Feasibility Study for CAREC Corridor 3 Reconstruction Project

Terms of Reference

For Part 1: Feasibility Study (FS) and Part 2: Detailed Engineering Design (DED)

A. Introduction

1. The government of the Kyrgyz Republic has agreed with the Asian Development Bank (ADB) on a small expenditure financing facility to design the CAREC Corridor 3 Manas (previous name - Jalal-Abad) - Osh Road Reconstruction Project (Project). The Project is intended to enhance the efficiency of traffic flow, that will be increased partly by the planned China–Kyrgyzstan–Uzbekistan railway and the new Jalal-Abad international airport, and the alternate North-South highway scheduled for commissioning in 2026. The Ministry of Transport and Communications (MOTC), the Project's executing agency (Client), is seeking to engage a consulting firm (Consultant) to perform a comprehensive study to determine the economic, social, environmental, and technical feasibility of the Project to be designed and implemented in 2026.

2. The main output of the Project is 62 kilometers the CAREC Corridor 3 between Manas (approximate station Km 574) and the northern end of the Uzgen By-Pass Road (approximate station Km 595) and from the southern end of the Uzgen By Pass Road to Osh approximate station Km 620) to Osh city (approximate station Km 661), upgraded to a four-lane divided road that meets Category II road standards of the Kyrgyz Republic. The road is currently a two-lane divided facility and meets Category III. A consortium of private investors financed the 14 km Uzgen By-Pass Road construction as a toll road (the road has already been built and commissioned).

3. In addition to meeting the national standards, the upgraded (reconstructed) road must include eco-friendly, climate-resilient, and low-carbon design features, ensuring compliance with ADB requirements.[1] The civil works will be procured using ADB Standard Bidding Documents for *Single-Stage: Two-Envelope Bidding Procedure Without Prequalification, with Merit Point Criteria (January 2026)*. The Consultant must have the technical expertise and a sound understanding of ADB policies on safeguards and procurement to carry out the study. The Consultant must have experience in designing and constructing road infrastructure in Central Asia or a similar region, sufficient to understand and include the climate, terrain, and construction practices in the preliminary design. The mean daily temperature in the Project area ranges from 4 to 34 degrees Celsius throughout the year, and average annual precipitation ranges from 6 to 60 mm. The altitude of the site varies from about 750 meters to 950 meters, and the unstable (sliding) soil masses in the area increase the risk of road failures.

B. Implementation Arrangements

4. This selection relates to the services for: Part 1: Feasibility Study (FS) and Part 2: Detailed Engineering Design (DED). Full technical proposals are required from the firms addressing both Parts.

5. Details of the required outputs and scope of work, deliverables and reporting requirements, indicative staffing, consultant expert positions, qualifications and key tasks,

[1] The consultant should refer to the ADB Green Roads Toolkit, which provides practical guidance for integrating sustainable, climate-resilient, and low-carbon road design measures into projects. https://data.adb.org/dataset/green-roads-toolkit

contract administration and reporting for this contract are provided in the following sections, separately for Part 1 and Part 2.

6. The Part 2 of the assignment will be subject to satisfactory performance of the selected firm under Part 1 and official certification on it issued by the Client.

7. The time for completion of the feasibility study shall be **nine months** from the commencement date stated in the notice to proceed.

8. The Consultant shall be based in Osh with periodic visits to Bishkek for consultation with the Client. The extent of fieldwork must allow for detailed consultations with key stakeholders and building consensus. The Client expects the study team to spend about 65% of their total time in the field. The Consultant will provide a detailed program of its team's home and field inputs as part of its RFP submission. This will overlay the project delivery program with the assignment of the total time to the experts performing the different tasks at various stages of project delivery, while distinguishing between home and field inputs.

9. The ADB Project Implementation Unit (PIU) of the MOTC will be the Client's representative and be responsible for managing the consulting services contract. The Consultant will report to the Head of the PIU and work in direct consultation with the relevant PIU specialists on day-to-day operational matters. The PIU will assign a project manager to the Consultant's team to facilitate better coordination and communication between the consultant and MOTC.

10. The Client will assist the Consultant in establishing communication with government stakeholders, community leaders, etc., and relevant documents from past projects and consulting services.

C. Scope of Services (Part 1: Feasibility Study)

11. The Consultant must examine the feasibility of upgrading the road infrastructure to include features such as protected pedestrian and animal crossings, improved lighting, and initiatives that promote local employment that will benefit, inter alia, women and vulnerable groups. Additionally, the Consultant will examine the design and connection features that will position Manas (previously Jalal-Abad) as an international multimodal logistics hub. The assessment shall present the social, environmental, technical, and economic implications, including costs and benefits of the Project. Based on these findings, the Consultant shall recommend the most viable course of action that the Client must take to deliver the Project.

12. Reliable background, technical, and social data for the feasibility assessment are limited. The Consultant must gather the required information from archived records and verify its accuracy to avoid errors in assessing social and environmental impacts, estimating costs, and determining construction time. A geographic information system shall be used to analyze and present the collected data to support the development of the preliminary road design. The design must incorporate measures that reduce climate-related risks to road infrastructure, road transport services, and adjacent land, ensuring long-term sustainability of the investment.

13. MOTC's current policy is to award the civil works contracts that include short-term performance-based maintenance, either concurrently with or following the defects notification period for the main works. The Consultant shall assess the effectiveness of the completed and

ongoing hybrid contracting arrangements and recommend appropriate strategies for their implementation in future projects.

