**Annex 2\_Tender tasks, timeline and deliverables**

1. **DESCRIPTION OF THE CURRENT SITUATION**

The transportation system of the city of Živinice consists of subsystems including road, railway, postal, and telecommunications traffic, as well as public transportation infrastructure (primary and secondary roads, regional routes, railway lines, bus stations, airports, postal and telecommunications networks, etc.). Additionally, the Živinice area is included in air traffic.

The fleets for road traffic, as essential operational resources, are divided into three categories:

* The fleet owned by the City of Živinice,
* The public transport fleet, and
* Fleets of private, commercial, and vehicles of public enterprises and institutions registered in the city of Živinice.

All three groups of vehicle fleets have different structures of eco-standards. There are only 5 electric passenger cars, 1,619 vehicles meeting EURO 6 standards and 360 vehicles belonging to individuals and 3 vehicles registered to legal entities that utilize a combination of gasoline/LPG/electric as fuel. According to data from the Agency for Identification Documents, Records, and Data Exchange (IDEEAA), as of the end of April 2024, there were a total of 21,418 active registrations of motor vehicles in the Živinice area, including 18,200 passenger cars, 1,167 commercial vehicles, 19 working machines, 35 buses, 126 tractors, 677 trailers and 224 motorcycles and mopeds, as well as other smaller vehicles of various types, body structures, ages and eco-standards. The average age of the vehicle fleet is unfavorable with over 13,493 vehicles being older than 15 years, while the share of vehicles younger than 5 years is relatively small at 907 vehicles. The first age group vehicles primarily do not meet the new standards for harmful gas emissions and are more prone to oil leaks and breakdowns on the road.

The three groups of vehicle fleets do not undergo regular renewal, indicating a constant need for investment in machinery and capacities to maintain standards of quality in transport services, safety and to reduce exhaust gas emissions levels. The concentration of exhaust gases from traffic in the Živinice area is a function of the number of motor vehicles (21,418) as well as fuel consumption. The operational consumption of fuel for 21,418 motor vehicles depends on the mode of operation of the vehicles and the driving conditions in the city of Živinice, which must be carefully considered. Existing gas stations, service centers, and workshops for the repair and maintenance of road traffic fleets can also negatively impact air quality (e.g., pollution from exhaust gases, oily wastewater, etc.). In 2016, a register of air emissions and air quality categorization was created for the Tuzla Canton, including the city of Živinice. However, it is necessary to revise it concerning road traffic (passenger vehicles, light commercial vehicles, heavy commercial vehicles, mopeds and motorcycles, gasoline evaporation, etc.), considering changes in the values of input parameters of vehicle fleets, the aging of vehicles and driving conditions. According to the provided data, there has been no assessment of the sustainability risks of the transportation infrastructure and sections, considering factors related to natural disasters and climate change.

**Road infrastructure**

The city of Živinice benefits from a favorable geo-traffic position. It is connected by major and regional roads that predominantly traverse urban areas, which affects the reduction of travel speeds and increases travel times in these urban sections. The total traffic infrastructure in the Živinice area comprises main, regional and local roads, city streets and unclassified roadways, with a total length of 466.68 kilometers. Geographically, the city is situated at the intersection of significant main and regional roads in Bosnia and Herzegovina. The M-18 main road runs in a north-south direction, with the busiest section located between Tuzla – Živinice - Sarajevo.

In addition to the aforementioned main road, a significant portion of regional roads also traverses the area of the city of Živinice, including:

* R425 Lukavac-Živinice-Zelenika,
* R474 Međaš-Živinice,
* R474a Banovići - Živinice, put Živinice - Gračanica.

The density of the categorized road network in the city of Živinice (171.7 km/100 km²) is significantly higher than that of the road network in Tuzla Canton (54.70 km/100 km²) and Bosnia and Herzegovina as a whole. Živinice ranks ahead in terms of kilometers of road per 1,000 inhabitants (7.63) compared to Tuzla Canton (2.78) and Bosnia and Herzegovina (5.13). Data indicates that the intersections connecting city streets to major and regional roads in the urban area of Živinice are not well designed, which considerably hampers the smooth flow of traffic, particularly during peak hours. Road traffic through the Živinice settlement and along the main road is not optimized, resulting in slow movement and frequent congestion. When considering the significant age of the vehicle fleet and the high levels of specific emissions, the impact of internal combustion engines on air quality is substantial, especially under winter conditions.

