory

Liguria region is located in the Northern Italy, with a total area of 5422 km². It borders with Piemonte, Emilia-Romagna and Toscana Regions as well as France in the west part. Although the territory is formed for the most part of mountains and hilly areas, the southern part of the region lies on the Ligurian Sea with more of 350 km of coastline.

Figure 1: Location of Liguria Region in Italy.

Figure 2: Map of Liguria region.

Liguria Region territory is divided in four Provinces:

- Genoa
- Savona
- La Spezia
- Imperia

Genoa is the capital city of the Region and the most important and populated urban area. Due to its importance, the Province has a special regulation and it is named “Città Metropolitana di Genova” (Genoa Metropolitan Area).

Figure 3: Map of Liguria provinces.

Population

The population of Liguria region is 1.565.307 inhabitants (ISTAT, 2016), with a high population density, 289 inhabitants per km², especially in the coastline with about 1000 inhabitants per km². During the last years, the region registered a continuous decrease in population, with an annual average change of -0,54% since 2010, due to a number of deaths higher than births, which results in a very high index of aging.

The population is clustered by age range as follows:

Age	%
0-17	13,8
18-44	27,6
45-65	30,3
> 65	28,4
Foreigners	8,8

Table 1: Age range of Ligurian population. (Source: ISTAT)

According to ISTAT statistics 58.7% of the population is older than 45 with an average age of about 48 years whit a higher value than the Italian average.

The population is clustered by Province as follows:

INFORMATION	GENOA	SAVONA	LA SPEZIA	IMPERIA
Population	850.071	279.408	220.698	215.130
Foreigners (%)	8,4	8,5	8,8	11
Average age	48,2	48,5	47,9	47,9
Total area (km²)	1.833,70	1.546,26	881,33	1.154,75
Population density (inhabitants/km²)	463,6	180,7	250,4	186,3

Table 2: Population of Liguria region by Province. (Source: ISTAT)

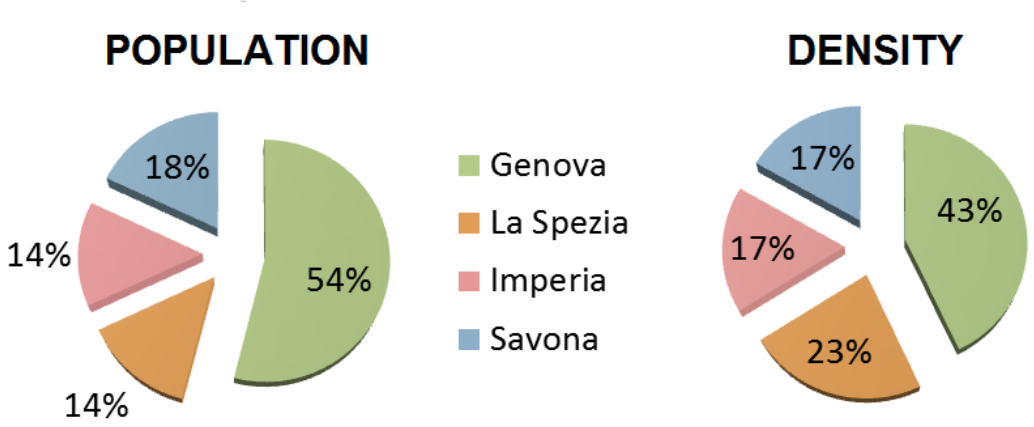


Figure 4: Population and density of population of Liguria region by provinces. (Source: ISTAT)

Economic background

Since the last century, Liguria Region has been an important industrial area thanks to its geographical position. Many relevant ports for logistic, trade, fishing, build ship constructions or military purposes are operational in Liguria coastline. However, nowadays, the economy of the region is mainly based on service sector, especially regarding the business services and services to industrial. Tourism, mainly related to seaside and farm holidays, has a great importance as well. Other relevant activities for the regional economy are fishing, cultivation of flowers, food production and crafts production, like ceramic products.

Modal split

The latest census data provide an insight on modal split of Ligurian population of commuters. According to ISTAT (Population Census 2011 – Report on daily commuting trips for work and school, 2014), only 41.9% of population commutes by car; **this is the lower car modal split among Italian regions.** This figure – potentially promising for public transport use – is counterbalanced by the **highest modal share for motorcycles, mopeds and scooters in Italy**, 14.1%, by far the highest among Italian Regions.

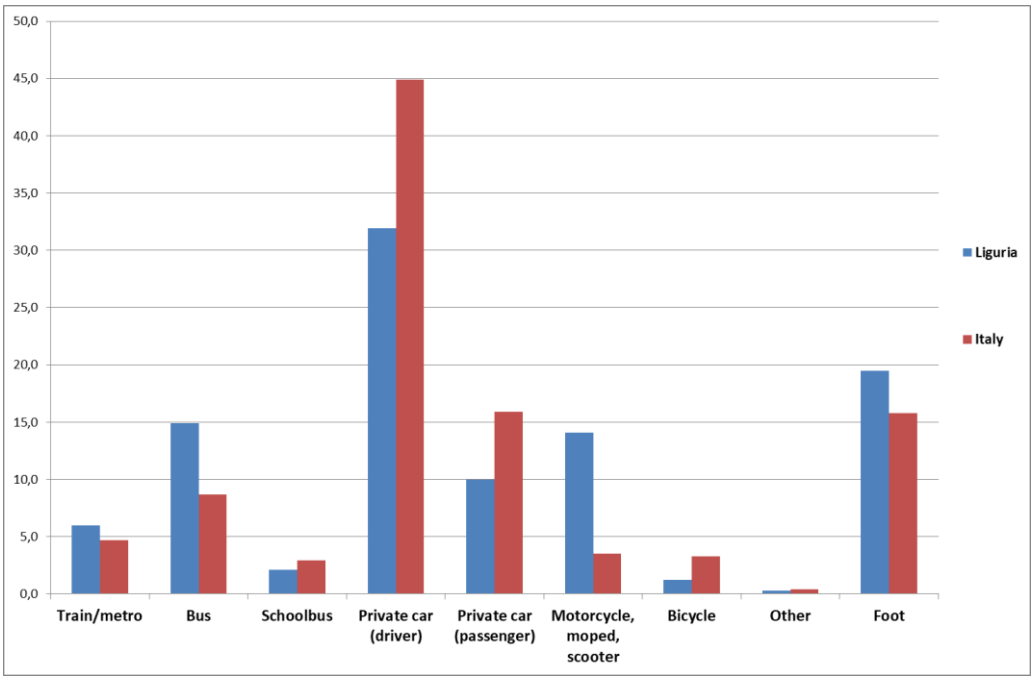


Figure 5: Modal split of commuters in Liguria and Italy. (Source: ISTAT)

The share of train (6.0%) and bus (14.9%) are both significantly above the respective Italian average figures. Indeed, the railway network plays a very important role in the mobility of Ligurian coast side, locally, towards other regions (e.g. Piemonte, Toscana) and France. By the other side, public transport options from/to the mountain/hilly hinterland are mainly supplied by the extra-urban bus lines, which provide the service in the Ligurian territory not covered by the railway network.

2.4.2 Governance and Participation

The Government of Liguria Region is led by the Governor, assisted by Councilors (Regional Ministers) which form the “Giunta Regionale”, the Regional executive body. The Regional Legislative Assembly (“Assemblea Legislativa”, formerly “Consiglio Regionale”) debates and approves Regional Laws and legislative Deliberations.

The **territorial governance** is composed by the four Provinces and the Municipalities within them, among which the provincial capital city Municipalities play a more relevant role, spread on neighboring towns in many topics. Genoa province has a special regulation and it is named “Città Metropolitana di Genoa” (Genoa Metropolitan Area).

Each Province has competence on the public transport in its territory (see 1.3).

By the **Regional Programme – 10th Legislature (2015)**, Liguria Region has listed the main strategic goals for the regional governance in the present years (2015-2020):

- GOVERNMENT: the Regional Government aims at to achieve a model allowing to overcome the rigidity of bureaucracy as well as to support the Governor’s work in a better way. Actions towards these purposes are the approval of a new Statute which provides a faster legislative process, the introduction of a managing director for specific tasks, the reorganization of board works and a new electoral law;
- PUBLIC AUTHORITY REORGANIZATION: the Region needs an internal audit in order to redistribute the competences of the Provinces avoiding services disposals. Therefore, the main action is the analysis of public authority and identification of margins of improvements in order to increase the results and decrease the costs.
- NATIONAL/INTERNATIONAL FRAMEWORK: the Region enhances the coordination with other Regions in order to achieve higher importance in the relations with the National Government and the European Union. For this reason, the Region will increase the institutional relations for economic development and the coordination with Regions, National Government and European Union for infrastructural works.
- RELATIONS WITH LOCAL DISTRICTS: The Region promotes incentives for small Municipalities in order to optimize the use of financial and human resources. For this purpose, a new regulation about associated management will be approved.
- COMMUNICATION AND ICT: information will be made more available and immediate for citizens.
- REGULATORY AGENDA: a constant check of the impact of new regional regulations and reforms in every topic (transport, health care, politics, environment, society, etc).

Liguria Region – the governance of transport system

A key turning point for each regional transport system in Italy is the **Legislative Decree 422/97**. Like all other Italian Regions, Liguria Region achieved in 1997 by the approval of that decree the responsibility for infrastructure management, financial resources and territorial policies.

Subsequently, Liguria Region approved the regional law "Norme in materia di trasporto pubblico locale" **(Regulation on local public transport, 1998**) which started the reform of local public transport (LPT) in the Region, by delegating and coordinating competences and scopes of responsibility with Provinces and Municipalities.

Currently, the legislative framework for regional transport governance is set by **Regional Law 33/2013** and **Regional Law 19/2016**, that will be analysed in details in Section 1.4. The competences of the Regional Government are focused on:

1) financing local public transport (LPT) managed by local authorities, with implementation of Framework Agreements and LPT service contracts;
2) planning, promotion, coordination and monitoring of LPT,
3) planning of railway network and regional and local railway services.

The following documents have been approved in order to accomplish these tasks:

- Piano regionale dei trasporti (**Regional Transport Plan**);
- Programma triennale dei servizi pubblici locali (**Three-years local public services Programme**);
- Programma dei servizi di trasporto pubblico regionale e locale (**Regional and local public transport service Programme**) 2017-2020
- Piano regionale dell'infomobilità (**Regional Infomobility Plan**).

In 2017, Liguria Regional Government approved the new **Programming act on regional and local public transport** (Atto di programmazione in materia di trasporto pubblico regionale e locale), with impact on the distribution of Regional Transport fund among the four Provinces, proportionally to population, public transport demand, environmental sustainability and railway service level (see 1.4).

The following Section 1.4 focuses on acts approved by the Region in the framework of LPT reform and on contracts and agreements signed between the Regional Government and the railway stakeholders.

Participation

Agenda 21

Liguria Region adopted the **"Agenda 21"** in 1999, following the national guidelines on the topic, by approving the Regional Law 18/99[1]. Agenda 21 is a voluntary and participative process which aims to define a medium-long run strategic plan based on socio-economic expectations of the community.

The Regional Law defines Agenda 21 as the "Regional Environmental Plan" whit:

- Harmonising of the regional policies in different sectors towards sustainable development, through inter-disciplinary and participative approach;
- Collection of Regional development objectives and strategies, steering them to the implementation of sustainable development principles, through the definition of guidelines;
- Set up of objectives, strategies and priorities of environmental and energy programming, updating existing programming documents;
- Coordination of environmental policies of Region and Local Authorities, promoting the development of local Agenda(s) 21;
- Definition of criteria for the identification of high environmental risk areas;
- Identifies goals and targets to reach in different environment topics, through the definition of specific indicators;
- Definition of a specific sustainability strategy, identifying the measures to reach it.

Through Agenda 21 process, the stakeholders are invited to participate and to contribute to the final decisions on projects/programmes having impact on their reference community[2].

Following the Regional Law prescriptions, the Regional Government delegates one of its Councilors to state the procedure through which the participation process is undertaken. The Chairman of the procedure is a Regional Officer. The consultation procedure lasts 90 days, and it must comprise at least Provinces, Municipalities and Mountain Communities, which are allowed to express their positions on planning and programming documents.

The goal of Agenda 21 participation process is to achieve an integrated vision, in order to prevent possible conflicts that may arise if planning is developed from a single point of view.

The involvement of stakeholders starts from the invitation, sent by local administrations through a Forum formed previously. Stakeholders are invited to agree on a knowledge base (**Report on the Environment State**).The set of common objectives and the actions are defined (**Local Agenda 21 Action Plan**). The stakeholders accept to realize and monitor the actions in which they are responsible in order to achieve the objectives of the Action Plan.

Several Local Agenda 21 (Ag21L) participation processes have been undertaken in Liguria from 1999 on, with diverse results in terms of stakeholder involvement. According to "Ambiente Liguria"[3] few local

[1] Regione Liguria (1999)
[2] http://www.ambienteinliguria.it/eco3/ep/liguriasostenibile/documenti/azione21_inliguria.pdf

administrations have implemented effective verification tools of process implementation, and a not sufficient number of stakeholders participate to the process.

Participation as a regional government guideline

Liguria Regional Government proposed actions regarding the participation in the Regional Programme – 10th Legislature (2015). One main objective is to operate a **simplification of digital agenda and PA services access** as well as **simplification of regulations and information** regarding the participation of citizens.

The Region allow citizens of the **possibility to participate to Committee Meetings,** organized to achieve more transparency and participation on specific topics. Furthermore, Liguria Region has made available a **Virtual Front Office** for public transport users, a digital web-based platform which enables a clear and easy support regarding information for Local Public Transport (LPT) activities performed by the region as well as other administrations.

Focus: the participation process about LPT in "Val Bisagno" area (Genoa)

The main problem of Val Bisagno area is the **lack of alternatives to road transport**. For this reason, in 2017 the Municipality of Genoa has developed a participation process within a feasibility study for a new tram-way. The process includes thematic laboratories and focus groups where the technological solutions, traffic scenario, the assessment of critical issues at the urban level and the timing of implementation were discussed. The process has been developed in 3 steps:

1. Identification of a technical working group (composed by Municipality Mobility and Urban Development Departments, University of Genoa - Architecture and Engineering Faculties, Local Districts and LPT companies);
2. Identification and involvement of stakeholder groups with interviews, open meeting sessions, questionnaires, notebooks, laboratories and focus groups;
3. Elaboration of shared guidelines.

Furthermore, a **public information campaign** has been programmed in order to involve the remaining stakeholders (educational institutions, shopkeepers, sport associations, religious and environmental associations, transport companies, public service providers, labor unions, local district committees, citizens). The following needs have been identified by a survey:

- Need of a more efficient public transport system;
- Reduction of traffic difficulties and better accessibility to urban services;
- Preference to the introduction of tram-way;
- Better integration between urban and suburban LPT and alternative/integrative systems

[3] ibidem

(car sharing, collective taxi, car pooling).

The process has reached the goal to **identify critical points and possible strengths** connected to the construction of a tram-way in the area. Despite the problems related to the expectations and different interests of the stakeholders involved in the territory**, the initiative has been appreciated** and the output of the process was the publication of guidelines, applicable to similar territorial situations, useful to finalize the feasibility study for the construction of the tram-way.

The participation process for a new tramway in Val Bisagno area has been included as "Interreg Europe best practice", identified by DEMO-EC

2.4.3 Car reduction

The Regional Government promotes policies to aim to reduce car use, then the specific rules are under the competence of Municipalities. Recently some policies have been issued and funded by the Region. In 2016, thanks to the **Regional Growth Act**[4], the car tax **exemption for electric and hybrid cars** for 5 years has been approved, in order to promote the use of e-mobility and to reduce the use of more pollutant vehicles (see 1.5).

Each Province capital city issued policies and guidelines at urban level to discourage the use of private car in particular in the city center, with promotion of:

- sharing mobility
- pedestrian and cycling mobility.
- LTZ (Limited Traffic Zone),
- re-organization of parking areas
- specific incentives for bus public transport

The following section identifies some initiatives about car reduction, i.e. specific measures and/or projects aimed to achieve the concrete reduction of car use. It has to be reminded that Liguria shows the lower car modal split among Italian regions.

The following sub-sections focus on some concrete examples of car reduction policies, as issued by the Regional Government and Local authorities, as well as some examples of car reduction projects.

Pedibus – going school on foot

The **Pedibus service** started following a specific action by the Regional Government, in 2013 to foster walking in home-to-school daily trips. Elementary students are accompanied from home to school and back by volunteers (e.g. one parent per day with a 20-students' group). The service is active in several cities of the Region, mostly promoted by Municipalities and organized by parents' associations.

Figure 6: example of "Pedibus service"

Rete Ciclabile Ligure – the regional cycling network

"**Rete Ciclabile Ligure (RCL)"** is a network of cycle routes throughout the region, connected to the Italian and European (e.g. Eurovelo) cycle networks. The project identifies five cycle routes through Ligurian territory:

- Arco Ligure Greenway
- via Pedemontana
- via del Mare
- via dei Monti
- via dei Pellegrini

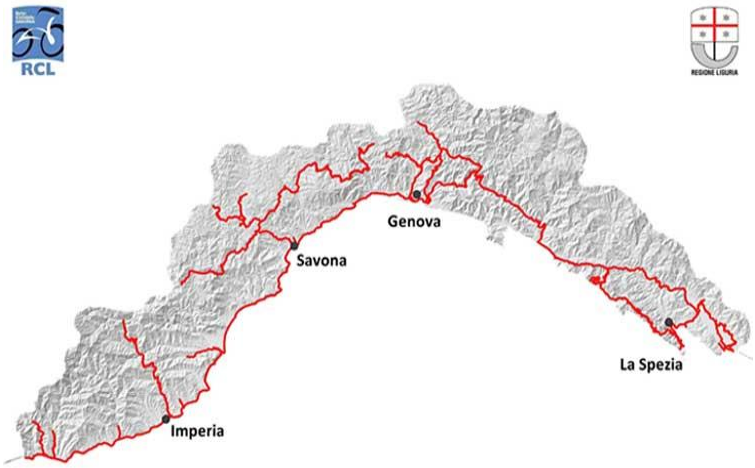


Figure 7: map of RCL in Liguria region (Source: Liguria Region)

The project will allow to create a unique net of paths, at the moment fragmentary. The most important one is the Arco Ligure greenway ("Ciclovia Tirrenica"), which will allow to connect Liguria region with Piemonte and the hinterland. The particularity is that the most part of the walking and cycling paths have been realized on old railway lines not used for several years. RCL is part of "Eurovelo 8" route between Bordighera and the French border, as well as in the national road leading to Colle di Tenda[4].

[4] http://www.eurovelo8.com/countries/italy

Figure 8: two different views of RCL in Liguria (Source: Liguria Region).

Bike sharing and cycling paths

The use of bicycles by commuters is lower than the Italian average (see Figure 5), the high density of cycling paths and several bike sharing experiences allows to identify “bike sharing and cycling paths” as a Ligurian best practice towards car reduction.

The different orography of Ligurian areas and cities leads to different approaches about cycling in Liguria: Savona, Imperia and La Spezia are flat cities; most part of citizens use own bike and the density of cycle paths is high. In Genova area there are more difficults than other cities, because there are a hard orography with natural and artificial barriers that there isn’t in other cities, anyway there was a lot of activities to improve cycling mobility.

Cycling lanes (including the walking-cycling lanes), routes and paths are diffused as follows in Liguria, according to the unofficial register of Italian bike routes (www.piste-ciclabili.com) and to information achieved from the local administrations:

- Genoa: 11 km of cycling paths in the city in 16 bike routes in the Metropolitan Area;
- Savona: no “official” cycling lanes in the city (although planned[5]) but there are 16 bike routes in the Province;
- La Spezia: about 23 Km walking/cycling routes in the city and 31 cycling routes in the Province;
- Imperia: about 24 Km walking/cycling routes in the Province (“Riviera dei Fiori” route, the longest cycle path along the West Ligurian Coast).

