

SPECIFICATIONS

FOR BUILDING UP THE CONCEPT OF SUSTAINABLE DEVELOPMENT OF THE TRANSPORT INFRASTRUCTURE FOR CHISINAU MUNICIPALITY

I. PREAMBLE

According to para. 4 of the decision of the Chisinau Municipal Council no. 22/40 of 25 December 2008 ,On the approval of the Chisinau Local Urban Planning Regulation', it is established that for the historic central area of Chisinau, the Local Regulation shall enter into force once the Chisinau Municipal Council approves 'The Chisinau Central Area Urban Plan' and 'The Chisinau Comprehensive Transport Scheme'.

The projects 'The Chisinau Central Area Urban Plan' and 'The Chisinau Comprehensive Transport Scheme' were commissioned in the manner established by the General Directorate of Architecture, Urban Planning and Land Relations in 2008, and developed by IMP ,Chisinau-Proiect', submitted for consultations with the population, urban planning specialists and experts in January 2012, but which have not been accepted so far, because urban planning solutions are inconsistent with the modern principles of historic city planning, as well as due to traffic congestion in the city centre, upcoming layout of the Cantemir avenue and extension of the Sfatul Tarii street up to Visterniceni intersection node, including negative opinions from the Ministry of Culture (application no. 04-09 / 364 of 18.05.2013) and the Academy of Sciences of Moldova (application 974-24 / 5 of 22.05.2013).

Based on the analysis of many suggestions, objections and proposals resulting from the public debates, including the critical aspects on the part of urban planning experts and experts regarding 'The Chisinau Central Area Urban Plan' and 'The Chisinau Comprehensive Transport Scheme' projects, developed by IMP ,Chisinau-proiect', in compliance with the provisions of the *Chisinau General Urban Plan*, approved by the Municipal Council by decision no. 68/1-2 of 22.03.2007, aiming to improve and modernize the public and private transport strategy in accordance with the basic principles of modern planning in a city with historic status, as well as from the analysis of ideas already tested in the light of the experience of different cities on reducing to the extent possible the traffic congestion in the central area of the city, by providing viable alternatives and eliminating the infrastructure that encourages the transit through the centre, it is necessary to modify the section of the General Urban Plan of the current Chisinau City: *Public Services / A. Transport*, by building up the ,Concept of

development of the transport infrastructure for Chisinau municipality', which after approval will provide the basis for the modification of the 'Chisinau Comprehensive Transport Scheme', including the development of the 'Chisinau Central Area Urban Plan' and 'Updating the General Urban Plan of Chisinau'.

The Concept of sustainable development of the transport infrastructure for Chisinau municipality will be built up in compliance with the provisions related to the relevant field, the focus will be on changing the priorities and on the importance of recovering the historical heritage by eliminating the urban destruction resulted from the post Soviet interventions, including during the past 25 years and reconnecting this area to the city's life.

II. GENERAL INFORMATION

Project name: CONCEPT OF SUSTAINABLE DEVELOPMENT OF THE TRANSPORT INFRASTRUCTURE FOR CHISINAU MUNICIPALITY.

Contracting authority: General Directorate of Architecture, Urban Planning and Land Relations

Beneficiary: General Directorate of Architecture, Urban Planning and Land Relations.

Location: Centre Development Region, Chisinau Municipality, Area of Chisinau municipality – 571,6 sq.km., Area of Chisinau City – 123 sq. km., Area of the central area – 6,2 sq. km. The maximum distance to directions: North-South – 33 km and East-West – 37 km.

Development context: Decisions of the *Chisinau Municipal Council no. 68/1-1 of 22.03.2007* and *no. 68/1-2 of 22.03.2007* on the approval of the 'Chisinau General Urban Plan' and the 'Chisinau Territorial Development Plan'; Decision of the Chisinau Municipal Council no. 22/40 of 25 December 2008 on the approval of the Local Urban Planning Regulation; the decision of the Chisinau Municipal Council no.4/19 of 21.12.2015 on the development of the project regarding the updating of the Chisinau General Urban Plan and the Chisinau Territorial Development Plan, including the decrees of the *City Hall Management no. 10-d of 09.01.2012*, *no.350 of 27.04.2012*, *no.38-d of 03.02.2016*, *no. 89-d of 03.02.2017* and *no.110-d of 13.02.2017*.

Legislation and regulatory acts: The strategic concept should be based on the existing planning practices, taking into account legislation and urban planning documents, prepared to date or being designed:

- Law no. 835 of 17.05.1996 on the principles of urban planning and territorial development
- Decision of the Parliament no. 2531-XXII of 22 June 1993 on the approval of the Register of state-protected monuments of the Republic of Moldova.
- Law on Roads no. 509 of 22.06.1995
- Law no. 198 of 26.09.2008 on the ratification of the Council of Europe Framework Convention on the value of cultural heritage for society
- Law no.436 of 28.12.2006 on local public administration
- Decision of the Government of the Republic of Moldova no.967 of 09.08.2016 on the Mechanism of public consultation with civil society in decision-making.

