TERMS OF REFERENCE FOR CONSULTANTS
ON ROAD SAFETY AUDIT AND TECHNOLOGY TO HELP ENSURE ROAD SAFETY

A. Background

1. The Government of the Kyrgyz Republic has made a commitment to improving road safety and, in 2016, together with the other Central Asia Regional Economic Cooperation (CAREC) member countries endorsed *Safely Connected: A Regional Road Safety Strategy for CAREC Countries (2017–2030).* This strategy aims to reduce the number of road crash fatalities on the CAREC road corridors by 50% by 2030 (compared to 2010) and provides a benchmark for all CAREC member countries to address regional safety issues through tackling road safety challenges in their own jurisdictions.

2. The Kyrgyz Republic recorded a fatality rate of 15.4 fatalities per 100,000 inhabitants, in 2018, which is the fifth highest in CAREC countries. While road crashes do not only create suffering, fear, and trauma to victims and families, they are also a heavy burden on the economy of the nation. The economic cost of road deaths and injuries in the Kyrgyz Republic in 2018 was estimated to be 5.2% of national GDP, the second highest in Central Asia.[1]

3. Given this road safety situation and demonstrating its commitment to improving road safety, the Kyrgyz Republic has decided to establish a strategic approach to reducing road trauma using the Safe System approach. Implementing this decision requires development the national road safety strategy and the incorporation of systematic procedures to ensure safe road infrastructure practices, such as road safety auditing, are reflected in road management activities.

4. The Asian Development Bank intends to support the government's efforts through the CAREC Corridors 1 and 3 Connector Road Project (Phase 2) – Additional Financing (CRP-AF) approved in 2018. The project implementation is ongoing and aims to help the Kyrgyz Republic in the implementation of a national road safety strategy and offers opportunities to demonstrate safety technologies for potential future use on the state road network. The CRP-AF includes a component on Road Safety Engineering Improvement. This component is envisaged to be implemented through three sub-outputs: (i) sub-output 1: development of a national road safety strategy, (ii) sub-output 2: road safety auditing introduced into the business practices of the Ministry of Transport and Communications (MOTC), and (iii) sub-output 3: the latest technology for safer transport services applied along the project roads.

5. To this end, MOTC (the executing agency for the project, assisted by the Project Implementation Unit [PIU] in the day-to-day implementation of the project component) will engage Road Safety Audit and Technology Consultants (RSATC) for sub-outputs 2 and 3 combined. A separate engagement is being undertaken for the consultant to undertake sub-output 1.

6. The RSATC will be responsible to MOTC for the successful delivery of all activities under sub-outputs 2 and 3. The RSATC will:

(i) Maintain effective communications with MOTC, PIU, Traffic Police, and Kyrgyz State University on Construction, Transport and Architecture (KSUCTA);
(ii) Provide brief progress reports to MOTC each quarter and the Final Report at the end of the assignment;
(iii) Work closely with the Consultant working on sub-output 1 and support ADB missions;

[1] World Health Organization. Global Status Report on Road Safety. 2018

(iv) Consolidate all progress reports at the end of the services including events proceedings (topics, attendances, presentations, and so forth); and

B. Scope of Services

7. The RSATC will undertake the following tasks, but not be limited to:

Sub-Output 2: Introduce road safety auditing into the business practices of MOTC

Task 1. Develop a national road safety audit manual:

(i) Review any existing engineering guidance in the Kyrgyz Republic used for assessing crash and severity risk of road infrastructure including any existing university curricula;
(ii) Develop a draft road safety audit manual for the Kyrgyz Republic bases on enhancing existing practices towards adoption of international good practice as reflected in the CAREC Road Safety Engineering Manual 1 Road Safety Audit March 2018;
(iii) Host a workshop to inform the implementation of the new road safety audit manual including participation by MOTC road engineers together with relevant consultants and academics in the Kyrgyz Republic; and
(iv) Create an Implementation Plan for the adoption of the new road safety audit manual.