The development of cycling routes is actually in several tourist areas in the Region where it could be possible to develop cycling (and intermodal) activities.

Several **bike sharing services** have been developed in Ligurian cities, as measures to reduce car use among integrated mobility policies.

Integrated mobility policies introduced several **bike sharing services** in Ligurian cities, as

[5] According to the City Urban Planning Document (PUC) and its annex “Strategic Document on Mobility” (2011)

measures to reduce car use.

Genoa bike sharing service called “Mobike”[6] is managed by the Municipal parking management company, Genova Parcheggi S.p.A. The network includes and 64 bikes deployed in 13 bike sharing stations. Bike sharing in Genova is affiliated with BicinCittà. This affiliation allows users to purchase the preferred subscription (annual, weekly, 3-days, daily).

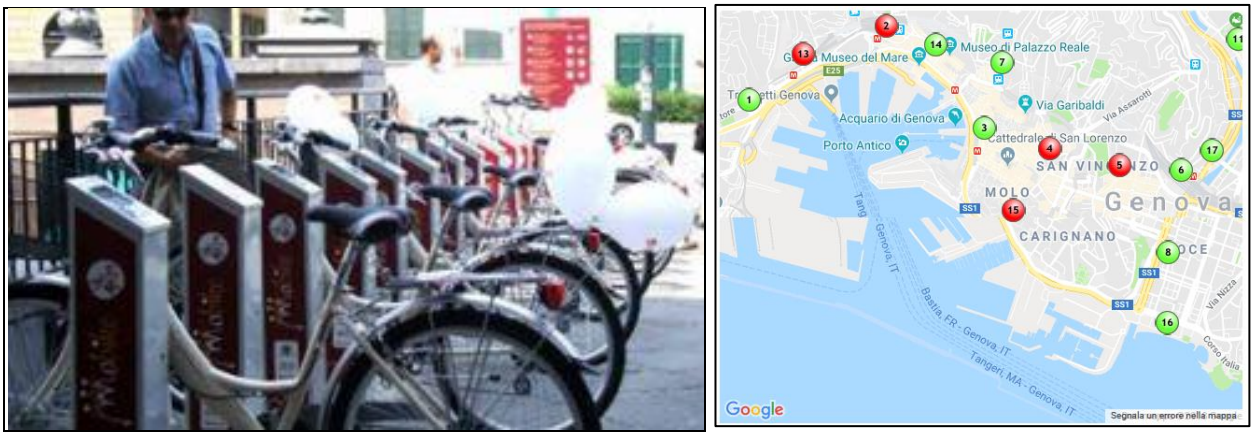


Figure 9: Bike sharing service in Genoa and location of Mobike stations (Source: Genova Parcheggi and Bicincitta).

Since 2008 **La Spezia** developed a bike sharing service called “Spezia in Bici”, with about 80 bikes and 19 sharing stations (180 racks)[7] plus other 6 stations that will be deployed during 2018, within and outside the city centre. Spezia in Bici is affiliated to Bicincittà. The access to the service is possible through a Rfid-card “Speziapass”, valid also to access LPT services. The measure was activated within an integrated mobility programme issued by La Spezia Municipality, which comprises the realisation of pedestrian and bike paths to incentive citizens to shift to walking and cycling on trips within the city.

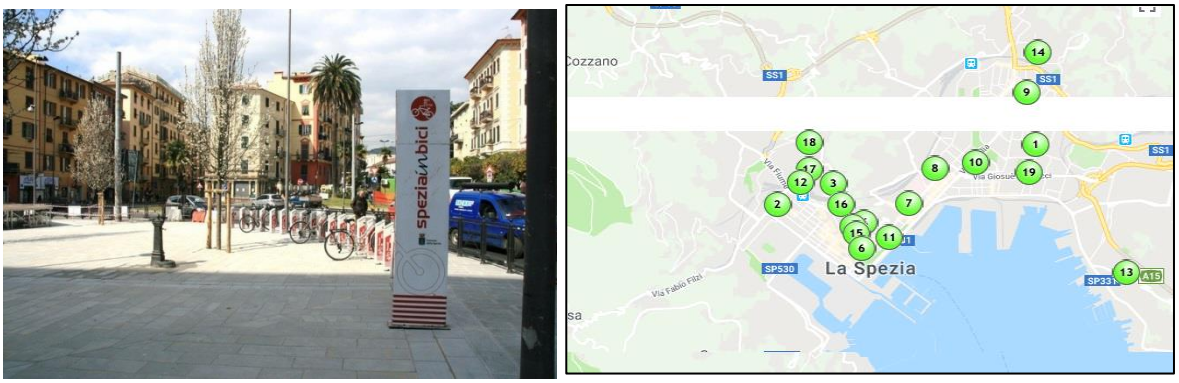


Figure 10: Bike sharing service in La Spezia (Source: Speziainbici, Bicincitta).

[6] https://genovaparcheggi.com/panoramica-bike/
[7] http://www.ttsitalia.it/la-spezia-bicisicura-e-nuova-app-per-il-bike-sharing/ (2015)

In 2010 **Savona** Municipality activated bike sharing service as part of a car reduction policy including a LTZ in the city center, an extension of pedestrian zones, an improvement of bus line network and a reorganization of parking areas. The starting fleet of bike sharing service has 40 bikes with 7 sharing station.The service suspended[8] in February 2018 cause of a lack of demand and high number of stolen and vandalized bikes Another bike sharing service was at Albissola (Savona Province) but the service suspended due to lack of demand in the small town where a lot of people use own bike.

In **Imperia** Municipality, the idea to develop a bike sharing service has been abandoned, cause of the orography (several slopes in some areas of the city) and the average age of the citizens (prevalence of elderly people). The electric bikes with pedal assistance would be needed but, due to the high purchase costs for e-bikes, the Municipality did not go on with the development of the service.

Imperia has the LTZ in the city center and in all the province there are about 24 Km walking/cycling routes, including the “Riviera dei Fiori” route, one of the longest in Europe.

Bike sharing services are operating in several coastal towns, serving mainly an increasing demand from **tourists**. “Tigullionbike” is the bike sharing service operating in Sestri Levante and Lavagna[9] with 7 stations enabled as e-bike charging points too.

Portofino Park and Bike[10] is the brandnew bike sharing service (60 bikes, 10 stations) organized by the Park of Portofino and covering all the Regional Park area, including also other two famous tourist resorts like Santa Margherita Ligure and Camogli. The service is mainly and evidently devoted to tourists, providing them with a non-car service to visit Portofino village (which is almost completely restricted to car traffic) and the surrounding areas.

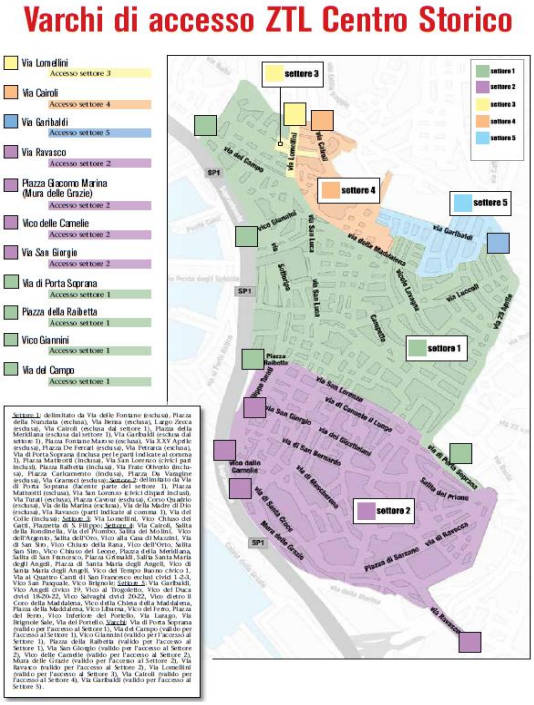
[8] http://www.lastampa.it/2018/02/16/savona/furti-e-atti-vandalici-tramonta-il-servizio-di-bike-sharing-a-savona-b1vAtC8hFqZ5S2A79K3vSL/pagina.html
[9] http://www.comune.sestri-levante.ge.it/bike-sharing
[10] http://www.parcoportofino.com/parcodiportofino/resources/cms/documents/bike_sharing_2.pdf

Limited Traffic Zones

Limited Traffic Zones (LTZ or "ZTL" in Italian) are one of the most frequent car reduction and traffic limitation policy among Italian cities. Ligurian cities have issued ZTLs in accordance with competences assigned to cities by the national Road Act. ZTLs in Genoa and Province capital cities are described in the following paragraphs.

Genoa

A number of 8 ZTLs have been implemented by Genoa Municipality: Centro Storico, Vernazzola, Molo, San Vincenzo, Boccadasse, Nervi. **"Centro storico"** ZTL, the biggest and most important one, spans over almost the entire historical centre, and it is controlled by **11 electronic gates.** "Molo" and "Nervi" ZTLs are controlled by one electronic gate each.



The figure on the left (Source: Genova Parcheggi) shows the 11 gates around "Centro Storico" ZTL, which is divided into 5 sectors.

The implementation of ZTLs in Genoa dates back to 2001, when the first regulation of limited traffic zones was approved by the Municipality. The regulation[11], subsequently amended, sets rules to access the ZTL and defines exempted categories. Each ZTL has particular rules according to the seize, the position and the importance for the mobility of the city. The main ones are active 24 hours per day. The access in each ZTL is granted only for vehicles with authorisation (LPT, police, ambulances, public services, car sharing, disabled people, owners of private parking, residents).

Figure 11: Limited Traffic Zone in Genoa (Source: Municipality of Genoa).

For Electric vehicles the access to ZTL areas is always free. The access rules for urban freights are different among the different ZTLs, almost all having a specific "time window".

ZTLs are managed by "Genova parcheggi", the in-house company of the City of Genoa also managing tolled parking. The company's portal hosts all procedures to obtain general permits and specific derogations to access ZTLs[12].

[11] http://www.comune.genova.it/sites/default/files/disciplina_dellaccesso_alle_zone_a_traffico_limitato.pdf
[12] https://genovaparcheggi.com/panoramica-ztl/

Savona

A small ZTL is operating in the historical centre of Savona (Via Caboto, via Untoria and via dell' Olmo). Parts of the area is a pedestrian zone. The access is granted only for vehicles authorized for particular needs, police and ambulances. The ZTL is not active in two "time windows" (6:00-10:30 and 14:00-16:00), issued to allow freight deliveries. Derogations for urban freight and disabled people are issued by the Municipality[13].

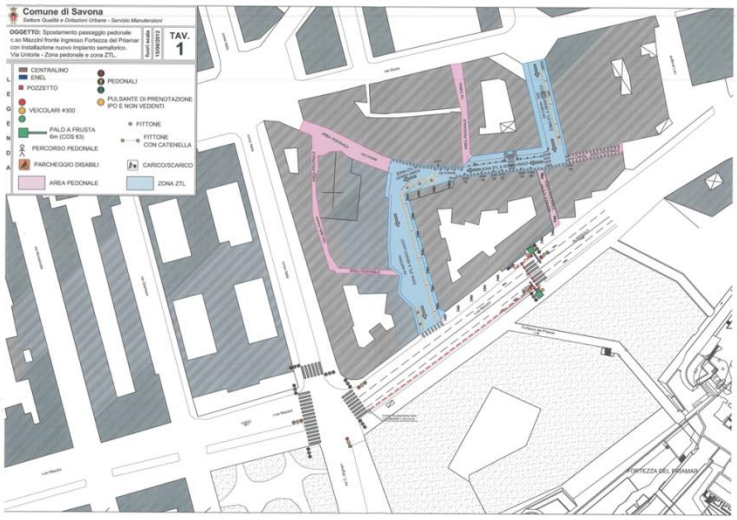


Figure 12: Limited Traffic Zone in Savona (Source: Municipality of Savona).

Imperia

In Imperia historical centre: Borgo Marina and Parasio, (as identified by the following figure) There are two 24-hour ZTLs with three electronic gates in Via S.Antonio, via Vianelli and via Cascione. In LTZ Borgo Marina the access is granted only for authorized vehicles (residents, public services, owners of private parkings, disabled people, emergency services, maintainers and carriers). In LTZ Parasio the access is granted for moto and scooters too. Freight deliveries in ZTL Borgo Marina are always allowed with a notice of at least one hour, while in ZTL Parasio deliveries are allowed in two time windows (8:00-10:00 and 15:00-17:00), for maximum 30 minutes per delivery trip. Temporary accesses are also issued by the Municipality

[14]) Figure 13: Limited Traffic Zone in Imperia (Source: Accessibilitacentristorici.it)

[13] http://www.comune.savona.it/IT/Page/t07/view_html?idp=6806

[14] https://www.accessibilitacentristorici.it/ztl/liguria/imperia.html

La Spezia

Figure 14: Limited Traffic Zone in La Spezia

The ZTL of La Spezia, called “Centro Torretto”, is active 24 hours per day and it covers the historical centre (Via Manzoni,Via Fazio, Via Ferruccio and Via Cavallotti). In the area there are three electronic gates[15]. The current regulation of ZTL was issued in 2015 by the Municipality[16] The access is forbidden for all the vehicles that are not in the “white list” issued by the Municipality, which approves requests submitted by specific categories of users (residents inside the ZTL, parking owners, commercial vehicles, crafts, disabled people). Freight deliveries are allowed in two time windows (4:00-10:00 and 14:00-16:00) for a maximum of 30 minutes, only from the Gate “Manzoni”. Derogations and further restrictions are issued by the Municipality.

Car reduction integrated projects

This section describes the main features of two significant integrated projects to aim to reduce traffic vehicles. Such projects represent good examples of coordinated actions issued by Ligurian Local Authorities in order to get mobility actions funded by National Authorities (Italian Ministry of Environment.

M.Ma.Go. (Mobility Management Golfo dei poeti) Project

The M.Ma.Go. (Mobility Management “Golfo dei poeti” – part of east cost area in Liguria Region) project started in 2017 after the approval of the agreement between the cities of La Spezia and Lerici. The project started by the analysis of business commuting between the province capital city

[15] http://www.comune.laspezia.it/Aree_tematiche/Mobilita_Traffico/ztl.html
[16] Comune di La Spezia (2015), Ordinanza n. 6075 del 30/07/2015

and Lerici (and v.v). The rationale (validated by a survey) is that also a small variation of the transport habits of the citizens could stimulate car reduction, and benefits for the environment.

The main objectives of the project are:

- Reduce of car use and increase of LPT and cycling use
- Promote an environment-friendly mobility for home-work and home-school commuting

The action provided in order to achieve these objectives has three topics:

1. Bike sharing improvement
2. Cycle route development
3. LPT improvement

Specifically, for the first topic the actions are:

- Reactivation of the bike sharing service in Lerici
- Integration of the bike sharing services and the La Spezia and Lerici prices integration system
- Deployment of 6 new stations in La Spezia and 2 new stations in Lerici
- Substitution of traditional bikes with new model bikes
- Increase of electric bikes
- Activation of virtual stations with smartphone app.

Regarding the second topic, one weakness underlined by the citizens is the safety problem related with the bicycle use in certain areas of the cities as well as the lack of a good cycle route supply. For this reason, there will be an **improvement of connections and safety in the cycle routes**.

The third topic it's the **promotion and the improvement of shuttle bus service** as well as the **introduction of "pass mobility" awards for TPL subscriptions**. In fact, the interchange parking and an economic grant could be good incentives in order to increase the public transport use by the citizens, particularly workers and students.

All the actions are expected to become effective in 2018 and 2019.

<u>Smart Mobility Project</u>

The Smart mobility project has been approved in March 2018. The project is coordinated by Savona Province, and it involves the City of Savona, the Municipalities of Albissola Marina and Celle Ligure (two seaside towns in the Province).

The project funded thanks to the national funding programme "Bando nazionale relativo alle periferie urbane" (**National tender related to urban peripheries)** and co-funded of the Italian

Ministry of Environment. The project is also part of the national programme on sustainable mobility called “Mobilità sostenibile casa-scuola e casa-lavoro” (**Sustainable Mobility home-work and home-school**).

The project aims to achieve a reduction of car use and shift to LPT and cycling as well as to foster sustainable mobility for home-work and home-school commuting.

In order to achieve these objectives, **walking/cycling routes** that connect the main nodes of the area, in particular the train station, the schools, the industrial area, the stadium and the municipal pool will be realized in Savona. This action aims to **reduce the traffic congestion offering a sustainable alternative and to improve the bike sharing service** between the train station and the University campus. Furthermore, safe bicycles stations will be deployed near the schools and the train station.

Another action will regard the realization of a new sustainable mobility system in order **to increase the safety of Pedibus** (see 1.2) and **cycling routes in the Province**. This improvement as well as the institution of new routes are necessary in order to increase the use of bike for extra-urban commuting routes in Savona area.

Also the **renewal of Savona coast area** is foreseen. Indeed, there will be an extension of the existing walking/cycling routes and the degraded areas will be revamped.

All Smart mobility project actions are expected to be completed within 2020.

2.4.4 Public transport

Liguria Regional Government reserves a specific attention to public transport in its strategic planning document, the improvement of quality and efficiency of public transport is one of the main goals. Several actions – both on service and infrastructure for public transport – are set in the current above-mentioned 10th Legislature Regional Programme (2015):

- Reform the actually LPT regional regulation
- Promote the extension of Genoa Metro line
- Manage the relationship with Trenitalia on interregional service responsibility
- Improve the integration of services, above all in the coastline
- Assign part of revenues from administrative sanctions to LPT
- Use of European funds to promote low environmental impact vehicles
- Study and analise potential tariff integration shared with different type of TP

The current Ligurian Government support and encourage the reform of regional LPT The **Regional Law 33/2013** ("Reform of Regional and local public transport") was the ultimate legislative instrument issued by Ligurian Government to fully receive the national reform of public transport, approved by the Italian Government in 1997-1999 by Legislative Decrees 422/97 and 400/99**.** with the re-organization of the regional and local services and

Liguria Region created the **Regional observatory of transport** (Osservatorio Regionale dei Trasporti), in order to support the regional planning, and the dissemination of data and information to the users.

Liguria Region takes on several responsibilities in the public transport sector, such as the coordination of LPT and of regional service network, the planning of railway network and rail services of regional and local interest, as well as the operation of railway services that are not operated by Trenitalia (the national railway operator).

Liguria Region has the following competences:

- Definition of direction and coordination of local and regional public transport (rail, bus, maritime, tram/trolleyways, cableways, elevators, etc.) and management of transport services requiring a unique management at regional level, i.e. regional railway services;
- definition of functional transport areas ("Bacini" and "ATO"), corresponding to the territory of each Province for LTP services, and to the entire Region for railway services;
- definition of common guidelines for the definition of "Area Plans" plans about areas related to river basins in Ligurian territory set up by the Genoa Metropolitan Area
- Definition of the **Regional Transport Plan**

- Definition of three-year **Regional and Local Transport Service Plan,** in this plan RL approve the availability of resources in the Regional budget, also in order to realize the requirements of “Piani di Bacino” as much as possible;
- Definition of financing of LPT by granting local authorities through the implementation of Programme Framework Agreements (Accordi Quadro di Programma) and LPT service contracts;
- Study and definition of pricing policies;
- Implementation of procedures of supervision for transport services.

The Metropolitan Areas in the Region have functional autonomy in mobility policies, like:

- sign **Programme Agreements** with the Region, which rule roadmaps for investments in transport and mobility funded by the Region in the Province territory,
- approve **Transport Area Plans** (“Piani di Bacino dei Trasporti” for transport services in their geographical competence (following common guidelines defined by the Regional Law),
- manage **Service contracts** signed with LPT operators.

The Municipalities take care of the LPT management at urban/local level.

The following paragraphs describe the main features of public transport in Liguria, clustered by mode of transport and innovative services (such as car sharing).

Railway

The railway network in Liguria consists of more than 500 km of lines which link more than 100 stations, 22 only in Genoa rail node. The Liguria network is developed for the most part along the coastline, but there are also important lines connecting the coast with the hinterland, neighbouring Italian Regions (Piemonte / Toscana / Lombardia) and France.