The existing urban planning documents

- HABITAT III, New Urban Agenda, adopted by the United Nations Conference, January 2017.
- The Transport and Logistics Strategy for 2013-2022, approved by the Government Decision no.827 of 28.10.2013.

- The Environmental Strategy for 2014-2023 and the Action Plan for its Implementation approved by the Government Decision no. 301 of 24.04.2014.
- The Municipal Transport Strategy of Chisinau, Karlsruhe, Bucharest, December 2013 – the document developed with the support of the EBRD.
- The concept of the construction project for the bypass road of Chisinau municipality, developed by the Ministry of Transport and Road Infrastructure this year.
- Optimization of public transport in Chisinau municipality, Institute for Development and Social Initiatives (IDIS) *Viitorul*, Chisinau, 2011.
- Investigation study on the condition of the Chisinau Historic Centre, prepared within the Historic Urban Project 'Integrated revitalization of historical towns to promote a polycentric and sustainable development', funded by the European Union in 2008.
- Feasibility Study 'Protection against floods in the territories of populated cantons in Chisinau municipality' in 2011.
- Concept on the integrated revitalization of the Chisinau Historic Centre (document in progress), 2017
- The Chisinau Public Transport Project, the Public Transport Regulation and Restructuring Programme. The Transport Strategy of Chisinau, 2013.
- Report on the implementation of the National Regional Development Strategy for 2013-2015, Ministry of Regional Development and Construction, Chisinau, 2016.

III. THE GOAL OF THE DOCUMENT

The assessment of the factors that currently influence the traffic congestion problem, the assessment of the main directions for the development of the roads infrastructure and the measures to be taken to improve the current situation, including for a long time. The transport development will ensure the implementation of the modern planning and management concepts for sustainable urban mobility, tailored to the specific conditions of Chisinau municipality, will form the basis for modernizing and modifying the general principles of the Comprehensive Transport Scheme and the previously developed transport section.

The concept of development of the transport infrastructure for Chisinau municipality, within 2018 and 2042, is a strategic document and a development policy tool aimed at improving the accessibility and good integration of different modes of transport and mobility.

The following main objectives should also be taken into account:

- Modernizing the city's street network to ensure transport connections between administrative sectors avoiding the central area;
- Ensuring transport connections between the municipality's localities;
- Reducing traffic congestion in the city's Central area;
- Developing transport jointly with the proposals to implement the intermodal transport model;
- Connecting the municipality's street network to the international traffic arteries;
- Providing different transport options to all citizens: public (bus, trolley, tram), motor;
- Reducing air and noise pollution, greenhouse gas emissions;
- Proposing integrated parking and road traffic policies;
- Ensuring continued and safe accessibility for pedestrians: pedestrian and cycle paths linking urban public spaces;
- The relocation of the railway station and freight transport services outside Chisinau city: Revaca and Mereni stations;

Note: The concept of development of the transport infrastructure should provide a basis for establishment and need to modernize and modify the general principles of the Comprehensive Transport Scheme and Transport Section of the current GUP with the introduction of strategies,

plans and programmes for the development of the street network and all types of transport in the municipality.

IV. TASKS OF THE DOCUMENT

The final goal of the **Concept of Sustainable Development of the Transport Infrastructure for Chisinau municipality** (design period making up 12 months from the date of designation of the winner of the tender) will be to propose measures aimed at contributing to economic, environmental and social sustainability of the transport system and to improving accessibility for pedestrians.

The concept will lay the foundations for a modern approach consistent with the modern standards of the urban transport issue and working recommendations which will form the basis for the decisions on the transport development in Chisinau municipality and in municipality's localities.

The analysis of the public transport network correlated with the existing street networks, the designed ones, and the degree of its overload, as well as the proposals to develop public transport services based on modern principles able to provide services that can lead to a relative reduction of vehicle transport requirements.

Solutions to reduce, as far as possible, traffic flow in the centre, including in residential areas, by providing alternatives for the existing bypasses roads, also taking into account the bypasses in the process of design and construction.

Finalization of the development strategy for the public and private transport system and the road infrastructure for Chisinau municipality until 2042, with the establishment of the design and implementation phases:

- **Phase I – Transport infrastructure development strategy and directions for 2018-2042**, design period making up 7 months from the date of designation of the winner of the tender, which once duly approved by the Chisinau Municipal Council will provide the basis for the modification of the urban planning documentation *‘Chisinau General Urban Plan’*, *‘Chisinau Comprehensive Transport Scheme’* and *‘Chisinau Central Area Urban Plan’*.
- **Phase II – Short-, medium- and long-term implementation plan and implementation solutions (measures and designs) of the Concept of Sustainable Development of the Transport Infrastructure**, design period making up five months after the approval of the Phase I.

