

TERMS OF REFERENCE FOR CONSULTANTS

Consultant	Total (P-M)	Terms of Reference
A. International Consultants		
1. Technical advisor	2.0	<ul style="list-style-type: none"> (i) Review the current status of policies, planning, financing, budgeting of the transport sector in each province; (ii) understand the current road network condition, maintenance budget allocation and expenditure for each province; (iii) review the institutional arrangement of the transport sector of provinces, and identify any room for improvement; (iv) provide advice on how to improve the sustainability of the road maintenance, such as overloading control, expanding tolling revenue, and road safety improvement; and (v) provide guidance on policy dialogues with the concerned government agencies.
2. Transport economist	3.0	<ul style="list-style-type: none"> (i) Supervise and guide the national transport economist to conduct the due diligence; (ii) review the current, and likely future capacity, of the existing road to cope with traffic flows. Prepare projections of current and future levels of service. Prepare an options analysis reviewing the options available and on the basis of a multi-criteria analysis select the preferred option in terms of both alignment (where relevant) and carriageway type; (iii) review existing data such as international roughness index (IRI) data, traffic data, traffic count and origin-destination data, and axle-load surveys; (iv) produce estimates of traffic flows (annual average daily traffic) on the project road and all other parts of the network experiencing non-trivial changes to flows resulting from the new project. Estimates are to be produced for the without-project scenario and the with-project scenario (considering traffic reassignment from competing corridors and traffic generated by the project). The traffic forecasting methodology (e.g., traffic counts, origin-destination surveys, modelling requirements and forecasting methodology) to be performed for each project is to be agreed with ADB in advance. For cases involving offline construction a basic traffic assignment model may be required; (v) produce 20-year demand forecasts of traffic on each section, for both the with and without project scenarios, based on forecast growth in e.g., vehicle ownership, GDP and/or population; (vi) prepare an economic analysis for each subproject using Highway Development and Management model (HDM, version 4) or similar software. Calculate the economic internal rate of return (EIRR); (vii) undertake sensitivity analysis on the risk factor basis for various scenarios such as changes to the cost, generated and diversion traffic, construction period, etc.; (viii) the economic analysis is to be undertaken in accordance with ADB Guidelines for the Economic Analysis of Projects (2017). The consultant shall be responsible for producing final versions taking into consideration comments made by ADB; (ix) review and provide inputs to (a) the assessment of the economic costs of reducing project greenhouse gas emissions; (b) the assessment of potential climate impacts and risks to the project; (c) where feasible, the assessment of the economic costs and benefits of possible adaptation inventions as identified by the environmental specialist; and (d) the climate change assessment report's final recommendations; and (x) conduct of economic analysis impact of project on poverty for projects.
3. Highway engineer	3.0	<ul style="list-style-type: none"> (i) Define the subprojects selection criteria and format of subproject identification form based on a brief field survey of pavement condition and associated traffic, of environmental, safety and social aspects; (ii) review the feasibility study of all subprojects and design with cost estimate. Analyze and summarize project costs; (iii) review the rehabilitation strategy for each subproject especially pavement

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		design, and drainage, road safety design; (iv) propose contract packaging and detailed cost estimates for proposed subprojects to be financed by an ADB loan; and (v) assist to prepare a training plan that can be implemented as part of the ensuing project.
4. Highway maintenance engineer	3.0	(i) Supervise the review of road condition surveys; (ii) conduct consultations with all stakeholders and review the road maintenance performance for each province with budget allocation, releasing, expenditure for each maintenance category; (iii) identify the maintenance fund gap, and propose recommendations to improve the road maintenance sustainability; (iv) prepare performance indicators in consultation with all stakeholders; (v) carry out the capacity development activities to create awareness about Performance-Based Maintenance; (vi) provide the market analysis of the potential contractors of road maintenance and the possibility of private contractor's participation; and (vii) organize training in road maintenance management.
5. Financial management specialist	3.0	(i) Must possess adequate relevant experience and an accounting qualification such as CPA/CA/ACCA; (ii) conduct a financial management assessment of the executing and implementing agencies; (iii) assess previous financial management assessments conducted by ADB or other agencies, and capacity for planning and budgeting, management and financial accounting, reporting, auditing, and internal controls, (iv) review proposed disbursement and funds-flow arrangements; (v) identify financial management risks and confirming measures for addressing identified deficiencies; (vi) prepare financial projections and conducting financial analyses of the incremental recurrent costs, to determine financial sustainability; (vii) propose relevant financial performance indicators to be incorporated in financial covenants; (viii) assist in assessment and reaching agreement on financial reporting, auditing and public disclosure arrangements for the project; and (ix) the assessment should be carried out in accordance with ADB's Financial Management Technical Guidance Note: Financial Management Assessment (2015). https://www.adb.org/site/public-sector-financing/operations/financial-management-resources
6. Transport institutional specialist	3.0	(i) Assess the capacity of the Borrower and executing agency and prepare a detailed report for ADB; (ii) prepare transport sector assessment; (iii) prepare an overview of the transport sector in the provinces, with emphasis on the road maintenance subsector, through a closer look at demand and supply patterns of the industry, the regulatory framework and institutional and human capacity; (iv) assess the current status and capacity of EAs and identify specific interventions for building its capacity; (v) design the project management unit structure, and recommend institutional capacity improvements; and (vi) carry out consultations with the government, civil society organizations and other stakeholders to obtain their views on the proposed project and incorporate their requests, where possible.
7. Environment specialist	2.0	(i) Lead and guide design consultants and national environment specialist for design, preparation, and finalization of the IEE/EIA and will be responsible for all quality control of the studies undertaken; (ii) consult with environmental agencies to identify protected areas, cultural heritage, important natural resources, and other sensitive sites in relation to proposed projects as well as environmental black-spots associated with the provincial road network and right-of-way for each province; (iii) assist the executing agency and its environmental assessment consultants to carry out desk and field investigations and analysis to develop environment