Figure 15: Map of railway network in Liguria region (Source: Regione Liguria).

Three rail networks are operational in Liguria (as shown in the following table): Ligurian lines of the national rail network are managed by RFI, the national Infrastructure Manager. Besides services (regional and inter-regional) operated by Trenitalia, some EuroCity services connecting Milan with France through Liguria are operated by Thello, French operator owned 100% by Trenitalia.

Besides RFI lines, Genova - Casella is a line connecting Municipality of Genoa with Municipality of Casella, a small hill town in the hinterland of Genoa. The line is managed and operated by the Genoa LPT operator AMT SpA, which operates also the rack railway Principe-Granarolo, operational since 1896 from Genova Piazza Principe (the main rail station is Genoa) and the hilly suburb of Granarolo.

Figure 16: rack railway in Granarolo (left) and suburban railway in Genoa-Casella (right)

Network	Infrastructure Manager	Railway operator (passenger transport)
All lines in the Region (except below)	RFI	Trenitalia Direzione Regionale (DR) Liguria (regional services) Thello (EuroCities connecting Milan, Ligurian stations and France)
Genova - Casella	AMT	AMT
Principe - Granarolo	AMT	AMT

Table 3: Rail Infrastructure Managers and operators in Liguria.

RFI network is divided into “main network” (“rete fondamentale”) and “complementary network” (“rete complementare”). As shown in Figure 12, the entire coastal line, as well as Milano-Genova and Parma-La Spezia lines are included in the main network (red line in the figure), while the other lines (e.g. the two lines connecting to Acqui Terme and the line to Turin via Ceva) are in the complementary network (yellow line).

All lines included in the main network are double-track lines (thicker line in the figure), except a short but significant - still not alleviated - single-track bottleneck on the coastal line from Albenga to San Lorenzo).

Lastly, the railway network is in the most part electrified (continuous line in the figure), except the still non-electrified international line connecting Ventimiglia and Cuneo through France.

Figure 17: Clustering of railway lines in Liguria region (Source: RFI).

Liguria Region signed a **Framework Agreement** with RFI[17]. This document, prescribed by the European legislation (EC First Railway Package - Directive 2012/34/EU) and approved by the Regional Government in December 2016, establishes direct relations between the Region - as "rail capacity purchaser" – and the rail infrastructure manager. With the Framework Agreement, the Region reserves sufficient network capacity to perform the services (frequency, speed, quality) that will be agreed with the rail operator (Trenitalia) in the Service contract. Furthermore, the Framework Agreement defines a investment programme to improve the rail infrastructure and technology in the Region.

The new service contract with Trenitalia

The national rail operator Trenitalia is the rail operator providing regional and local railway services according to a Service contract with Liguria Region. The new service contract18 provides for many new features and for a substantial improvement of the service quality. The main topics of the Service contract are the following:

1. **Total fleet renewal**: the train fleet will be renewed by 2023, in the paln are 48 new trains (serving all lines in the region), among which 5 new trains named "Jazz" will be available in 2018. The average age of the rolling stock will be reduced to 5 years by 2023.

[17] Regione Liguria-RFI (2016)

[18] Regione Liguria-Trenitalia (2018). A summary of the main novelties is in the news published by Liguria Region at https://www.regione.liguria.it/giunta/item/17668-contratto-trenitalia.html

2. **Better performance**: the new trains to be deployed in Ligurian network will be more efficient in acceleration and braking. It will lead to higher commercial speed and reliability, lower lead times, and energy consumption reduced by 30%.

3. **Modern rolling stock**: The new "Pop", "Rock" and "Jazz" trains are larger and more comfortable for users. 90% of the fleet will be accessible for disabled people by 2023, compared to today's 30%.

4. **Higher punctuality (and more effective monitoring)**: the Service contract provides for a new punctuality monitoring system: punctuality will be monitored not only at the end station, but at intermediate stops too. Officers hired by the Region will monitor the train quality on a daily basis. A new penalty/incentive scheme will be applied. Penalties will be reverted to commuters, which will receive a discount on the next-month subscription fee in case the service has not reached minimum quality standards in the previous month.

5. **More information**: information to users will be improved, also to check the customer satisfaction continuously.

The high relevance of hills in the Region constraints the transit of the trains in narrow corridors along the coastline. The need to build a high number of tunnels (and to maintain the existing ones) increases investment and operational costs.

Bus transport

The above-mentioned Regional Law 33/2013 established the Unique Regional Transport Area (BURT-Bacino Unico Regionale dei Trasporti) and its governance model. The model foresaw the assignment of bus LPT to a single operator, by a unique service contract about all bus transport services in the Region.

The new Regional Law 19/2016 amends the entire text of the previous law. The implementation of the BURT is not foreseen anymore, and the six geographical areas of LPT competence ("bacini") are now replaced by **4 mobility areas** ("bacini di mobilità") corresponding to "optimal territorial ambits" (ATO), which correspond to the Metropolitan Area of Genova and to the Provinces of Imperia, Savona and La Spezia.

The new law sets a novel scenario for the provision of LPT services by bus in the territory, through the following steps:

1) Approval of the 3-year **Regional and Local Transport Service Plan**[19] by the Regional Legislative Assembly. The Plan, approved in June 2017 for 2017-2020 period, defines:
    a. common guidelines for Area Plans ("Piani di Bacino") to be implemented by the Provinces and Genoa Metropolitan Area
    b. the quantity and frequency of "minimum LPT services" to be considered in the Area Plans, taking into account local transport needs and the availability of resources in the Regional budget;

[19] Regione Liguria (2017)

c. the regional budget for minimum LPT services, considering “standard costs” calculated in the Plan and criteria to assign regional funds to the Areas.
d. methodology to set LPT tariffs and their integration among operators and areas
e. criteria to reduce traffic congestion, air pollution and noise

2) Definition of the **Area Plans** (“Piani di Bacino”) by each Province and Genoa Metropolitan Area;
3) Guidelines for **Public evidence procedures** (one for each of the 4 Areas) for LPT service procurement;
4) Start of **Electronic Ticketing System** (SBE, Sistema di Bigliettazione Elettronica) implementation from 2016.

The reform will be complete once the 4 Area Plans and the public evidence procedures are completed by the Provinces and Genoa Metropolitan Area. Currently Provinces are preparing the Area Plans. The completion of the process – and the awarding of LPT services to operators – is foreseen by end of 2018 or beginning of 2019.

Until then, the LPT by bus is run by five operators, and each of them performs the service in specific provincial or intra-provincial areas (“bacino”), defined in 2010 and roughly mirroring provincial areas identified by the new Regional Law:

- In Genoa Metropolitan Area, extra-urban (formerly “TG area”) bus services are operated by ATP Esercizio. Urban services (former “G area”) in Genoa are performed by AMT.
- In the Province of Savona, once divided in two areas (S area and A area), bus transport is operated by TPL Linea.
- In the Province of Imperia (once “F area”) and La Spezia (once “L area”), LPT operators are respectively RT and ATC.

As evident from the following figure, LPT operators have to perform their services in a coordinated way in the border areas between two Provinces, borders in order to assure an efficient and continuous service in some towns where bus users are served by operators of both Provinces.

LPT operator	Province / ATO
AMT	Genoa (urban)
ATP Esercizio	Genoa (extra-urban)
RT	Imperia
TPL LINEA	Savona
ATC	La Spezia

Table 4: LPT operators by Province and correspondence to former “Bacino”

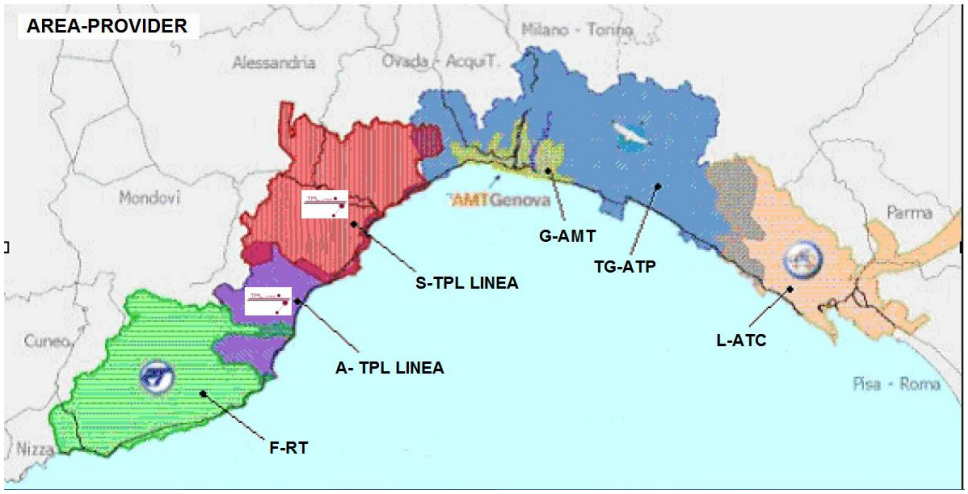


Figure 18: LPT operators and geographical scope. (Source: own elaboration on La Sapienza 2016)

The following paragraphs provide a short description of Ligurian LPT operators and their business scope. Data on traffic performance reported in the tables are the same reported for 2016 in the Regional and Local Transport Service Plan.

AMT- Azienda Mobilità e Trasporti

Azienda Mobilità e Trasporti (AMT) was founded in 1895. The company performs the LPT service in the urban area of Genoa (formerly “G area”). AMT business scope includes many mobility services in Genoa: besides bus transport service, AMT operates the Genoa Metro, funiculars, elevators, the Principe-Granarolo rack rail, a fast line by sea (called "Navebus"), the Genoa-Casella rail line, the airport bus line “Volabus”, a dial-a-ride service (called "Drin Bus") and other services (e.g. "Taxibus"). The service carried out by AMT forms a network of about 972 Km that reaches about 580.000 inhabitants (citizens of Genoa). AMT owns about 750 vehicles.

ATP- Azienda Trasporti Provinciali

Azienda Trasporti Provinciali S.p.A. (ATP) founded at the end of 2005 after the merger for incorporation of ALI Autolinee Liguri Provincia di Genoa S.p.A. in "Tigullio Pubblici Trasporti S.p.A.". The new holding company started its activity in 2006 and in 2012 the new operational branch company, ATP Esercizio Srl, was created to operate LPT service in Genoa metropolitan area, specifically in the area not served by AMT. The territory served by ATP Esercizio includes 67 municipalities. ATP operates in some neighbouring municipalities of Savona and La Spezia as well. ATP performs its services in a 1550 km long network, serving about 300.000 inhabitants. Besides the bus service, ATP operates a bus rental service, the maintenance of the vehicles, a car parking and other mobility services in Genova metropolitan and provincial area. ATP Esercizio Srl has 475 employees and it owns 280 vehicles (2015).

AMT has incorporated ATP in March 2018 to create a single public transport holding in Genoa city and metropolitan area. The merger has already allowed the integration of tickets and the possibility to travel with a single ticket in several lines in Genoa city and Metropolitan Area. Nevertheless, ATP Esercizio is still the LPT operator of Genoa Metropolitan area even after the holding merger.

	Azienda Mobilità e Trasporti (AMT)	Azienda Trasporti Provinciali (ATP)
Territory served	City of Genoa	Genoa Metropolitan Area, about 70 Municipalities
Citizens served	580.000	300.000
Total bus network	972 km	1.550 Km
Fleet	750 vehicles	280 vehicles
Lines	127	154
Employees		475
Transport services	Bus, metro rail, rack rail, sea, taxi, elevators	Bus , rental , maintenance, car parking, other
Bus performance (vehicle*km/year)	23.334.835	8.909.643

Table 5: Business scope and performance Genoa LPT operators

(Source: operators and Regional Transport Observatory).

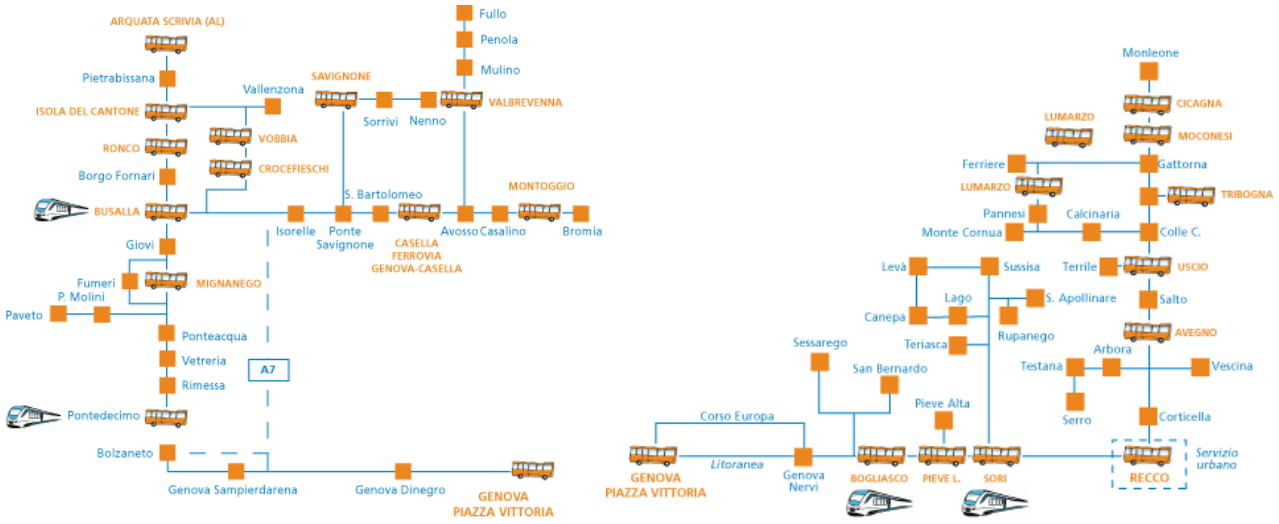


Figure 19: Examples of ATP Esercizio lines

TPL LINEA SRL- Trasporti Ponente Ligure

TPL Linea S.r.l. (Trasporti Ponente Ligure) founded at the end of 2009 as a starting point, in order to integrate the LPT service, with the fusion of the two transport operators of Savona province: ACTS Linea S.p.A. e SAR TPL S.p.A.. making TPL Linea the only operator for both the Savona areas. The territory served by TPL Linea includes 73 municipalities of Savona province and other 4 municipalities of Genoa

metropolitan area and Imperia province. The service carried out by TPL Linea is a network of 1.800 Km that reaches about 286.000 inhabitants and it includes a bus transport service, a rental service and a school bus on call service. TPL Linea fleet has 250 vehicles.

	TPL Linea
Territory served	Savona Province (75 Municipalities)
Citizens served	286.000
Total bus network	1800 km
Fleet	250 vehicles
Lines	83
Employees	419
Transport services	Bus, rental, school bus
Bus performance (vehicle*km/year)	8.331.518

Table 6: Business scope and performance TPL Linea (Source: operator and Regional Transport Observatory)

Figure 20: Logo and standard vehicles of TPL Linea.

ATC spa - Azienda Trasporti Consortile

Azienda Trasporti Consortile S.p.A. (ATC) founded in 1948 originally as FI.TRAM. In 2009 a further branch of the company was created with the name of ATC Esercizio S.p.A. to manage the LPT service in La Spezia city and province The territory served by ATC includes about 30 municipalities while the LPT service forms a network of 977 Km that reaches about 220.000 inhabitants. ATC operates also with a shuttle, bus rental, a trolley bus and a school bus service. Further, as a peculiar case of non-bus public transport service, ATC manages the city elevators of La Spezia city. ATC has more than 300 vehicles.

	ATC
Territory served	La Spezia Province (30 Municipalities)

Citizens served	220.000
Total bus network	977 km
Fleet	300 vehicles
Lines	116
Employees	400
Transport services	Bus, shuttle bus, rental, trolley bus, school bus, elevators
Bus performance (vehicle*km/year)	9.133.308

Table 7: Business scope and performance ATC (Source: operator and Regional Transport Observatory)

Figure 21: Logo and a standard vehicle of ATC.

RT spa – Riviera Trasporti

Riviera Trasporti S.p.A. (RT) founded in 1975 with the acronym S.T.P. and in 1983, after the acquisition of the company STEL, the current name was adopted. Afterwards, RT became the only LPT transport operator in the city of Imperia and province. The territory served by RT includes 66 municipalities as well as one municipality in Savona province. The LPT service carried out by RT forms a network of 860 Km that reaches about 223.000 inhabitants and it manages a bus LPT service, a trolley bus service, a bus rental and a car parking service. RT has more than 222 vehicles.

Riviera Trasporti	
Territory served	Imperia Province (66 Municipalities)
Citizens served	223.000
Total bus network	860 km
Fleet	222 vehicles
Lines	74
Employees	300
Transport services	Bus, rental, trolley bus, school bus, car parking
Bus performance (vehicle*km/year)	9.133.308

Table 8: Business scope and performance RT (Source: operator and Regional Transport Observatory)

Figure 22: Logo and a standard vehicle of RT.

Electric public transport in Liguria

In Liguria there are many areas with natural barriers and a difficult orography for mobility, especially in the City of Genoa, with its particular geographical position between the sea and the hills. Therefore, several electric infrastructures are one of the most effective solution to move quickly in the Genoa city and elsewhere in many other cities with same features in the Region.For example in the small towns of Celle Ligure and Rapallo a funicular has been realized and/or renovated to connect the cost to the hills.

La Spezia (trolley bus and elevators) and Imperia (trolley bus) also decided to promote electric transport as alternatives to bus trasports.

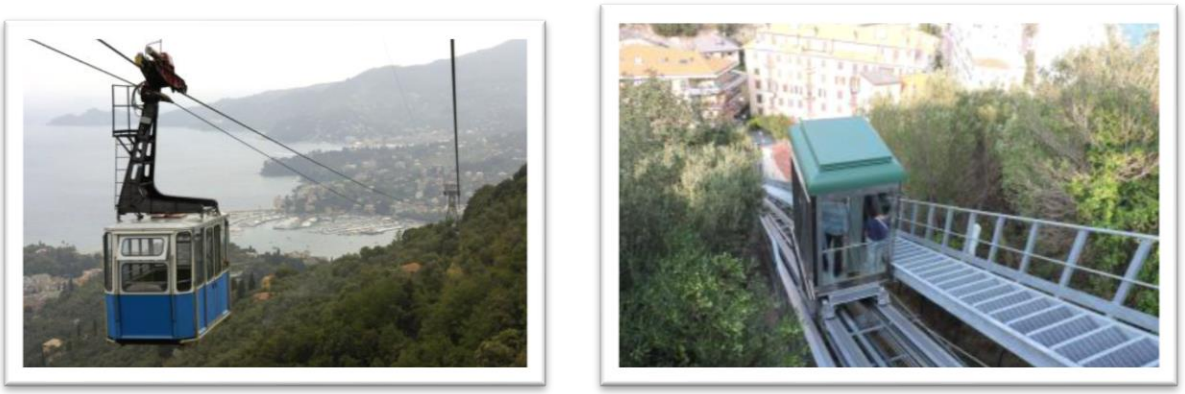


Figure 23: Funiculars in Rapallo (left) and Celle Ligure (right).

The best example is given by the city of Genoa, which has several electric infrastructures managed by the Public Transport Company (AMT Spa) that can be used with the same travel tickets valid in the urban network:

- 2 funiculars (Sant'Anna and Zecca-Righi)
- 1 rack railway, (Principe –Granarolo, built in 1901, described above)
- 1 suburban railway (Genova-Casella, described above)
- 12 urban elevators, connecting hilly parts of the City to the center
- 1 metro line

Figure 24: Elevator in Castelletto (left), rack railway in Granarolo (right).

An infrastructure managed by AMT is worth mentioning due to its peculiarities: Montegalletto Elevator connects the main Genoa railway station, Principe, with the hilly area of Montegalletto. The infrastructure was completely renovated in 2004 and since then is a unique case worldwide: users reach Montegalletto in the same cabin by:

- A funicular in the plain segment of the line
- An intermediate segment served by mountain cable car technology
- A final segment by elevator.