14. The study will encompass the following key tasks:

15. **Data Collection and reviews:**

i. Identify the data needs and study area
ii. Prepare a data collection plan, schedule, and agree with the PIU
iii. Collect and review all available relevant studies, reports, materials, documents, and information relevant to the Project.
iv. Gather primary information through personal interviews, focus group meetings, etc.

16. **Technical surveys and assessments.** The Consultant shall be responsible for conducting all assessments and surveys necessary to gather data for the feasibility study and subsequent design activities, including, but not limited to, the following:

i. **Topographic survey** to accurately map terrain features, including slopes and elevations, sufficient to support preliminary design of the road.
ii. **Geological, geotechnical, and infrastructure condition surveys** to assess soil types, rock formations, and geotechnical properties, and the condition of existing infrastructure, such as bridges, culverts, and pedestrian facilities, to identify elements requiring repair or replacement.
iii. **Hydrological survey** to assess water resources, drainage patterns, and flood risks through stream flow measurements, watershed analysis, and floodplain mapping, and to produce maps of hydrological features and recommended drainage solutions.
iv. **Utilities survey** to identify and consult with the owners of above-ground and underground infrastructure that may require replacement or relocation.
v. **Traffic and transport surveys** to understand current passenger and freight movements, including origins and destinations, peak-hour patterns, and modal shares, and to forecast future traffic for informing the economic cost-benefit analysis of the project. These surveys will include traffic counts, travel-time studies, axle-load studies, and origin-destination surveys.
vi. **Resources survey** to determine the availability of materials, plant and machinery, with particular attention to the import and haulage, storage and disposal requirements
vii. **Human resource survey** to determine the requirements and availability of skilled, semi-skilled, and unskilled workers in the project area and in Kyrgyzstan, opportunities for women with particular attention to the national labor laws and regulations
viii. **Interface study** to assess the condition and adequacy of the linkages (accessibility) to adjoining developments, including roads, transport terminals, and townships.

17. **Climate Change and Disaster Risk Screening and Assessment (CCRA).** The Consultant shall assess the feasibility and effectiveness of measures to mitigate climate and disaster risks and ensure the project's long-term sustainability, and describe the methodologies employed for identifying and analyzing:

i. Historical events and climate change projections (e.g., CMIP6 data).
ii. Climate mitigation and climate adaptation cost estimates.
iii. Chronic landslide zones.

18. **Environmental and Social Impact Assessment.** The Client has tentatively categorized the project as "Moderate Risk" based on the preliminary information that suggests the impacts will be:

- predictable and expected to be temporary and/or reversible;
- low in magnitude;
- site-specific, without likelihood of impacts beyond the actual footprint of a project;
- low probability of significant adverse impacts to human health and/or the environment; and
- E&S risks and impacts can be easily mitigated.

19. The Consultant shall verify this categorization through assessments in accordance with ADB's Environmental and Safeguard Framework (ESF)[2] . To this end, the Consultant must assess the nature and scale of the likely environmental and social (E&S) impacts with particular reference to Section D (paragraphs 22 to 27) of the ESF and the ESF Guidance Notes on the Environmental and Social Standards (ESS) for Assessment and Management of Environmental and Social Risks and Impacts (ESS1).

20. In assessing the environmental impacts, the Consultant shall, at least, examine adverse impacts on:

- air, water, and soil quality;
- health, safety, and security risks of project workers and communities, including the effects of noise, pollution, vibration, and dust;
- natural and critical habitats and biodiversity, ecosystem services, living natural resources, and the environmental flows; and
- cultural heritage; and
- climate change.

21. When assessing the social impacts, the Consultant shall, at least, examine the adverse impacts on:

- land acquisition and land use restrictions;
- communities of Indigenous Peoples and others within the project's footprint;
- project workers, both local and foreign
- disadvantaged or vulnerable groups; and
- women and children, including potential risks of sexual exploitation, abuse, and harassment (SEAH).

22. In designing the mitigation measures, the Consultant shall consider:

- Constructability/implementability, and maintainability
- life-cycle costs

23. Based on the assessment, the Consultant shall prepare the E&S documents and systems (refer to the Appendix on page 31 of the ESF) listed below[3] to enable the Client and ADB to discuss the impacts and risks and the management strategy:

- Environmental and Social Impact Assessment (ESIA) report
- Environmental and Social Management Plan (ESMP)
- Environmental and Social Audit report

[2] ADB. 2024. Environmental and Social Framework. Manila. December. https://www.adb.org/documents/environmental-social-framework

[3] If the impacts and risks corresponding to the requirements listed in ESS 3 through ESS 10 in Part III of the ESF are deemed significant, the Consultant shall prepare separate reports on the examinations made, findings, and the avoidance or mitigation measures.

- Cumulative Impact Assessment report
- Environmental and Social Commitment Plan (ESCP) and Environmental and Social Action Plan (ESAP)
- Environmental and Social Management System

24. **Preliminary design and drawings.** The consultant shall prepare a set of conceptual designs and drawings comprising:

i. Design criteria
ii. Horizontal and vertical alignments
iii. Typical cross sections
iv. Drainage layouts
v. Structures concepts
vi. Intersections layouts
vii. Pedestrian facilities
viii. Pavement type options
ix. Bill of quantities with current prices and unit prices

25. **Geographic information system.** The Consultant will prepare a GIS using a commercially available software agreed with the Client. The software user license must be transferred to the Client and be valid for 24 months after handing over the system to the Client. The system must comprise the information and data described in paragraphs 12 through 14, and must be able to either import or overlay the road design on the E&S data layers.