According to planning data, previous initiatives aimed to relocate a portion of the existing M-18 main road outside the urban area of the city to improve horizontal and vertical road elements, thereby increasing calculated speeds and reducing travel times. The construction of a bypass would divert transit traffic away from the city center. Additionally, relocating a section of the regional road R-469 to the east would remove the regional road from populated areas, while simultaneously establishing significantly better communication with Tuzla International Airport (TIA). The relocation of part of the regional road R-455 to the west, covering approximately 7,600 meters, would avoid passing through the settlements of Barice, Šerići and Priluk, while substantially improving the route's elements.

For a long time, discussions have been held regarding the planning and construction of highways and expressways that would enhance the connectivity of the city with the broader region, the Balkans and Europe. In recent years, the development of the main road network in the Živinice area has not kept pace with the growing population nor with the increasing transportation demands, especially on long-distance (main) roads. Regional roads were not developed in the past period, and there was a lack of maintenance. It is evident that insufficient attention has been given to the internal traffic integration of the Northeastern Bosnia region, as well as to its connection with other regions. Although local roads have experienced some relative development, as indicated by their condition, urban streets in Živinice often fail to meet the structural and functional needs of the population.

The reconstruction and construction of new roads, particularly the development of highways along the main routes of our road network and the construction of bypasses around the city's urban area—along with the removal of unplanned structures near roads—will significantly improve traffic safety. The construction of appropriate ancillary facilities along the roads and more importantly, the introduction of modern signage and information systems should enhance traffic conditions. Based on traffic density analysis at key points in the city, we believe that the construction of roundabouts on the M18 Main Road at intersections such as Križaljka, Ciljuge (junction with R455a), the city entrance near Omega shopping center and the Markan intersection would significantly reduce congestion at entry, exit and transit points in Živinice.

When analyzing the road surface conditions in Bosnia and Herzegovina and their impact on traffic safety, it becomes clear that public roads in Bosnia and Herzegovina are old with worn-out surfaces. The infrastructure has suffered from years of underinvestment, resulting in an increasing number of hazardous spots where reaction and stopping times in dangerous situations are prolonged. From a construction perspective, several negative phenomena can be observed on public roads in Bosnia and Herzegovina, such as:

* Road surface damage and potholes,
* Low-traction road surfaces,
* Insufficient horizontal and vertical visibility,
* Inadequate cross slopes,
* Improperly executed road transitions, and
* Lack of road widening in curves.

Given the pronounced need for research and analysis, it is essential to consider both the functional and construction aspects of roadways, in both existing and planned conditions. Each public road should meet specific conditions for road traffic, which include:

* Traffic load,
* Traffic density,
* Gross tonnage equivalent of the road surface,
* Design speed, and
* Road capacity.

These characteristics determine the quality of a road in terms of traffic functionality. They are the foundational data for further planning and design, whether in determining needs and priorities for the renewal and reconstruction of the existing road network or for the construction of new roads. They are also the basis for determining the cross slopes of the road in curves, the required visibility length and the radius of vertical and horizontal curves. Each road consists of straight sections, curves and transition curves, and when designing any road, it is crucial to account for all geometric elements in the layout plan, longitudinal profile and cross-sectional profile.

It is assumed that the design of every public road will comply with all legally mandated elements, so further elaboration on this is unnecessary. From a construction perspective, roads are built on embankments, cuts, excavations, galleries, tunnels and various other structures along the route. The road consists of its lower and upper layers as well as the associated construction structures.

**Railway traffic**

The city of Živinice is connected to the national and broader railway network via the standard gauge railway line Banovići - Živinice - Tuzla - Brčko. Additionally, it connects to the Zvornik - Doboj railway line, which links to the Sarajevo - Ploče line and the Bar - Belgrade line facilitating access to the former Yugoslav republics and through Zagreb and Maribor to Central Europe. The length of the railway within the city of Živinice is 14.86 km. Furthermore, the railway line toward Zvornik, which also passes through Živinice (approximately 12.6 km), provides an eastern exit into the Republic of Srpska.