V. DURATION OF THE CONTRACT

The Concept delivery term is 12 months from the date of signature of the contract.

During documentation development, the design materials will be submitted beforehand for examination and consultation by specialized Commissions of the Chisinau Municipal Council, Chisinau City Hall specialists, experts in the field and the population.

The documentation shall be submitted concurrently with the Conception development phases, set out in Chapter V.

The phases of preliminary submissions are:

- **Phase I – Transport infrastructure development strategy and directions for 2018-2042**, design period making up 7 months from the date of designation of the winner of the tender.
 - A. The analysis of the existing situation and problems identified at city and municipality level per each studied area (population, space structure/urban functions, motorized and pedestrian transport, street network, accessibility).

- B. Plan for building the Unique Transport System for the city and Chisinau municipality, taking into account the current trends of created (formed) agglomeration in the capital.
- **Phase II – Short-, medium- and long-term implementation plan and implementation solutions of the Concept of Sustainable Development of the Transport Infrastructure, design period making up five months after the approval of the Phase I.**
 - A. Short-, medium- and long-term programme of actions and implementation solutions (measures and designs) of the Concept of Sustainable Development of the Transport Infrastructure.

VI. PHASE I OF THE CONCEPT DEVELOPMENT – TRANSPORT INFRASTRUCTURE DEVELOPMENT STRATEGY AND DIRECTIONS FOR 2018-2042

Phase I – Collection of initial data – survey:

- Demographic and socio-economic evolution: Overall demographic picture, dispersion and characterization of population, job assessment;
Road and public transport network
- Data on transport infrastructure: vehicle traffic, freight traffic, traffic management, transport supply, public road traffic, use of public transport;
- Car parking system;
- Environmental assessment;
- Information on public, green and recreation spaces (including in the central area).
- The practice of solving the transport infrastructure problem of modern cities functioning similarly to Chisinau city.
- Questionnaires for population on transport infrastructure (the minimum sample 1% of the total population) will be carried out to determine the origin and destination of travels, opinions on road traffic and public transport.

Phase II - Analysis of the existing situation:

- The analysis of the efficiency of the street network and public transport
- The analysis of layout of corridors of international traffic arteries;
- The analysis of the road structure in the historic centre of Chisinau city;
- The analysis of pedestrian accessibility;
- General/complex traffic network covering all forms of transport in the examined area;
- Alternative movement modes – cycling, pedestrian traffic and movement of people with reduced mobility;
- Traffic management – parking, traffic safety, intelligent transport systems, signalling, management structures at the level of the planning authority;
- The identification of highly complex zones – protected central areas, logistical areas, occasional poles of attraction/traffic generation, intermodal areas – railway stations, airports etc.;
- Environmental assessment – emissions;

Phase III - Regulation:

- Establishing a transport traffic model using the PTV VISUM software
- Resizing the principal traffic arteries in relation to the traffic requirements;
- Proposing a new street network for the municipality including the bypass road;

- Reconfiguring the road network profiles to encourage pedestrian movement, to ensure safe traffic and pleasant traffic, especially near schools, public institutions and existing and proposed services;
- Establishing restricted traffic zones;
- Construction of a ring road that will encircle the central area and removal of transit traffic from the central area;
- Implementing the intermodal system bringing together a number of public transport types, facilitating connections between them;
- Creating priorities for the development of public transport with proposals to implement the intermodal transport model;
- Organizing transshipment centres at main entrances to the city with organization of public parking;

VII. PHASE II – SHORT-, MEDIUM- AND LONG-TERM IMPLEMENTATION PLAN AND IMPLEMENTATION SOLUTIONS (MEASURES AND DESIGNS) OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT OF THE TRANSPORT INFRASTRUCTURE.

The main tasks of the Concept are to analyze in detail and find short-, medium- and long-term solutions related to implementation periods, to propose measures and designs on the following levels:

- Developing the transport model using the PTV VISUM software;
- Integrating urban planning mobility through the socio-economic context;
- Organizing road and pedestrian traffic and setting the integrated parking policy;
- Ensuring road safety and security;
- Mobility management;
- Promoting non-motorised travels;
- Promoting intelligent transport systems (smart city concept);
- Strengthening institutional capacity.

The short-, medium- and long-term implementation plan and implementation solutions (measures and designs) for the regulations shall be developed based on the priority projects.

