TERMS OF REFERENCE

DEVELOPMENT OF NATIONAL TRANSPORT STRATEGY 2022 - 2030

A. COUNTRY AND REGIONAL CONTEXT

1. ***The Republic of Serbia is located in the central part of the Balkan Peninsula, on an increasingly important route linking Europe and Asia, occupying an area of 88,361 square kilometers.*** Serbia's international road, railway, and inland waterway networks are connected to the broader Western and Central European corridors, as well as to intercontinental corridors linking Central and South-eastern Europe with the Middle East, Asia and Africa. Serbia's geographic position, with a border length of 2,114.2 kilometers, opens up significant opportunities to deepen trade and economic integration with neighboring economies.

2. ***The Republic of Serbia is an upper middle-income country with a Gross National Income per capita of US$ 7,409 (2019) and a population of 7 million (2018).*** Serbia is one of the main economies of the Western Balkans and has observed positive economic performance in the last 4 years. This has been coupled with sound public finances and an ambitious regulatory modernization to meet European Union (EU) accession requirements. Growth of the industry, transport, and services sectors contributed most to the overall growth of the economy over the last three years, while agriculture had a negative contribution to growth in 2015 and 2017. Medium-term growth projections depend crucially on deeper and timelier structural reforms and progress towards EU accession.

3. ***The country is ranked relatively high in terms of competitiveness, investment climate and the ease of doing business*.** The World Economic Forum's global competitiveness index ranked Serbia at 72 out of 141 countries in 2019, behind regional peers Slovenia (35), Bulgaria (49), Romania (51) and Croatia (63) but ahead of Montenegro (73) and Albania (81). It is ranked 48th by the World Bank's Doing Business Index 2019, where it scored above regional average for Europe and Central Asia. Since 2014, the Government of the Republic of Serbia (GoS) has made good progress in reducing public debt, including through greater fiscal responsibility, reform of the public administration, reform of the state-owned enterprises and an overall increase in public sector productivity.

4. ***The prospects for accession to the European Union (EU) has provided an impetus for a broad spectrum of reforms.*** In November 2007, Serbia initiated a Stabilization and Association Agreement with the EU.[1] In 2012, it was granted EU candidate status. As of December 2018, Serbia had opened 17 out of 35 chapters of the EU's Acquis communautaire, of which two are provisionally closed. Chapters relevant to the transport sector are chapters 14 and 21.

[1] European Commission, retrieved from https://ec.europa.eu/neighbourhood-enlargement/countries/detailed-country-information/serbia_en, on May 22, 2019.

B. SECTORAL CONTEXT

EU Accession and regional integration

5. ***As a part of the accession process, Serbia needs to implement the EU rules (the Acquis) in the transport sector, in particular chapters 14 - Transport Policy and 21 – Trans European Networks (includes both, transport and energy).*** The EU has common rules for technical and safety standards, security, social standards, State aid and market liberalization in road transport, railways, inland waterways, combined transport, aviation and maritime transport, which need to be meet by candidate countries. Implementation of these common rules is monitored within chapter 14 and presented each year in a country-specific progress report. Serbia's progress report for 2019, focused on road safety improvements, implementation of rail reforms, improvements in connectivity, with the particular reference to intelligent transport systems. Chapter 21 promotes trans-European networks in the areas of transport, telecommunications and energy as means of strengthening the internal market and contributions to growth and employment. According to the progress report 2019, Serbia needs to „revise its transport strategy in line with EU guidelines for the development of trans-European transport networks" and „strengthen administrative capacities for transposing, implementing, and enforcing the Trans-European networks acquis"[2].

6. ***The European Commission (EC) has provided substantial and continuous support to Serbia's transport sector in recent years.*** For transport sector, over the period 2007-2013 approximately 150 MEUR of IPA funds were committed, from WBIF funding, IFI loans 1,723 MEUR, and more recently, under the IPA 2014-2020 programming period 64.8 MEUR has been allocated to transport sector development. Bilateral donors, especially the Czech Republic, China, Russia, and Azerbaijan have also provided support to the sector.

7. ***Deepening regional integration contributes to political and institutional stability.*** The European Union provides the clearest evidence and example for the Western Balkans Six (WB6) of the many benefits associated with regional integration. The aim of the Western Balkans Six (WB6) Initiative (2014) known also as the "Berlin Process" is to bring a new dynamism to regional cooperation by building and connecting transport and energy infrastructure as a driver for growth and jobs. This "connectivity agenda" to improve the links within the Western Balkans and with the EU has been endorsed and supported by the EU from the start. In the context of the WB6, an indicative extension of the Trans-European Transport network (TEN-T) including core network, core network corridors and pre-identified priority projects for infrastructure investment has been defined. However, it is not only infrastructure that will enhance connectivity. Similarly, important is the implementation of technical standards and soft measures such as aligning and simplifying border crossing procedures, railway reforms, information systems, road safety and maintenance schemes, railway unbundling and third party access. In addition, the proliferation of preferential trade agreements in the last two decades has strengthened economic relationships and reduced the likelihood of conflict between trade partners. Regional commitments also provide an anchor and rationale for policy reform, reinforcing national authorities' leverage to implement reforms. The regional approach also allows for joint reforms, such as the interconnection of information systems, the alignment of documentation, standards, and

[2] Ministry of European Integration Government of the Republic of Serbia, retrieved from http://www.mei.gov.rs/eng/documents/eu-documents/annual-progress-reports-of-the-european-commision-for-serbia, on July 5th, 2019.

guarantee systems, and the adoption of cross-border agreements allowing free passage[3]. Importance and benefits of regional integration was recognized by the World Bank, as well, and supported by launching the Multiphase Programmatic Approach to facilitate achievement of the Western Balkans Governments' goal of reducing trade costs and increasing transport efficiency. Contract to be signed for these services is a part of this Program related to the Serbia.

8. ***The Transport Community Treaty (TCT) signed on 9th of October 2017 (Council Decision (EU) 2019/392) represents a key instrument to support the accession process*** (Acquis implementation). The aim of the Treaty is the creation of the Transport Community, the international organization composed of the European Union and the South East European Parties, the Republic of Albania, Bosnia and Herzegovina, the Republic of North Macedonia, Kosovo*[4], Montenegro, the Republic of Serbia with the key objective to extend the EU transport market rules, principles and policies to the Western Balkan Parties through a legally binding framework in the field of road, rail, inland waterway and maritime transport. The Transport Community is supported by the Permanent Secretariat of the Transport Community (TCT Secretariat) based in Belgrade, Serbia. It provides administrative support to the other institutions of the Transport Community (the Ministerial Council, the Regional Steering Committee, the technical committees and the Social Forum), reviews the implementation of the obligations under the Treaty, and acts as a Transport Observatory to monitor the performance of the indicative TEN-T extension of the comprehensive and core networks to the Western Balkans and supports the implementation of the Western Balkans Six (WB6) Connectivity Agenda aiming to improve links within the Western Balkans as well as between the region and the European Union.

Strategic framework

9. ***There is currently no coherent policy or strategy to guide the development of the transport sector in Serbia***. The last transport strategy of railway, road, inland waterway, air and intermodal transport development for Serbia was developed in 2007, covering the period 2008-2015. This document set forth, conceptually, the direction of development of transport sector, but lacked a robust evidence base on future traffic across the modes. The General Master Plan complemented the 2007 Transport Strategy for Serbia, which provided an operational approach to solving transport problems and traffic forecasts until 2027. It also identified capacity issues for each mode and laid out key reform and investment priorities for the short, medium and long-term planning horizons. Yet, since 2007, numerous shocks have affected Serbia and the region, from the global financial and economic crisis of 2008-2009 to Greece's debt crisis and subsequent protracted economic recession. Further, severe negative impacts of the pandemic COVID-19 on the global economy is expected to spill over the Serbian economy, as well. Magnitude and duration is hard to predict since the pandemic is not over yet. In addition, the already committed investments proved insufficient in size and were ineffectively deployed.

   There are no current formal implemented strategies, or an established framework accepted by all stakeholders with legal force for providing Intelligent Transport Systems in the country. Namely, Serbia completed a draft version of "Intelligent Transport System (ITS) Strategy for Serbia" in 2017, which was discussed to some extent but not officially adopted. However, the document contains all elements in accordance with Directive 2010/40 and the European ITS

[3] The World Bank Group.2019. Western Balkans trade and transport facilitation project using the multiphase programmatic approach

[4] (*) This designation is without prejudice to positions on status and is in line with UNSCR 1244 (1999) and the ICJ Opinion on the Kosovo declaration of independence.

action plan. Existing laws (on Road Traffic Safety, on Working time of vehicle crew in road transport and tachograph) have some elements relevant for the deployment of ITS in the road sector (tachograph system, accident data collection system, vehicle safety system and eCall system). Some by-law acts still need to be adopted for full harmonization. Most ITS implementations in Serbia suffer from insufficient standardization of information exchanges, market actors' disparate capabilities to use ICT, legal requirements that hamper the use of ICT, as well as data security and privacy issues.