26. **Regional cooperation and integration.** The Consultant must examine the project's potential to supplement the China-Kyrgyz-Uzbekistan railway and increase Kyrgyz trade with China and Uzbekistan. The special components and design features required for this end, and to develop Manas as a trading hub, must be identified and included in the concept design, with appropriate costs and benefits

27. **Ecotourism.** The city of Uzgen, which is one of the cities in the country that was also on the Silk Road and is located close to Kara-Shoro State Park, a growing nature and health tourism destination, presents significant ecotourism potential. The Consultant shall take these attractions into account when estimating traffic volumes and incorporate design features to enhance access to and the overall attractiveness of these sites.

28. **Cost estimates.** The Consultant shall prepare a preliminary cost estimate detailing all the underlying assumptions. Costs shall be disaggregated into: (i) civil works including distinct identification of climate-resilient measures such as additional slope stabilization and polymer modified asphalts, guided by the application of the ADB Green Road Toolkit; (ii) social costs, with land acquisition and resettlement costs shown separately; (iii) environmental impact prevention/mitigation costs; (iv) costs of travel delays and life-style disruptions during construction; and (iv) physical and price contingencies.

29. **Economic analysis.** The Consultant shall perform a cost-benefit analysis to determine the economic viability and sustainability of the project in accordance with ADB Guidelines for the Economic Analysis of Projects. [4] Include the potential benefits of CO_2 reduction, improved road safety, climate-resilient features (if any), and other exogenous benefits and costs as applicable.

[4] ADB. 2017. Guidelines for the Economic Analysis of Projects. Manila

30. **Preliminary implementation schedule.** Based on the examinations, analyses, and design, the Consultant shall present a monthly program for procuring and completing the civil works. The Consultant shall consider logistical, weather, land acquisition, and environmental requirements when establishing timelines and the critical path.

D. Personnel

31. The Consultant shall designate one expert as the Team Leader and one as the Deputy Team Leader, providing adequate justification of their competencies and qualifications for these roles. The Team Leader may be a standalone position, or combined with another expert role, provided the proposed individual meets all qualification and experience requirements for both. As a minimum, one of the Consultant's international experts shall be designated as the Team leader, while one of their national experts shall occupy the Deputy Team Leader role.

32. The Consultant is requested to propose time inputs for these key personnel as per their approach and methodology. The CVs of all these key personnel will be evaluated as mentioned in the Data Sheet.

Table 1: Team Composition

Consultant's Personnel
A. Key experts (International)
1. Team Leader* (anyone from 1 to 4, or standalone expert)
2. Highway and Traffic Engineer*
3. Structural Engineer*
4. Geotechnical and Materials Engineer
5. Transport Economist
6. Environmental Specialist*
7. Social and Gender Specialist
8. Logistics and Regional Cooperation Specialist
9. Procurement Specialist
B. Key experts (National)
1. Deputy Team Leader* (Anyone from 1 to 7, or standalone expert)
2. Highway/CAD specialist*
3. Structural Engineer*
4. Geotechnical Engineer
5. Geographic Information System Specialist
6. Environment Safeguard Expert
7. Climate Change Expert
8. Social Safeguards / Land Acquisition & Resettlement Expert
9. Surveying
10. Computer-Aided Design Expert
11. Social Development and Gender Expert

Note: Experts indicated with * will be evaluated and rated based on their CVs, their general qualifications, project-related experience, and country/overseas experience; otherwise, the expert will be evaluated on a pass/fail basis. Details can be found in Appendix 1, Summary Evaluation Sheet, and Personnel Evaluation Sheet of Section 2 of SRFP (ITC).

33. A list of expected responsibilities and minimum qualification requirements for the key and non-key experts outlined above is contained in the **Annex**. The Consultant shall include in their

submission the key expert positions that meet the qualification and experience requirements stated in the **Annex**.

E. Deliverables

34. The Consultant will deliver the outputs on or before the deadline listed in **Table 2**. The Consultant and the Client may revise, if any, and finalize the structure and contents of each output during the contract negotiations. Additionally, the Consultant will submit a short progress report within 10 working days after the end of each month, starting from the date of commencement to the contract end date.

35. The Consultant shall submit two (2) hard copies of each output and a soft copy by email. Presentation (mixed mode) of the reports may be requested on an as-needed basis. Reports must be submitted in English, Russian, and Kyrgyz.

36. Each output will be reviewed by MOTC, selected stakeholders, and ADB, who will seek clarifications or propose improvements to the output within 15 working days from the submission day. If the Client does not respond within 15 working days, the Consultant may assume that the Client has accepted the output. The Client will review the final feasibility study report within 30 working days. If comments necessitate the resubmission of an output, the Consultant shall do so within 10 working days.

F. Payment

37. The Consultant will include in their proposal the proposed utilization of the budget to accomplish the tasks described in these terms of reference. Their proposal to deliver this assignment will include, as a minimum: (i) remuneration, (ii) per diems, (iii) international and national airfare, miscellaneous travel expenses, report preparation, reproduction and transmission (including translation), administrative support, land transport, and other related expenses.