Task 2. Policy and legislation:

(i) Review relevant MOTC internal policy and business rules and national legislation and regulation relevant to road construction practices and empowering authority to identify amendments needed to lawfully implement the new road safety audit manual and any ensuing actions;
(ii) Draft Amendments to Normative Legal Acts needed to effectively and efficiently implement the new road safety audit manual and any ensuing actions covering its inclusion in the whole project lifecycle; and
(iii) Support MOTC in the enactment of new and promotion of draft legal acts to introduce amendments and additions to existing legal acts, standards, norms, etc.

Task 3. Strengthening the engineering standards and requirements related to road safety:

(i) Assess the as-built safety standard against international best practice of two (2) recently constructed sections of national highway in the Kyrgyz Republic;
(ii) Review relevant technical documents used for designing road infrastructure and identify the major gaps between Kyrgyz road construction standards and international best practice for safe roads;
(iii) Draft a technical note including consultation with MOTC road designers and managers setting out standard road cross sections, intersection treatments and urban highway configurations for use in future state highway construction projects; and
(iv) Draft a Design Exception Procedure including consultation with MOTC road designers and managers for the design and approval of safety treatments that do not comply with existing official road construction standards in the Kyrgyz Republic.

Task 4. Training:

(i) Develop and deliver two (2) road safety audit trainings based on the new audit manual. Training may be delivered in agreement with MOTC but must include practical exercises for participants based on real locations and configurations in the Kyrgyz national road network;
(ii) Develop and deliver two (2) road safety engineering trainings based on the new road safety engineering technical note and Design Exception Procedure.
(iii) Develop and deliver one (1) online train-the-trainer program based on the new audit manual; and
(iv) Training materials are to be provided to MOTC in Kyrgyz and Russian for their future use.

Task 5. Road Safety Audit Unit in MOTC:

(i) Develop a structure and roles for a Road Safety Audit Unit (RSAU) within MOTC;
(ii) Create an operational plan for the RSAU to implement auditing throughout the project lifecycle;
(iii) Draft a standard operating procedure for RSAU including job descriptions for each position;
(iv) Prepare an annual budget estimate for running an RSAU and finance the first year's operation of the RSAU in 2023; and
(v) Provide support to RSAU in undertaking road safety audits for five selected projects at different stages including detailed design, during construction, and post-construction 2023-2024.

Task 6. Introducing a road safety auditing course in KSUCTA

(i) Develop together with KSUCTA staff a course on road safety auditing including a curriculum for engineering students at a standard that can be certified in Kyrgyzstan to contribute to a degree or diploma qualification;
(ii) Prepare the course material and carry out the training of KSUCTA lecturers to deliver the material for students; and
(iii) Support KSUCTA lecturers with the initial implementation of the course during the 2023-2024 academic year.

Sub-Output 3: Applying safety technology along the project roads

Task 1. Crash risk and technology matching:

(i) Review the range of casualty crash types occurring along the CAREC Corridors in the Kyrgyz Republic;
(ii) Identify technologies for reducing the crash likelihood and/or severity for the key crash types including excessive speed, drink driving, fatigued driving, non-seatbelt wearing, driver distraction/inattention and poor risk judgement at intersections. At a minimum, the technologies listed in Attachment 1 are to be considered; and
(iii) Document the requisite capacities needed for successful deployment of the identified technologies.

Task 2. Readiness assessment and recommendations:

(i) Undertake an assessment along the road sections being rehabilitated under CAREC Corridors 1 and 3 Connector Road Project (CRP) and CRP-AF of the adequacy of the capacities identified in Task 1(iii) to support the technologies identified in Task 1(ii);
(ii) Make recommendations for the inclusion of specific technologies and any necessary supporting capacities along the project road sections including a cost estimate for each technology and its maintenance over a 10 year period; and

Task 3. Technology acquisition and deployment:

(i) Support the MOTC in the specification, procurement of the needed equipment. MOTC, through the contractors working under CRP and CRP-AF will undertake installation, calibration, testing and training of concerned staff.

C. Consultants Requirements

8. The assignment is expected to be conducted by a team of consultants (international and national). Consulting services require a total of 46 person-months of international experts input, 48 person-months of national experts and will take place over a period of approximately 28 months. The consultancy team is expected to hold the necessary skills and experience to deliver the entirety of the project. Firms should recommend team members based on their assessment of need and within the minimum composition set out below.