Given the very dynamic nature of the transport sector and regional traffic, it is crucial that the resulting transport model reflects the current traffic flows and incorporates a stronger multimodal dimension.

10. ***Since 2007-2008 several sub-sectoral strategies have been produced, not always in a coordinated or integrated manner:*** In 2015, a strategy on waterborne transport development of the Republic of Serbia, 2015-2025 was adopted, dealing with broad issues ranging renewing and modernizing the national fleet, to developing the economic potential of Serbian ports and harbors, and developing the navigational standard of national inland waterways. For railways, Railway Master Plan was produced with the financial assistance of the European Western Balkan Joint Fund (EWBJF) under the Western Balkan Investment Framework in 2012, for the period from 2012 to 2021.[5] In 2017, the Parliament adopted the National Program for the Development of Railway Infrastructure 2017-2021. The program deals with infrastructure gaps and identifies priority projects for both maintenance and reconstruction/new construction. Roads of Serbia prepared and adopted a medium- and long-term plan of business strategy and development plan for the period 2017-2027, which tackles the provision of infrastructure maintenance and capital investments, as well as the need to strengthen business processes within the company. Similarly, Koridori Srbije Ltd. adopted long- and mid-term plan of business strategy and development plan for the period 2019-2028. While these documents have filled policy gaps and provided strategic direction at a relatively granular level, Serbia is missing an overarching framework to assess the 'big picture' tradeoffs and prioritize different modal interventions on that basis and mechanisms to assess and adjust implementation, in an integrated manner.

Institutional framework

11. ***The transport sector in Serbia is administered by the Ministry of Construction, Transport and Infrastructure (MCTI)***, which is responsible for policy, strategic planning, and regulatory oversight, while different modal agencies are responsible for construction, maintenance, operation and management of roads, railway, inland waterways and aviation. However, in some instances, MCTI also has a role of investor. The sector is governed by several laws, the most important being the Law on Ministries of 2014 (amended in 2015 and 2017), according to which, MCTI has overall responsibility for the transport sector.

12. ***In the past 10 years, Serbia has transformed the primary institutions of the transport sector.*** Under the Ministry, there are two companies in the roads sub-sector: Koridori Srbije Ltd. and Public Enterprise "Roads of Serbia" (PERS). PERS performs management, maintenance, construction, reconstruction, toll collection and development of II category state roads, and I

[5] This document includes 24 railway projects with technical reports, based on the application of traffic forecasting model and evaluation of investment priorities (using multi-criteria and cost benefit analyses).

while Koridori Srbije Ltd. is an infrastructure development unit, responsible for the construction of specific motorway sections.

The railway sector has been restructured by splitting one vertically integrated company into four specialized entities and introduced contractual arrangements between companies and with the government (track access charges, public service obligation). The Railway Directorate is the independent regulator of the railway sector and National Safety Authority. It regulates the activities of the separated state-owned enterprises (SOEs) that provides services (infrastructure, passenger transport, and freight transport) and new market entrants.

The inland waterway network is managed, maintained, and developed by the Directorate for Inland Waterways. Additionally, the Port Governance Agency manages concession agreements and tariffs for inland waterway ports.

There are three major public entities in the aviation sector, (i) the Civil Aviation Directorate (CAD), (ii) Serbia and Montenegro Air Traffic Services llc (SMATSA), and (iii) Airports of Serbia ltd (AS). CAD of the Republic of Serbia is a public agency, over which the Government on behalf of the Republic of Serbia exercises the founder's rights, performs the state administration activities entrusted to it by means of the Air Transport Law of the Republic of Serbia. CAD was designated as the National Supervisory Authority of the Republic of Serbia in the area of air navigation, in accordance with EU regulations and, therefore, issues the Certificates of competency for provision of air navigation services and assesses if the air navigation services providers continue to fulfill the prescribed conditions. SMATSA primary and predominant business activity is Air Navigation Service Provision, with additional services including air traffic control officer training, flight training, flight inspection of ground-based radio navigation aids and aircraft maintenance services. AS was founded by the Government to assemble the airports in the territory of the Republic of Serbia, including "small airports" in order to raise the level of safety, security and development assistance. AS performs operational tasks in the process of implementation of the National Airport Development Program in the Republic of Serbia.

13. ***While Serbia has successfully established a well-defined framework of necessary transport sector institutions, issues such as technical capacity, funding, legal instruments, overlapping mandate, governance, digitalization, and constraints in autonomy of decision making hinder these entities' efforts to fulfil their roles and responsibilities.*** Strengthening human capacities in government and sectorial agencies is recognized as a critical task for the short and medium term. In particular, there is a need to modernize outdated sectoral management practices, and to address high employee turnover in government (particularly among the young) and among contractors. Furthermore, there is little integration between the individual transport modes, each having their own strategy, but with little focus on multimodality, improvement of logistic services and service sector performances. In all transport modes digitalization is lagging, where Intelligent Transportation System (ITS) framework for the country does not exists, leading to fragmented and not coordinated and integrated implementation of stand-alone solutions.

14. ***Key transport sector enablers and value chain drivers are generally not addressed in a systematic manner at the moment.*** This matters because infrastructure investments are unlikely to yield the intended impact if they are not supported by: (a) changes in the sector's overall governance structure, by which integration (across modes, geographies, and levels of government) may be facilitated and, in time, mainstreamed; and (b) embedding cross-cutting issues - like human resources development, contract management, multimodal design and

service delivery, climate change, social inclusion, and technology adoption—in the planning, policy, and decision making process.

15. ***To fully realize the transport sector's potential, gender-based barriers and other drivers of exclusion must be addressed, based on the fundamental principles of promoting equality and combating discrimination, based on the equal access irrespective of gender, racial or ethnic origin, religion or belief, disability, age, or sexual orientation.*** The Gender in Transport Study, managed by Coordination Body for Gender equality within Deputy Prime Minister (DPM) office and financed by the World Bank loan proceeds, will illustrate female participation and needs when it comes to mobility and will inform the policy paper. A transport strategy encompassing these issues can provide a good opportunity to improve the capacity of governments to examine barriers in transport with a gender perspective. The Gender Survey planned to be undertaken under the IFC/Bank Trade Facilitation Support Program (TFSP) will shed light on some of the gaps that exist around barriers that women traders face in undertaking trade across the Western Balkans at the firm level.

C. RATIONALE FOR THE ENGAGEMENT

16. ***In order to achieve its ambitious investment goals for the next decade, totaling in value nearly EUR 14 billion (see Annex 1) and to do so in a manner that is sustainable and complaint with chapters 14 and 21 of the EU acquis, Serbia should adopt a national multimodal strategy to guide the development of the transport sector***. In light of the EU enlargement process and considering current sectoral challenges such as insufficient technical capacity, outdated practices, and high skilled labor turnover in the transport sector, there is a need to address the issues from both an operational and a systematic point of view, and as such to ensure a sustainable, well-functioning transport system. Furthermore, delivery of new investments and maintaining infrastructure assets requires strong project management processes like planning, monitoring, supervision, and delivery. Hence, the goal of improving connectivity and mobility services asks for an ongoing reform of the public sector and its companies, with relevant strategic focus on innovation and technology adoption, planning and monitoring mechanisms, and capacity development at levels and among all stakeholders.

17. ***Currently the Republic of Serbia is implementing the Western Balkan Trade and Transport Facilitation Project (Project).*** The Project is part of Phase 1 of the Multiphase Programmatic Approach launched by the International bank for Reconstruction and Development (IBRD) to facilitate the achievement of the Western Balkans Governments' goal of reducing trade costs and increasing transport efficiency. Beside Serbia, Albania and North Macedonia are included in the Phase 1, while in the second phase other beneficiaries in the Western Balkan will be included. For the purpose of financing of the Project, IBRD has granted to the Republic of Serbia 35 MEUR loan to support a combination of investments, technical assistance and regulatory and institutional reforms. The Project consists of four components whereas the services described under this ToR is expected to be carried out as part of the Component 2: Enhancing transport efficiency and predictability with special focus on preparation of strategic document for transport sector in Serbia. At the regional level, the Secretariat for Transport Community Treaty (TCT) will play the role of the regional coordination and liaison office for the Western Balkans Six, for all the transport related dimensions of the Project. The CEFTA Secretariat will play the same role for the trade elements of the proposed project. At the national level, Project Implementation Unit (PIU), within the MCTI, has primary responsibility for Project execution ensuring that the Project development objectives are met.