38. The contract will be a partial lump sum administered by PIU. Payments for deliverables will be in installments upon acceptance of the outputs by the Client, in accordance with the contract and the payment schedule in **Table 2**.

Table 2: List of Project Deliverables and Payment Schedule

Deliverables	Delivery Deadline (time from Commencement Date)	Indicative Payment % *	Activities Preceding Payment
Milestone Payment 1			
1. Inception Report (including first field survey plan)	No later than 4 weeks	10	• A presentation on the detailed Workplan and team deployment plan. • Proposal for GIS software
Milestone Payment 2			
2. Preliminary traffic and travel/goods movement analysis	No later than 20 weeks	40	• Technical surveys 70% completed • Environmental, social, and gender impact data gathering 70% completed
3. Social and gender impact screening report			

4. Climate impact screening report 5. Environmental screening report 6. Geographic information system shell			• Climate impact data gathering 70% completed • Environmental impact data • Basic information input into the GIS
Milestone Payment 3			
7. Cost estimate and economic analysis report 8. ESIA 9. Preliminary land acquisition and resettlement plan, social impact assessment report, and gender action plan 10. Preliminary design report and drawings (draft versions) 11. Draft GIS system	No later than 32 weeks	40	• Economic sensitivity analysis completed • Environmental monitoring and management plan completed • Completed stakeholder consultation and social surveys completed
Milestone Payment 4			
12. Draft final report on feasibility study and GIS system	No later than 36 weeks	-	All annexes included, and the comments from earlier submissions satisfactorily addressed
Milestone Payment 5			
13. Final report on feasibility study inclusive of the preliminary design of the road, specifications and the bill of quantities	No later than 42 weeks	10	All annexes included, and the comments from earlier submissions satisfactorily addressed

* The percentage reflected shall be calculated against the total lump sum cost, excluding reimbursable expenses and provisional sum. The % of each payment will be finalized at contract negotiation.

39. Other operational expenses, including, but not limited to, travel and related costs, will be paid at cost, unless otherwise agreed between the parties.

40. A provisional sum is to be used for: (i) all surveys and field studies, (ii) equipment, and (iii) seminars and training to MOTC staff that will be provided by each team member in his/her domain of expertise. The Consultant and the Client will agree on the scope and timing, and allocation of the total provisional sum to each provisional activity. All goods and equipment, including software licenses, procured under this assignment contract are required to be transferred to the Client at the end of the assignment, or at the time requested by the Client.

41. The Consultant shall be responsible for all aspects related to the procurement of all surveys and related assessments, procurement of equipment, and arrangements for seminars, workshops, and training. All procurement shall be competitively undertaken in accordance with the principles of ADB's Request for Quotation procedure. The Consultant shall include in its offer the costs of sourcing, engaging, managing all activities, and reporting on all provisional sums included under this contract.

G. Services Delivery

42. The Consultant will provide the Client with a firm mobilization plan during the negotiations and agree on the Commencement Date based on the expected date of notice to proceed.

H. Facilities and Services Provided by the Client

43. The MOTC will nominate counterpart staff to work with the Consultant and nominate staff to be trained or attend the training sessions, and support the Consultant, if necessary, with:

- identifying suitable office and lodging space in Osh and Bishkek
- accessing data and information on past research, reports, and surveys;
- obtaining necessary visas, residence permits, and customs clearances. Visa processing fees shall be borne by the Consultant.

Annex

Team Responsibility and Qualification Requirements

Responsibilities	Qualification Requirements
International Expert	
Team Leader (Standalone or anyone from 1 to 6)	
• Responsible for coordinating with the Client through the PIU on the outputs, schedule, and interventions required from the Client • Allocate resources, provisional sum for the various provisional activities listed in paragraph 37 of the TOR, and maintain financial records and accounts. • Responsible for the quality, completeness, and timeliness of all deliverables in Table 2 of this TOR, particularly the E&S documents and systems listed in paragraph 20 of this TOR. • Responsible for ensuring the team's strict compliance with the terms and conditions of the contract • Responsible for responding to the Client's requests and comments on the outputs	• Master's degree or post-graduate degree in civil engineering, project management, law, economics, or relevant fields. • Excellent written and verbal communication skills in English. <u>Experience:</u> • Min. 20 years of total experience in infrastructure planning and/or design, including min. 10 years of team leader and/ or managerial experience. • Experience in preparing projects funded by ADB or other multilateral funding agencies and fully versed in safeguard and procurement policies. • Experience in implementing projects with civil works procured using ADB standard bidding documents.
1. Highway and Traffic Engineer	
• Responsible for review of data, previous studies, and maps for preliminary assessment of road alignment and design. • Responsible for coordinating and reviewing preliminary topographical surveys. • Coordination with all team members and providing necessary input to the feasibility study. • Responsible for conducting field surveys and evaluating existing infrastructure and the traffic flow patterns, including the potential alternative traffic management strategies during construction • Evaluating the past safety performance of the road and conducting a preliminary safety audit on the project road • Preparation and consultations with the Client on the preliminary designs that must include climate-resilient and road safety improvement features, specifications • Estimation of preliminary quantities and costs • Preparation of necessary reports.	• Master's degree or post-graduate degree in civil engineering, highway engineering, or relevant fields. • Member of an internationally acknowledged engineering institution in relevant fields. • Excellent written and verbal communication skills in English. <u>Experience:</u> • Min. 20 years of total professional experience, including min. 15 years of highway and road planning and design, project preparation. • Knowledge of road design standards in Central Asia or in other Asian countries • Knowledge of global road safety and climate-sensitive design requirements and solutions
2. Structural Engineer	
• Assess the concrete and steel structures (e.g., bridges, culverts, utilities) and identify the upgrading requirements. • Prepare conceptual designs of the structures along with preliminary cost estimates. • Agreeing with the Client on the conceptual designs and options. • Supervise and conduct field surveys. • Coordination with all team members and providing necessary input to the feasibility study. • Conduct knowledge transfer sessions and input for training to PIU staff whenever necessary.	• Master's degree or post-graduate degree in Bridge Engineering, civil engineering, structural engineering, or relevant fields. • Member of an internationally acknowledged engineering institution in relevant fields. • Excellent written and verbal communication skills in English. <u>Experience:</u> • Min. 15 years of professional experience in the design of structures, with min. 10 years of experience in the design of bridges for highway projects, including the design of major bridges (more than 50 m span).