9. **Team Leader (International)**. A minimum of 15 years relevant experience in advanced road safety audit and training is required, as well as a degree in a relevant field, and proven experience of developing and implementing policy in safe infrastructure based on the Safe System approach. Experience in developing countries is required, and experience in CAREC countries is an added advantage. The expert must have proven writing skills and fluency in English. Fluency in Russian and or Kyrgyz is an added advantage.

10. **Road Safety Engineering Expert (international).** A minimum of 15 years relevant experience in road safety engineering and implementation of traffic safety management systems as well as a degree in a relevant field, and proven experience of designing safe road infrastructure. Experience in developing countries is required, and experience in CAREC countries is an added advantage. The expert must have proven writing skills and fluency in English. Fluency in Russian and or Kyrgyz is an added advantage.

11. **Organisational Development Expert (International).** A minimum of 10 years relevant experience in public sector organisational development is required, as well as a degree in a relevant field, and proven experience of implementing organisational change. Experience in at least one CAREC country is highly desirable. The expert must have proven writing skills and fluency in English. Fluency in Russian and or Kyrgyz is an added advantage.

12. **Traffic Technology Expert (International)**. A minimum of 10 years relevant experience in traffic control technologies for road safety including the specification, procurement and deployment of such technologies is required, as well as a degree in a relevant field, and proven experience of implementing such technologies within the Safe System approach. Experience in developing countries is required, and experience in CAREC countries is an added advantage. The expert must have proven writing skills and fluency in English. Fluency in Russian and or Kyrgyz is an added advantage.

13. **Road Construction Engineer (National)**. Minimum 10 years relevant experience in road construction. Proven knowledge and experience delivering major road upgrades. Fluency in Russian and or Kyrgyz is required as are English language skills. The expert is expected to be a full team member.

14. **Traffic/Systems Engineer (National)**. Minimum 5 years relevant experience in traffic engineering. Proven knowledge and experience designing and implementing traffic management technologies. Fluency in Russian and or Kyrgyz is required as are English language skills. The expert is expected to be a full team member.

D. Deliverables

15. The Consultant will be responsible for submitting several deliverables. The main deliverable will consist of the manual for undertaking road safety auditing, Standard Operating Procedure for RSAU, a curriculum on road safety auditing, and the specifications of the selected technologies. The deliverables are listed below.

16. **Inception Report** (after 1 month). The Inception Report will be prepared within 1 month after commencement of the contract. This will describe the approach to be used by the Consultant in carrying out the services, including the equipment to be used in road safety auditing, the necessary amendments to be made to the relevant legal documents, the required resources and the final implementation schedule. A Capacity Building Plan will also be included, describing the capacity gaps related to road safety auditing and how these will be addressed through different capacity building and training activities involving the different units under MOTC that are stakeholders in the road safety improvement. The Report will identify the key parties to be engaged in the project and the roles expected of each party.

17. **Monthly Progress Reports** (each month). Each month the Consultant will prepare a Monthly Progress report indicating the activities carried out and the progress achieved with the different deliverables, as well as a detailed plan for the activities to be undertaken in the next 2 months. The report will highlight any risks or issues and propose mitigating measures.

18. **Implementation Plan** for the formation of a new road safety audit manual including recommended policy amendments including the structure and operational plan for the RSAU and an annual budget estimate for RSAU operation.

19. **Road safety auditing manual** (draft after 3 months, final by Dec 2022). The manual is to provide:

(i) A detailed description of the auditing process during the planning, design, construction, operation and maintenance of a road;
(ii) Instructions on the steps to be undertaken in each audit;
(iii) Guidance on writing and responding to an audit report including template reports; and
(iv) Instructions on the commissioning and management of road safety audits including draft terms of reference audits.

20. A **Road Safety Audit Policy** for MOTC setting out which projects and roads are to be audited and when.

21. A **report on road safety standards** including assessment of the as-built safety of two (2) road sections, reviewer commentary on the gaps in safety in existing road construction standards, a technical note on future safe road construction standards and a Design Exception Protocol.

22. **Written feedback to RSAU on road safety audits** for five selected projects at different lifecycle stages (1 month from the completion of safety audit).