18. ***Within the Project a strategic policy framework and foundation for introduction of ITS to improve transport sector performance in the country will be produced, and it will guide development of the National Multimodal Transport Strategy.*** The policy framework will cover all policy elements that should constitute a modern national transport strategy, including horizontal and vertical sectorial issues. Vertical issues are related to the next investment cycle and include identification of priority investments and interventions while horizontal issues cover sectorial enablers like governance, human capital, technical capacities, gender, resilience, intermodal transport, and technology adoption, including ITS, etc. The goal of the GoS is to acquire a strategic view based on transport as a mobility service rather solely as provision of infrastructure links.

D. OBJECTIVES AND SCOPE OF THE ENGAGEMENT

Overall Objective

19. ***The primary objective of the engagement is to prepare the new coherent National Multimodal Transport Strategy and action plan to guide the sustainable development of the transport sector over the period to 2022- 2030 and, as such, to*** contribute to expanded, improved and safer transport networks, which will enhance transport services, attract new investments to the poorer regions, improve the quality of regional life, foster innovation, promote trade and contribute to the improvement of relations with neighboring countries. This will include a prioritized time bound plan for institutional (organizational, policy and regulatory) reform, capacity building, and physical investments (whether from public or private sources), encompassing all transport modes (road, rail, IWW, air, maritime, multimodal) as well as ITS Strategy.

20. ***The activity will provide MCTI and the GoS with options- and scenario-based policy advice, quantitative and qualitative evidence of current and potential future transport sector performance, and a development narrative that can support the GoS in their intended goal of adopting a National Multimodal Transport Strategy in line with the Law on the Planning System of the Republic of Serbia (Official Gazette of RS, No. 13/18) and related bylaws.*** The activity will assess sectorial enablers and the practices of government in Serbia's transport sector as to the core functions of planning, decision and policymaking, institutional organization and governance, legal and regulatory framework and its enforcement, and performance management. The activity will also take into consideration sectorial enablers and issues like human capacity, contract management, resilience, gender, intelligent transportation systems, etc. By addressing horizontal and vertical sectorial issues, the activity will help the GoS to shape a preliminary strategic direction for the transport sector as to goals, objectives, risk profile, and trade-offs. It will develop a freight and passenger transport model at the national level to identify supply-demand mismatches and test the likely impact of infrastructure, regulatory, and policy-based interventions. And it will provide a set of prioritized recommendations for lasting sectoral performance improvement, with options regarding their implementation and, in the case of broad avenues for physical investments, indicative economic viability assessments.

21. ***This will be achieved through the development of (i)National Multimodal Transport Strategy based on identified bottleneck, definition of the vision for the sector, and outputs of the multi-modal transport model including strategic development of an Intelligent Transportation System (ITS) aligned with national and international (EU) legal framework and action plan for its implementation; and (ii) strategic environmental impact assessment.*** The outputs from the services should guide future government development of the sector, including key aspects of transport mobility, ranging from infrastructure, governance, mobility as a service, innovation,

user needs and soft issues. Delivery of ITS strategic documents should enable the country to introduce ITS in a sustainable and effective manner at the national and municipal level.

22. The strategic framework should at least include the following:

a. Provide a diagnostic of current sectorial bottlenecks and define, together with the MCTI, vision for the sector;
b. Provide an assessment of the current transport flows across different modes;
c. Provide a review and assessment of the current and projected demand for inter-city/long-distance freight and passenger transport (both commercial and PSO), covering national and international transport, and transport connections within the country and towards neighbors, in the national roads, railways, and inland waterway sub-sectors, based on available information, for the base year 2019, and the target year of 2030; if necessary intermediate years can be interpolated linearly;
d. Provide a review and assessment of the current condition of the supply of inter-city transport infrastructure and cargo (including transport of hazardous goods) and passenger carrying capacity of key nodes, covering national roads (e.g., motorways), railways, aviation and inland waterway transport, and including the country's main national motorways and roads, river ports, railway facilities, airports, and trucking equipment and terminals. Provide an assessment of the multimodal transport potential in the country, particularly with regard to containerized freight, from the perspective of shippers, carriers, and logistics service providers in the market, including city logistic;
e. Present a prioritization of capacity expansion investments in the motorway, railway, river ports, inland waterways, and logistics centers network, based on an assessment of supply-demand mismatches and future bottlenecks, taking into account the sector's absorption capacity and consistent with the expected financing capacity of the country;
f. For the selected scenario, present a detailed list of assumptions, investment needs and delivery risks. Also, present the list of investments in physical assets for each transport mode;
g. Where shows necessary provide recommendations for improvement of the government structures and needed reforms for each transport mode;
h. Provide a review and assessment of the enabling environment for transport sector development, including human capital and capacities, gender inclusion, climate and operational resilience, contract management and planning, and opportunities for technology adoption, e-Mobility, and innovation;
i. Analyze the remaining requirements as per EU acquis (accession chapters 14 and 21), Western Balkans 6 agreement, and regional integration;
j. Provide review of current state and further systematic and coordinated introduction of ITS in the country as a tool for safer, greener and more efficent transport, identifing potentials and weaknesses in the ITS legal, organizational, technology and application implementation and develop strategic actions and measures to be address for full legal, institutional, technical and operational deployment of ITS on National Level, aligned with International standards;
k. Prepare a preliminary strategic environmental impact assessment with special focus on air pollution, as per obligations stipulated in the Law on Environmental protection.

Scope of Work

23. The scope of work will comprise the following main tasks:

Task 1. Identification of non-physical bottlenecks

24. The task focus is on the transport sector in general and in individual transport modes. Under the task, existing documents and analysis will be used wherever possible. The final goal of the task is to provide an independent review of the existing bottlenecks that prevents the sector from maximizing its performances. The task will be performed through the following two subtasks:

Subtask 1.1 Assess current performance of the transport sector

This subtask will assess current performance of all sector modes as per internationally accepted benchmarking criteria. It will use existing statistical and sectorial data to assess productivity, effectiveness, impact, etc. of the transport sector modes. For each identified gap, the causes of lower performance will be identified; with a view of assessing and ensuring compatibility with best world practices and European Standards.

Subtask 1.2. Bottleneck diagnostic

Based on the performance analysis, bottlenecks that prevent the sector from better performance will be identified. The bottlenecks can be caused by many, often mixed factors, like:

- ***a.*** **Legal and Regulatory Framework.** Laws and regulations of relevance to the transport may be burdensome, outdated, or non-compliant with relevant multilateral and bilateral agreements, and the European Union *Acquis* and the ECMT *Acquis*. If such bottleneck is identified, the more detailed analysis of legal acts and directives will be performed, as to flag the legal and regulatory aspects that need to be improved.
- ***b.*** **Institutional Capacity and Sectorial Governance.** Various elements of institutional capacity and governance may be cause for underperformance of the sector, like for example organization, staffing, operational procedures, performance and funding. In addition, the compliance with relevant EU directives can be obstacles in the future accession process. Attention needs also be given to institutional capacity to undertake transport sector planning, needs assessments, prioritization, managing of local roads, budgeting and formulation of improvement projects. If this type of the bottleneck is identified, the more detailed analysis of relevant institutions will be performed including a SWOT analysis of their roles, functions and responsibilities.
- ***c.*** **Transport Sector Policy Issues.** In some cases, current policies may deviate from international best practice or may inhibit improving the sustainability of the sector, from an environmental, social and economic perspective. If such case is identified, the Consultant will review the relevant Government's policy papers and statements and will consult with the concerned national and local authorities. The policy issues also include enabling environment such as, but not limited to, resilience, intermodality, ITS/digitalization etc. Investment planning and contract management also belongs to the sector policy issues.
- ***d.*** **Sustainability of sector financing.** This bottleneck analysis will involve an assessment of the current financing models in the sector, the sustainability of each level of the road sector, rail, inland waterways and air transport modes financing arrangements, including the scale and structure of current user charges, public sector sources at national and sub-national levels, the current levels of public support, the levels of cost recovery from both public and

private modes, oversight and performance of the funding streams, and capacity for cost-sharing at local levels. The Consultant will collect and collate trend data on expenditure, split by capital and recurrent and source, for all four modes and identify the level and source of financing within the transport sector organizations currently, and ascertain any shortfall to the financing (capex or opex) necessary to sustain the sector.

e. **Service sector capacities and performances.** Often, the service sector represents the bottleneck and either does not have capacity to perform planned works or are using outdated and ineffective practices. Under the analysis the current capacity and performance of the design and construction industry sector in particular will be addressed.

Subtask 1.3. Presentation of findings

Under the task, the Consultant will organize a consultative workshop with the MCTI to present results of the international benchmarking and bottleneck analysis. The goal of the workshop is to discuss the findings and receive additional clarification or inputs related to the observed gaps. Upon the workshop, the Consultant will deliver the short International benchmarking and Bottleneck analysis report documenting findings from the Task 1.

Task 2. Mission statement and reform path for the transport sector

25. In cooperation with the MCTI, mission and vision of the transport sector will be defined, which will provide strategic guidance for the definition of policy options and interventions. Based on the mission, vision and current status (Task 1), key reference objectives that the proposed policy changes will aim to meet will be established. This task will also provide a definition of where transport in Serbia should be in year 2030 if the identified development objectives are to be met. These objectives should be used to work backwards from them and understand what this means for each sub-mode in terms of infrastructure, operations, and institutions (regulations, legislation, capabilities).