The condition of the railway infrastructure is currently unsatisfactory, necessitating modernization in the near future. It is also essential to ensure the construction of necessary railway crossings and where they already exist, to modernize them or, if possible, to provide for grade-separated crossings between roads and railways.

**Air traffic**

The Tuzla International Airport (TIA) is located in the Tuzla Canton and is one of four operational international airports in Bosnia and Herzegovina, managed by the public utility TIA. The distance from the city of Živinice to TIA is 8.9 km by road, which takes approximately 14 minutes to drive from the center of Živinice. Additionally, Sarajevo International Airport is situated about 106 km from Živinice, translating to a travel time of approximately 1 hour and 55 minutes. The airport is located along the regional road Živinice - Kalesija, specifically in the settlement of Gornje Dubrave, in the city of Živinice.

tia facilitates international air traffic, and in recent years, the number of passengers utilizing the services of this airport has fluctuated. The opening of cargo transport at TIA significantly creates potential for robust development in the production sector within the city of Živinice. According to data, some existing transportation issues include weak connectivity with other modes of transport and problems with access roads.

**Stationary traffic**

Public parking facilities in the city of Živinice are managed by the public utility "Horizontala Živinice". This company has been entrusted with the management, usage, and organization of public parking spaces in the area by a decision of the City Council of Živinice. The company utilizes automated equipment for parking fee collection which requires regular maintenance and servicing. Additionally, it has implemented an electronic control system for the collection of fees at public parking lots. Basic vertical and horizontal signage has been installed at most public and reserved parking spaces. The company has organized 658 parking spots divided into three zones. The parking facilities are structured as both open and closed types, featuring a privileged permit issuance model and more than 280 reserved parking spaces.

The city of Živinice has long faced challenges regarding parking spaces in the central urban area. Due to the increasing number of vehicles, it is essential to reorganize stationary traffic and construct new, well-designed parking areas equipped with payment systems. Considerations for the need for new parking facilities in the urban zone, alongside the improvement of certain locations, extend to the construction of larger-capacity underground garages at suitable sites. The company aims to enhance the intelligence of city parking facilities through innovative technologies it implements (facilitated parking space discovery, online payment and transparency, monitoring and security, and maintenance of mobility) to enable drivers to find parking more quickly, thereby reducing gas emissions and contributing to a cleaner environment.

**Passenger transport**

The city of Živinice has one bus station located approximately 853 meters from the city center, which is just an 11-minute walk. Within the city, transportation is also provided by public bus services. There are over 30 national and 20 international bus departures from Živinice. Transportation services are offered by two companies headquartered in neighboring municipalities: Tuzla and Banovići. In addition to the aforementioned public transport, taxi services are also available. Some of the carriers operating from Živinice include Centrotrans d.d., Prevoz Putnika Zavidovići, Trans Turist Tuzla, Halilovic - Big Sim, ENA TRANS, among others. Živinice also has international departures to various countries, such as Germany (e.g., Düsseldorf, Munich, Hamburg), Croatia (Split), and Serbia (Belgrade).

**Scheduled transportation**

The city of Živinice has adopted regulations to establish the conditions, criteria and procedures for granting subsidies as well as a decision to initiate subsidies for providing regular bus transportation services for passengers. This includes subsidizing regular bus transportation services for passengers in local communities. The city of Živinice allocates financial resources to subsidize the necessary number of departures/returns for bus lines that are essential for the normal functioning of daily life and work in the specified areas. Public calls for proposals are regularly issued for public transport providers to deliver services on the relevant routes. A longstanding issue has been observed at the beginning of the school year regarding bus lines operating from certain local communities, where the company awarded the transport contract has the legal right to withdraw from lines that are not financially viable. The city of Živinice, with the support of the City Council, has attempted to address this issue in the long term. The subsidies are also intended to encourage transportation for the wider population.