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Responsibilities	Qualification Requirements
• Preparation of necessary reports.	• Experience in working on overseas and/or South Asian bridge design projects is highly preferred. • Experience in projects funded by ADB and other multilateral funding agencies is preferable. <u>Status of Employment:</u> • The expert must be a full-time employee of the Consultant and should have completed 2 years of service with the firm by the final day of technical proposal submission.
3. Geotechnical and Materials Engineer	
• Carry out the geotechnical investigation and prepare the geotechnical investigation/ assessment report. • Design geotechnical countermeasures/ mitigation measures and prepare preliminary drawings and preliminary cost estimates for the structures with rate analysis. • Carry out geotechnical studies for bridges on the alignment and provide geotechnical backstopping to the bridge engineer. • Coordination with all team members and providing necessary input to the feasibility study. • Conduct knowledge transfer sessions and input for trainings whenever necessary. • Together with the Road Engineer, evaluate recently completed projects in the area and/or in other parts of the country to determine the levels of pavement performance. • Review the specifications and quantities of the failed projects to determine the cause of failures and changes needed. • Evaluate alternative pavement types and determine the most appropriate for the geometry and functional class, and measures to mitigate the failure risk of the chosen design. • Demonstrate the constructability and sustainability of the chosen pavement type; and • Evaluate the efficiency and effectiveness of MOTC's policy on performance-based maintenance and defects notification period.	• Bachelor's degree in geotechnical engineering, geology or geological Science, soil mechanics, civil engineering, or relevant fields. • Master's degree or post-graduate degree holder in the relevant field is an advantage. • Membership in an internationally acknowledged engineering institution in relevant fields is highly preferred. • Excellent written and verbal communication skills in English <u>Experience:</u> • Min 12 years' experience in geotechnical investigations of embankment slopes, landslide studies, identification of chronic slip zones, slope stabilization, Q-value/RMR, rock classification, and geological mapping. • At least 10 years' experience in soil and material surveys & investigations, identification of borrow & quarry areas, slope stabilization • Sound understanding of climate-change resistant pavement materials and their cost-effectiveness and constructability
4. Transport Economist	
• Prepare data collection methodology and schedule, and written reviews of the literature and analytical results; • Review the project rationale and the design and monitoring framework, and prepare plans and coordinate with other team members for collecting baselines for indicators and measures in the framework and other data requirements; • Suggest ways in which the project may be designed to maximize regional development and employment, including but not limited to tourism and trade in a socially and environmentally sustainable manner; • Estimate the investment risk based on the availability of maintenance funds and institutional capacity, and propose a practical	• Bachelor's degree in economics, transport planning, or relevant fields. • Master's degree or post-graduate degree holder in a relevant field is an advantage. • Excellent written and verbal communication skills in English <u>Experience:</u> • Min. 15 years of professional experience in conducting economic analysis of transport projects. • Min. 10 years of experience as a transport economist of major highway projects. • Able to analyze HDM-4 • Experience in projects funded by ADB and other multilateral funding agencies is highly preferable.