26. The Strategy will have special focus on bringing the country closer to EU by addressing remaining requirements as per EU acquis (accession chapters 14 and 21), Berlin process, and regional integration. To this end, the definitions under the task will take into account the accession process requirements and define a set of actions that should bring the sector to the closure of remaining chapters. It will also provide the recommendations on a set of actions that should improve regional trade and transport integration.

Subtask 2.1 Defining the mission and vision for the transport sector.

In cooperation with the MCTI, the mission and vision of the transport sector as a whole will be defined. The definition should be wide enough to cover all transport modes but also specific enough to allow formulation of transport sector objectives. Here defined mission and vision will guide the Strategy development and final prioritization of the activities. During the task, the Consultant will provide the guidance and suggestions on the possible missions and vision statements, but the MCTI will need to choose and decide on the one that should feed into the strategic policy paper. To this end, after providing several options, based on the initial diagnostics and understanding of the Government goals, the Consultant will organize a workshop where alternative definitions will be discussed and decision on the one that will feed into the strategic policy paper will be made.

Subtask 2.2. Setting up objectives and Key Performance Indicators for the transport sector

Under this sub-task, based on the mission and vision definition, the quantifiable objectives of the transport sector will be defined. The objectives will be sector wide and for each transport mode. The mission and vision of the sector, and consequently defined objectives, will be taken into consideration and utilize sectoral enablers and value chain drivers as identified under Task 1 of the activity. The sub-task will also deliver the proposal for the set of Key Performance Indicators (KPIs), their targets and success markers.

Upon completion of the analysis under the subtask, the Consultant will organize a workshop to discuss the proposed objectives and KPIs with the MCTI and relevant stakeholders, and identify their final composition and priority.

Subtask 2.3 Options for reform and workshop

Under this subtask, the options to resolve bottlenecks identified under Task 1 will be provided. The output from this activity will propose different options on how to effect the changes necessary to achieve the defined vision and objectives of the sector. It should also identify main risk and propose mitigation measures.

The proposed options will be discussed with the MCTI and affected stakeholder groups, in order to identify final set of options that could feed into the strategic policy paper and action plan.

Subtask 2.4. Delivery of the Mission Statement and Reform Path Report

Upon completion of the above subtask, the Consultant will prepare the short report summarizing the main findings. The report will include the mission and vision statement, defined objectives and KPIs, and policy options that should lead to the defined objectives.

Task 3. National Transport Model and Demand Forecasts

27. This task involves the development of an inter-city national road, rail, and inland waterway network demand-supply model of passenger and freight traffic. The model will be used to assess future bottlenecks in the inter-city network of motorways/national-level roads, rail links and terminals, waterway sections and river ports. On the freight side specifically, the model will also be used to identify the main freight hubs within Serbia, such that this can inform a strategy to facilitate the deployment of logistics centers and multimodality options. The models will cover the base year 2019 and draw future scenarios for 2025, 2030, and 2035. For simplicity and to help reasonably reduce complexity, the model will exclude air transport.

Subtask 3.1 Collect and Update Household, Land Use, and Transport Data

The first subtask will involve the collection and collation of the necessary data to prepare and analyze present historic traffic volumes (for 5 years) for each mode, separately for freight and passenger traffic. These would include both historical and spatial data. A zonal system would need to be determined in collaboration with MCTI and other relevant agencies for the purpose of spatial data collection, traffic forecasts and sub area analysis. For road traffic, this will include traffic volumes based on origin and destination data and traffic counts on roads. For ports and inland waterway transport, the analysis will focus mainly on the operations of the ports and on the volumes by cargo type and by origins and destinations, and passenger traffic. For railway traffic, this will include traffic volumes and composition by cargo type and commodity for each railway line.

Particular attention will also be given to a separate analysis of origin and destination of international trade and transit flows, separately by mode of transport and by border crossing point.

While existing models developed under previous master plans, such as REBIS, will be consulted, it is expected that past models will not provide the level of granularity needed by this engagement and therefore the usefulness of existing models is expected to be limited - hence the ongoing need for a multimodal transport model for Serbia. The task should include baseline data collection and collection of missing data through secondary sources and/or field surveys:

a. **Baseline Data Collection:** Maximum use of available data from existing secondary sources, including technical studies, documents, traffic counts and existing Origin-Destination (OD) matrices, from the earlier studies (which will be made available by the MCTI) should be made. Under the subtask, it is expected to review this information, validate against aggregate trade data, and disaggregate traffic volumes, supplementing as necessary to ensure that the data employed in the study indicate accurately the baseline conditions for traffic volumes in the region, and provide a sufficiently robust base for the economic and financial analysis in the later Task.

   The goal is to develop a database for the purpose of strategic transport planning. The study area will need to be subdivided into a number of traffic zone systems together with MCTI at the commencement of the study. The zonal system should be flexible enough to accommodate future land use subdivisions. A minimum data on the following categories should be collected: (i) Population and land use data collected on the basis of traffic zones; (ii) Road network inventory including attributes of physical infrastructure; (iii) Railway network inventory, schedules, operating and financial data; (iv) Historical traffic count data for all transport modes; (v) Inland waterway fleet; and (vi) Motor vehicle fleet (historical data).

b. **Screen line Traffic Counts**: Under the task the data collected through baseline data collection will be reviewed and for identified data gaps, in consultation with MCTI and other agencies, additional data required for the purpose of calibration and validation of the model through field surveys and secondary sources will be collected.

Development of the model will be fully dependent upon prompt and comprehensive data and information sharing by MCTI and its modal agencies, and by other GoS agencies and SOEs as relevant. Any data gathering from private sector and fresh market surveys will be the responsibility of the Consultant. Limitations in data sharing between GoS agencies and the Consultant may result in delays in the development of the model and/or may constrain the model’s granularity and analytical depth.

The model will also be subject to inherent limitations having to do with data and information that may not ultimately be available, from any source, including primary research; but in those cases, gaps will be mitigated through well-informed assumptions from the international experience and past Consultant's work. The Consultant is encouraged to request meeting with MCTI and relevant agencies for more efficient data collection.

Subtask 3.2 Data Processing, Analysis, and Calibration: Collected data shall be computerized using a suitable package and in the format agreed in consultation with MCTI. The data should be coded, and analyzed using a standard statistical package and presented in graphical form and tables with verbal descriptions. The processed data proformas and the tool used for data entry and analysis should be handed over to MCTI along with manuals/proper documentation. Data should also be provided on CDs and in hard copy on completion of the study. The data should be broadly categorized as under, and be provided at zonal, sub-region and region levels, to be agreed with the MCTI.

Subtask 3.3 Establishing the national supply-demand transport network model and demand forecast

This task involves a review of current demand in the transport sector in Serbia, covering all transport modes, passenger and freight, and the preparation of robust demand projections for a defined base year 2019, and the target year of 2035; and interpolations for the intervening years. Conditional traffic forecasts will be produced for (1) the current national road, rail, and inland waterway transport network for passenger and freight flows as a "Base Case" description of the current situation as of the base year 2019; (2) a "Reference Case", whereby the transport network is expanded only by any already planned and funded/committed interventions; and (3) purely for analytical purposes, a "Trend" or "Do Nothing" scenario where no new infrastructure and transport capacity interventions are implemented. Further ad-hoc scenarios will be tested to assess the impact of particular interventions of interest. For example, a scenario may be assessed whereby a new motorway tolling system, harmonized with the typical or average EU user charge regime, is deployed. The definition of a limited number of ad-hoc scenarios will be agreed upon by MCTI and the Consultant during implementation and will be driven by the policy options identified under Task 2. The projections should include normal, pessimistic and optimistic scenarios, as agreed with MCTI. One of the objectives of this task is to identify pinch points where volume to capacity ratios indicate investments in higher capacity would be warranted.

Subtask 3.4. Handing over the model and workshops

While the model will be developed using specialized software, the Consultant will endeavor to show as much information from the model as possible in Excel/spreadsheet format, and the full result of the model for each developed scenario will be transferred to the GoS at the end of the engagement.

The model will be concluded through consultative process. Beside frequent focused meetings to enable the consultative process, two workshops will be organized during this task. At the workshops, the scenarios to be analyzed (first workshop) and preliminary results (second workshop) will be discussed. As much as possible, interactive version of the results will be produced, in which the MCTI will be able to play with predefined parameters.