The system is completely automated, and the capacity is 400 person/hour.

Figure 25: Montegalletto elevator (Source: AMT Genova, Primocanale Genova web site)

Genoa Metro

Genoa metro is a light metropolitan railway connecting Genoa city center with the Certosa quarter. The single line is 7,1 km long, with 8 stations. The first segment (Certosa-Dinegro) opened in 1990, while the latest opened station are De Ferrari (2005) and Brignole (2012).

Genoa metro runs on rail gauge (1435 mm) due to the narrow profile of the historic Certosa tunnel, the metro vehicles are narrower than those operating on other Italian metro lines. Each train (maximum 3 wagons) have a 620-630 passenger capacity, which makes a hourly capacity of 4,000 passenger per

direction. Since 2016, new 39-meter long Hitachi Rail Italy vehicles are operating, with an improved capacity of 290 passenger/vehicle.

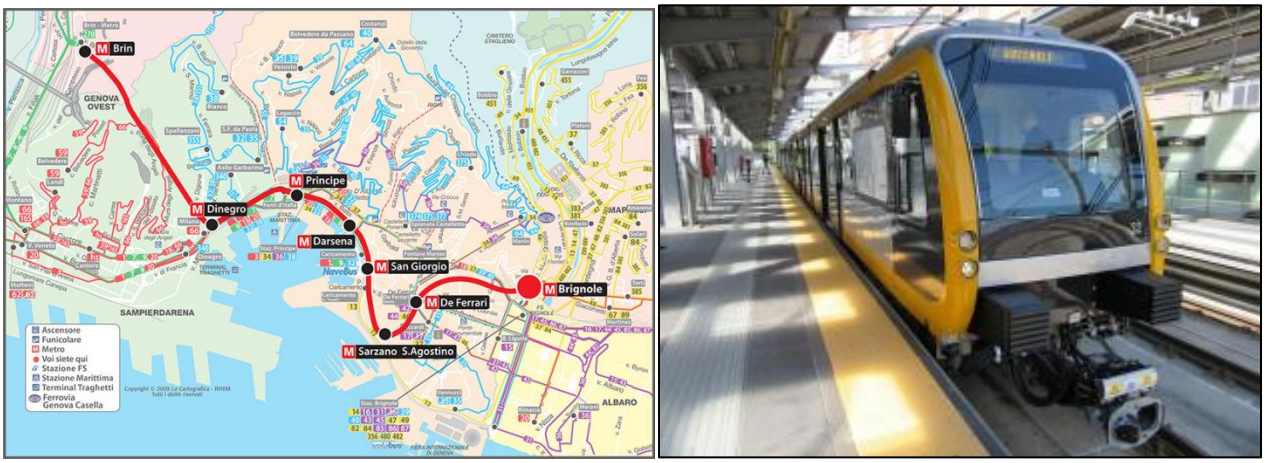


Figure 26: Genoa Metro: network and the new Hitachi Rail Italy vehicle

Genoa Metro is managed by AMT ensuring a complete integration with the bus network, in terms of ticketing and interchange at stations.[20], **11 Million passengers per year (2016)** use the Genoa Metro line.

Smart Ticketing and other innovative features of public transport in Liguria

The Plan defined guidelines for **the split of financial resources for LPT** among Provinces (ATOs) and identified the “minimum service” according to the available resources standard costs and other peculiar criteria. The “minimum service” identified as a share of services in the model, per line within each ATO. Due to current resource constraints, and in view of a general rationalization process of bus LPT, “minimum service” resulted in nearly 60% of the actual operational model. However, 95% of regional financial resources have been shared between ATOs following the current sharing. Criteria for rationalization of LPT services in “weak demand” areas have been set by the Plan.

The **Smart Ticket Project** has been approved by Ligurian Regional Government in December 2016[21],. **Electronic Ticketing System (SBE)** will be implemented, , in order to achieve a higher efficiency in all the regional and local public transport. The Regional Government approved a memorandum of understanding to be signed with LPT operators, as a first step to share strategic guidelines to address technical features of the SBE.

[20] https://www.amt.genova.it/amt/trasporto-multimodale/metropolitana/ - Data on annual passenger performance are in Regione Liguria (2017)
[21] Regione Liguria – Giunta Regionale (2016)

Liguria Region would achieve through Smart Ticket project the following goals:

- Minimise ticket evasion
- Increase customers fidelity
- Assess the real demand for each service
- Implement integrated tariff systems
- Attract new users with flexible pricing policies
- Promote ticket distribution network
- Optimise fleet monitoring

SBE will provide an innovative tool for service monitoring to Local Administrations and private operators. A **smart card** will be available for users to recharge tickets and subscriptions for services provided by all regional operators.

A very relevant aspect of SBE is the opportunity to perform the **revenue clearing** and sharing between operators starting from a real and undisputable data baseline, and then enabling a complete tariff integration on a regional basis.

Moreover, the assessment of the real demand for LPT will be possible through SBE, to calibrate the transport service supply starting from routes and schedules demanded from users. The electronic ticketing system will be available in Liguria from 2019.Another action set by the Regional Government was the **purchase of new vehicles in 2017** about 80 new buses through European funds for the Genoa and Imperia area, and other new buses will be purchase in the Savona and La Spezia area

Car Sharing

Car sharing is mentioned in the Regional and Local Transport Service Plan 2017-2020 as a service complementary to public transport. The Plan recognizes the need to include car sharing services in the tariff integration process, with the objective for the the interoperability of ITS ticketing systems, in order to use the same feature (app, device, etc.) for the LPT network and other mobility systems such as car sharing., the Plan prescribes a pricing integration to ease the use of integrated transport services (including car sharing) Car sharing services are regulated and promoted in Liguria by (Province capital) Municipalities, in the framework of wider programmes, or as stand-alone initiatives., the increasing supply of (public and private) charging points is a promising factor for the development of shared e-mobility.

Some car sharing tests performed in local areas, like Savona-Rapallo-5 Terre, La Spezia and Imperia (see “Eco car sharing Riviera dei Fiori”, in the e-mobility section), the most relevant results are evident in Genova.

Genova Car Sharing

The car sharing service in Genova is operational since 2004, with 46 reserved parking slots in the city center, some in the neighboring districts and a fleet of 70 vehicles (city car, medium, large and van)In the last years the service was indirectly funded by the Italian Ministry of Environment with the national car sharing initiative ICS (Iniziativa Car Sharing), with the coordination and the promotion of several initiatives in different cities of Italy.

The service is managed by Genova Car Sharing srl[22], and it is part of the "**GirACI**" national network, managed by the Italian Automobile Club (ACI).

Figure 27: Car sharing slots, standard car and logo of Genova Car Sharing "GirACI" in Genoa.

European initiatives for eco-sustainable buses

The present sub-section describes some European projects and initiatives that effectively contributed to the deployment of innovative vehicles for LPT in Liguria.

BioEthanol for Sustainable Transport (BEST) project

BioEthanol for Sustainable Transport (BEST) was a four-year demonstration project (2006-2009), funded by the European Commission. The project involved Italy (La Spezia), Sweden (Biofuel Region and Stockholm), Germany (Brandenburg), United Kingdom (Somerset), Netherlands (Rotterdam) and Spain (Madrid and Basque country).

The main objective of the project was the establishment of European partnerships for innovative demonstration of alternative fuels and energy efficient vehicles. In order to achieve this aim, about 70,000 bioethanol-powered cars and buses were introduced in European cities.

Liguria Region participated in the project through the involvement of the transport operator of La

[22] http://www.genovacarsharing.it/privati/chi_siamo.aspx

Spezia, ATC. Therefore, La Spezia deployed E95 buses in its territory, introducing the market penetration of the bioethanol as a fuel topic. By BEST, La Spezia became the first Italian city to bio-ethanol powered buses.

The partnership formed through the project, together with another European Partnership (Hydrogen for Transport), gave way to the Alternative Motor Fuel Work Programme, which aims to achieve the mitigation of greenhouse gas emissions growth, the reduction of over-dependence on oil and the promotion of biofuels for transport applications.

Figure 28: Project logo and bioethanol-powered bus used in La Spezia.

Highvlocity project

Highvlocity is a project funded by the European Union started in 2012, involving local administrations in Italy, Belgium, United Kingdom, Denmark and the Netherlands. Locations are strategical because they offer an important perspective for broader European-wide fuel cell and hydrogen business development and investment decisions to key stakeholders. Therefore, other possible industrial players of these areas could be involved in the further deployment of these technologies.

The project aims to facilitate a quick deployment of the last generation of Fuel Cell Hydrogen (FCH) powered buses in public transport. The project objective is to introduce a new generation of FCH buses (14 FC buses will be operating in Scotland (UK), Liguria (IT), Flanders (BE) and Groningen (NL)) in public transport fleets.

Specific requirements are requested in order to facilitate the integration of this type of buses:

- Energy efficiency of buses;
- Reduce the total cost of ownership;
- Increase the life time of the fuel cells;
- Reduce life cycle costs and more specifically the cost of hydrogen;
- Define concrete economic early markets.

Ligurian players such as Liguria Region, Riviera Trasporti (Imperia) and Genoa University are involved in the project. The action expected in Liguria is the introduction of hydrogen-powered buses in Riviera Trasporti fleet. Furthermore, a Hydrogen fueling station for FCH buses will be realized by 2019, the end of the project period.

Figure 29: Logo of the project and the FCH buses used in Imperia.

2.4.5 E-Mobility

Several initiatives aim to increase the share of electric mobility have been performed in the recent years in Liguria. The present section describes actions promoted by Ligurian Public Administrations, considering that some of them (e.g. the Regional Plan described below) are aimed to trigger private investment by mobility players and energy providers.

The diffusion of e-mobility is due to the presence of a always greater infrastructure for electric vehicles, with a increasing network of **charging stations**. In Liguria Region 30 charging stations have been deployed in the four Ligurian provinces as follows:

- Genoa: 21
- Savona: 5
- La Spezia: 2
- Imperia: 2

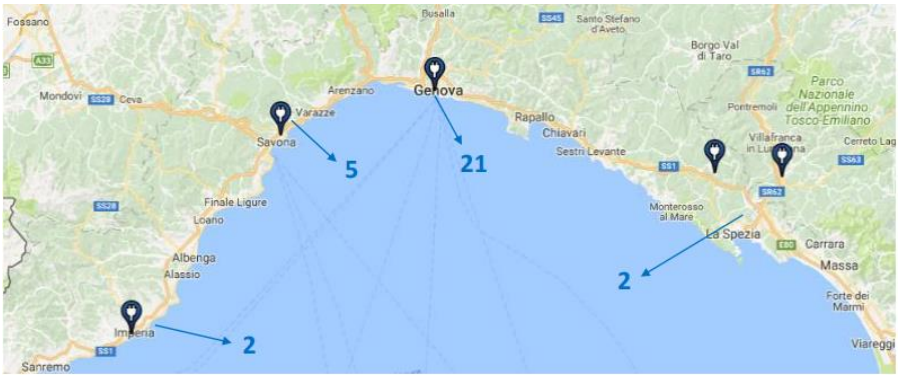


Figure 30: Map of charging stations deployed in Liguria in 2017 (Source: Fabianelli-IRE, 2017).

There are some programmes projects funded by **Ministry of infrastructures and transport** ("Ministero delle infrastrutture e dei trasporti"-**MIT**) established the **Infrastructure National Plan for charging of Electric Vehicles** (Piano Nazionale Infrastrutturale per la Ricarica dei veicoli alimentati a energia Elettrica-**PNIRE**). Strategies aimed at the development of an efficient network of charging stations are set in PNIRE at national level, with guidelines relevant for Regions. Following PNIRE provisions and providing funds for its implementation, MIT established the "two pillars", represented also in the following figure:

- 2013: Open Call to Regions to apply for plans to grant charging networks for e-vehicles;
- 2015 (Ministerial Decree n.503/2015): MIT made additional PNIRE grants available to Regions for deploying charging infrastructures in their territories.

Overall, a **2 Million Euro** grant is foreseen to be deployed to implement new charging stations in Liguria by 2019.

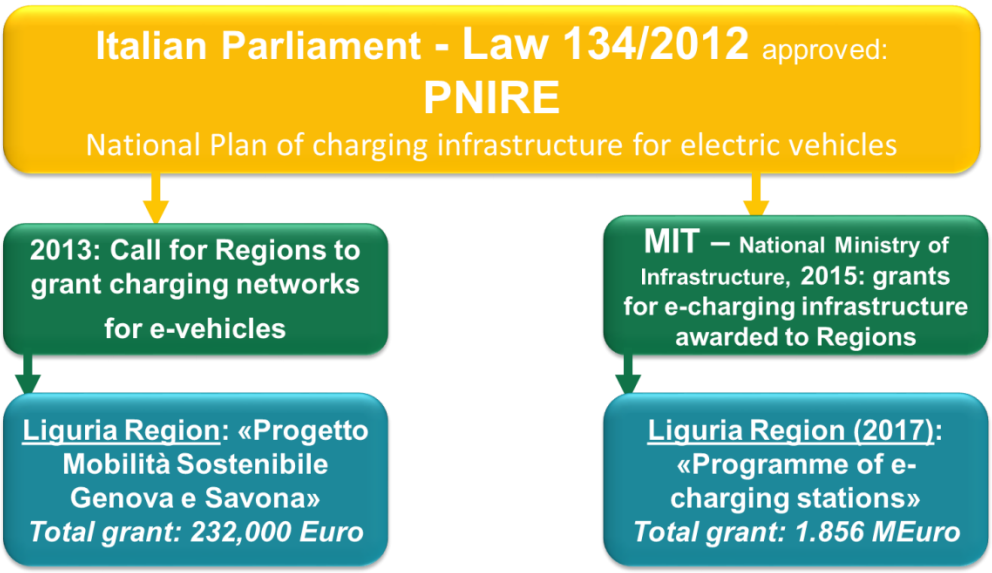


Figure 31: The "two-pillars" of e-mobility policies in Liguria.

Genoa and Savona Sustainable mobility project

In 2013, the MIT published a tender within the **PNIRE framework**: "Bando a favore delle Regioni per il finanziamento di reti di ricarica dedicate a veicoli elettrici" (**Call for Regions to grant charging networks for e-vehicles**). Liguria Region was awarded of grants for the project "Progetto Mobilità Sostenibile Genoa e Savona" (**Genoa and Savona Sustainable mobility project**). The main objectives of the project are:

- Drafting of a design project for the installation of the charging stations and necessary authorizations thereof;
- Preparation of technical and administrative documentation for the procurement of charging stations;
- Involvement of IRE, an in-house regional company, which will be responsible for managing procurement, direction of works and information activities.

The project was approved in 2014 and Liguria Region received a grant in order to carry out the activities provided. Afterwards, in 2015 a **Memorandum of Understanding** (MoU) among the Municipalities of Genoa, Arenzano, Cogoleto, Cairo Montenotte and Savona was signed. In the end, the design phase will be finalized by May 2018 and 23 new charging stations will be deployed in Liguria. Therefore, in 2019 **52 charging stations** will be operational in Liguria (the new ones are showed by red dots in the following figure).

Figure 32: Map of charging stations to be deployed by 2019 in Liguria
(Source: own elaboration on Fabianelli-IRE - 2017)

The position of the charging stations in the territory has been identified according to several criteria such as population served, mobility flows, geographical position and technical feasibility. Furthermore, in the final decision all the local plans regarding traffic and mobility were taken into account. The figures below show two kinds of collocation resulting from this analysis.

Figure 33: Two examples of charging stations collocation in Liguria region

A particular innovation will be the deployment of 10 charging stations available for motorbikes and scooters.

City	car+car	Power	Car+moto	Power
Arenzano	2	44(22+22)		
Cogoleto	2	44(22+22)		
Cairo Montenotte	1	44(22+22)		
Savona	4	44(22+22)	6	25,7 (22+3,7)
Genova	3	44(22+22)	4	25,7 (22+3,7)
TOT	**12**		**10**	

Table 9: Number and type of charging stations to be deployed as per the MoU.

Liguria Regional Programme of e-charging stations

Following Law 134/2012, the **Ministry of Infrastructure (MIT) approved the Decree 503/2015**, by which additional PNIRE resources were assigned to Regions to grant the implementation of new charging infrastructures. Liguria Regional Government, in order to receive the grants, approved the program called “Programma per la realizzazione di infrastrutture di ricarica per veicoli elettrici in Liguria” (**Programme of e-charging stations**) through the **regional decree DGR 113 (2017)**. This achievement was the last step of a previous process.

Indeed, in 2016 Liguria Region had started a consultation phase with local administrations and economic operators, like trade associations (ex. Confindustria), in order to analyze the regional framework. The following emerged from this phase:

- All contacted bodies showed a general interest in the programme;
- All contacted bodies agreed on potential availability of private co-financing;
- Liguria Region needs a public and/or private partnership in order to ensure the financial coverage of all the phases of the program.

These results convinced the Region to propose a preliminary expression of interest in order to involve all the bodies in a general programme to deploy public (and private, open to the public) charging infrastructures. Furthermore, all the participants were invited to indicate:

- A summary description of the proposed intervention
- Number, location and typology of charging infrastructures and the type of recharging (slow/accelerated or fast)
- Availability of financing, with specification of fund origins in case of municipal administrations

Due the positive response of public and private operators, **the expression of interest was able to collect more funds already received from the Region**. After a selection of initiatives suitable for funding in 2018, it was decided that the resources will cover the following activities:

- Drafting of the installation plan
- Design of the charging sites
- Purchase and installation of the “normal power” and “high power” charging stations
- Communication campaign aimed to inform the users

The projects proposed for funding are currently under evaluation.

EU projects involving Liguria Region: Unit-E and EVA plus

Several EU-funded projects have involved Liguria Region in funding programmes to deploy infrastructure for e-mobility.

Unit-E is funded by the European Commission through the **Connecting European Facility programme (CEF)**. This project, started in May 2015 and ended in December of 2017, involved Italy, France, Belgium, United Kingdom.

The overall objective of the project is to demonstrate the economic viability and the necessary conditions for an EU-wide network of interoperable and interconnected fast charging stations and the related customer-oriented interoperable e-mobility services. In order to achieve this overall objective, the specific ones have aimed to:

- Ensure a link between UK and France;
- The deployment of the necessary infrastructures in Belgium and Italy;
- The preparation of a EU-wide interoperable platform, ensuring a consistent coordination with other initiatives (**roaming platform**).

Subsequently, a pilot action analysis was performed. This study analyzed three issues:

- Coupling of regional infrastructures, as the basis for an EU wide non-proprietary open standard system;
- Developing a long distance enabler;
- EU-wide business readiness.

About 38 fast charging stations were deployed, including 23 in Belgium and five each in Italy, France and UK. The action aimed to create a continuous charging station network between Dublin and Genoa along the core network. Indeed, the Liguria territory, thanks especially to of the involvement of beneficiaries and implementing bodies (Porto Antico di Genoa S.p.A., ABB S.p.A., Istituto Internazionale delle Comunicazioni) became involved in 2017, through the deployment of 4 charging stations with slow and fast charge along the 180 Km of the motorway between Genoa and Beausoloeil (F), specifically in Arma di Taggia, Albenga, Savona and in Genoa (Porto Antico). The innovation of these new charging stations is the short charging time for a car, about 30 minutes.

Figure 34: map of charging stations deployed in Unit-E

Another relevant project is **EVA plus (Electric Vehicles Arteries)**, which started in 2017, involving Italy and Austria. The project, co-financed 50% by CEF Programme as well by a 8.5 M€ budget, pivoted on the cooperation between ENEL (the main Italian electricity provider) and e-vehicle manufacturers like Renault, Nissan, BMW and Volkswagen. EVA plus is designed to compile studies on customer needs and expectations. Based on these findings, the consortium is developing tailor-made e-mobility services for customers. These services include easy and non-discriminatory access to the charging infrastructure, information and support for customers, services at the charging locations.