Responsibilities	Qualification Requirements
strategy that is implementable in the short term for mitigating the risks; • Present proposals on how to brand the project road (e.g., as a scenic route) to attract through traffic and tourists; • Carry out economic analysis of the different improvement options with reference to ADB Guidelines for the Economic Analysis of Projects (2017)—use a probabilistic method for estimating economic returns. The analyses should consider the distribution of the benefits and costs by income class	
5. Environmental and Climate Change Specialist • Together with the GIS specialist, prepare basic environmental data management in the form of a GIS that could serve as an underlying layer of the road alignment data, location of quarries and borrow pits, asphalt plants, construction camps (if known or being suggested); Environmental setting of the project area of influence, and information related to sensitive receptors • Identify and assess the level of various direct and indirect environmental risks and propose associated mitigation measures. The risks may include, but are not limited to, the following: dust, noise, and vibration due to construction works, especially blasting, management and reinstatement of borrow pits and quarry sites, vehicle emissions and oil spills from traffic collisions, illegal logging, poaching, and water and air pollution due to the increase in road accessibility and mobility. • Provide detailed descriptions of any protected areas existing within the project area of influence, with their biodiversity value; physical and cultural resources with their historic, cultural, and spiritual value. Chance finds that procedures should be proposed for possible unidentified underground relics • Conduct the climate change and risk assessment as part of the overall ESIA • Prepare the E&S documents and systems listed in paragraph 20 of this TOR with input from other team members. • Integrate the GIS system and the environmental and social management system. • Review the environmental management capabilities of the PIU and relevant local authorities and recommend institutional strengthening measures • Identify target groups and formulate questions for a meaningful public consultation • Coordination with all team members and providing necessary input to the feasibility study. • Conduct a literature review of reports, surveys, and available documents to assess the disaster risk, which includes river flooding and sediment	• Bachelor's degree in environmental science or environmental engineering, or relevant fields. • Master's degree or post-graduate degree in environmental science, or relevant fields preferred. • Excellent written and verbal communication skills in English. <u>Experience:</u> • Min. 15 years of professional experience. • Min. 12 years of experience, in initial environmental examination/ environmental impact assessment and preparation and monitoring SEMP implementation for infrastructure projects for externally aided projects, including in the grievance redress mechanism. • Experience in conducting climate risk screening, preparing climate risk and vulnerability assessments, and designing adaptation and/or mitigation measures in infrastructure projects/ externally aided projects. • Experience designing and implementing climate and disaster risk reduction measures for projects funded by multilateral development banks is required. • Familiarity with the Paris Agreement is an advantage. • Demonstrated experience in GHG estimation models such as HDM-4 and TEEMPC. • Experience in projects funded by ADB and other multilateral funding agencies is highly preferred.

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Responsibilities	Qualification Requirements
loading, and other disaster risks along the road alignment, and evaluate the results. • Conduct all necessary studies stipulated in the TOR.	
6. Social and Gender Specialist • Coordination with all team members and providing necessary input to the feasibility study. • Plan and manage field surveys for social impact screening and assessment, including data required for the conduct of a thorough gender assessment (see Annex 1 of TOR for Detailed Design). • Carry out social impact analysis of involuntary resettlement due to land acquisition and restriction of access, and related surveys among persons adversely affected by the ensuing project to determine the scope of involuntary resettlement. • Conduct meaningful consultation and information disclosure with adversely affected persons, including women and vulnerable people, and other stakeholders. • Thorough knowledge of the prevailing land acquisition act, any National Resettlement Policy, and ADB's ESF.	• Bachelor's degree, or equivalent, in social sciences, community or international development, gender and women studies, labor, and social protection. • Master's degree or post-graduate degree holder in the relevant field is an advantage. • Excellent written and verbal communication skills in English. <u>Experience:</u> • Proficiency in social impact analysis, social assessments, and participatory development, and knowledge of social policies, involuntary resettlement planning, indigenous peoples' development planning; and familiar with labor and social protection, gender assessment, community-driven development, and public communications, among others. • Experience in the development of the project's gender assessment and action plan as per ADB's guidelines on gender mainstreaming categories • Experience with ADB's SPS 2009 and/or ESF, and other multilateral development bank social policies is highly desirable.
7. Logistics and Regional Cooperation Specialist • Coordinate with all team members and provide inputs to the feasibility study on logistics, freight transport, and regional integration aspects of the project. • Assess the project's role within CAREC Corridor 3 and its integration with regional infrastructure, including rail, road, and air transport systems, and evaluate its impact on regional trade and connectivity. • Analyze existing and future freight and passenger flows, identify logistics bottlenecks, and propose measures to improve the efficiency of transport and supply chains.	• Develop concepts and recommendations for multimodal logistics development, including positioning Manas (Jalal-Abad) as a regional logistics hub and identifying required infrastructure and operational improvements. • Contribute to economic analysis, preliminary design, and feasibility study outputs by integrating logistics and regional cooperation considerations, including stakeholder consultations and reporting. Experience: • Bachelor's degree in transport, logistics, economics, engineering, or related fields (Master's preferred). • Minimum 10 years of professional experience in transport logistics, freight systems, or regional transport planning. • Experience in multimodal transport and corridor development, preferably in Central Asia or similar regions. • Proven experience in feasibility studies and freight/logistics analysis for transport projects. • Experience in projects funded by ADB or other multilateral development banks is preferred.
8. Procurement Expert • Update and improve, if necessary, the procurement documents in the feasibility study report • In consultation with other members of the team, in general, the national quantity and quality management expert and the computer-aided design expert in particular, review the BOQ to ensure that the items (terms, definitions, references) are	• Bachelor's degree in civil engineering, commercial law, or relevant fields. • Excellent written and verbal communication skills in English. <u>Experience:</u> • Min. 10 years of professional experience in procuring civil works and recruiting consulting firms according to ADB or multilateral bank policies.