Task 4. Policy Paper with Recommendations

28. Under this task policy paper with option-based action plan will be defined that can feasible attain the objectives defined under the Task 2. The policy paper will summarize the findings from the previous activities and provide the verbatim for the substantiation of the proposed actions. The action plan will have a clear list of prioritized activities, hard and soft, with estimated costs and duration, responsible entity(ies), related KPI(s), and recommended monitoring mechanism(s). The task should also recommend a performance management-monitoring plan enabling MCTI to regularly assess the implementation progress of proposed policies and achieved results. The policy paper should take into consideration each transport mode and expected effects from the

coordinated development. The task will be completed through iterative process that is through delivery of the summary of findings from the previous activities and option-based recommendations. After consultative process, the final policy paper will be delivered to the MCTI.

Subtask 4.1 Draft Strategic Policy Option Paper

The Draft Strategic Policy Option Paper will provide strategic analysis and guidance for the sector. It will be based on observed bottlenecks, definition of the mission and vision, defined objectives and output from the demand model.

Subtask 4.1.1 Sector Analysis and Strategic directions

The activity will summarize the previous findings and will provide investment and policy options based on the defined vision and agreed priorities. It will cover all modes, identified sectorial enablers and crosscutting issues.

Road Transport and Infrastructure – Road Transport and Infrastructure part will focus on national and local road infrastructure, document current and pipeline projects in the national road network and assess any changes to the proposed development of the network given projected demand. Current development plans fall into three categories: (i) periodic maintenance as prioritized by the PERS; (ii) removal of backlog maintenance; and (iii) the capital investment projects to contribute to the development of the network. Performance of the relevant service sector companies and commercial road transport operators, security, ITS and environmental issues should be included as well. Road sector enablers should feature prominently, covering observed bottlenecks and applying the best practice solutions.

Urban Transport – Urban transport analysis will primary focus on the governance aspects of the maintenance, rehabilitation, and capital investments in municipal road network, together with concerns such as the efficiency, equity, safety and security of delivery, and associated costs. To this end, the structure and mechanisms for the municipal road network management will be proposed. The recommendations should be based identified major issues and main characteristics of municipal road network, governance structures, budgets, safety and environmental issues, and other pertinent information. The identified policy options should ensure continued performance of functions while the current institutional framework is gradually improved.

Rail Infrastructure and Railway Transport – The focus here will be on the rail infrastructure and railway operations, documenting current and pipeline projects in the sub-sector, and assess any changes to the proposed development of the network given projected demand. The review and recommendations will include main characteristics and condition of the rail infrastructure, maintenance of railway infrastructure and rolling stock, railway operations management (including PSO needs assessment), rolling stock, legal framework in the sub-sector, overall organization and business model, a discussion of the financial situation, structural problems. The recommendations will also take into consideration the recommendations from the National Implementation Plan of the European Railway Traffic Management System (ERTMS), which will start in the second half of 2020 and is financed through EU.

Intermodal transport – Striving towards more efficient and cost-effective transport, intermodal transport has shown that there is possibility of achieving these goals. Therefore, in order to improve it, the strategy should include analysis of infrastructure, operational and digital bottlenecks and define guidelines for improvement of intermodal transport. Also, legal framework should be

analyzed with a suggestion of measures for stimulating intermodal transport. Having in mind that intermodal terminals are suitable for development of logistical zones (where logistical services are provided, i.e. forwarder services, storage capacities services, customs services, etc.), analysis should include possibility of development of such zones.

Ports and Inland Waterways –Focus here will be on the inland waterway transport, together with efficiency, sustainability, and environmental concerns. The review of Development Plans for Ports and Inland Waterway Transport will be provided, in light of the produced demand forecasts, and will highlight major issues and proposed strategies to improve functioning and performance. The analysis should cover the main characteristics of water transport, including inland port infrastructure, the length of the inland waterway network, the inland waterway transport operations and extent of service coverage, traffic levels and ridership, service levels by type of service (passenger/freight), ports' performance, safety, security and environmental issues, and other pertinent information. Financial and fiscal issues, subsidies, user charges, etc. will also be reviewed. Moreover, it will provide review of the organizational structure of water transport, explaining the role and responsibilities of public authorities, the regulatory framework, and private concessionaires involved in provision of water transport services, and discuss the legal relationship between these entities.

Air Transport – The focus is on the operational aspects of airports and air transport services management and delivery systems, together with concerns such as the efficiency, equity, safety and security of services, mobility, and sustainability. It will cover Review of Current Development Plans for Air Transport and Infrastructure in light of the produced demand forecasts and will highlight major issues and propose strategies to improve functioning and performance. The review may cover the main characteristics of air transport services, airports, traffic volumes and service levels by type of service, safety, security and environmental issues, and other pertinent information. The organizational structure of air transport, explaining the role and responsibilities of public authorities, the regulatory framework, and the legal relationship between these entities will be provided.

eMobility, active Mobility, and Technology uptake – Often the notable improvements can be made with less cost intensive interventions, through digitalization, introduction of ITS, and promoting of alternative mobility modes. In particular, the strategic framework for development of the market as regards alternative fuels, including the deployment of the necessary infrastructure should be put into place. The focus should be on electric vehicles, with zero emissions, as the most environmentally friendly option currently available on the market, and necessary infrastructure for such vehicles, having in mind that electric vehicles have become a common sight on European roads. It is necessary to set targets for recharging points that would be accessible to the public to ensure that electric vehicles can circulate freely, especially on main roads as well as in urban and suburban agglomerations. The analysis and consequent recommendations should reflect on: (i) an appropriate number of recharging points accessible to the public (adequate coverage) and its location, in order to enable electric vehicles to circulate within determined road network as well as at in urban/suburban agglomerations and other densely populated areas, in line with European best practice; (ii) appropriate specifications of the recharging of electric vehicles at recharging points (fast chargers, rapid chargers), in line with European best practice; (iii) analysis of possible platforms for charging of electric vehicles, in line with European best practice.

Sectorial enablers and cross-cutting issues – in some cases, identified issues will cut across several or all transport modes or will be value chain drivers relevant for all modes. Such issues may be human capital, contract management, gender aspects, etc.

Subtask 4.1.2 Draft Policy Option Paper

Utilizing all relevant information options to improve quality, efficiency, and adequacy of transport and transport services will be proposed. The proposed options should cover vertical measures (infrastructure investments) as well as horizontal issues (resilience, ICT, ITS, eMobility, gender, contract management, planning framework, etc.). They should also cover needed reforms and provide the roadmap for their implementation.

The workshop with MCTI and other relevant institutions will be organized to discuss the Draft Policy Option Paper. This note should include options in all necessary areas. The draft proposal should also elaborate how to effect the changes, and the support necessary for their implementation. The draft policy options, after discussion stakeholders, will be developed into a detailed action plan, setting out timetables, responsibilities and mechanisms.

Subtask 4.2 Draft National Transport Strategy with detailed Action Plan

Under this activity, all findings and agreement reached during the engagement will be summarized in the Draft National Transport Strategy with detailed Action Plan. It should describe what are the goals of the Government and provide convincing narrative on how the proposed options help the Government to achieve the defined mission and vision and objectives of the sector.

An action plan will set out investment and soft priorities as well as cross cutting issues, timetables, responsibilities and mechanisms, based on the demand forecasts and the assessment of available finance and associated costs. The action plan should promote the alleviation of bottlenecks on major routes, regional integration, capacities in the sector, resilience, gender issues, and ITS. Basic viability assessment for high profile priority interventions will be provided. The action plan should ensure that transport sector continues to perform its functions while being gradually restructured. Special attention should be given to policies and practices that foster the use of sustainable and safe transport design, construction and operation. The policy options and action plan may involve support activities packaged into projects in appropriate format for donor consideration. The resulting action plan should clearly identify at least the necessary resources, timescales and ownership of the following: (i) required infrastructure per transport mode for the modes and portions of the network covered by the transport model; (ii) financing of CAPEX and funding of OPEX per mode; (iii) Analysis of sources of finance and funding and implications on the action plan; (iv) operations' requirements; (v) enabling steps (legislation, regulations, governance arrangements, capability development); and (vi) Risk profile and mitigations per sub-mode.

The action plan should also take into account the various realizations scenarios – successful, moderate, and low realization scenario – and their impacts. It should be linked with the KPIs and provide mechanisms for monitoring of the strategy implementation and performance.

Upon completion, the Draft National Transport Strategy with detailed Action Plan will be presented to the MCTI.

Task 5. Strategic Framework for sustainable implementation of ITS solutions

29. The ITS Strategic directions with belonging policy options will be part of the final Draft National Transport Strategy in the form of an annex. To guide the implementation, under this task, a concise document needed for successful and sustainable ITS introduction will be developed. This task will produce technical documents to feed and shape the adoption and implementation strategy for Intelligent Transportation Systems at the national level, mainstay of the ITS systems in the international experience. The task will focus on road transport, but the limited coverage of other modes may be done for illustrative purposes. The analysis should take into account the results of the study done by Egis International Strategy of development of ITS, from 2017, as well as the recommendations from the "Strategic Framework for the Implementation of ITS on TEN-T Core/Comprehensive Network on the WB6", produced by CONNECTA, in 2018, within Connectivity Transport Reform Measures in WB6.