Phasing periods of the project proposals are:

Short-term – 5 years, within 2018-2023

Medium-term – 15 years, within 2018 - 2033

Long-term – 24 years, within 2018 – 2042

VIII. STRUCTURE OF THE CONCEPT OF SUSTAINABLE DEVELOPMENT OF THE TRANSPORT INFRASTRUCTURE FOR CHISINAU MUNICIPALITY

The transport concept shall be structured as follows:

WRITTEN PARTS – Explanatory memo

A. ANALYTICAL PART

1. INTRODUCTION

1.1 The goal and role of the developed concept

1.2 Embedding the municipality into the development context

1.3 Development directions to outline polycentric urban-rural system in Chisinau municipality

- 1.4 Socio-economic context with the identification of population densities and economic activities: the structure of population engaged in sectors of the economy, overall demographic picture
- 1.5 Major road network. Accessibility level
- 1.6 Public transport network and tariff structure
- 1.7 Traffic safety and social impact
- 1.8 Freight and logistics
- 1.9 Alternative mobility means: pedestrian and cycle paths, accessibility for disabled people
- 1.10 Traffic management: parking, traffic safety, intelligent transport systems, signalling
- 1.11 Tourist resources
- 1.12 Environmental impact

B. REGULATORY PART

- 1.1 Overall assessment
- 1.2 Motor mode assessment
- 1.3 Allocation of Public Transport
- 1.4 Assessment of operational measures
- 1.5 Environmental assessment – emissions
- 1.6 Effect of model measures
- 1.7 Short-, medium- and long-term project phasing proposals
- 1.8 Strengthening institutional capacity
- 1.9 Major interventions on the street network. Ensuring the quality of the passable space and parking management
- 1.10 Freight transport. Traffic routes
- 1.11 Reorganization and improvement of public transport
- 1.12 Traffic management
- 1.13 Proposals on the development of non-motorized travels
- 1.14 Highly complex zones. Integration of urban planning mobility
- 1.15 Intermodal structure and necessary urban operations
- 1.16 Funding of investment plans for mobility
- 1.17 Economic part – general assessment for the implementation of short-, medium- and long-term proposals
- 1.18 Proposals for the layout of transnational corridors
- 1.19 Organization of joint infrastructure for the operation of international and municipal traffic arteries.
- 1.20 Environmental regulatory proposals.

■ DRAWN PARTS – GRAPHICAL PART

A. ANALYTICAL PART

- 1.1 The scheme of incorporation in the territory of the Republic with the reflection of the corridors of international traffic arteries, scale 1: 400 000
- 1.2 The basic plan of the municipality, scale 1: 25 000
- 1.3 Functional zoning of Chisinau municipality. Highly complex zones, scale 1: 25 000
- 1.4 The population density chart in Chisinau municipality, scale 1: 25 000
- 1.5 Socio-economic framework. Chart of job density in Chisinau, scale 1: 25 000
- 1.6 The scheme of transport routes in Chisinau municipality: motor, rail, air, scale 1: 25 000

- 1.7 The scheme of interurban public transport networks with the service infrastructure, scale 1: 25 000
- 1.8 The scheme of municipal public transport networks with the service infrastructure, scale 1: 25 000
- 1.9 The scheme of freight traffic, including transit traffic, scale 1: 25 000
- 1.10 The scheme of non-motorized traffic: pedestrian and cycle, scale 1: 25 000
- 1.11 The scheme of the traffic intensity on main traffic arteries, scale 1: 25 000
- 1.12 The scheme of impact of transport on the environmental situation in the municipality, scale 1: 25 000
- 1.13 The scheme of evolution of the street network in Chisinau.

B. REGULATORY PART

- 1.1 Socio-economic evolution estimated in the spatial profile. Areas with high population density dynamics and highly complex zones, scale 1: 25 000
- 1.2 Strategic areas for the development of Chisinau municipality, scale 1: 25 000
- 1.3 Economic development areas of Chisinau municipality, scale 1: 25 000
- 1.4 Municipal road forecast for the year 2042, scale 1: 25 000
- 1.5 Road forecast for the year 2042 in the Central Area of Chisinau city, scale 1: 25 000
- 1.6 The scheme of public transport traffic. Types of public transport, scale 1: 25 000
- 1.7 Daily forecast of the number of passengers distributed by different types of public transport, scale 1: 25 000
- 1.8 The scheme of freight traffic, including transit traffic, scale 1: 25 000
- 1.9 Non-motorized traffic routes: pedestrian and cycle, scale 1: 25 000
- 1.10 Public spaces. Accessibility and continuity, scale 1: 25 000
- 1.11 Service infrastructure for intermodal points, scale 1: 25 000
- 1.12 Traffic reconfiguration, scale 1: 25 000
- 1.13 The way of affecting traffic after implementing the projects, scale 1: 25,000
- 1.14 Improved environmental situation. Proposed environmental transport types, scale 1: 25 000
- 1.15 The list of major development and restructuring projects, scale 1: 25 000
- 1.16 Establishment and delimitation of areas with temporary and permanent prohibition on construction.
- 1.17 Schemes of road and public transport traffic, pre-programmed pedestrian travels using the special PTV VISUM and PTV VISSIM software.