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Responsibilities	Qualification Requirements
consistent with the drawings and specifications. • Together with the Client and the national quality and quantity estimation specialist, review the unit prices and obtain PIU's concurrence with the prices • Assist PIU in preparing the draft terms of reference for recruiting the construction supervision engineer.	• Min. 5 years of experience in procuring civil works and consulting services for highway projects in developing countries.
National Team	
Deputy Team Leader (Standalone or anyone from 1 to 8)	
• Coordination with all team members and providing necessary input to the feasibility study. • Responsible for all local communication and coordination. • Coordinate and plan all tasks and assist the team leader in managing team members. • Assist the team leader in ensuring all deliverables are made with high quality and promptly. • Coordinate between the PIU, the Consultant, and other relevant agencies and give presentations.	Qualifications: • Min. bachelor's degree in civil engineering, project management, law, economics, or relevant fields. • Excellent written and verbal communication skills in English, Russian, and Kyrgyz. Experience • Min. 15 years of total professional experience, including 8 years of experience in managing, planning, project preparation, and design of highway projects, including externally aided projects • Experience in projects funded by ADB or other multilateral funding agencies is preferable.
i. Highway/CAD specialist*	
• Verify the suitability of the surveys, data, and their accuracy. • Review design inputs and outputs to the feasibility studies. • Carry out design verifications on the land. • Assist the international highway design engineer with the preparation of preliminary cost estimates, alignment options, preliminary pavement designs, etc. • Prepare preliminary design drawings and relevant design reports, in collaboration with all the experts. • Coordinate between the PIU, the Consultant, and other relevant agencies and give presentations.	• Min. bachelor's degree in civil engineering, highway engineering, or relevant fields • Master's degree or post-graduate degree holder in the relevant field is an advantage. • Written and verbal proficiency in English and the local language. Experience: • Min. 15 years of total professional experience, including 8 years of experience in planning, project preparation, and design of highway projects, including externally aided projects. • Experience in Feasibility Study and DPR/Construction Supervision of major highway projects. • Experience in projects funded by ADB and other multilateral funding agencies is preferable.
2. Structural Engineer	
• Carry out the bridge feasibility study and identify requirements and locations for the bridges. • Work with the international bridge engineer throughout the assignment. • Prepare the specifications and conceptual drawings of structures	• Bachelor's degree or post-graduate degree in Bridge Engineering, civil engineering, structural engineering, or relevant fields. • Master's degree or post-graduate degree holder in the relevant field is an advantage. • Excellent written and verbal communication skills in English.

• Provide the quantity estimates and unit prices to the team preparing the BOQ • Supervise and conduct field surveys. • Coordination with all team members and providing necessary input to the feasibility study. • Conduct knowledge transfer sessions and input for trainings whenever necessary	Experience: • Min. 12 years of professional experience in the design of structures, with min. 8 years of experience in the design of bridges for highway projects. • Experience in the design of major bridges is preferred. • Experience in projects funded by ADB and other multilateral funding agencies is preferable.
3. Geotechnical Engineer	
• Carry out the geotechnical investigation and prepare the geotechnical investigation/ assessment report. • Work with the international geotechnical engineer throughout the assignment. • Design geotechnical countermeasures/ mitigation measures and prepare detailed drawings and cost estimates for the structures with rate analysis. • Carry out geotechnical studies for bridges on the alignment and provide geotechnical backstopping to the bridge engineer.	• Bachelor's degree in geotechnical engineering, geology or geological science, soil mechanics, civil engineering, or relevant fields. • Master's degree or post-graduate degree holder in the relevant field is an advantage. • Excellent written and verbal communication skills in English Experience: • Min. 12 years' experience in geotechnical investigations of embankment slopes, structures, either underground or surface landslide studies, identification of chronic slip zones, slope stabilization, Q-value/RMR, rock classification, and geological mapping. • Experience in soil and material surveys & investigations, identification of borrow & quarry areas, determination of density & CBR of subgrade soil, identification of dumping yard for disposal of unsuitable material during execution of civil works, sub-soil/ geo- technical investigations for deep foundations for bridges, or shallow or deep foundations for other structures and embankment/ slope design, laboratory and field testing, analysis of results, report preparation, slope stability analysis, embankment (low/ high) design, identifications of chronic slip zones & mitigation measures for slope stabilization, finalization of foundation types for bridges/ structures etc. in highway design and/or construction projects. • Experience in projects funded by ADB and other multilateral funding agencies.
4. Geographic Information System Specialist	
• Together with the international environmental specialist and social development specialists, and in consultation with the CAD Specialist, prepare electronic maps of environmental, land areas that require acquisition, buildings and structures that will be features along the road, existing cultural and natural assets, and indicate the sensitive areas; • Indicate areas where baseline data were collected for both social and environmental impacts and outputs as required by the Client;	• Background with GIS or a GIS-related field. Associate degree in GIS or equivalent experience • Proficiency in the ESRI ArcGIS Suite, ArcMap, ArcCatalog, or ESRI Business Analyst • 2 years of experience in the implementation and management of GIS. • Experiences with GIS in support of Computer-Aided Drawing • Ability to provide training, knowledge, and skills necessary for the client's staff to use the GIS system and data