**Transportation of municipal and bulky waste**

The collection and transportation of municipal waste in the city of Živinice are conducted in accordance with the Law on Municipal Activities of the Tuzla Canton. The existing organization for managing municipal waste in Živinice is based on the principle of waste collection and disposal by two companies, “AKVA Invest” and “Rif Post” d.o.o. According to available data, not all residents utilize municipal waste disposal services, with only approximately 75% of the city's population participating.

**The demand for transportation**

The dispersion of different population categories within the neighborhoods of Živinice results in varied transportation demands. An analysis of the population distribution across individual neighborhoods and their locations in suburban and rural areas is necessary to determine zones of attraction and production. A preliminary review of the raw data suggests that transportation demand is highly differentiated, with a significant number of diverse transportation needs varying by: time of day, day of the week, purpose of travel, type of goods or passengers, etc. For educational, sports, or social activities, children and youth in the rural areas of Živinice generate daily transportation demand. The attractions for their travel within Živinice include regular primary and secondary schools, sports centers, cinemas, shopping centers, and similar establishments. The older population in rural neighborhoods frequently has a demand for healthcare services. Due to disabilities or limited mobility, access to public transport for the elderly is challenging. To adequately respond to their needs, public passenger transport should provide a “door-to-door” service. The most important zone of attraction for travel within the city of Živinice is the city center, with key points of interest including schools, the mine, public institutions, and commercial entities.

The points of transportation demand are numerous neighborhoods (29) within 26 local communities in the city of Živinice (Živinice Centar, Rudar Živinice, Dubrave Gornje, Dubrave Donje, Oskova, Litve, Višća Donja, Kovači, Šerići, Bašigovci, Priluk, Gračanica, Suha, Tupkovići, Živinice Gornje, Lukavica Gornja, Lukavica Donja, Šišići, Svojat, Barice, Stari Đurđevik, Đurđevik, Podgajevi, Višća Gornja, Šahići i Zelenika).

**Traffic safety**

Traffic accidents in the city of Živinice are primarily caused by non-compliance with road conditions, inadequate transportation infrastructure, and driving under the influence of alcohol. Certain local sections also require traffic calming measures. The technical elements of the road, along with constant speed limits on the routes and the presence of pedestrians, as well as frequent access points to the road, degrade the roadways and contribute to the occurrence of traffic accidents. It is crucial to continuously implement activities aimed at regulating speed limits, maintenance, reconstruction, and modernization of roadways, as this will lead to improved infrastructure quality and a reduction in the risk of traffic accidents.

**Pedestrian paths**

The availability of pedestrian paths throughout the city of Živinice is unsatisfactory, except for the central part of the city and the main street. It is essential to enhance recreational walking zones and paths, develop themed trails and create pedestrian areas adjacent to residential, commercial and industrial buildings, ensuring their connectivity. The planned city boulevard must include pedestrian traffic zones as a requirement. Additionally, there is insufficient promotion of walking to encourage greater pedestrian activity.

**Cycling**

The cycling infrastructure, including the network of connected and available bike paths and bicycle parking, is underdeveloped. Aside from the constructed bike path measuring 2.5 km in the area of Ciljuga, cyclists in the urban parts of Živinice are often forced to share the roadway with motor vehicles. There is no integrated bike-sharing system for public bicycle rentals or rent-a-bike services. The current situation necessitates a continuous increase in the number of well-maintained and interconnected cycling paths, including urban and recreational/mountain biking trails, along with promoting cycling as a mode of transportation through the marking and signage of established bike and recreational paths.

The organization of the mountain biking tour "Konjuh Adventure" is commendable, particularly for attracting passionate and recreational cyclists. Cycling paths are anticipated in the Spatial Plan; however, there is a lack of continuous promotional materials and overall promotion of cycling tours and tourism in the area. Favorable geographical conditions and the development of cycling infrastructure (including paths, rest areas, services, toilets, and parking) would enhance accessibility to potential tourist locations for cyclists and make this mode of non-motorized transport more attractive.