Therefore, during of the project, 180 multi standard fast chargers will be deployed in Italy, 20 in Austria. All electric vehicles currently on the market can be charged at the stations deployed. The locations of charging stations will be very close to main highways in Italy and Austria. Furthermore, the charging network deployed will be managed using adequate IT infrastructure. **The connection to roaming platforms will allow the e-mobility providers to offer cross-border services for their customers**. To summarize, the objectives of the project are:

- Building a comprehensive, cross-border network of public fast charging stations for e-cars;
- Developing of multi-standard chargers and innovative ICT solutions to provide easy access;
- Deploying of 180 multi standard fast chargers in Italy, 20 in Austria.

Charging stations will be installed in Liguria during 2018, while in 2017 a charging station has been already deployed in Genoa airport.

Figure 35: EVA+ cars and charging station.

E-mobility projects in Genoa

Genoa Municipality is involved in two projects regarding e-mobility: ELE.C.TRA project and ELVITEN project.

The **ELE.C.TRA project ("Electric City Transport", developed under the IEE Program)** was active between 2013 and 2015 and it focused on stakeholder involvement in order to create conditions for the development of 2-wheels electric vehicles mobility (properties, short/long term rental, sharing systems). The objective of the project was the market analysis, focusing on an economically self-sustaining model able to satisfy the real mobility needs of citizens through the involvement of stakeholders, both public and private. The project is related to a development and experimental path regarding low environmental impact technologies, aimed to achieve medium and long run CO^2 emissions targets.

Another project in which the Municipality has been involved since 2017 is **ELVITEN - Electrified L-category Vehicles Integrated into Transport and Electricity Networks** (developed under **Horizon 2020 Program**). The project represents the arrival point of two previous European projects: ELECTRA and MOVEUS (New Sustainable Models for the promotion of Sustainable Mobility - developed under FP7 Programme). The aim of the project is to propose innovative services and infrastructures (particularly hubs for charging electric vehicles) in order to facilitate the diffusion of light electric vehicles in small private transport companies (deliveries and shipments) and sustainable tourism.

Figure 36: Electric scooters deployed in ELVITEN.

Aera – car sharing in Imperia

In 2013, Imperia Province activated an electric car sharing called “Eco car sharing Riviera dei Fiori”, mentioned previously. This initiative was started thanks to the European cooperation programme ALCOTRA, with a pilot action denominated “Aera” promoted by Liguria Region, the lead partner. This project focused on activities aimed at improving the air quality. Therefore, the Region, through the Imperia Province, realized the pilot action for the development of an ecologic mobility system. In fact, the service was free and active in Imperia and Sanremo, with an electric car for each city. Furthermore, in each city there was one reserved park area with a charging station and other 3 charging stations were deployed in strategical points of the municipalities. Cars were available during workdays for a maximum of 3 months, and could be used only in the city center of the two cities. Cause of the lack of demand, the service was cancelled and the cars, purchased with EU funds, were assigned to the public tourist port managing company.

Figure 37: Logo and electric car used for the electric car sharing pilot action “Aera”.

Regional and local policies for E-mobility

An important practice carried out by Liguria Region, was the **introduction of incentives**. In May of 2016, **Liguria approved a measure regarding incentives for environment-friendly policies**, within the Regional Growth Act framework. Afterwards, in June of 2016 **Liguria approved the incentive for the purchase hybrid cars** and stipulated a **collaboration with Toyota**, which is one of the most important hybrid car manufacturers. Toyota, therefore supplied two hybrid cars to the Region, which in turn assigned them to local administrations in order to support the development of sustainable mobility. Finally, in August of 2016, the five-year tax exemption for electric and hybrid vehicles became effective.

Due to this incentive, **Liguria is the Region issuing the exemption for hybrid and electric vehicles for the longest time-horizon in Northern Italy**. Furthermore, even if Liguria already issued a 5-year exemption from car tax in the past for LPG cars and CNG powered cars, the incentive for hybrid and electric vehicle was the first in the E-mobility framework, so it could become an important starting point toward further e-mobility incentives. In fact, Liguria aims to create **a sustainable development framework** that combines environment with economic development and tax burden fall.

Following the indications given by the Region, the local administrations have started developing E-mobility initiatives as well:

- **Imperia** Municipality issued the **exemption from LTZ for electric bikes**.
- **La Spezia** Municipality is endowed with **8 electric cars with 16 charging stations**, each one with a parking space, and **several electric bikes (about 25)**, available for employees of Municipality services. These electric vehicles, after the addition of 2 new electric cars and new 5 e-bikes in 2017, are used as a **pilot action aimed at promoting sustainable mobility** to the collectivity. Furthermore, since the Municipality is aiming to become a smart city, in 2017 there were various **proposals of incentive for e-mobility**. One of them (effective in 2018), regards the **possibility to request free parking passes for electric vehicles** in the entire city area. Another one regards the **proposal to make the city center available only for electric vehicles**, especially for TPL, improving the trolley bus service.

Figure 38: One of the electric cars used by Municipality services of La Spezia.

In Genoa Municipality in December of 2017 an **incentive scheme for scooters and bikes scrapping** (to shift to e-scooters and e-bikes) became effective. Furthermore, a free parking pass was given to electric vehicles in “Blu” parking areas with permission to access LTZ for freight vehicles made.

Figure 38: Advertisement of Genoa Municipality on the incentive scheme for scooters and bikes scrapping.

2.4.6 Behavior change

Liguria Region has strongly focused towards **sustainable mobility development**. To achieve this objective, the first action is giving to the **citizens the necessary information in order to change their mobility habits** to more sustainable transport modes.

More than 100 Municipalities of Liguria Region, include **Genoa, La Spezia and Savona**, joined the **"Covenant of Mayors"**, whit the main objective to achieve the target so-called "20-20-20" (20% decreasing of greenhouse gas emissions by 2020 and 20% increasing of energy saving as well as using energy produced from renewable sources). **Some of these cities, such as Sanremo or Ventimiglia, have also took a step forward with the elaboration of SUMP (Sustainable Urban Mobility Plan)** in order make the cities suitable to switching the habits from private car to cycling, shared transport modes and public transport.

«La Spezia 20.20 – la città diventa Smart» Project

The development of the behavior change topic, begun with "Piano integrato per la mobilità" and PAES, has been implemented since 2015 through the establishment of a **round table discussion about mobility**, which has provided different meetings in order to elaborate actions aimed to:

- Improve the safety of the maritime navigation system;
- Reduce the traffic congestion;
- Reduce the emissions from transport.

The Municipality of **La Spezia** has started a process aimed to realize a plan in order to make a smart city within 2020.

From this starting point, the city of La Spezia has elaborated a project called **"La Spezia 20.20 – la città diventa Smart"**, which aims to make a city oriented to a sustainable development through an integrated planning and co-programming with citizens and other stakeholders. Indeed, the project provides periodic meetings to involve citizens and stakeholders in topics like **environmental change** (smart environment and smart environment energy), **circular economy** (smart economy), **hydrological and territory issues** (smart government and smart living) and **social practices to improve the territory** (smart people).

Regarding the mobility issue, thanks to the smart mobility focus has been possible to include the needs and the requests of all the parties involved in the planning of the actions:

- Improvement of the sea accessibility and safety
- Improvement of navigation system of La Spezia harbor
- Realization of a unique database for mobility

- Development of an integrated system for all mobility services and prices
- Reduction of the traffic congestion and emissions (La Spezia E-smart)

Particularly, La Spezia E-smart action will provide:

- Improvement of LPT and its interconnection and interoperability with railway and maritime network
- Extension of electric vehicles in LPT network
- Integration of LPT with interchange parking as well as with an electric car sharing and electric bike sharing services
- Spread of electric cars use in the urban framework
- Push measures in order to reduce the private car use in urban areas
- Pull measures in favor of cycling mobility

The deployment of charging stations and the regulatory incentive towards use of electric cars and electric bikes previously mentioned are measures connected with the finalization of the project.

In **La Spezia** city since 2008, started a promotion of new habits in order to develop a more aware and environment-friendly behavior of its citizens. In 2008 the "Piano Integrato per la Mobilità" (**Integrated plan for mobility**) was published, a plan with the aim to improve the road safety, the overall parking system and the accessibility and livability of the urban center. In order to achieve these objectives, the Municipality improved the "**trolley bus system"**, the "**LTZ"** in the center, more **infrastructures for bike sharing** and a "**virtual front office"**. The "virtual front office" is a tool with aim to improve mobility quality and to manage a traffic supervision available to the users, this tool completed in 2014 with the name **SPOT- SPEZIA ON TIME.**

In 2012 **La Spezia** city published the "Piano di Azione per l'Energia Sostenibile-PAES" (**Action Plan for Sustainable Energy**). This plan contains the actions that will be performed in order to respect the commitments subscribed with the "Agreement of Mayors" and it provided different measures with the aim to achieve a behavior change:

- Realization of interchange parking
- Creation of a discount prices system for LPT subscriptions
- Creation of a car-pooling system for companies
- Improvement of the bike sharing service
- Integration of mobility topic in all the planning strategies of the municipality
- Institution of the "sustainable mobility day

In 2017 the Municipality approved the proposal regarding a **20 € contribution on monthly basis and seasonal LPT tickets** which it will be provided to its employees.

Savona Projects

In the city of **Savona is starting to develop a sustainable mobility system** in order to achieve a behavior change of the citizens. First of all, **the smart mobility project, mentioned previously, provides the participation of students to cycle routes inauguration** and other educational activities related with the **promotion of sustainable mobility**.

In 2015 the province joined the "**European Cycling Challenge"**, an initiative for all the European cities to aim to sensitize the citizens to cycling mobility for urban shifts. Thanks to this initiative, in 2017 Savona Province participated to the main "**European cycling gamification initiative"** towards improvement of the communication strategy for sustainable mobility promotion and the monitoring of the performance of actions.

The city of Savona is planning a renewal of the bike sharing service with new bikes, which are more comfortable and easier to use and an easier bureaucratic system regarding the prices and subscriptions system in order to incentive the cycling mobility in the territory.

Genova «MoveUs project»

In 2016, city of Genoa developed the app with the **MoveUs project**. This European project developed a **ICT cloud-based platform** with **mobility services**, for users. The project aims to promote transport habits changes to more sustainable trasporto (focused on real needs) and to change them in order to achieve a reduction in carbon emissions.

The idea of the project based on three concepts:

- ECO-MOBILITY STYLES: promote changes in mobility habits, offering new possibilities for modal shifts different from the use of private vehicles;
- PULL MEASURES: pull measures are more efficient than push measures, therefore a mix of measures about prices, financial and social incentives is preferred;
- APP TO MONITOR THE OWN JOURNEY: develop an app that allows the citizen to plan and monitor his transport modal shifts as well as to take advantage of incentives with his own "eco-mobility styles".

The Municipality of Genoa with Softeco Sismat srl and Quaeryon srl developed **an application for smartphones and tablets with a cloud-based platform**. This App allows to give incentives in change of the mobility habits changes. The App contains:

- Energy assessment tools aimed to measure users' energy efficiency
- Potential travel recommendations for users
- Real-time traffic information
- Potential accident warning
- Eco-routing and carbon footprint metering

In order to obtain the benefits of an evolution of mobility system, it was necessary to involve all stakeholders in a process of knowledge, awareness-raising and in the sharing of actions, programs and strategies, giving them the opportunity to participate in the process for the development of policies and strategies of regulation. Moveus APP is a good exemple of involvement of voluntary stakeholders, they accept to monitor their trips and behaviours to gain incentives.

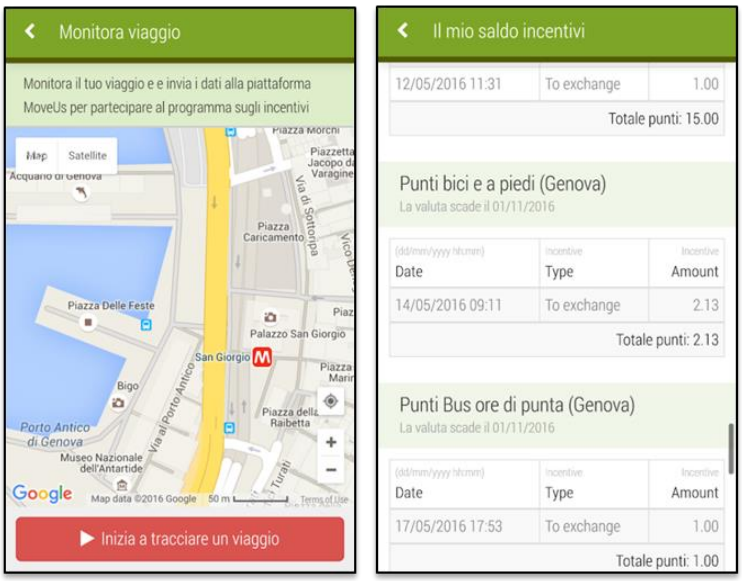


Figure 39: Screenshots of Moveus app

2.4.7 SWOT-Matrix

A SWOT analysis identify **strengths** and **weaknesses**, **opportunities** and **threats**, in different fields: Governance and participation, Car reduction, Public transport, E-Mobility, Behavior change. SWOT analysis aims to identify the internal and external key factors to achieve specific objectives.

Internal factors can be influenced by the organization by improving the policy instrument. Therefore, they can be considered strengths and weaknesses.

External factors cannot be influenced by organization and they have to be considered as factors that are favorable or unfavorable to improvement in these topics. For this reason, they can be considered opportunities and threats by external elements and conditions.

The results of this analysis are a first estimation of potential barriers and opportunities for successful planning and implementation of the Regional Action Plan.

Governance and participation

Strengths	**Weaknesses**
Central role of Liguria Region about common guidelines and strategies to achieve a unitary governance Liguria Region directly manages infrastructures, financial resources and policies related to transport system (DL 422/97) Coordination process among Liguria Region and all Provinces and Municipalities about LPT Different points of view about needs of citizens in the participation process as identification of more precise critical points and possible strengths thanks to more stakeholders involved Participation processes at regional level (Agenda 21, Virtual Front Officer) Awareness of Liguria Region on the importance of citizens involvement	Lack of a permanent stakeholder consultation body Different points of view about needs of citizens in the participation process as problems related to different expectations, interests and conflicts among the stakeholders Long term of decision making processes
Opportunities	**Threats**
Regional programme about planning of funds, institutional relations, check of regional regulations impact, etc	Different points of view between cities and Company Mobility Managers

Some participation initiatives are recognized as “best practice” (e.g. “Val Bisagno” area) Increase of equality through a proportional redistribution of regional funds to the Provinces with planning act on regional and local public transport Simplification of PA services access for citizens	

Car reduction

Strengths Regional policies to incentive car reduction (e.g. incentive for electric and hybrid vehicles) Promotion of sustainable mobility policies, sharing mobility, pedestrian and cycling mobility Development and improvement of Bike Sharing service in the main cities Good development of cycle routes in the flat area (e.g. “Riviera dei fiori“ route and “Rete Ciclabile Ligure (RCL)”) Pedibus service in a lot of districts of the cities LTZ r in many cities of Liguria Region	**Weaknesses** Regional “complex orography” not encourage walking and cycling cause natural and artificial barriers Lack of demand and vandalism phenomenon for bike sharing in some cities Lower car modal split among Italian regions
Opportunities Smart mobility initiatives about traffic congestion reduction, bike sharing improvement, walking and cycling safety increase Re-use of old railway lines to convert to cycling/walking routes Large use of own bike in flat cities Promotion of company agreements in order to optimize the home-work trips of the employees (mobility management) Add bike sharing stations in strategical points and touristic area (e.g. train stations, school, interchange points, public buildings)	**Threats** Road safety aspects to be improve by organic policies at regional and local level Lack of connections in the cycle routes Lack of safety for cycling in urban area Risk of not acceptance of car reduction policies and measure by citizens

Public transport

Strengths	Weaknesses
LPT reform with definition of optimal level of aggregation and an innovative LPT service Definition of standard cost criteria and guidelines about tariff integration between bus and train transports (long-term agreement with Trenitalia 2018-2032) Institution of a regional observatory of transport Coordination among LPT providers Discounts for train passengers with month or seasonal tickets and reimbursements in case of delay	Orography barriers in a lot of part of Liguria Region Railway network non-electrified in some areas in hinterland Lack of resources for investments in new bus fleet Low service speed = higher travel time Car sharing service successful only in the Metropolitan area of Genova Few of alternatives to road transport in some hinterland areas
Opportunities	**Threats**
Improvement of modal interchange between Local Public Transport and other modes of transport Regional Programme include renewal of LPT providers fleet with low carbon emission vehicles Enhancement and upgrading of local public transport services, improvement of competitive system Renewal of Railway infrastructures Introduction of prices integration Introduction of electric ticketing system Promotion of alternative fuels and energy efficient vehicles as a fleet renewal with European funds	Uncertainty about financial resources (budget constraints for regional and local public transport financing) Transport habits oriented to private vehicles

E-Mobility

Strengths	Weaknesses
E-mobility development through an involvement of Liguria Region in EU projects within New charging stations Use of electric public transport for urban mobility (e.g. urban area of Genova) Purchase and installation of “normal power” and “high power” charging stations A lot of initiatives of cities in e-mobility (e.g. ELE.C.TRA project, ELVITEN project, Eco car sharing “Riviera dei Fiori”) Incentives for electric and hybrid vehicles Free access for electric bikes and free parking for electric vehicles in the city center	Limited existing in charging stations network Long procedures to spend available funds Low diffusion of electric vehicles
Opportunities	**Threats**
New infrastructure for charging of Electric Vehicles Sustainable mobility project granted Incentives for e-bike and electric scooters in Genova Municipality Promotion and support of agreements to use electric mobility among employees Promotion of sharing transports with electric vehicles (e.g. electric car and bike sharing) Possibility of free access and free parking in LTZ for electric vehicles	Lack of trust by the users High investment costs Difficult to plan of areas suitable for electric recharging infrastructures

Behavior change

Strengths	Weaknesses
Integrated plan for sustainable mobility Development of interchange parking, Carpooling system creation Bike sharing service improvement A lot of Municipalities in Liguria region signed the "Covenant of Mayors" with agreement about sustainable mobility Public contribution or discount on LPT ticketing	Use of sharing mobility still not consolidated
Opportunities	**Threats**
SUMP developed or under development in different cities of Liguria A lot of projects foresee periodic meetings to involve citizens and stakeholders, about mobility (deployment of charging stations, actions aimed to LPT improvement and electric vehicles promotion) Promotion of daily habits change and development of application for smartphones and tablet with a cloud-based platform Increased awareness of citizens regarding environmental pollution issues, sustainable mobility policies and actions Promote of cycling initiatives	Users' feedback still to be verified in many cases Adaptability of citizens