• Prepare a simple user guide for how these maps can be updated and expanded, and provide training for the users at the PIU; and • Set up the system for posting summaries of progress and operational data on the MOTC website and ensure its accuracy and reliability before the end of the consultancy.	•
5. Environment Safeguard Expert	
• Coordination with all team members and providing necessary input to the feasibility study. • Work with an international environment specialist to collect data, review, and analyze. • Support conducting preliminary baseline surveys for Air, Water, Noise, vibration, ecology, biodiversity, Traffic, and Soil. • Provide input to the team on local and provincial concerns about environmental factors. Conduct meaningful consultations with the community and various stakeholders, including CSOs, and include the analysis in the environmental screening and assessment reports.	• Min. bachelor's degree in environmental engineering, Environmental science, Climate Sciences, Meteorology, or related fields. • Excellent written and verbal communication skills in English. <u>Experience:</u> • Min. 8 years of professional experience in initial environmental examination/ environmental impact assessment and preparation and monitoring ESMP implementation for infrastructure projects in the Kyrgyz Republic. • Experience working on externally aided projects is preferred. • Experience with multilateral development banks, particularly familiarity with ADB's SPS 2009 and/ or ESF, is preferred. Experience in projects in hilly/ mountainous terrain and protected areas is highly preferred.
6. Climate Expert	
• Coordination with all team members and providing necessary input to the feasibility study. • Work with international climate and disaster resilience experts on data collection, review, and any necessary input. • Conduct a literature review of reports, surveys, and available documents to assess the disaster risk, which includes river flooding and sediment loading, and other disaster risks along the road alignment, and evaluate the results. • Support in conducting all necessary studies stipulated in the TOR.	• Min. bachelor's degree in Climate Sciences, Meteorology, Environmental Engineering, and related fields. • Excellent written and verbal communication skills in English. <u>Experience:</u> • Min. 8 years of professional experience in development projects and designing adaptation measures. • Experience designing and implementing climate and disaster risk reduction measures is preferred. • Familiarity with the Paris Agreement is an advantage. • Experience in projects funded by ADB and other multilateral funding agencies is highly preferred.
7. Social Safeguards/ Land Acquisition & Resettlement Expert	
• Coordination with all team members and providing necessary input to the feasibility study. • Coordinate and work with the international safeguard experts to conduct necessary field surveys, consultations, data collection, and assessments. • Work with the international expert to determine the institutional arrangements for land acquisition and resettlement.	• Min. bachelor's degree, or equivalent, in social, community, or international development, gender and development, labor and social protection. • Min. 10 years of professional experience in land acquisition, rehabilitation, and resettlement services • Written and verbal proficiency in English and the local language.

• Work with the international expert to determine the land acquisition and resettlement budget and implementation schedule.	Experience: • Experience in social impact assessment and related studies, preparation of Resettlement Plan, Land Acquisition Plan, Indigenous Peoples Plan documentation, along with related due diligence reports • Resettlement and land acquisition expert in at least one highway project. • Experience with multilateral development banks, particularly familiarity with ADB's procedures, is preferred.
8. Survey Engineer • Support all other experts in conducting reconnaissance surveys to determine the most feasible route or routes for further detailed investigations. • Conduct a preliminary survey based on a reconnaissance survey using an appropriate instrument, collecting all physical information affected by the proposed highway location. • Coordinate with all outsourced survey activities. • Bookkeeping of all survey records. • Collect longitudinal, transverse cross-section, and establish benchmarks for the determination of the final centerline of the road. • Coordination with all team members and providing necessary input to the feasibility study.	Qualification • Min. Diploma in civil engineering, survey, or related field. • Written and verbal proficiency in English and the local language. Experience • Min. of 10 years of professional experience • Min of 5 years of experience in carrying out survey work. • At least carried out 1 No. of road topographical survey work for major roads of 5 Km and longer in the past 10 years. • Experience in working with GIS.
9. Computer-Aided Design Expert • Collate information provided by survey crew and prepare the baseline and preferred option's drawings and plans as requested by the international highway engineer and deputy team leader; • Optimize the chosen alignment while paying particular attention to the constructability and maintainability of the road about social, environmental, and technical parameters (including road safety); and • Prepare a full set of drawings to accompany the tender documents.	• Degree or Diploma in Architecture, Engineering, or related field • 5 years of experience in CAD works • Experience and good background in infrastructure development • Proficient in the use of Microstation, AutoCAD, 3D Max, and the capability to handle graphic software of Sketchup, 3D Max, Photoshop, and Adobe InDesign • Ability to understand and interpret sketches provided by the Highway Engineers
10. Social Development and Gender Expert • Prepare poverty and social analysis and gender assessment and action plan (GAAP) in accordance with ADB guidelines. Conduct necessary surveys, as needed. Assessment should be evidence- and context-based. • Map potential stakeholders, including key women, vulnerable groups, and relevant CSOs to engage with for GAAP preparation and GAP implementation. • Develop a work plan and coordinate with all team members, and provide necessary input to the detailed design study. • Conduct meaningful consultation with directly affected persons and other stakeholders (including NGOs) of the ensuing project. • Make recommendations on GAP implementation arrangements, and strategic and practical gender/GESI elements in the project design. • Identify relevant items and cost estimates to be considered for GAP implementation. • Assess the social dimensions that will influence the design and implementation of the ensuing project, including CSO participation and communication	• Min. Bachelor's degree, or equivalent, in social sciences, community or international development, gender and women studies, labor and social protection. • Min. 7 years of professional experience in integrating GESI approaches across all components of the project • Written and verbal proficiency in English and the local language. Experience: • Familiarity with gender mainstreaming and GESI principles in the context of the Kyrgyz Republic. • Experience in the development of the project's GESI analysis and GESI strategies • Experience with multilateral development banks, particularly familiarity with ADB's procedures, is preferred.

strategy, communicable diseases (e.g., STIs including STDs), human trafficking, and core labor standards.
- Timely consultation and seek feedback from the ADB gender officer before finalizing surveys for rollout, workplan schedules, and GAAP for the project.