IX.CONCEPT MONITORING

During documentation development, the design materials will be consulted with urban planning specialists, including with the representatives of the specialized Commissions of the Chisinau Municipal Council, with the presentation of the results of the debates on the web page of the Chisinau City Hall. Based on the specialized Commissions' positive opinions, the design materials will be submitted to the Chisinau Municipal Council for examination and approval.

This decision will allow setting up the subdivisions of the city hall responsible for the Concept implementation and monitoring.

X.FINAL PROVISIONS

The documentation will be developed in a participatory way – the population and relevant actors shall be involved through various events and materials for promotion and consultation at various stages of document development.

The initial data shall be submitted by the City Hall of Chisinau Municipality through the responsible subdivisions, the City Halls of the municipality and related competent authorities.

All the documents included in the specifications as well as those that are to be drawn up in the contract shall be submitted in Romanian. The designer shall also submit the electronic format of the works.

At the end of the contract, the prepared documentation shall become the property of the beneficiary, and the copyright shall be assigned to the beneficiary.

The documentation shall be developed in 3 (three) copies in printed format and one copy in electronic format (PDF and editable). Also, all data structures shall be delivered in vector format and excel (word).

Chief Architect of Chisinau municipality
Head of General Directorate of Architecture,
Urban Planning and Land Relations



Sergiu BOROZAN

**Annex to the Terms of Reference
for Elaboration of the Concept of Sustainable Transport Infrastructure Development for the
Territory of Chisinau Municipality**

1.1 Vision and Objectives of the Concept of Sustainable Transport Infrastructure Development for the Territory of Chisinau Municipality

VISION

An efficient, integrated, sustainable and safe transport system designed to promote economic and territorial development that will be inclusive one from the social point of view, and to ensure high living standards in the urban area under analysis.

OBJECTIVES OF THE CONCEPT

- I. **ACCESSIBILITY** – All the citizens shall have viable public transport options allowing them to access the most significant points of destination and services
- II. **SAFETY AND SECURITY** – Improving the traffic safety and security
- III. **ENVIRONMENT** – Reducing the background pollution and air pollution, the green-house gases and energy consumption
- IV. **ECONOMIC EFFICIENCY** – Improving the efficiency and profitability of passenger and cargo carriages
- V. **URBAN ENVIRONMENT QUALITY** – Contributing to increase in attractivity and quality of urban environment, as well as to designing an urban environment to the benefit of the citizens, economy and society as a whole

1.2 Methodology of Concept Elaboration

1. Collecting the data and carrying on first consultations with the stakeholders
2. Analysing the factors and identifying the mobility challenges
3. Developing the transport model (software used as a tool for analysis of mobility scenarios and related projects) – this stage shall be based on the data collected at stage 1 and shall be realised in parallel with stage 2
4. Identifying the measures and projects proposed, grouped in the alternative scenarios

Proposals to be included in the **TERMS OF REFERENCE** and resulting from public consultations, inclusively with the urbanism specialists:

Section III. SCOPE OF WORKS shall be completed with an additional paragraph:

- The strategical document having as its goal the settlement of traffic challenges characteristic of all means of transportation (i.e. pedestrian means, bicycles, public transport, motor transport) shall assess the factors having an influence on the traffic and main directions of road infrastructure development and contributing to achievement of such objectives as accessibility, road safety and security, environmental protection, energy efficiency and urban environment quality.

Section VI. Elaboration of the Concept – Stage I. Strategy and Directions of 2018-2042 Transport Infrastructure Development and Stage III. Regulations – shall be completed with the following clauses:

- Assessing the traffic capacities of the street network (based on the segments and junctions), inclusively for the perspective period;
- Setting the red lines of the through streets, subject to keeping to the maximum the protected built-up areas having the historic value.