2.4.8 References

Websites and press articles

- C. Alfonzetti, Città della Spezia (23 February 2017) “Pass gratuiti per chi gira sull'auto elettrica, la proposta per la città smart” (http://www.cittadellaspezia.com/La-Spezia/Attualita/Pass-gratuiti-per-chi-gira-sull-auto-227988.aspx)
- D. Borghi, La Stampa Imperia e Sanremo (27/02/2013) “Il car sharing debutta a Sanremo e Imperia” (www.lastampa.it/2013/02/27/edizioni/imperia/il-car-sharing-debutta-a-sanremo-e-imperia-1yTOO4U0b9MFx1T59Z2tVL/pagina.html)
- E. Romanato, La Stampa Savona (16/02/2018), “Furti e atti vandalici, tramonta il servizio di bike sharing a Savona”, http://www.lastampa.it/2018/02/16/savona/furti-e-atti-vandalici-tramonta-il-servizio-di-bike-sharing-a-savona-b1vAtC8hFqZ5S2A79K3vSL/pagina.html
- From mobility Press, Telematica Trasporti e Sicurezza (25 September 2015) “La Spezia: BiciSicura e nuova app per il bike sharing” (http://www.ttsitalia.it/la-spezia-bicisicura-e-nuova-app-per-il-bike-sharing)
- G. Solinas, La Gazzetta della Spezia e Provincia (23 February 2017) “Mobilità elettrica: il Comune della Spezia inizia dal parco mezzi” (https://www.gazzettadellaspezia.it/cronaca/item/67111-mobilit%C3%A0-elettrica-il-comune-della-spezia-inizia-dal-parco-mezzi-videointerviste-e-foto)
- G. Vaccaro, Il Secolo XIX Savona (16 February 2018) “Addio bike sharing, flop delle bici in affitto. Servizio abbandonato nelle due Albissole” (http://www.ilsecoloxix.it/p/savona/2018/02/16/ACHQxaKB-abbandonato_servizio_albissole.shtml)
- genovaparcheggi.com/panoramica-ztl/
- genovaparcheggi.com/panoramica-bike/
- giraci.com/it/
- Giunta Regionale Liguria (12/01/2018), “Firmato il nuovo contratto di Servizio tra Trenitalia e Regione Liguria”, https://www.regione.liguria.it/giunta/item/17668-contratto-trenitalia.html
- Il Secolo XIX La Spezia (7 May 2017) “Trasporto pubblico alla Spezia, nel centro storico solo mezzi elettrici” (http://www.ilsecoloxix.it/p/la_spezia/2017/05/07/ASMehBJH-trasporto_pubblico_elettrici.shtml)
- Il Secolo XIX Savona (22/03 Marzo 2018) “Smart Mobility, nuovi percorsi per la mobilità 'green': il progetto” (http://www.ilsecoloxix.it/p/savona/2018/03/22/ACchXLJC-percorsi_mobility_mobilita.shtml)
- Il Vostro Giornale (22/03 Marzo 2018) “Pedibus, bici-bus e mobilità sostenibile: Savona, Albissola e Celle lanciano il progetto Smart Mobility” (https://www.ivg.it/2018/03/pedibus-bici-bus-mobilita-sostenibili-savona-albissola-celle-lanciano-progetto-smart-mobility)
- Imperia Post (16/05 Maggio 2014) “Il car sharing eco-sostenibile e gratuito anche in provincia di Imperia” (http://www.imperiapost.it/39650/il-car-sharing-eco-sostenibile-e-gratuito-anche-in-provincia-di-imperiai-dettaglivideo)
- Levante News (27 Giugno 2017) “Trasporto locale: Liguria divisa in quattro ambiti” (http://www.levantenews.it/index.php/2017/06/27/trasporto-locale-liguria-divisa-quattro-ambiti)

- M. Corradi, Mentelocale Genova (11 November 2008) “Bike sharing: a La Spezia è realtà” (http://www.mentelocale.it/la-spezia/articoli/22358-bike-sharing-alla-spezia-e-realta.htm)
- ugeo.urbistat.com
- www.accessibilitacentristorici.it
- www.ambienteinliguria.it
- www.amt.genova.it
- www.atcesercizio.it
- www.atpesercizio.it
- www.bicincitta.com
- www.comune.imperia.it
- www.comune.laspezia.it
- www.comune.laspezia.it/Servizi_cittadino/bike_sharing.html
- www.comune.savona.it
- www.comune.sestri-levante.ge.it/bike-sharing
- www.ec.europa.eu/inea/en/connecting-europe-facility/cef-transport/unit-e
- www.eurovelo.org/routes
- www.eurovelo8.com/countries/italy
- www.evaplus.eu
- www.genovacarsharing.it/privati/chi_siamo.aspx
- www.istat.it
- www.parcoportofino.com
- www.piste-ciclabili.com/regione-liguria
- www.provincia.imperia.it
- www.provincia.savona.it
- www.provincia.sp.it
- www.regione.liguria.it
- www.rivieratrasporti.it
- www.tpllinea.it
- www.veicolielettricinews.it

Reports and legislative/regulatory documents

- Comune di Genova (2018), “Disciplina dell’accesso alle zone a traffico limitato “, http://www.comune.genova.it/sites/default/files/disciplina_dellaccesso_alle_zone_a_traffico_limitato.pdf
- Comune di La Spezia (2015), Ordinanza n. 6075 del 30/07/2015
- Comune di Savona (2011), “Piano Urbanistico Comunale – Descrizione fondativa”
- ISTAT (2014), “Gli spostamenti quotidiani per motivi di studio o lavoro”
- ISTAT (2016), “Indicatori demografici”
- Italian Government (1997), Decreto Legislativo n.422/97
- Italian Government (1999), Decreto Legislativo n.400/99
- M. Bonsignore - V. Cesaretti, Università di Roma La Sapienza (20166) “Il Trasporto pubblico locale in Liguria: il caso di Genova”
- M. Fabianelli, Regione Liguria- IRE (2017) “Iniziative a supporto della creazione della rete di ricarica dei veicoli elettrici in Liguria”
- Regione Liguria – Giunta Regionale (2015), Delibera n.571/2015 “Determinazione dei costi standard dei servizi”
- Regione Liguria – Giunta Regionale (2016), Delibera n.1309 del 30/12/2016 “Progetto Smart Ticketing”
- Regione Liguria (1999), Legge Regionale n.18/1999 “Adeguamento delle discipline e conferimento delle funzioni agli enti locali in materia di ambiente, difesa del suolo ed energia”
- Regione Liguria (2007), Piano regionale dell’infomobilità 2007-2009
- Regione Liguria (2013), Legge Regionale n.33/2013 “Riforma del sistema di trasporto pubblico regionale e locale”
- Regione Liguria (2014), Azione 21 Liguria
- Regione Liguria (2014), Linee guida PEDIBUS elaborate dal Sistema Regionale di Educazione Ambientale ligure
- Regione Liguria (2014), Smart Specialization Strategy
- Regione Liguria (2015), Programma di governo X Legislatura
- Regione Liguria (2016), Legge Regionale n.1/2016 “Legge sulla crescita”
- Regione Liguria (2016b), Legge Regionale n.19/2016 “Modifiche alla Legge Regionale 7 novembre 2013, n. 33 (riforma del sistema del trasporto pubblico regionale e locale) ed altre modifiche normative in materia di trasporto pubblico locale”
- Regione Liguria (2017), Atto di programmazione in materia di trasporto pubblico regionale e locale (Deliberation of the Regional Legislative Assembly n.7/2017)
- Regione Liguria-RFI (2016), Accordo Quadro per servizi di trasporto pubblico locale
- Regione Liguria–Trenitalia (2018), Contratto di Servizio per il trasporto pubblico ferroviario di interesse regionale e locale tra Regione Liguria e Trenitalia S.p.A. anni 2018 - 2032

2.5 PP7 – Lirebec

2.5.1 Overview

Liberec is a city located in the northernmost part of historical region of Bohemia in the Czech Republic and very close by the borders with Germany (20 km) and Poland (15 km). Liberec is surrounded by the Jizera Mountains and Ještěd-Kozákov Ridge. As an advantage can be also perceived the fact that Liberec is distant only 100 km from the capital city Prague and there is a good connection thanks a motorway. It was settled by German and Flemish migrants from the 14th century until their expulsion after World War II, Liberec was once home to a thriving textile industry and hence nicknamed the "Manchester of Bohemia".

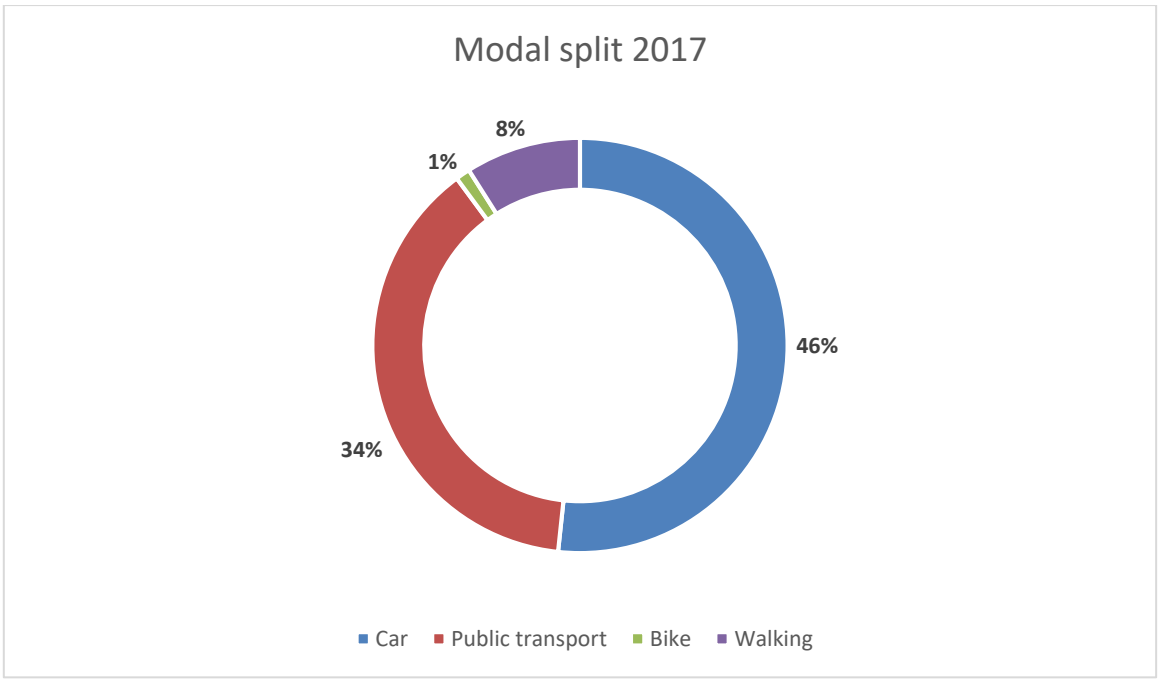
For many Czechs, Liberec is mostly associated with the city's dominant Ještěd Tower. Since the end of the 19th century, the city has been a conurbation with the suburb of Vratislavice and the neighboring town of Jablonec nad Nisou. Therefore, the total area with suburbs encompasses 150 000 inhabitants. In Liberec itself live 103 853 inhabitants. That makes Liberec the fifth-largest city in the Czech Republic. The long-term population decline in last years is caused by low birth rate and emigration due job opportunities particularly in Prague. Young people and young families are moving to the suburbs that lay stress on the technical infrastructure, mobility and transportation issues. Another challenge consists in population ageing as the average age of the population in Liberec is 41,6 years. Employment in industry is one of the highest in the whole country – some 45 % of the active population work in industry. This reflects the long industrial tradition of the region, which, at the beginning of the 20th century, led to the establishment of the Technical

University in Liberec, one of the leading technical schools in the country. Liberec also has the renowned Research Institute of Textile Machinery. The region has a number of higher tertiary vocational schools, secondary technical schools and vocational training centers.

The region has traditionally had very little heavy industry - light industry has been predominant. The traditional industries of the region are the glass & jewellery, textile and mechanical engineering – small glass and textile manufactures were among the first industries in the country in the 18th century. These traditional sectors were later replaced in importance by the manufacture of automotive parts, machinery production and electrical engineering but still remain an important source of employment and revenue for the region. Production of machinery and equipment, metalworking and plastics also belong among the major sectors. Most of the region is easily accessible from Prague and the rest of the Czech Republic via the motorway connecting Liberec and Prague. Thanks to the motorway and its proximity to Skoda Auto's car plants the region has attracted many automotive parts manufacturers. Liberec is indeed a highly industrialized region – nearly 45 % of all active population works in industry.

Liberec is conveniently located in relation to the main European transport corridors as well as in relation to the main development area of the whole country. Unfortunately, there are no railway corridors going through the Liberec region. Liberec as a city with 100 000 inhabitants is the only city lying out of main railway corridors. There is a relatively dense and stable road and rail network in the city although the railway lines have not been modernized or electrified yet. The importance of individual car transport has increased significantly in recent years. On the other hand, the interest in bike transport has also increased although it brings growing number of traffic accidents due lack of infrastructure. The terrain of the region and the city would be described as hilly and very wavy. Public transportation is operated by Transport company of the cities Liberec and Jablonec nad Nisou using buses and trams.

Modal split below shows how the particular types of transportation have been used in 2017 in Liberec. People in Liberec choose motorized transport as the most favorite one although there is a big share of public transport too. Unfortunately, cycling and walking present only small portion of the transportation in the city.


Modal split 2017
8%
1%
46%
34%
Car
Public transport
Bike
Walking

2.5.2 Governance and Participation

On the EU level, **the Commission's Action Plan on Urban Mobility** recommended encouraging the adoption of Sustainable Urban Mobility Plans (SUMPs). A SUMP is a strategic plan designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life. It builds on existing planning practices and takes due consideration of integration, participation, and evaluation principles. The 2011 White Paper proposed that there might be a mandatory requirement for SUMPs for cities over a certain population, and that the allocation of regional and cohesion funds might be made conditional on the submission and auditing of a SUMP. **The Ministry of Transport and the Ministry of Regional Development of the Czech Republic** as national authorities has appealed Czech cities with more than 50 000 inhabitants to develop SUMP. The general methodology for SUMP preparation has been published in December 2015.

The Ministry of Transport is a central authority of the state administration for transport issues, it is responsible for the preparation of the state transport policy and, within its competence, for its implementation. It is responsible for a number of areas relating to transportation as road and rail infrastructure, waterways, aviation, navigation and information systems.

Another central authority related to the transportation topic is The Ministry of Regional Development of the Czech Republic. It is responsible for regional policy and other areas, like housing, tourism and spatial planning, which also affect to a great extent the development of the regions. It also manages financial resources provided by the Government for areas of housing and regional policy of the State, co-ordinates the activities of other Ministries and central bodies of State Administration when implementing the housing and regional policy of the State, including the co-ordination of the financing of these activities in cases when the Ministry itself does not directly manage these financial resources. The Ministry for Regional Development also provides information and methodology for counties, cities and municipalities and their associations and supervises the activities associated with the process of integrating regions into European regional structures.

The Liberec Region is an administrative unit of the Czech Republic counting 215 municipalities with the capital city of Liberec. Its transportation issues on the regional level are entrusted to the Department of Transport that provides the transport service in the whole region, approves the timetables, oversees the traffic safety and maintenances class II and III roads.

On the regional and local level the common strategic documents of the Liberec region and the city of Liberec constitute an important tool for the implementation of regional and local policy. They monitor existing policy and address the future development of the region and the capital of the region to ensure its

overall balanced and sustainable development. The most important strategic documents at regional level are the Regional Development Strategy and the Regional Development Programme. Both these documents represent essential bases for the processing of other documents at regional, micro-regional and municipal levels, as well as providing a general framework for the plans and projects that the Region wishes to support during the relevant programming period. The Liberec Region commenced the preparation of the new 2014 - 2020 programming period by updating the Liberec Region Development Strategy 2006 - 2020. The purpose of this document is to implement principles of sustainable development in the design of activities that will not only lead to the meeting of EU objectives for the 2014 - 2020 period (all-round cooperation and the promoting of sustainable growth, competitiveness and employment), but also troubleshooting and covering established needs, thereby leading to the balanced development of the entire Liberec Region.

The Liberec region established a company called **KORID LK** which is a company responsible for transport coordination and operation in the whole Liberec region and maintenances the integrated transport system of the Liberec Region “IDOL”. The IDOL system encompasses railway transport, suburban bus transport and municipal public transport with full transport and tariff integration.

The city of Liberec has developed the Updated Development Strategy for years 2014 – 2020 as a basic document for future development of the city. It is based on the current needs of the city and their inhabitants as 10 different working groups created by all relevant stakeholders focused on specific topics were working on it. One of the specific objectives was determined as sustainable mobility and technical infrastructure.

As already above mentioned, the city of Liberec is currently in the middle of SUMP preparation. At the municipality of Liberec is in charge of leading and processing of all strategical documents and participation process the department of strategic development and subsidies. The project team established for SUMP has a few key members and roles: a project manager and his assistant, a specialist for participation and public involvement in decision process, an external expert on mobility and transportation strategic documents. There was also established a steering committee whose members are political representants, a managing director of a company responsible for transport coordination in Liberec region, a managing director of **public transportation company for cities Liberec and Jablonec nad Nisou** (company owned by the city of Liberec), chairmen of transport commissions and a transport expert working at the municipality. The project team is collecting all the relevant incentives, needs and inspiration thanks round tables, public discussion forum and surveys. The methodology and tools for better participation and public involvement in the decision process has been adopted from the Healthy cities of the Czech Republic Network and Agenda 21. The wide working groups for biking and public transportation work together with the project team on challenges and problems that has to be solved, on specific objectives and specific

activities that has to be done. One of the results of the SUMP preparation should be among others also a transport model that we intend to use in DEMO-EC project focusing on car reduction. Very desired is also make the city of Liberec more walkable.

As strength in public participation process we consider the membership in the Healthy cities of the Czech Republic Network and Agenda 21. The department of strategic development and subsidies participated on project financed by URBACT III that enhanced their capacity with URBACT methodology. There was established a new job position of a specialist for participation and public involvement in decision process.

On the other hand, as weaknesses in public participation process we consider the lack of political support, lack of interest of the public and their distrust in change. That is why the public is not willing to participate on integrated strategical plans.

2.5.3 Car reduction

The automobile industry is very important for the Czech Republic and is one of the traditional drivers of the Czech economy, not only because it employs a lot of people, has a long-term tradition and regularly produces more than a million vehicles, but also because of its position within Europe. The Czech automotive industry employs more than 150,000 people and accounts for more than 20 percent of both Czech manufacturing output and Czech exports, according to state agency CzechInvest. The country has the world's highest output of cars per capita and is 15th worldwide in total output.

On the other side, Czech cities do understand that an individual car transport is causing the most of the air pollution that their inhabitants have to breathe. That is why also Czech cities and their political representatives support the idea of CO2 emission reduction resulting from car transport.

Several documents adopted by the European Commission, e.g. the White Paper – Roadmap to a Single European Transport Area, the Green Paper – Towards a new culture for urban mobility and its Action plan of urban mobility and other documents plead in favour of the development of cycling transport in the Czech Republic. These documents set many ambitious aims – such as the phase-out of conventionally fuelled cars in cities by 2050 – which will require a much more extensive use of bicycles, walking and public passenger transport.

On the national level, the development of cycling is outlined in the National Strategy for the Development of Cycling in the Czech Republic for years 2013 - 2020, which aims to improve road safety, change lifestyle for the benefit of our health and the environment, and also provides suggestions for an effective development of cycling and support of high quality projects within cycling. The popularity of cycling as an alternative mode of transport as well as the increased support of cycling inherently brings increasing demands to provide sufficient information on these issues.

The Liberec region and the city of Liberec are also working on a smog reduction. This effort was for that matter incorporated to the strategical documents. Both bodies endeavour to promote the role of cycling as an alternative to the other transport modes. Nowadays, cycling is solely understood as a leisure activity in Liberec and only 1 % of inhabitants use their bike as a means of transport for transportation to their office, shops and schools.