The task will be implemented through the following five (5) subtasks:

1. Needs assessment
2. ITS vision and priority interventions
3. Development of National ITS Architecture and Institutional arrangements
4. Roadmap for adoption of international ITS standards and Directives for priority ITS services
5. ITS strategy and Action plan.

Subtask 5.1 Needs Assessment

i. The Consultant will review the current state of ITS and transpose that over the successful EU and International practices. This will be done through gathering and review of relevant data, studies and background information regarding, but not limited only to the data collection equipment along the national transport network, current and planned ITS deployments in RoS that provide traffic and transport management services, any existing traffic control and information centers, standards used in planning and deploying existing ITS equipment/systems and interfaces, assessment of ITS deployment situation in main urban areas, current institutional arrangements, existing relevant studies and multi-modal programs of the MCTI and the ongoing plans for ICT and ITS related deployment on urban and strategic roads by the national and regional authorities.

ii. The Consultant will present countries that successfully introduced ITS and are of similar size and dynamic and will determine the type of applications that have the potential for implementation in the Republic of Serbia and institutional setup to guarantee sustainability. Specific consideration should be given to the following application areas: road monitoring infrastructure, advanced traffic management systems, tunnel management systems, advanced traveler information systems, advanced public transport systems, safety systems for pedestrians and other vulnerable road users, heavy vehicle operations, electronic payment systems, connected vehicles, RIS and other inland waterway applications, ERTMS and other relevant railway applications.

iii. Further, the Consultant will, through desk analysis and consultations with stakeholders, assess the current transport problems/key issues in the Country, identify, and prioritize areas where improvements are needed.

iv. ITS needs assessment report should describe the existing and planned ITS systems and findings, it should outline key functional and operational issues that impact the transport system and

services in terms of ITS requirements, and to present case studies from few ITS champion countries and ITS services that showed highest benefits and could be applicable under country context, and finally, it should indicate the major transport issues that needs to be addressed by ITS and outline major prerequisites for successful introduction of ITS, ranging from institutional to technical and financial.

v. Findings will be presented by the Consultant at the workshop and will be analyzed and discussed with the MCTI, before submission of the final Report for approval.

Sub task 5.2 ITS Vision and Priority Interventions

i. The Consultant will assist the MCTI in developing an ITS vision for Serbia in consultation with relevant stakeholders. The ITS Vision should be a brief statement accompanied by a summary of the goals and objectives that will serve as the basis for development of an operational ITS system. Strategic goals will highlight how road-based ITS can be effective in helping to meet and enhance the overall transportation goals in terms of safety, mobility of people and goods, public transport, environment, multi-modality and inter-modality, freight and logistic services and market drivers and private sector participation. Interface between transport modes and sectors is a necessary element in the ITS Vision.

ii. Proposed ITS Vision statement and objectives will be analyzed and discussed with the MCTI, before submission of the final document for approval, at the workshop to be organized by the Consultant.

iii. Based on the defined vision and objectives and needs assessment, the Consultant should provide a list of prioritized ITS applications and technical, functional, regulatory and organizational requirements. Under this activity the Consultant should address and develop decision criteria and selection process of priority ITS applications, propose locations for deployment of identified ITS applications, develop key performance indicators, group ITS applications into short, medium and long term priorities and analyze financing and investment issues.

iv. A workshop will be organized by the Consultant to present and discuss the decision matrix and proposal for short, medium and long-term investments. Based on the inputs from the workshop, a final list will be prepared and submitted to the MCTI for approval.

v. For agreed short term and high priority ITS interventions, the Consultant will prepare preliminary costs and benefits assessment, catalogue of priority ITS applications and risk analysis for high priority ITS projects. In addition, the Consultant should propose the most suitable procurement mechanisms for the planned ITS projects, considering human, technical and financial resources available.

vi. Based on the previous, the Consultant will develop a conceptual model defining traffic management center at the national level (National TMC). This model should include:

- Definition of requirements: outlining the key traffic, institutional and technical requirements for national and regional traffic management and information centers;
- Functional concept: outlining the key processes required to satisfy the various traffic management and information functionalities in TMCs at national and regional levels together with the necessary information flows and interfaces within the TMC and between the TMCs, including cross-border data exchange of traffic information with neighboring countries;

- High-level operational concept: outlining the key concepts and configuration for operations and interfaces required for planning, deployment, operation and management of TMCs at the national and regional levels;
- Rough cost estimate: an initial estimate based upon international best practice and in line with typical costs in existing TMC deployments, if available;
- Needed sensory equipment and locations to support ITS application with preliminary costs.

vii. Consultative workshop will be organized by the Consultant to discuss high-level concept for National Traffic Management and information control center (s) with the MCTI. Feedback from the workshop shall be included in the final proposal, respectively Report on ITS Vision and priority interventions.

Sub task 5.3 Development of National ITS Architecture and Institutional arrangements

i. The Consultant will provide complete guidance on introduction of national ITS architecture and institutional arrangement through following:

- By taking into consideration MCTI the EU ITS Framework Architecture (FRAME and FRAME-NEXT), the Consultant will develop a reference framework that addresses the vision of various stakeholders based on identified ITS applications. This framework will determine the reference ITS System Architecture and should include, but not be limited to the management entities and service providers responsible for specific operational activities, national, regional and urban entitles responsible for specific management, control and information services to the traveler (transport component), management entities or service providers responsible for communicating information (vehicle components), personal information elements, central system units (operational control center, etc.), communication network and standards, road-side units, interfaces that build upon international standards. The system architecture should ensure a balanced, open and future-proof deployment of ITS, cooperative organizationally and technically, and efficient;
- The Consultant will define different options of communication links between the different components of planned ITS components (road-side, vehicle and control center) outlined above;
- Provide information on nature of information to be exchanged in each direction between specific components and on current industry or national communications and data standards;
- Identify the stakeholders that will be responsible for management of transport components and data links, with their roles and responsibilities and assessment of organizational capability;
- Develop a Technical Note or Report detailing the national ITS System Architecture, including but not limited to logical, physical/communication and organizational viewpoints, guidance for use and maintenance of the developed architecture and any related software used to develop and utilize the architecture;
- Assessment of organizational, technical and human resources needed for maintenance and update of the system architecture, together with proposal for institutional arrangements with the ToRs for the critical positions and
- Training sessions on the use and maintenance of the national ITS system architecture.

ii. The Consultant will organize 3-5-day workshop to present and discuss proposed ITS Architecture and provide technical training on mapping the services.

iii. As result of this subtask, the Consultant will deliver ITS National System Architecture and institutional organization in hard and soft versions, including ToRs, technical documents, user guidance and training documents.

Sub task 5.4 Roadmap for adoption of International ITS Standards and Directives for Priority ITS Services

i. On the basis of ITS Applications, stakeholder interviews and information exchanges, current international standards will be identified and assessed for adoption for the ITS planning and deployment in Republic of Serbia. Standards adopted by international organizations as CEN, ISO and ETSI will be mapped against data exchange and communication interfaces for the system architecture flows identified for each identified priority ITS service. In addition, industry standards used for ITS equipment testing and certification will be compiled and ITS standards used in current ITS deployments, if any, will be identified. Relevant European Directives, regulations and guidelines in ITS deployment and operations should also be identified.

ii. Through gap analysis, assess what standards and standardization practice exist in the Country and are applicable for the above-identified critical standards.

iii. Technical standards and relevant Directives that have been selected above together with gap analysis will drive final list of the standards that needs to be implemented and introduced under context of the Republic of Serbia. Final list should ensure that the proposed approach have the right level of balance between specificity and flexibility, in order to:

- Provide interoperability within the Country as well as with other European systems, in particular cross-border information exchange, EN standards will receive priority for application in Republic of Serbia;
- Capture enabling and evolving technologies within each functional area defined in the architecture, in particular to the current and planned IT context in Republic of Serbia;
- Not limit or constrain technological innovations or ITS deployments that might take in the future;
- Allow easy scaling up of currently-deployed ITS applications, if needed;
- Enable both, less and more expensive technologies, to apply, and
- Propose standards that will support robustness and reliability of the ITS systems proposed.

iv. Following the finalization of ITS standards, a deployment plan for technical and legal adoption of the standards and Directives in Republic of Serbia will be developed by the Consultant. Such a deployment plan will be mapped according to testing and certification requirements and legal/contracting conditions. Standards that are mapped to high priority ITS services coupled with the availability of testing and certification technical resources and legal coverage currently or shortly in place in Republic of Serbia will be placed in the front line of national adoption. Other standards that need international testing or certification due to lack of national technical resources but mapped to high priority ITS services will be used to initiate a road-map to ensure proper testing and certification at local or regional levels. Other standards related to medium- and long-term applications will be placed as part of medium- and long-term plan to ensure proper resources to be deployed prior to introduction of such services. Within the task, the Consultant will also propose if there is a need to adjust current institutional settings and increase

internal capacities necessary to drive standardization process. For the critical positions driving national standardization, the Consultant will draft ToRs.

v. The Consultant will develop the guidelines on the data communication protocols introduction, formulation of data dictionaries, and support the Client to drive their list of main communication telegrams for chosen the priority service. DATEX protocol as the most used in EU has all characteristics to be used in the Republic of Serbia as well.