The following studies and procedures shall be also specified in the contents of the subject programme at the stage of organisation of the public bidding procedure for procurement of works on elaboration of the project 'Concept of Sustainable Transport Infrastructure Development for the territory of Chisinau Municipality':

Clause 7 Preparing the Initial Data – STRATEGY AND DIRECTIONS OF 2018-2042 TRANSPORT INFRASTRUCTURE DEVELOPMENT

Stage I – Consulting the existing studies/plans and Collecting the initial data:

- Consulting the existent transport studies and plans
- Consulting and analysing the existing strategies and plans of urbanism and territory improvement
- Assessing the implemented actions proposed by the previous projects
- Organising the queries related to the required data
- Statistical data about demographic and socio-economic evolution in the territory of Chisinau Municipality: general demographic situation, population spreading in the territory, identification and mapping of the workplaces in the Municipality
- Data about inhabitants' trips during different day and week periods, obtained as a result of co-operation of the projectors with mobile companies, in order to map the traffic
- Data about trips duration and road traffic congestions in Chisinau
- Data about the number of employees and their work schedule at public and private establishments, obtained as a result of co-operation of the projectors with different establishments
- Data about cargo quantities and cargo carriage schedule that may be obtained as a result of co-operation with logistic centres
- Data about projects under development, to be obtained from co-operation with the General Directorate of Architecture, Urbanism and Land Relations, due to which there will be identified new functions and, respectively, contiguous data (number of population, proposed streets, parking areas and so on)
- Data about frequency of taxi use by the population, depending on the day and week period; such data may be obtained from co-operation with taxi companies
- Co-operation with the Directorate of Transport Registration in order to collect data related to vehicle age and evolution during the last 5 years
- Data about transport infrastructure: way of public transport circulation, motor vehicle traffic, cargo traffic, traffic management, transport offer, public road traffic, joint transport use

Co-operation with the General Directorate of Public Transport and Ways of Communication with the Directorate of Chisinau Electrical Transport, in order to collect information about public transport.

- Collecting the indicators characterising the environmental condition
- Collecting the information about characteristics of public, green and entertainment area (inclusively in the central zone)
- Collecting the data about the number of population owing motor vehicles and, as well, about evolution of this indicator during the last 5 years

- Data about road safety, laying an emphasis on fatal road accidents
- Data obtained by questioning the population about the transport infrastructure (a minimum sample shall make 1% of the total population) shall be arranged so that there would be identified the trips origin and destination, opinions about road traffic and public transport
- Data and indicators reflecting the impact on the environment: air quality in the pre-established locations and population exposed to the pollution generated by such traffic

Remark:

Data collection shall be based on the tools and techniques meeting the following criteria:

- Permanent availability
- Cheap use
- Delivery of correct results throughout the period of implementation

Google stores the information about location of all Android-based smartphones that include Google maps and integrated GPS and may be used as a source for trips analysis.

Stage II – Analysis of the current situation:

1. Demographic and socio-economic context

- Demographic evolution and population distribution by age groups; identifying the centres of interest for each of such groups
- Analysing the population density and workplaces; identifying the areas giving the great percentage of workplaces
- Identifying non-residential areas (commercial, social and cultural activities) attracting a great flow of transports and passengers
- Identifying the areas under design and development (both dwelling areas and areas of public interest) that will be the points of attraction for motor vehicles and passengers
- Analysing the demographic data from Chisinau Municipality and neighbouring districts (Ialoveni, Straseni, Orhei, Criuleni)

2. Road network

- Analysing the efficiency of the street structure in the current context
- Analysing the way of tracing of main international corridors and parameters thereof
- Analysing the road network in the historic centre of Chisinau City
- Analysing the road transport traffic within the central and historic area
- Identifying the density of the street network in the over-territorial context (as compared with other European cities)
- Flowing capacity of the streets and roads during the rush hours and in the day period
- General/complex trafficking network comprising all the kinds of transport in the area under examination
- Analysing the road traffic impact on the public space and urban image within the City of Chisinau, particularly in the central area
- Analysing the transit traffic impact on the city

3. Railroad network

- Analysing the railroad infrastructure and railroad stations in Chisinau Municipality (for passengers and cargoes); identifying the physical condition thereof
- Identifying the role and importance of the railroad network for passengers' trips and cargo carriages
- Identifying the correlation between the railroad stations and other kinds of transport, particularly of public one

4. Public transport network

Buses, trolleybuses and fixed-route taxis:

- Analysing the coverage of the public transport infrastructure (for each kind of transport) and the density of the population and workplaces within a radius set in the course of work
- Analysing the public transport traffic during different day and week periods: rush hours, in the course of the day, on week-ends
- Analysing the quality of services provided by public transport
- Analysing the way of location of the public transport stops and coverage area (servicing radius), as well as co-operation thereof with other kinds of transport (railroad and private transport)
- Analysing the public transport traffic in the central area of the city
- Identifying the territories to form the intermodal points at the main entries into the city through detailed analysis of the types of property and functions
- Analysing the number of passengers per day and per year/per transport line

Tariff structure:

- Analysing the tariff structure for each kind of public transport (bus, trolleybus, fixed-route taxi) – types of tickets and tariffs
- Analysing the coverage of the servicing expenses and identifying a need for changes in the tariff structure

Taxis:

- Analysing the negative impact of the taxis on the road traffic congestions on all arterial roads of the city and, as well, at the level of taxi stops and public parking areas

5. Alternative mobile means: trips on foot and bicycle trips

- Analysing pedestrian accessibility and identifying the infrastructure for passengers; analysing the challenges that does not allow to use it now
- Analysing the impact of the car parking areas on trips on foot and bicycles, as well as on the public spaces
- Identifying the areas that are the points of attraction for non-motor traffic (pedestrian traffic or bicycle traffic)
- Identifying the preferences of the bike riders with regard to the bicycle infrastructure
- Analysing the pedestrian infrastructure that ensures travelling of people with reduced mobility

6. Traffic management

Road safety

- Analysing and identifying the areas with increased accident risk and the unsafe places for pedestrian traffic, bicycle traffic and public transport/motor vehicle traffic
- Identifying the causes of road accidents and mapping them

Congestions

- Analysing and identifying the causes leading to road traffic congestions during different day periods: rush hours and in the course of the day
- Identifying the roads and streets, where the traffic is reduced because of everyday or all-day-long congestions
- Identifying the congestion index for each major street in the city
- Analysing the transit traffic impact on congestions in different city areas
- Analysing the impact of congestions on inhabitants, environment and public transport
- Analysing the evolution of the number of motor vehicles during the last 5 years, based on the data presented by the Directorates of Transport Registration from Chisinau Municipality

Parking areas

- Analysing the existing car parking system and bicycle parking system
- Identifying the economic impact of parking areas on the municipal budget
- Analysing the impact of car parking areas on the pedestrian traffic and on the bicycle traffic
- Analysing the underground car parking infrastructure and the multi-storey car parking infrastructure
- Analysing the free-of-charge parking effects on the public spaces and pedestrian traffic

6. Cargo transport and logistics

- Analysing the infrastructure of logistic centres and goods distribution centres in the territory of Chisinau Municipality and neighbouring districts
- Analysing the impact of the airport on cargo transport
- Identifying the significance of the airport in the network of logistic centres and in cargo transport
- Analysing the impact of the heavy-load transport on the traffic during different hours of the day

7. Identifying the complex areas

- Identifying the areas with a high level of complexity – central protected areas, logistic areas, occasional areas of attraction, intermodal areas, i.e. transport stations, airport and so on
- Analysing and identifying the traffic-generating areas – Gara de Nord (Northern Bus Station), Gara de Sud (Southern Bus Station), Gara Centrala (Central Bus Station), airport, shopping malls, social centres, health centres, educational establishments and so on
- Identifying the significance of the central area in the urban structure and analysing the impact of the motor vehicles thereon
- Analysing the way of location and distribution of the complex areas in the territory of the municipality

8. Environmental impact assessment

Air pollution:

- Assessing the traffic-generated impact on the air quality, more exactly: the impact of inorganic gases (nitrogen oxides, sulphur dioxides, carbon dioxides, ozone), substances in the form of particles (particles in suspensions, particles having the aerodynamical diameter smaller than 10 or 2.5 nm, black smoke), components of substances in the form of particles (elemental carbon, polycyclic hydrocarbons, plumb), volatile organic compounds (benzene, butadiene)
- Identifying and carrying on a comparative analysis of the indexes characterising the air pollution level in different city areas
- Identifying the number of old motor cars with the CO₂ emission exceeding the admissible limits, and the impact thereof on the environment
- Analysing and identifying the infrastructure to service the eco-friendly transport in the territory of the municipality

Noise:

- Analysing and identifying the areas exposed to the noise impact during different day periods
- Identifying the noise impact on the population, based on the analysis of the main noise sources in the city: road traffic, railroad traffic, air traffic and industrial activities

Stage III – Regulations related to approach to the strategical objectives: *Traffic Safety and Security, Accessibility, Environment, Economic Efficiency and Quality of the Urban Environment.*

1. Traffic safety and security:

- Developing the transport model, using the PTV VISUM programme
- Promoting the intelligent transport system (smart city concept)
- Freeing the central area from the transit traffic and redirecting the motor vehicles outside the limits of the historic area
- Offering the solutions for Chisinau areas with the greatest number of accidents
- Developing the policies to increase the road safety and, as well, developing the educational campaigns related to the road safety policies

2. Accessibility:

Non-motor trips:

- Organising the extended network of streets and areas with the priority for the passengers and for a bicycle strip network directed to the main areas of interest (workplaces, educational establishments, shopping malls and rest areas)
- Reorganising the transport and traffic within the City of Chisinau, taking into consideration the trip hierarchy, based on trips importance (passengers, bike riders, public transport, private transport): development of some boulevards favourable for the passengers
- Creating a functional network and an entertainment network for bicycles: bicycle strips and parking lots
- Providing the guidelines for bicycle infrastructure protection
- Introducing a bicycle rent system
- Creating transfer parking areas of Park&Ride type at the major public transport stations
- Introducing new zones with the priority for the passengers in the central zone of Chisinau City, particularly, ensuring the connection between the historic areas: pedestrian areas and mixed-functionality areas
- Improving accessibility for the persons with reduced mobility

Public transport:

- Identifying a strategy and a plan of investments into increase of quality, security and accessibility of the infrastructure and public transport services
- Proposing an extended integrated transport network for whole Chisinau Municipality, to contribute to reduction of car use
- Rehabilitating the public transport infrastructure
- Introducing the eco-friendly motor vehicles for the public transport
- Proposing new public transport joints: trams, transport for realisation of the rapid transport corridor
- Implementing the intermodal system to reunite several types of transport together, thus facilitating transport interconnections

Road transport and parking area network:

- Organising the road traffic and identifying the integrated parking policies
- Introducing the street parking management system, with regard to the city centre
- Realising and implementing a residential parking policy
- Introducing the electrical vehicles – delivery and commercial ones
- Reorganising a street road chart for the municipality, subject to inclusion of a bypass road
- Protecting the road connection between the city districts and, as well, between the city and the municipality, in order to exclude the transit traffic

- Reconfiguring the street network profiles, in order to favour pedestrian trips, to have a safe and pleasant traffic, particularly near schools, public establishments and existing or proposed services
- Freezing the street chart within the limits of the central area, in order to keep the identity thereof
- Identifying the areas with the traffic restrictions
- Forming a traffic ring as a bypass road for the central area and eliminating the transit traffic from the central area
- Organising the trans-shipment centres at the main entries to the city, subject to arrangement of public parking areas
- Developing and implementing an urban logistics strategy in the localities of the municipality

3. Mobility management:

- Mobility management
- Introducing an operating system for public transport: centre of control, real-time information, dispatching, adaptation and personal safety
- Implementing a tariff integration scheme

Clause 12 Time Frames of Realisation and Works Costs – The project results shall be documented in a series of reports, depending on the phases set. The deliverables shall include the following reports:

Phase I:

- ✓ **Initial report (in a month after project commencement)**
Providing a review of the data and documents obtained, and comprising a description of the data availability and query lists
- ✓ **Monthly progress reports (each month, starting with the second month)**
Describing briefly the tasks realised during the previous month and the tasks scheduled for the next month; providing the information about dysfunctionalities occurred and remedies thereof
The expert objections shall be enclosed to the progress report.
- ✓ **Interim report 1 (in 4 months after project commencement)**
Comprising a questionnaire report and presenting, as a synthesis, the results obtained from analysis of the current situation; including, as well, a report of traffic changing and strategical milestones adopted for stage III
- ✓ **Interim report 2 (in 6 months after project commencement)**
Presenting the options of the Concept of Sustainable Transport Infrastructure Development (in power point) and providing the documents for public consultations
- ✓ **Final report – draft (in 7 months after project commencement)**
Providing the Concept and describing all proposals related to project development; graphic presentation and report regarding the results of implementation of the solutions proposed. Remarks of the experts and Chisinau Municipal Council shall be added within a maximum of a month after presentation thereof. The final report shall be presented within a month after receiving the remarks from the experts and Chisinau Municipal Council.

Phase II:

- ✓ **Interim report 3 (in 3 months after Phase II commencement)**
Presenting the actions plan and short-term and medium-term implementations through identification of all the actors involved, the budget required and the responsible authorities.

- ✓ **Final report – actions plan (as estimated – in 12 months after project commencement)**
(depending on the period of phase I approval)

The actions plan shall be presented in five months after Phase I approval at Chisinau Municipal Council and obtainment of the conclusions from the specialised commissions. Meanwhile, there shall be carried on public consultations on the proposals made. The comments of the wide public and non-governmental organisations shall be considered upon completion of the final report.

The times frames of Concept delivery shall be **7 months** for **Phase I**, starting with the day of contract signature, and **5 months** given for **Phase II**, starting with the day of Phase I approval.

Throughout the period of documents preparation, the project materials shall be presented beforehand for consultations and examination to the specialised commissions of Chisinau Municipal Council, specialists from the Mayoralty Chisinau Municipality and branch-wise experts. There shall be also organised consultations with the population according to the schedule set in chapter V.

**Chief Architect of Chisinau Municipality, Head of the General Directorate of Architecture,
Urbanism and Land Relations
Sergiu BOROZAN**