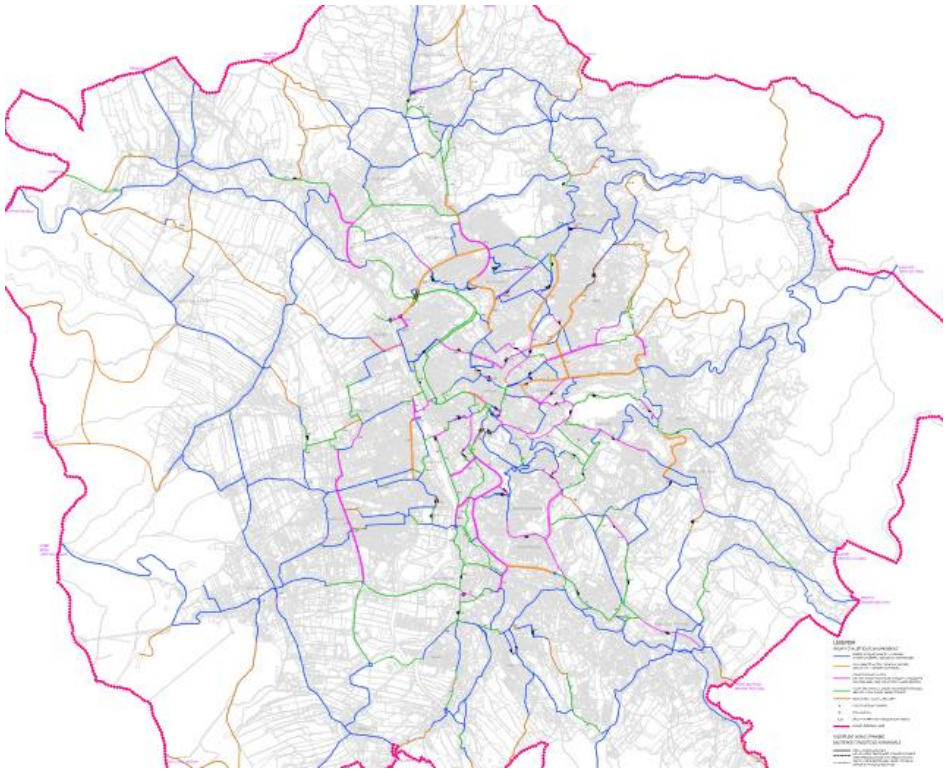
The Liberec Region Development Program 2014 – 2020 defines at a general level the main objectives, measures and activities that The Liberec Region intends to support in the new programming period as follows: comprehensive and high-quality infrastructure, create conditions for safe, non-motorized traffic

especially in spots where is a danger of conflicts with motorized transport mode. The Liberec Region prefers to financially support project preparation of cycling infrastructure.

The city of Liberec carried out a survey of traffic behavior in the area at the beginning of 2017. The results show that 75 % of people older than 18 years old are driving license holders (83 % of men and 68 % of women). The majority which means 55 % of inhabitants lives in the suburbs of the city and there is a need of travel to get to a job, shopping center or school. We assume that there is 0,48 car per person in the Liberec Region and people spend ca. 25 mins with travelling in a car every day. On the weekends people use cars even more often (53 %). The part of inhabitants that use the public transportation spend ca. 23 mins. with travelling every day. The peak hour traffic is between 7 am and 8 am when 17 % of all trips have been made. Another peak hour traffic was identified at 3 pm when people start travelling home from their jobs, schools etc. Usually, there are on an average 1,4 people sitting in a car.

Although, there is an effort to spread and promote the cycling in the future, Liberec stays at the very beginning now. First very important document made was The Strategic Analysis – cycling transport from year April 2011. The actual aim of this document was to define the state of situation and suggest possibilities for cycling infrastructure development including supporting infrastructure (racks, signage, maps in the city center, bike rental service etc.). The emphasis was put on integration with public transport. The opponents of cycling infrastructure insist on a statement that the rolling landscape is the biggest obstacle of the cycling development. However, according to the above mentioned analysis was as the biggest obstacle mentioned safety, thefts and missing cycling infrastructure. That affirms also the survey that shows only 15 % of people perceive the terrain as a reason not to use a bike. Lately, there is noticeable an significant endeavor to use bike for transport which caused unfortunately the increasing number of traffic accidents in the last years.

The city of Liberec prepared The Plan of Cycling Routes (cyklogenerel) in 2005 that suggests options and the integrated cycling network. This document was updated two years later. Since then, only limited constructions of new cycling routes or signage were realized. The city of Liberec is a city located on both banks of the Nisa River that enable to develop a backbone cycle path along it. This idea has been started with the construction of Odra – Nisa backbone cycle path. Unfortunately, due to ownership issues the cycle path misses the city center. The city council keeps negotiating about land purchases with current owners but there are still a few parts that can not be linked up. Nevertheless, the city is going to start the construction of the main part of it in 2018 that brings the path in the city center at the first time.



Currently, the city of Liberec is not a walkable city although the size of the city is very suitable. Only the core of the city center – Moskevska and Prazska street linking two main squares is determined as a pedestrian area. This area is also shared with cyclists. Unfortunately, due to motorized transport pedestrian do not feel safe in the city center. Even though the biggest suburbs are within walk distance the missing infrastructure causes that people do not prefer walking and use rather other transport mode.

As a strength of cycling and walking we can foresee that there is a certain number of people that want to use non-motorized transport mode for their trips, the existence of The Plan of Cycling Routes and the fact that city of Liberec is not very spread and it can become a walkable city one day.

On the other hand, there is still lack of motivation and incentives for sustainable mobility development. The transport department at the municipality hesitate to start developing and implementing sustainable principles in their decisions and plans.

2.5.4 Public transport

Public transport in the city of Liberec has a long tradition. The trams have been operated since 1897 in the city. In 1955, the line to the neighbour city Jablonec nad Nisou was opened. Currently, Liberec is the only city in the Czech Republic with the narrow gauge trams in regular operation (1000 mm, line Liberec - Jablonec nad Nisou). Currently, 34 % of inhabitants use the public transport for their daily trips in Liberec.

The public transport in Liberec is provided and operated by The Transport Company in cities Liberec and Jablonec nad Nisou. This company is fully owned by the city of Liberec that is the only shareholder. The Company operates 45 bus lines in Liberec, 25 bus lines in Jablonec nad Nisou and 4 tram lines within both cities. The Company has a fleet with 133 buses and 67 trams. 95 % of all vehicles are barrier-free and The Company is trying to restore all the old vehicles with the new ones more modern equipped with smart technologies. Currently, The Company owns 55 vehicles with diesel propulsion system and 45 vehicles with CNG propulsion system.

The timetables are planned by a company called KORID LK that is also in charge of operating the transport in the Liberec region. This company was established by The Liberec Region. Evidently, this structure of activities that are not split between the city of Liberec and The Transport Company in cities Liberec and Jablonec nad Nisou on one side, and The Liberec Region and KORID LK is not ideal. According to the meetings of all involved parties, should be established a new position at the municipality that will take over responsibilities from The Transport Company and KORID LK in matter of urban public transport.

Coming into force on May 18th, 2009, the pilot project of the Integrated traffic system for public transport in Liberec Region IDOL in territory of Českodubsko was launched. In all territory of Liberec Region IDOL has been launched on July 1st, 2009.

The base of the integrated traffic system IDOL is non-contact chip card Opuscard with its possible usage for transfer tickets and time coupons. Integrated rate IDOL is zoned-relational one and allows travelling with one ticket by all tram and bus lines included into IDOL and all passenger trains, express trains in tariff-integrated sections of railway lines. The rate was announced by regulation of Liberec Region on maximum prices in public transport and in individual cities with public transport subsequently approved by city councils.

According to the survey the biggest obstacle that causes that people not use the public transportation is the high price. The most of people need to travel a few stops only and travel usually less than 15 mins. There are no short-time tickets available and the shortest ticket is valid for 30 mins. The other issue is that the suburbs where the population has increased in last years is operated only a few times a day and the

frequency does not allow the needed flexibility. As a big advantage can be perceived that passengers can pay by credit or debit cards in all trams providing the service in Liberec.

All trams and buses cross at central station called „Fügnerova" located in the lower city centre. This station is very busy during the whole day and due to the traffic and the presence of antisocial individual is perceived as a very unpopular place to go. Results based on an emotion map done last year show that this station needs the urgent change. Attractiveness of other bus and tram stations is also very discussed topic and needs to be considered.

At various holidays and events the historical trams are used - operated by the "Bovera - Club" . The historic trams can also be rented individually and they are very popular.

Unfortunately, there is lack of integration of particular transport modes in Liberec.

Thanks to the European funds there are many options for financing of transport infrastructure. The city of Liberec is preparing a few projects that will help to foster use of public transport. The most important project driven by the city of Liberec is the construction of a new terminal for long distance buses with the parking house with ca. 450 parking spots. The current terminal does not fit to today´s needs anymore. On the picture below, you can see how it looks like today.

Another important project relates to purchase of new buses for The Transport Company in cities Liberec and Jablonec nad Nisou. Considered is also the construction of new tram line connecting the city centre and the largest district in the city called Rochlice.

As a strength we consider that there is a big share of inhabitants that already use the public transport. The Transport Company in cities Liberec and Jablonec nad Nisou is trying to respond to the customer´ needs and new trend in smart technologies. The weaknesses is the price of the public transport and insufficient frequency of the service in the suburbs. Other disadvantage is a conflict and an animosity between KORID LK and The Transport Company in cities Liberec and Jablonec nad Nisou.

2.5.5 E-Mobility

Green mobility is a very attractive and rapidly developing sector in the Czech Republic. Whether this involves electric vehicles, hybrids, CNG, LPG, biofuels or hydrogen fuel cells, vehicle manufacturers and providers of charging infrastructure and alternative fuels are experiencing growth. One of the very important stakeholders of the topic is an agency of the Ministry of Industry and Trade, Business and Investment Development Agency CzechInvest. Established in 1992, the agency contributes to attracting foreign investment and developing domestic companies through its services and development programmes. CzechInvest is exclusively authorized to file applications for investment incentives at the competent governing bodies and prepares draft offers to grant investment incentives. Its task is also to provide potential investors current data and information on business climate, investment environment and investment opportunities in the Czech Republic. CzechInvest is contributing to the development of the green mobility sector in the Czech Republic by providing information support and financial aid within available programmes, as well as through the public and privates spheres.

Current e-mobility infrastructure is under a direct management of one predominant innovator in the Czech Republic – ČEZ. Current e-mobility infrastructure is under a direct management of one predominant innovator in the Czech Republic – ČEZ. In 2012 CzechInvest concluded a memorandum on cooperation with the ČEZ group, which besides holding the leading position in the energy sector is also a pioneer in using smart grids and electric vehicles in the everyday life of the Czech public. Innovative approaches to using energy are covered by the FUTUR/E/MOTION project. ČEZ's strategy is to take a responsible and trustworthy approach to society and the locations where it operates. Emphasis is placed on investments in the development of technical education and the use of renewable sources of energy.

With the preparation of investments in the Czech infrastructure by ČEZ, E-ON, PRE and RWE, the structure of charging stands and stations is taking shape. Suppliers are beginning to specialise for various customers. Charging stations are being offered to filling-station networks, thus allowing full integration with filling stations' existing payment and information systems provided by the company PhGIA. For many filling stations, the main source of income is no longer fuel sales, but rather sales of goods and restaurant services. Therefore, it is advantageous to sell cheap electricity, thus enticing the customer to spend more time and money at the station. Customers on the road are willing to pay significantly more per kWh than via their own connection. Shopping centres, restaurants, museums and parking lots are being offered universal stations which either provide charging free (at paid parking lots or supermarkets) or accept coins, cards or contactless RFID/MIFARE chip cards which energy companies will issue to electric-vehicle users. Various companies including Rittal, Elnico, Molaris, Micos, Proautoma, TILI and Ensto are offering such stations in

the Czech Republic. Today, there are more than 300 charging stations in the Czech Republic and the number is still increasing.

In the city of Liberec were built two charging stations. One in the city centre, in particular in the area of the Liberec science centre iQLANDIA, the electric cars can be recharged since May 2016. The charging station can be used by all e-car owners for always within the opening hours of the centre. Its advantage is that no recharge card is needed, only download the mobile application is needed and charge it. ČEZ opened another charging station next to the shopping mall Nisa on the outskirts of the city.

In total, the owners have registered 1 067 electric vehicles in the Czech Republic over the last five years. The Liberec Region owns one electric car and the municipality of Liberec owns two such cars since 2017 thanks the subsidy received from The State Environmental Fund of the Czech Republic.

The Transport Company of cities Liberec and Jablonec nad Nisou that operates the public transport in the area got a chance to try out the new electric bus Peron from the Czech company Škoda Electric. The company is a traditional producer of electric drives and traction motors for locomotives, suburban train units, subway, trolleybuses, trams, mining vehicles. The electric bus was introduced in operation in Liberec in June 2016. The Transport Company of cities Liberec and Jablonec nad Nisou appreciated the bus in general. The only reason why the company does not want to buy it and operate it was the higher price and the number of km in a single charge.

The Czech Republic shows relatively high public awareness and regular e-mobility events, although there are smaller pilot projects in place resulting in generally lower supply. There is the limited government support. This leads to a lack of incentives and no clear nationwide strategy, especially as the country have similar e-mobility potential.

2.5.6 Behaviour change

Autumn is inherently linked with the European Mobility Week in Liberec which is the most comprehensive campaign on sustainable mobility in region. This year's theme was "Clean, Shared and Intelligent Mobility," and the city of Liberec was organizing interesting events for children and adults. The aim of this activity is to promote and excite interest about the topic of sustainable mobility and impact of motorized transport on the environment and health. The city of Liberec organizes this event with cooperation with partners as follows: The Regional Directorate of the Police, The Liberec Region, The Road Safety Team, the Transport Company for cities of Liberec and Jablonec nad Nisou, The Czech Red Cross Liberec, The Integrated Rescue System and other co-subjects.

There are a few target groups that have to be considered for behaviour change in environmental friendly transport.

The first one consists politicians, members of city council and local government as the leaders and decision makers about investments in transport infrastructure. In the view of the fact that there is lack of pressure from national level, there is still not urgent need to elaborate the concept of sustainable mobility system from their side. Only partial activities are driven by them but there are mostly motivated by participation in the Healthy cities of the Czech Republic Network and Agenda 21. The superstructure is still missing. The idea how to involve them in the topic is participation in interregional projects where they can learn and see how the transport system in more developed European cities works.

Another target group are big employers in the region and in the city. The municipality will need a partner to build an infrastructure and conditions for people and employees that will walk or cycle to their job in the morning. Cyclists will need to store their bikes safely somewhere close to the entrance and they will need to take a shower before they start working. The city should also support employers in participation in activities like “Bike to Work” which is a state-wide competition. It took place in May in over 33 cities and towns across the Czech Republic. The project’s goal is to motivate as many people as possible to learn to use a bike as a regular urban means of transportation (alternatively to walk or run). The idea is that if more people switch from cars to bikes and other non-motorised vehicles, they will not only improve their physical condition, mood and work relationships but they will also jointly contribute to cleaner air and more pleasant, safer and healthier cities where they live and work.

Bike to Work is a team competition for companies and institutions. Anyone, who can make a team of at least 2 and maximum of 5 members and regularly bikes to work with their co-workers in May, can join the competition. Since last year runners, walkers, skaters, skateboarders, long boarders and wheelchair users can join too. There is no limit as to how many teams from one company (one employer) can join. The goal

of Bike to Work is to playfully motivate and inspire employees to cycle to work and to persuade their employers to create the necessary facilities.

Another very important partner for the municipality should be schools for sure. All public elementary schools are owned by the city in Liberec. Schools are having a big influence on future generations of transport users. Schools should perceive the need to lead their pupils to the sustainable and healthy life. The municipality should cooperate with schools about to prepare the respective infrastructure for bike storage solutions and racks.

Currently, it looks that the only target group on which is the city of Liberec really focusing are young people. They are open minded and do not have rooted transport habits yet. As already mentioned, the city of Liberec owns and runs all the public elementary schools in the city and can influence the infrastructure available and address them very easily.

The target group that is defined as seniors or elderly people use the public transportation the most and do not represent the main target group for behaviour change. The municipality with the cooperation with The Transport Company for cities Liberec and Jablonec nad Nisou intends to improve the quality of the public transportation to meet their requirements.

The very important target group are working people that are very active. This group is very large and contains a lot of sub-target groups as men that love to drive their cars, businessmen, businesswomen, dads with families, singles, low income people and high income people etc. This category deserve a better research to understand their needs and incentives. Unfortunately, there has never been such a survey done in Liberec yet.

Families represent another target group that should be surely considered. More than 55 % of inhabitants live in suburbs in Liberec and most of them drive their cars daily to get to jobs, shops, schools and after-school activities, trainings and sports.

Neither The city of Liberec nor The Liberec region have developed the strategy or communication plan for a behaviour change for environmental friendly transport yet. All activities related to the behaviour change for sustainable transport modes are initiated by the guideline from the Healthy cities of the Czech Republic Network and Agenda 21 and the municipality organizes them with the aim to meet the minimal conditions and requirements for a stay in the network. There is lack of support or pressure form the national level. Hopefully, through the process of SUMP preparation will above mentioned strategy or communication plan defined and it starts the new age of sustainable mobility in the city.

As a strength we can consider the fact that the behaviour change seems to be pushed from the public. People are getting still more and more interested naturally in healthy life approaches and sustainable ways

of life. The city of Liberec is a city of sports and sportsmen. The transport belongs to the main topics too. People love to join activities like “Bike to Work” and there is always a big number of people they participate in such activities.

2.5.7 SWOT-Matrix

Regional SWOT results		
Governance and participation	**Strengths** • newly established position of a specialist responsible for public involvement in decision process • membership in the Healthy cities of the Czech Republic Network and Agenda 21 • department of strategic plan with long-term experience at the municipality that is developing strategies and action plans	**Weaknesses** • people are not willing to attend the forums and round tables discussions • particular departments and companies involved in the transport topic do not cooperate in a way to develop a new transport management • insufficient implementation of existing strategic documents
	Opportunities • new municipal elections in 10/2018 • results received from activities based on Agenda 21 methodology • participation in projects supported by programmes like URBACT that provides the guideline and capacity building in participative approaches	**Threats** • public demotivation due to previous empty promises • political instability at the municipality • animosity between The City of Liberec and The Liberec Region
Car reduction	**Strengths** • existence of The Plan of Cycling Routes • The Plan of Cycling Routes is implemented in The New Local Plan • the new part of Odra – Nisa backbone cycle path linking the path with the city centre will be started in 2018	**Weaknesses** • reconstructions of transport infrastructure within the municipality are not coordinated with the sustainable approaches and solutions (roads without cycling paths) • lack of political support at the municipality • implementation of The Plan of Cycling Routes
	Opportunities • existing non-profit organization supporting the	**Threats** • political instability at the municipality

	cycling and walking • people want to change – there is a potential of new bikers according to the surveys	• settlements regarding ownership of properties for new strategic cycling paths is a long-term process with uncertain result
Public transport	**Strengths** • integration of public transport in Liberec in Integrated Transport System of the Liberec Region • close cooperation with other city in the region – Jablonec nad Nisou • the city centre of Liberec is well covered by public transport system	**Weaknesses** • the insufficient frequency of transport service in suburbs • the higher price and lack of an effort to change it • lack of a responsible department at the municipality managing the transport in the city
	Opportunities • people are willing to use the public transport more • the transport company is ready to respond to new trends and customer´ needs • accessibility of all suburbs	**Threats** • conflict between KORID LK and The Transport Company in cities Liberec and Jablonec nad Nisou • political animosity between The city of Liberec and The Liberec Region • demographic characteristics of a population
E-Mobility	**Strengths** • CzechInvest and Ministry of Industry and Trade supports the E-Mobility • 2 charging stations for electric cars • The Transport Company is willing to use e-buses in the future • The Liberec Region has one e-car and The city of Liberec owns two of them since this year	**Weaknesses** • e-cars are perceived as a luxury thing for the municipality • departments at the municipality are not willing to use the car • no negotiations between the municipality and ČEZ about new charging stations
	Opportunities • ČEZ is a leader in E-mobility and drives the	**Threats** • prices of e-cars are still too high

	implementation of E-mobility in the Czech Republic (infrastructure) • ČEZ has another followers: E.ON, RWE and PRE • SKODA started developing e-cars • high public awareness	• the number of km in a single charge is still insufficient for most of people
Behaviour change	**Strengths** • The city of Liberec is an establisher and manager of public elementary schools in Liberec and can influence the infrastructure and thinking of a new generation • the event called “Bike to Work” is very successful and popular in Liberec and The city of Liberec is involved in it	**Weaknesses** • no existing communication strategy for behaviour change • no department at the municipality that is in charge of transport management
	Opportunities • people are interested in healthy and sustainable solutions • the city of Liberec is a city of sport and healthy life – the city is surrounded with Jizera Mountains and Jested ridge	**Threats** • political animosity between The city of Liberec and The Liberec Region • political instability at the municipality

2.5.8 References

http://www.liberec.cz/aktualizace-strategie/

http://doprava.kraj-lbc.cz/Dokumenty-odboru-dopravy

http://www.kraj-lbc.cz/public/doprava/analyzaLK10/en.html

https://doprava.udrzitelne-mesto.cz/cz?uzemi=96d5c80c43cca860e625c933bd8a5ff1

http://www.dpmlj.cz/images/Obrazky/07VyrocniZpravy/2016_vyrocni_zprava_DPMLJ.pdf

2.6 PP8 – Milanówek

2.6.1 Overview

Milanówek is a town and a separate commune in Poland. Located in the Grodzisk Mazowiecki County near Warsaw, it is often considered an outlying suburb of the capital of Poland but is in fact an independent entity administratively and culturally. The municipality of Milanówek is located in the open natural environment system. The municipality was included in the Warsaw Protected Landscape Area. Within the boundaries of this Area is located almost the entire territory of the municipality, from except for its west brownfields part. Green is the most valuable element of the community's natural environment. Together with the biologically active areas of Brwinów and Podkowa Leśna, the Milanówek commune creates a supra-local natural system. Biologically active structures include: green high occurring in form valuable old trees, forest and wooded areas. The oldest, central part of the Milanówek community is covered by the urban protection zone and entered in the register of monuments. Legally protected is the historic architecture, old trees and historic park buildings. Of the 13,5 km2 occupied by the municipality of Milanówek, 12,77 km2 are legally protected areas. There are 108 natural monuments in the municipality.