**Appendix**: Based on the aforementioned points, in the upcoming period, efforts should be made to develop solutions for improved intersections at the specified junctions, along with continuous education of the population and youth in the field of traffic culture. From a traffic perspective, it is necessary to modernize and enhance the quality of local roads within the City of Živinice. Additionally, efforts should be made to improve vehicle roadworthiness, promote the use of public transport, encourage walking and cycling, and expand pedestrian zones (streets). Stricter enforcement of vehicle technical inspections and reduction of vehicle emissions, as well as fuel quality control, should be mandated.

1. **PROJECT ASSIGNMENT DESCRIPTION**

It is essential to conduct a Traffic study for sustainable transportation in the city of Živinice, which will define the following based on an analysis of traffic system participants, traffic flow analysis, assessment of transportation infrastructure, public perception analysis, population and tourist statistics, traffic forecasting and evaluation of an appropriate traffic model:

* Long-term measures for the development of sustainable transportation infrastructure (considering factors such as natural disasters and climate change),
* Sustainable solutions to enhance public transportation, with a particular focus on improving physical accessibility and availability,
* The introduction of a Park & Ride system,
* Optimization of delivery traffic,
* Additional measures to improve sustainable mobility,
* Identification of problematic locations and practices concerning passenger safety, particularly for women using public urban transport and other sustainable modes of mobility,
* Sustainability and safety of forest fire prevention routes (considering the increasing incidence of fires),
* Identification of funding sources and management systems.

The Study should also include a forecast of future passengers on potential new public transport routes and propose measures for promoting sustainable transportation and sustainable development in general. Regarding the improvement of physical accessibility and availability, special attention should be given to analyzing access to public transport stations and vehicles for women with children, persons with disabilities, and the elderly. In drafting the study, considerations should be made for gender equality and marginalized groups, as well as their access to public transport and their role in urban mobility.

The "framework content" of the requested study is as follows:

**INTRODUCTION (IN THE INTRODUCTORY SECTION, THE CONTRACTOR SHOULD PROVIDE AN OVERVIEW OF THE CURRENT SITUATION)**

1. **SPATIAL COVERAGE OF THE CITY OF ŽIVINICE**
2. **METHODOLOGY**
3. **ANALYSIS OF THE CURRENT SITUATION**  
   3.1. Analysis of existing documentation (spatial planning documentation - land use and planning analysis, traffic-related documentation, other relevant documentation, general conclusions from the analysis of all documentation)  
   3.2. Analysis of traffic system participants  
   3.3. Analysis of traffic infrastructure and networks  
   3.4. Traffic flow analysis (data from automatic traffic counting, mobile automatic counters, manual traffic counting)  
   3.5. Public opinion analysis (defining the statistical sample, location and time of surveys, survey methodology, questionnaire presentation, online survey, and analysis of results)  
   3.6. Analysis of travel and movement patterns for residents, tourists, and goods  
   3.7. Analysis of existing innovative urban mobility solutions in the City of Živinice  
   3.8. Analysis of public transportation in the City of Živinice  
   3.9. Analysis of non-motorized traffic and movement in the City of Živinice  
   3.10. Analysis of railway traffic and transportation in the City of Živinice  
   3.11. Analysis of air traffic and transportation in the City of Živinice  
   3.12. Analysis of electromobility in the City of Živinice  
   3.13. Analysis of urban logistics in the City of Živinice  
   3.14. Traffic safety analysis in the City of Živinice  
   3.15. Assessment of the current state of sustainable forms of transportation
4. **TRAFFIC FORECAST FOR THE CITY OF ŽIVINICE - TRAVEL GENERATION**  
   4.1. Methodology for forecasting  
   4.2. Establishing trends in traffic volume changes by passenger and population categories  
   4.3. Demand for transportation (purpose of travel and transport, etc.)  
   4.4. Modal split analysis of movement  
   4.5. Network status of all modes of transportation  
   4.6. Status of stationary traffic and terminal facilities  
   4.7. Status of transit traffic  
   4.8. Traffic forecast
5. **TRAFFIC MODEL**  
   5.1. Traffic model and creation process (Origin-Destination estimation, traffic zones, zoning of the City of Živinice, spatial distribution of movement, methodology for traffic zones, traffic demand modeling, traffic counting, supply model, determination of intersection capacities - unsignalized, roundabouts, signalized, goods flow analysis, determination of travel volumes, spatial and temporal distribution, assignment of trips to the road network, projection of modal split - non-motorized, motorized, individual, public transport, flow optimization via traffic simulation softwares such as VISUM).
6. **PROPOSED SOLUTIONS**  
   6.1. Solutions for improving pedestrian traffic (Opportunities for establishing pedestrian zones and redesigning existing road surfaces, expanding areas restricted or closed to motor vehicle traffic, where conditions allow)  
   6.2. Solutions for improving bicycle traffic (Introducing bicycle lanes in the city center, along the Živinice - M18 road, reconstruction and repair of existing bicycle lanes, promotion of existing lanes, construction of a multi-purpose pavilion - rest stop for cyclists, establishing bike parking, traffic signage for bicycle traffic, introducing a public bike-sharing system, promoting cycling as the most sustainable form of transportation)  
   6.3. Improving the quality of public transportation in the City of Živinice (Review of the regulatory framework, conditions for introducing public transportation, analysis of existing public transport, analysis of transport demand, proposals for new lines, on-demand transportation for rural areas, additional lines during the tourist season, optimization of school and worker transport systems, public transportation via tourist trains)  
   6.4. Introduction of Park & Ride systems 6.5. Urban logistics and optimization of delivery transport