23. **Training on road safety auditing** including:

(i) Two (2) road safety audit training based on the new audit manual;
(ii) One (1) online train-the-trainer program based on the new audit manual; and
(iii) Training materials for MOTC use in Kyrgyz and Russian.

24. **Draft legal instruments** to support the conduct of road safety auditing. The legal instruments will define the need for road safety auditing, establish audit recommendations as to the basis for the implementation of safety measures and empower agencies to implement responses to audit findings.

25. **Capacity Building Report** (by December each year, final by October 2024). Capacity building will be carried out throughout the assignment. The Capacity Building Report will list all capacity building and training activities undertaken, and the participants of those activities. It will describe the progress made in implementing the Capacity Building Plan submitted as part of the Inception Report. It will also recommend further capacity building activities beyond 2024.

26. A **degree level course on road safety auditing** consistent with the Road Safety Audit Manual and MOTC policy (draft by Dec 2022, final by July 2024) including:

(i) A curriculum outline by November 2022 for a 40-hour course including field exercises and assessment;
(ii) Detailed content of the course including training material for students, guidance notes for teachers and assessment material by the end 2022;
(iii) Report on completed training of the KSUCTA lecturers by March 2023;
(iv) A complete first draft of the course material will be submitted by July 2023 for approval to commence delivery in the subsequent academic year;
(v) A final version of all course material accounting for changes required during course accreditation and review to be submitted by July 2023 depending on KSUCTA review timeframes).

27. Report on relevant safety technologies to address key crash and injury risks along the project roads including reference to any foundation systems these technologies rely on (draft by March 2023).

28. Report on recommended technologies for MOTC implementation to reduce road trauma along the project roads (draft by July 2023).

29. Final Report (by November 2024). The final report will summarize all tasks undertaken as part of the assignment. It shall contain the lessons learned and recommendations for a future safety audit, management and analysis.

30. All reports, deliverables, and workshops, except those provided solely for ADB, are to be provided in Kyrgyz, Russian and English. Any reports solely for ADB are to be submitted in English.

E. Implementation period.

31. The assignment is expected to be commenced in August 2022 and will be undertaken on an intermittent basis until 30 November 2024.

F. Consultant recruitment

32. The MOTC will select an international firm associated with a local firm in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time) based on the quality- and cost-based selection method using a 90:10 quality–cost ratio with simplified technical proposal. All international and national experts will be evaluated.

G. Government Support

33. MOTC will (i) allocate two offices including desks and chairs for (a) consultants and (b) Road Safety Audit [RSA] Unit; (ii) finance running cost of the newly established RSA Unit; and (iii) assign a counterpart staff to assist consultants in performing their services and coordinating with Traffic Police and KSUCTA; and (iv) provide consultants with data and information as requested.

ATTACHMENT 1

Potential technologies for application

Safe Road Infrastructure

- Audio tactile line marking
- Flexible and semi-rigid center and roadside barriers
- Side road vehicle approach warning including reducing the speed at intersections with approaching vehicles
- Gateway treatments including speed reduction on entry to settlements
- Safe roadside bays for police enforcement actions.

Safe passenger transport on intercity and suburban regular bus services *(use GIS surveillance equipment in intercity bus transport to help vulnerable populations travel safer.)*

- **Software for the satellite vehicle monitoring system.** The software must include a program that is fully loaded onto the dispatcher's computer in the data center. In order to ensure the reliability and safety of the data received from mobile objects connected to the vehicle monitoring system, the software (software) should not be a Web service. Storing and accumulating data on the server and on the user's local computer
- **On-board devices for intercity buses**, including driver identification, speed control, geolocation in case of a traffic accident, the system transmits SOS signal to the Data Processing Center and to the emergency teams of the rescue services (link the location of the bus with the passenger information system, generate reports on violations high-speed traffic, work and rest regime, etc.

Safe Road Use

- Pedestrian activated signalized crossings with cycle count down signs
- Variable message Signs for approaching road hazards or poor driving conditions
- Incident surveillance cameras at high-risk locations
- Driver information systems, such as travel times, icy roads and poor visibility
- Automated speed enforcement cameras including instantaneous and average speed devices.

Planning project monitoring

- Traffic volume measurement with vehicle classification
- Cameras and drones for road construction project progress monitoring
- Investment and budget management