At the end of 2014, the municipality of Milanówek was inhabited by 16353 people and the population density index was 1217 people/ km2. The population in The pre-working age was 17,8%, the working-age population 61%, and the working-age population 21,3%. In the Milanówek municipality at the end of 2014 year indicator production population to 100 people of working age was 64. This means that for every 100 people of working age accounted for 64 people in the production age. Pointer to the old age population to 100 people in the age of prep was 119,6. This means that for every 100 people in the age of prep accounted for close to 120 people in old age. Old age population rate on 100 people of working age amounted to 34,9. This means that for every 100 people of working age accounted for close to 35 people in old age.

The municipality of Milanówek is about 30 km away from Warsaw. Convenient communication with the capital is provided by the railway line Polish State Railways - Polskie Koleje Państwowe (stop Milanówek) and the railway line Warsaw Commuter Railway - Warszawska Kolej Dojazdowa (stops: Milanówek-Grudów, Polesie and Brzózki). Milanówek operates a municipal bus that supports a connection in the area of the municipality of Brwinów and Grodzisk Mazowiecki. An additional bus services provide private carriers, including MK2 implementer journeys on the route of the Pruszków (Promyka Street) – Domaniew-Pruszków WKD and PKS in Grodzisk Mazowiecki (Jaktorów-Grodzisk Mazowiecki-Pruszków-Warsaw, Poland). Residents have the opportunity to benefit from the already mentioned Warsaw Commuter Railway. The WKD, which serves the largest traffic, is Warsaw and Grodzisk Mazowiecki. Milanówek also has a railway station. Study of passenger flows pointed out that the daily traffic is on average around, 1368

embarked and 1275 disembarked respectively. The connections to and from Warsaw were dominated by over 60% of PKP Milanówek passengers. Due to the nature of municipalities the primary means of transport in the spring season the summer and the autumn is to transport a bicycle. It enjoys a great popularity among the people. During the measurements the movement carried out in October 2015, up 10.6% reported vehicles were bicycles. In addition, the size of the municipalities and the distance between adjacent towns are suitable for the development of cycling that can affect car traffic, which in turn leads to substitution car traffic.

2.6.2 Governance and Participation

"A communication study covering all branches of passenger and freight transport in the Warsaw's suburban Garden Tri-City" was developed within the framework of the project "Warsaw's suburban Garden Tri-City - Improving the cohesion by co-operating in the field of social policy, shaping public space, water management and communication". The role of partners in the implementation of the study was and still is very significant. During the work on the study, more than 50 entities were invited. In addition to local government units, they were partners in public administration, academic institutions, hospitals, security, social services, cultural institutions, parishes and associations and NGOs. By creating a study, the views of all partners were taken into account in order to develop optimal solutions. During the meetings, in addition to the partners participating in the project, the participants were invited to the meetings through the use of various communication tools. All interested were able to identify problems, potential solutions and priority tasks for them, thus giving the municipality the starting material for the study. The document was also consulted with councilors from three municipalities and was adopted by the City Council on June 9, 2016.

At present, urban policy aimed at increasing bicycle and pedestrian traffic is involved:

- City Aesthetics Council, which aims at shaping the public space in Milanówek, including encouraging the use of cycling,
- an informal group composed of the inhabitants of Milanówek, representatives of the office and organizational units implementing the Milanówek cycling social campaign promoting active and healthy lifestyle
- Friendly Communication Association, which promotes solutions that improve communication and transport in accordance with the principle of sustainable development,
- Representatives of the city office, who are currently developing road projects and a document of the city's spatial planning conditions introducing new solutions conducive to the development of cycling and pedestrian traffic (creating cycling routes, slowing traffic, unidirectional traffic, driving traffic from the city center, providing smooth traffic). In creating a study of determinants, public consultations involving different stakeholder groups are organized.

Public participation has many benefits. The main aim of public participation is to encourage the public to have meaningful input into the decision-making process. Public participation thus provides the opportunity for communication between organization making decisions and the public. This communication can be an early warning system for public concerns, a means through which accurate and timely information can be disseminated, and can contribute to sustainable decision-making. Effective public participation allows the public's values to be identified and incorporated into decisions that ultimately affect them. While

there are numerous advantages associated with public participation in planning and decision-making processes, there are also disadvantages. Public participation can be time-consuming and sometimes expensive. To do it effectively, organization have to build capacity and train staff. If done poorly, public participation processes can result in, for example, loss of faith in the organization. A negative experience of the process may lead participants to have negative perceptions of the outcome, and they may be less likely to participate in future processes. Issues of concern to the public, and relevant to the decision at hand, must be taken into account in reaching a decision. Public input is used in the development and evaluation of options and public contribution has a genuine impact on the decision. It is important to ensure that stakeholder and public participation is, as much as possible, on an equal basis with that of the administrative officials and technical experts.

Municipality of Milanówek is taking part in the partnership for Functional Urban Area of Warsaw. One of the goals is the sustainable development of urban transport and cycling routes. The good practice could be cooperation with Warsaw ZIT (Integrated Territorial Investment for Warsaw). Integrated Territorial Investment is an instrument that contributes to the implementation of urban development strategies and their functional areas through the implementation of integrated projects co-financed by EU funds under the financial perspective for 2014-2020. Integrated Territorial Investment is a manifestation of the territorial dimension of cohesion policy. The idea of Integrated Territorial Investments is the co-operation of local governments to maximize the use of common assets and to solve problems that relate to the functional area of the city. The Municipality of Milanówek for the good practice is planning to work together with Functional Urban Area of Warsaw to unify the marking of bicycles lanes. Thanks to this solution Milanówek will be connected to the capital of a homogeneous bicycle system.

→Strength and weaknesses in public participation process

Strengths:

- Strong interest of residents and willingness to express their opinions.

Weakness:

- Difficulties with reaching out to the most interested groups choosing the right form of consultation

→Strength and weaknesses in governance structure

Strength:

- The document concerns the local scale, which facilitates the process of elaboration and consultation within their own papers and units

Weakness:

- Insufficient support from superior institutions such as the District Road Administration or the Mazovian Road Administration, which carry out their own projects;

- Due to the Conservation Area, many arrangements are required which lengthens the process of document development and blocks some activities.

2.6.3 Car reduction

For decades, traditional transport planning has focused on improving conditions for private automobiles at the expense of safe sidewalks and bike facilities. Yet, the majority of the world's people rely on cycling and walking, like other forms of human-powered transport to commute to work and get around their cities every day. Increasing the use of bicycles and the ease of walking is one of the most affordable and practical ways to reduce CO2 emissions, while boosting access to economic opportunity for the poor.

Due to the nature of the city-garden urban concept, the authorities would like to increase the share of cyclists in the road traffic. Concentrated development and services make it easy to navigate the city without having to drive. Unfortunately the poor condition of existing infrastructure, insufficient number of cycling routes, insufficient number of solutions slowing down and degrading traffic, discourage residents from using alternative means of transport such as bicycle or pedestrian traffic. At this point there are only 1,5 km of bicycle paths in the area of the city, which are coherent with WKD Grudów station). The security of cyclists is also an issue. Municipality of Milanówek needs alternatives for road traffic and cars as well as the promotion and planning of alternative means of transport just like cycling and pedestrian traffic. It is necessary to work out a concerted concept of mobility in the city considering other transport modes and parking management.

There are four road projects and project of four kilometers of bicycle paths in preparation phase. One kilometer of bicycle paths is during construction. The investment is realized within Regional Operational Program Mazowieckie for year 2014-2020, Urban mobility. The municipality received grants for the construction of 1.1 km of cycling routes along the main transport corridors linking public transport (PKP with WKD). The investment will be completed by the end of 2018. The project also involves the creation of a self service repair center where basic tools will be available free of charge to cyclists. A proposal was also submitted for co-financing of the further development of the network of cycling routes along the provincial road leading to neighboring municipalities of 1.67 km in length.

It is a priority to ensure the safety of cycling on a vast area and to allow for a comfortable cycling journey along the entire route. This requires a broader perspective, including communication corridors consisting of multiple sections of the street. Not all communication lines require the construction of a new pedestrian and pedestrianized cycle path. In some places it is sufficient to combine cycling with wheeled vehicles in a safe manner, using appropriate slowing devices (eg island thresholds that slow down the movement of cars without affecting the traffic of buses and bicycles, pavements, road bumps or asylums) and pedestrian signage (the so-called bicycle sergeant showing the direction and path of cycling to the roadway or the bicycle lanes painted on the roadway). In some cases, it may be safer to drive bikers to the sidewalks that have been altered on foot. On less busy roads in the inhabited area, no roadway space. No additional

investment is safely shared between drivers, pedestrians and cyclists. Important elements of bicycle infrastructure are parking spaces for bicycles. They should be located near the most popular destinations (train stops, shopping centers). It is worth to pay attention to their functionality and aesthetics, should be covered and equipped with racks to enable the pin. Currently, bicycles are located in the city center, at WKD Milanówek Grudów station, PKP Milanówek railway station, public buildings, schools and sports facilities. The most extensive parking is located on the sports field at Turczynek Street. As for the pedestrian zones Municipality of Milanówek is planning open public places such as square with fountain, where inhabitants could spend their spare time.

Bicycles provide numerous benefits in comparison with motor vehicles, including the sustained physical exercise involved in cycling, easier parking, increased maneuverability, and access to roads, bike paths and rural trails. Cycling also offers a reduced consumption of fossil fuels, less air or noise pollution, and much reduced traffic congestion. These lead to less financial cost to the user as well as to society at large (negligible damage to roads, less road area required). By fitting bicycle racks on the front of buses, transit agencies can significantly increase the areas they can serve. Among the disadvantages of cycling are the requirement of bicycles to be balanced by the rider in order to remain upright, the reduced protection in crashes in comparison to motor vehicles, often longer travel time (except in densely populated areas), vulnerability to weather conditions, difficulty in transporting passengers, and the fact that a basic level of fitness is required for cycling moderate to long distances.

Walking as a means of transport is commonly used for rather short trips. This means that it is actually difficult to assess pedestrian mobility at country level, as the national travel surveys often do not register the shorter trips. Also, the walking parts of trips made primarily by public transport are usually not taken into account. At present, the importance of walking is therefore underestimated. Walking is a way of traveling used mainly for two purposes: short trips to specific destinations such as shops when there are probably not too much to carry and leisure trips where the walking in itself is the main purpose. The main problem of pedestrian traffic as an alternative transport type is bad technical condition of pedestrian and bicycle infrastructure.

2.6.4 Public transport

The main means of public transport on the territory of the Warsaw's suburban Garden Tri-city is a railway serving Warsaw. The Warsaw's suburban Garden Tri-city is well explored by two parallel lines (line 447 and WKD). Nevertheless, a large proportion of rail passengers need additional means of transport between the station and the destination (home, school, and workplace). Some travelers use cars or bicycles that range from morning to night afternoons remain parked near the station. It is necessary to provide an adequate number of safe and uncomfortable parking places close to the stops. An increasingly popular solution is to build Park & Ride car parks with a toll system linked to the rail ticket. There is also a need to provide a well-stocked bike-ridden location so that it does not obstruct pedestrian traffic, which is equipped with a vehicle mount. Part of the population using the railway It is diverted to the station by cars by loved ones, hence the need for a new kind of parking space called Kiss & Ride for short stopover when the passenger gets off. However, Kiss & Ride parking spaces must be properly monitored so that they are not treated as ordinary parking spaces.

By the center of the Milanówek Municipality runs the railway line of the Polish State Railways (PKP) - one stop in Milanówek. Within the city are 3 stops of the WKD. Both lines provide direct access to Warsaw - the capital of Poland and municipalities located on the route to the capital. Milanówek has no interchanges. Municipality of Milanówek passes through the provisional road No. 719 leading from Warsaw and a small section of the A2 motorway, but without access to it. Within the city are located: provincial roads: 3,164 km, county roads: 13,060 km, municipal roads: 116,000 km. The total road network in Milanówek is 132,224 km. There is no Circular railroad leading to the center of Milanówek.
In conjunction with the modernization of the PKP railway line (lack of a main connection with Warsaw), there is a substitute communication consisting in launching additional bus transport enabling the commuting of the communes lying on the route Milanówek - Warsaw. In Milanówek, there is a municipal transport (co-financed by the city budget) covering 2 lines on the north and south sides of the city, one of which goes beyond the city limits to the neighboring municipality of Grodzisk Mazowiecki. However, there is no so-called resident card which would allow for the residents of Milanówek to discount tickets.

Strength of public transport: great popularity of public transport among the inhabitants (PKP, WKD)
Weakness of public transport: no common ticket, no interchanges, necessity of establishing the investments planned on the county and provincial roads with the district office.

2.6.5 E-Mobility

From an environmental standpoint, e-mobility is an excellent plan in answering the global clamor for de-carbonization. Hydrocarbons have been causing damage to the environment for the longest time, and one way to reduce their discharge is to look for carbon-less alternatives, and electricity is definitely one of the cleaner alternatives. In this segment, the active players are the goal-setting bodies, governments, and other organizations that set regulations and subsidies affecting E-mobility. As long as there are regulations and subsidies being raised, the economic appeal of e-mobility will remain high.

Nowadays in Milanówek E-Mobility is just a concept for further development of city. Milanówek as a city-garden is looking forward to possibilities and benefits of E-Mobility. In this case the most important aspects are: reduction of CO_2 emission - when operated with electricity from renewable sources, electric engines help reduce carbon emissions both at the local and the global level, and reduction of noise – less impact on environment and improvement of citizens' quality of life.

In our town there is a very limited number of e-vehicles and e-bikes, just several cars. We are not equipped with public charging infrastructure, none is planned for the nearest future. Municipality of Milanówek is planning apply for co-financing of the project "Green Lungs of Mazovia - development of urban mobility in the communes of the south-western part of the voivodship", under which we would like to purchase an electric bus and a charging station for electric vehicles. As well as in previous aspects, incentives and regulations to support e-mobility in Milanówek do not exist. Changing this situation can only take place through the receipt of co-financing.

Strengths:

- None

Weaknesses:

- High cost of charging infrastructure and vehicles,
- Not enough space for charging infrastructure in city,
- Low public awareness.

2.6.6 Behavior change

Milanówek is already undertaking activities promoting pedestrian, bicycle or public transport. We conduct the Milanowek cycling social campaign, which organizes sports events, promotes active and healthy lifestyles (eg intergenerational cycling, cycling combined with learning how to navigate the road, organizes photo competitions, bike tour, bicycle tournaments, racing championships cycling, and propagation of bicycle transport). There is a cycling section in Milanówek, which organizes numerous bicycle tours. The campaign aimed at residents which promote the movement of city on the bike is campaign “Bicycle’s Milanówek”. As part of the campaign, a number of actions are planned to encourage the use of a by creating friendly and safe conditions for the cyclist of Milanowek. The task of the Team of the Mayor of Milanówek is to develop good solutions that will contribute to the sustainability of the urban transport network, encourage participation in campaign events and inspire them to participate in cycling. Tasks and objectives of campaign: The shaping of cycling culture and the pro-cycling awareness of the inhabitants of Milanówek, promoting and promoting sport and cycling and healthy lifestyles (competitions, races, tours), propagate bicycle as the main means of transportation around the city and surrounding area, dissemination of knowledge about the objectives of the campaign among the inhabitants, dialogue with the inhabitants and actions to promote change, action to improve the conditions of moving around the city and its surroundings, action to reduce and slow down urban traffic in order to create conditions for the safe movement of cyclists on the roadway.

The role of bicycle and bicycle infrastructure in Milanówek is very important for the inhabitants. More and more people are using these forms of transport. As a result, the city authorities are taking steps to build bicycle paths, change the organization of the traffic that promotes smooth and slow traffic, drive traffic from the city center, and designate unidirectional routes for cycling routes.

Milanówek municipality acquires funds from the European Union both for the construction of cycling routes with accompanying infrastructure (racks, repair points). We also plans to apply for co-financing for the development of the city center with simultaneous closure of car traffic, the development of car parks near the PKP stop and purchases in partnership with municipal electric buses, which would promote ecological means of transport.

Modernization of the railway line has directly influenced the change of the traffic organization of some streets, thus reducing the traffic in the city center. At the same time, Municipality of Milanówek is implementing investments to improve the technical condition of municipal roads. Also is planning to build more cycling routes. All the actions taken affect the change in behavior of the inhabitants and increase the use of ecological forms of transport, which also allows them to reduce pollutant emissions into the environment.

2.6.7 SWOT-Matrix

Regional SWOT results		
Governance and participation	**Strengths:** • strong interest of residents and willingness to express their opinions, • the document concerns the local scale, which facilitates the process of elaboration and consultation within their own papers and units	**Weaknesses:** • difficulties with reaching out to the most interested groups choosing the right form of consultation, • insufficient support from superior institutions such as the District Road Administration or the Mazovian Road Administration, which carry out their own projects
	Opportunities: • improve living standard, Availability of external funding sources	**Threats:** • insufficient support from superior institutions such as the District Road Administration or the Mazovian Road Administration, which carry out their own projects
Car reduction	**Strengths:** • bicycle as a popular mode of transport, promoting cycling culture	**Weaknesses:** • poor condition of existing infrastructure, insufficient number of cycling routes
	Opportunities: • receiving funding for the construction of 1.1 km of cycling routes along the main transport corridors linking public transport	**Threats:** • insufficient number of solutions slowing down and degrading traffic, delayed significant infrastructure investments of a nature regional
Public transport	**Strengths:** • great popularity of public transport among the inhabitants	**Weaknesses:** • no common ticket, no interchanges, • Necessity of establishing the investments planned on the county and provincial roads with the district office

	Opportunities: • A convenient connection between various means of public transport can divert car traffic	**Threats:** • Renovation work related to the modernization of the PKP train station may result in increased car traffic
E-Mobility	**Strengths:** • none	**Weaknesses:** • high cost of charging infrastructure and vehicles, • not enough space for charging infrastructure in city, • low public awareness
	Opportunities: • market trending to encourage e-mobility development, • prices of infrastructure and vehicles are likely to drop	**Threats:** • governmental regulations, • problems with operation with renewable energy sources
Behavior change	**Strengths:** • great popularity bicycle among the inhabitants	**Weaknesses:** • insufficient promotion for sustainable mobility
	Opportunities: • reduce car for a friendly transport	**Threats:** • Distaste for leaving car as main means of transport

2.6.8 References