Sub task 5.5 ITS Strategy and Action Plan

Based on the above tasks, the Consultant should prepare the comprehensive National ITS Strategy and corresponding Action Plan as an annex of the Draft National Transport Strategy.

i. The ITS Strategic Action Plan should clearly set forth a plan and direction that the stakeholders can use to direct the future deployment of ITS. The Action plan should:

- identify how ITS core services and business-related objectives align with the national transport investment categories, and identify recommended strategies within each core service area;
- outline the highest level ITS strategies and identifies the resources and implementing actions required to achieve them;
- classify the ITS projects into short-term implementation with high priority (within 3 years horizon), mid-term (3-5 years horizon) and long-term implementation (5-7 years horizon);
- present the benefits of ITS applications and recommend any performance-measure metrics associated;
- include the details of each implementing action item such as a description, scope of work, complexity, prioritization, identification of responsible entities, and expected durations;
- provide guidance and direction for current and future ITS investment and implementation.

The Action Plan should include description for each project for short term implementation containing title and description (general overview, primarily focusing on the operational capabilities and functional scope), location, planning cost estimate (ideally opex and capex), service packages, time frame, lead agency, participants (principal stakeholders and agencies of critical importance for successful implementation), expected benefits and integration with other projects (those identified to be completed before or at the same time to ensure functional ITS system).

National ITS Strategy and corresponding Action Plan should be prepared in line with the Law on the Planning System of the Republic of Serbia (Official Gazette of RS, No. 13/18) and related bylaws.

ii. Upon finalization of all analysis and reports, the Consultant will align the National ITS Strategy and corresponding Action Plan, as final output from the activity.

iii. At the end of the assignment, the Consultant will present the final strategy and action plan to wider stakeholder group.

Sub task 5.6 EU Study Tour and Trainings

i. As part of the examination of ITS applications implemented in some Member States of the European Union and the identification of examples that could be replicated in Republic of Serbia, it is asked from the Consultants to organize one Study Visit to at least 2 different places within the European Union where such systems have been implemented.

The main selection criteria for the visits shall be the relevance:

- of the systems and applications that will be presented with what is proposed for implementation in Republic of Serbia and
- the way the ITS are managed from the control center, relative to how this will be implemented in Republic of Serbia.

ii. For the smooth and quality execution of the tasks it is necessary that the Consultants, within 2 weeks from the approval of inception report, carry out a training needs analysis, submit a training plan on basic and essential ITS concepts and carry out basic ITS training. The main objective of this initial training shall be the enhancement of the ability of the MCTI to understand the basic concepts and fundamentals of ITS planning and deployment to be able to follow and participate in the activities. Topics will be agreed with the MCTI.

Task 6 Environmental Impact Assessment

30. The Draft National Transport Strategy with annex should have its corresponding environmental impact assessment study as per the Law on Strategic Environmental Impact Assessment of the Republic of Serbia ("Official Gazette of RS", No. 135/2004 and 88/2010). Special focus should be on air pollution. The task of drafting the Strategic Impact Assessment Report on the Policy Option Report will be to look at the possible significant negative impacts of programmatic solutions on the quality of the environment and to prescribe appropriate measures to reduce them, or to bring them within acceptable limits defined by the legislation. The Law on Strategic Environmental Impact Assessment defines also the content of the Report. The report contains: (i) The starting premises of the strategic assessment; (ii) Overview of characteristics and assessment of the environment in the area of the plan; (iii) Summary and specific objectives of the strategic assessment and selection of indicators; (iv) Assessment of possible significant impact on the environment; (v) Description of the measures intended to reduce negative impacts; (vi) Guidelines for making impact assessments at lower hierarchy levels; (vii) Environmental monitoring program during plan implementation; (viii) Disclosure of the methodology used and the difficulties in making a strategic assessment; (ix) Showing decision making; and (x) Conclusions of the strategic impact assessment.

F. REQUIREMENTS

31. The Consultant firm will be selected in accordance with QCBS (Quality-and Cost-Based Selection) method set out in the World Bank's Procurement Regulations for IPF Borrowers (July 2016, revised November 2017 and August 2018).

32. The assignment will require a qualified consulting company or a joint venture that can demonstrate extensive experience in developing strategic documentation.

The following shortlisting criteria will be applied to all consulting firms that have submitted EoI:

(i) The Consulting firm must be a legal entity;

(ii) The number of permanent staff of the consultant (individual company or joint venture overall) currently working in the fields related to this contract, must be at least 7 for each of the last three years (2017, 2018 and 2019);

(iii) The consultant (individual company or joint venture altogether) has implemented and completed, during the last five years (from the January 2015 up to the deadline for the receipt of applications indicated below), at least two (2) contracts in a field related to these Services, of a minimum value of 1 MEUR each, and shall demonstrate that it had a participation of minimum 60% in each of the contracts brought as reference;

(iv) Of the contracts brought as reference in (iii) above, at least one shall have been delivered in either EU's or a EU accession country;

The experience and financial record of any proposed sub-consultancy shall not be included in the evaluation.

Key Experts' CV are not required and will not be evaluated at the shortlisting stage.

MCTI, as Contracting Authority, intends to shortlist up to eight eligible firms to whom a subsequent Request for Proposals (RFP), both technical and financial, shall be sent. In the event that more than eight firms fulfil all the qualifying criteria above, the MCTI shall use the following criteria to rank the applicants and the top eight shall be invited to submit proposals: (i) The number of contracts in a field related to these Services brought as reference in para (iii) above, and in case of equality on this criterion, then the value of the eligible part (the value of the activities carried out by the candidate) of the projects found eligible in para (iii).

As a proof, the Consultant firm shall prepare a table listing following information: name of the relevant assignments, short scope of work, year of contract's implementation, country/region, contact reference (name, e-mail, phone number).

33. The Consultant shall establish his Team in accordance with the needs and requirements of this ToR. The Team shall consist of a core team made of key experts with the qualifications and skills defined in the Table 1, below and non-key experts, as needed. The Consultant is obliged to ensure adequate staff in terms of expertise and time allocation, as well as needed equipment in order to complete the activities required under the scope of work and to achieve the objectives of this Contract in terms of time, costs, and quality. Having in mind the diversity of areas covered by this Contract it is expected that the Consultant shall have sufficient expertise to cover preparation of the documents required. Moreover, considering the geographical distribution of the scope, the Consultant is expected to be flexible in terms of travelling.

The Team, as a whole, shall include experts familiar with RoS' regulations. The team organization, proposed staff availability and number of working days assigned to specific activities and backup will be evaluated as one of the major criteria within the evaluation of the proposed methodology and time schedule.

Given the complex nature of the services to be rendered by the Consultant for the implementation of the Contract, both in terms of sectors and expertise required, as part of the organization and methodology of the technical proposal, the bidders will need to demonstrate their capabilities to effectively mobilize highly qualified key experts to carry out the specific tasks and activities

requested for each sub-sector. In particular, the bidders need to submit the CVs of key and non-key experts (see Table 1) which will be mobilized immediately following the commencement date of the Contracts. However, only key-experts will be subject of evaluation.

The Team Leader with qualifications and skills given below will lead the Team. He/she will be the main contact for the Team and will interface with the Contracting Authority, PIU and other interested stakeholders. He/she will be supported by the Deputy Team Leader, who will replace the Team Leader when necessary. He/she should be responsible for ensuring high quality performance of the main outputs and deliverables and the timing implementation of the activities during the Contract execution.

The employment of local experts will be welcomed by the Contracting Authority, and such experts should form a part of the team carrying out studies. The Consultant should pay attention to the need to ensure the active participation of local professional skills, and to providing a suitable mix of international and local-staff in the Team.

All experts shall be independent and free from any conflicts of interest in the responsibilities they take on.