6.6. Long-term development of transport infrastructure (Road, railway, airport infrastructure, etc.)  
6.7. Other measures for enhancing sustainable mobility (Analysis of the feasibility of purchasing electric vehicles for public institutions, measures to promote eco-friendly vehicles, measures to encourage eco-driving, public education on sustainable transportation and development)

1. **PROJECT OBJECTIVES, PURPOSE, AND INVESTMENT PRIORITIES OF PROJECTS, AS WELL AS POSSIBLE FUNDING SOURCES**
2. **ACTION PLAN AND FINANCIAL FRAMEWORK FOR IMPLEMENTATION**
3. **MONITORING AND EVALUATION PLAN**
4. **FINAL REPORT – STUDY CONCLUSION**

**REFERENCES**

**LIST OF IMAGES, TABLES, GRAPHPS AND APPENDICES**

The Study should be formally adopted by the City Council, after which procedures for harmonizing the spatial plan and preparing main projects for the reconstruction, repair, and modernization of transport infrastructure should be initiated.

When involving citizens and stakeholders in decision-making processes, available formal mechanisms and informal practices should be used to encourage the participation of women, youth, and other marginalized groups, with a mandatory consultation plan drafted.

Chapter 6 and 7 will be developed together with the SEI, where SEI would contribute with the content related to the universal design and inclusive mobility solutions to ensuring equal access to all modes of transport, travel demand management measures and policies for enhancing sustainable mobility and integration of smart technologies, electrification and decarbonization potential of transport sector, climate resilience and adaptation strategies

1. **PHASES AND TIMELINES**

The planned period for the development of the Traffic study for sustainable transportation in the city of Živinice is a **minimum of four (4) months**. The activity needs to be implemented by the end of 2025.

SEI Experts will collaborate with the external experts team to support the mobility study by providing methodological expertise, identifying key actions for a sustainable transport system, and conducting monitoring and evaluation to ensure quality.

1. **DEADLINES AND DELIVERABLES**

The selected Contractor will be required to provide services according to the deadlines outlined below:

|  |  |
| --- | --- |
| **Task** | **Due Date** |
| **Task 1:**  First draft of the Study prepared, submitted to the SEI and representatives of the City of Živinice for review and comments | March 31, 2025 |
| **Task 2:**  Prepared the Traffic study for sustainable transportation in the city of Živinice (final document), submitted to the SEI and representatives of the City of Živinice | May 31, 2025 |
| **Task 3:**  Report to SEI on the work performed | June 30, 2025 |

The selected Contractor is required to consider comments from representatives of the City of Živinice, SEI and other relevant parties, and to align their work with the provided suggestions.