Table 1Key qualifications and skills matrix

Title	Qualifications / Experience	Skills
Key experts: A deputy team leader shall be appointed from one of the key or senior non-key experts who shall be familiar with the Serbian transport legislation and speak fluently Serbian.		
Team Leader - Senior transport expert	Education: A level of education, which corresponds to, completed university studies attested by a diploma when the normal period of university education is four years in engineering, economics, public administration, management or law. Relevant Professional Experience: At least 15 years of professional experience acquired in transport sector; Experience as TL/Project Manager on at least two (2) projects related to development of a national multimodal transport plan including freight and passenger transport model and policy enhancement Experience in at least 3 EU countries and one EU candidate country	An excellent knowledge of the EU legislation relating to transport Strong leadership, planning and communication skills. Strong coordination skills. Strong analytical and report writing skills. Managing a team composed of international and local technical specialists Language: Excellent written and spoken English is required.
Senior transport modeller	Education: A level of education, which corresponds to, completed university studies attested by a diploma when the normal period of university education is at least four years in traffic engineering, econometrics, mathematics or similar. Relevant Professional Experience: At least 10 years of relevant professional experience in transport modelling of passenger and freight transport; Experience as transport modeller on at least two (2) projects related national or regional multimodal freight and passenger transport plans	Proven ability of scoping, specifying and developing 4-stage models Proven practical use of at least 2 transport model software's such as VISUM, CUBE, Transcad etc. Strong analytical skills. Ability to perform traffic surveys Language: Excellent written and spoken English is required.

Title	Qualifications / Experience	Skills
Senior economist /transport planner	Education: A level of education, which corresponds to, completed university studies attested by a diploma when the normal period of university education is at least four years in Civil Engineering, Transport Planning, traffic engineering, Economics or similar. Relevant Professional Experience: At least 10 years of relevant professional experience in the transport sector with focus on strategic planning and project preparation Experience as a Key Expert for at least two (2) projects related to regional / national transport master plans or similar scope	Proven ability to prepare Cost Benefit Analysis in large infrastructure projects Proven ability to analyse alternatives in project preparation Proven ability to perform multi-criteria analysis Proven ability to perform impact assessment for a Transport Policy Language: Excellent written and spoken English is required
Senior ITS Expert	Education: A level of education, which corresponds to, completed university studies attested by a diploma when the normal period of university education is four years in engineering. Relevant Professional Experience: At least 10 years of professional experience acquired in transport sector; Experience as a key expert on at least 4 (four) projects related to ITS policy development	A thorough knowledge of EU transport policies and ITS relating Acquis Proven ability of ITS execution, budgeting and deployment Strong analytical and report writing skills. Language: Excellent written and spoken English is required.
Non-key experts		
The Consultant is free to propose an appropriate non-key experts team composition considering that it is likely to require a mix of international and local experts with substantial international and developing country experience in a wide range of transport sector studies, and advanced multi-disciplinary skills in a range of areas, including but not limited to: • Transport sector policy formulation and analysis, for all modes; • Regulation and institutional reform in the transport sector; • Intelligent Transport Systems (ITS); • Road, rail, aviation and maritime/waterways; • Multimodal transport and logistics; • Public-Private Partnerships and finance; • Environmental and social safeguards; • Reviewing and drafting transport sector legislation and regulation.		

The indicative breakdown of the input from the experts will be given in the submitted proposal.

The costs for backstopping and support staff, as needed, are considered to be included in the bidder's financial offer. During the Inception period, it is expected that the Consultant will mobilize adequate support staff.

QCBS uses a competitive process among short-listed firms that takes into account the quality of the proposal and the cost of the services in the selection of the successful firm.

The MCTI will publish Request for Expression of Interest and upon evaluation of received EoI, up to eight best evaluated firms will receive Request for Proposal. Those firms will be called to submit technical-and financial proposals.

34. Office accommodation for each expert working on the Contract is to be provided by the Consultant.

The Consultant shall ensure that experts are adequately supported and equipped. In particular, it shall ensure that there is sufficient administrative, secretarial and interpreting provision to enable experts to concentrate on their primary responsibilities.

No equipment is to be purchased on behalf of the neither Contracting Authority (MCTI) nor beneficiaries as part of this service contract or transferred to the Contracting Authority or beneficiaries at the end of this Contract.

EXPECTED DELIVERABLES AND SCHEDULE OF THE ENGAGEMENT

35. It is expected that the Consultant will commence in the 4th QR of the Year 2020 and provide services within 16 months, or any period as may be subsequently agreed by the parties in writing.

36. Deliverables: The draft reports will be commented within three weeks of submittal, after which the Consultant will have two weeks to incorporate the comments into the subsequent edition of the Report. Following the comments received, the Consultant will send a revised version, with the operated changes highlighted, via the same contact, before formally submitting the final version to the MCTI for approval. A self-standing draft report will be prepared as per the below table. Approvals of the final reports by the MCTI will be issued within two weeks of submittal. The MCTI is responsible for formally approving of reports.

37. Reports will be prepared and delivered in both English and Serbian. All reports will be made available in hard and soft format, and should be sent to the MCTI (2 copies in Serbian and 2 copies in English). Draft reports will be sent in soft copy to the MCTI. All final reports will be sent in hard copy to the MCTI (3 copies in Serbian and 2 copies in English). All activities under this assignment are expected to be completed within 16 months from contract signing.

Table 2 Deliverables and timeline

No	Report title	Due (from contract signing)
1	**Inception Report**	1 month
2	**Identification of non-physical bottlenecks**	6 months
	Current performance assessment presentation	
	Bottleneck diagnostics workshop	
	Final report	
3	**Mission statement and reform path**	8 months
	Mission and vision of the sector workshop	

	Reform Options Workshop	
	Final report	
4	**National Transport model and Demand Forecast**	9 months
	Delivery of model input data (excel/CD)	
	Handing over the model and workshops	
5	**ITS Strategy and Action Plan**	11 months
	ITS Needs Assessment Report	
	ITS Vision statement and objectives	
	Report on ITS Vision and Priority Interventions	
	ITS National System Architecture and institutional organization	
	Roadmap for ITS standards, communication protocols, Directive for adoption at national level, including requirements for implementation and road map for deployment	
	ITS Strategy and Action Plan	
6	**Draft Policy Options and Recommendations**	11 months
7	**Draft National Transport Strategy and Action Plan**	13 months
8	**EIA**	15 months
9	**Final Report**	16 months

38. Inception report: Consultant will prepare, no later than 1 month following commencement of the Contract the Inception Report. It shall be maximum of 20 pages and describe initial findings, report on the discussions with the competent authorities, risk and difficulties expected in addition to work program and staff travel, together with a detailed plan of works, task allocations, timelines and communication procedure. Content of the reports to be prepared within the Contract will be proposed in the Report.

39. Progress reports: During the work, the Consultant will prepare brief quarterly progress reports on the status of the activities, including progress, problems encountered, and proposed activities for the current month. These reports will be presented to the MCTI by the 5th of each third month.

40. Workshops: The Consultant will be responsible to organize workshops per requests given in the relevant tasks. For each workshop, the Consultant shall prepare workshop program, distribute the reports early enough so the workshop participants can familiarize with them prior to the event. The report will be prepared following each workshop containing brief description of the discussion and decisions/agreements made and will be submitted to the MCTI within two weeks from the particular workshop.

41. The Consultant will assemble all the documentation prepared under the contract in one comprehensive Draft Report, representing the prospective Policy Options Assessment and corresponding Action Plan. In the latter, all key institution-building, technical assistance and proposed capital investments will be compiled into one coherent program, scheduled for the short, medium and long term, with a proposed financing plan, consistent with projected demand, and the financing capacity of the country. The Consultant is expected to hold a workshop at this stage to discuss the contents of the draft report with all key stakeholders in the sector. Comments received at the workshop, where appropriate, should be incorporated in the final report.

42. EIA: The Consultant will prepare EIA which will include an overview of the state and environment related issues in strategic area, identification, assessment, evaluation and categorization of the impact of the considered alternative solutions with review of conducted consultation with competent authorities, organizations and interested public, and consideration of their results in the decision-making process as well as providing information to the public.

43. Final Report: At the end of the engagement, the Consultant will prepare a short description of achievements, expert utilization, deliverables provided, problems encountered and recommendations for future actions to ensure results' sustainability (maximum 20 pages). The report must consist of a narrative/technical and financial section.

G. CONTRACT ADMINISTRATION

44. The Contract will be administered and managed by the MCTI through the PIU and with the supervision of the Project Coordinator. All tasks will be developed and implemented in close coordination with the MCTI, respectively PIU and Project Coordinator. In addition, the technical focal points will be appointed by relevant stakeholder that should provide day to day support and facilitate technical consultative processes.

45. The PIU will assist the Consultant in gathering of all available information that can help in the execution of his assignment. This relates to information on the institutional organization, legal framework, transport and statistical data, transport sector projects that are being prepared or are under implementation, as well as all other relevant information. The PIU will also provide the Consultant with copies of all studies that are available and that may be relevant to the execution of the Contract. Relevant documents that the MCTI has in electronic format shall also be made available to the Consultant.

H. TERMS OF PAYMENT

46. The Contract will be the Standard World Bank Lump Sum Contract. The payments for services will be based on the deliverables / reports approved by the Project Manager and Project Coordinator. The Contract costs will include remuneration and reimbursable costs referring to the assignment.

I. CONFLICT OF INTEREST

47. The engaged Consultant firm must not be involved in any other related activity to this Project.

Annex 1: Investment plan