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		<p>impact assessment (EIA) or an initial environmental examination (IEE) of the project components and an environmental management plan (EMP) to address impacts in accordance with ADB's Safeguard Policy Statement (2009). Assist the executing agency with public consultation and involvement and development of a grievance redress mechanism;</p> <p>(iv) the EIA/IEE will assess key issues identified during the preliminary environmental scoping, including: (a) identification and avoidance of sites which could trigger Category A classification; (b) specific consideration of cultural heritage, protected areas, critical habitats, important biodiversity and natural resources and other environmentally sensitive receptors, large industrial parks, and large mining sites; (c) minimizing works outside of the existing right-of-way, such as temporary land use during the construction stage; and demolition of structures and disruption of underground services; (d) potential adverse impacts on water and sediment quality as a result of works adjacent to watercourses and water bodies as well as drainage run-off; (e) reuse and recycling of subgrade and pavement and appropriate disposal of construction waste; (f) local increases in air and noise emission levels; (g) long-term climate change effects increasing vulnerability of infrastructure and communities to floods, appropriate design standards and emergency response requirements; (h) disturbance of local communities (including construction traffic, dust, noise, access, safety and temporary workforce); and (i) occupational/community health and safety associated with works in an active carriageway;</p> <p>(v) the EIA/IEE will assess direct, indirect, and cumulative environmental impacts of the project components during construction, operation and decommissioning, including any temporary facilities, such as spoil/material storage and disposal, temporary work and equipment storage areas, concrete batching plants, borrow pits and quarries. It will document the alternatives considered and the rationale for the selected design, method, materials and technologies, where appropriate;</p> <p>(vi) the EMP should identify the proposed mitigation measures, environmental monitoring and reporting requirements for all potential impacts and risks identified in the IEE. Assist the executing agency to incorporate appropriate mitigation measures into the project design. It should include contractor specifications and templates for environmental management and monitoring as well as costs for environmental mitigation measures, environment monitoring and evaluation;</p> <p>(vii) prepare and assist with presentation for ADB Peer Review of EIA/IEE/EMP, prepare a final EIA/IEE/EMP report incorporating the comments from ADB for disclosure through ADB's website;</p> <p>(viii) consult with key stakeholders to assess current capacity, training needs and to agree a strategy for institutional strengthening in order to develop and implement a network environmental survey and monitoring, information management and disclosure system. Develop environmental component of institutional development plan; and</p> <p>(ix) develop an environmental assessment and review framework to provide an environmental due diligence planning tool for WSD maintenance and rehabilitation works.</p>
8. Climate change specialist	2.0	<p>(i) Study the hydrological and seismic regime in detail, based on an analysis of regional historical rainfall, seismic, and flood records, supplemented by engineering field investigations and scenarios involving potential impacts of climate change, to establish the adequacy of road embankment levels, bridge clearances, culverts, and side ditches, and design bed and slope protection for the drainage structures and bridges;</p> <p>(ii) integrate viable climate change adaptation and mitigation measures in the detailed engineering design, based on the climate change assessment;</p> <p>(iii) provide information on potential impacts of the project and the characteristics of the impacts, magnitude, distribution, sensitive receptors and affected groups, and their duration;</p>

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		<ul style="list-style-type: none"> (iv) key environmental impacts associated with each project must be assessed quantitatively, including supporting assessment for the climate change impacts of carbon emissions; (v) assess the climate change impact; identify the key risks to the project road, related facilities, and relevant stakeholders in light of the future climate scenarios (including but not limited to potential impacts of climate on the suitable location of road corridors reflecting changing risks of flooding and slope failure, impacts of temperature and/or precipitation changes on materials and methods of construction; and impacts of hydrological changes on the design of drains and culverts, bridge clearances and related design components); provide recommendations for additional and/or more detailed analysis of climate-related risks and steps to be taken through both engineering design and other risk management approaches (e.g., insurance) to mitigate the risks identified; estimate greenhouse gas (GHG) emission levels with and without the project and assess and recommend measures that are technically and financially feasible to reduce or offset project related GHG emissions during project design, construction and operation stages; (vi) prepare a climate change assessment report covering (a) climate risks to the project, (b) estimation of GHG levels with and without project, and (c) recommendations for engineering design and other risk management approaches, including a mitigation cost-effectiveness and adaptation cost-benefit analysis; and (vii) based on the IEE (or EIA) and the climate change assessment, provide inputs to the draft bid documents, project administration manual (PAM) and final feasibility study report.
9. Road asset management specialist	3.0	<ul style="list-style-type: none"> (i) Conduct assessment of current road network condition and road agency for each province, including planning, programming, and budgeting process; (ii) assess the capacity of EAs for Road Asset Management System (RAMS) implementation on human resources, IT infrastructure, budget, and institutional arrangement; (iii) review existing road management policies, road maintenance fund (revenue, allocation, and expenditures in past years) and assist in the refinement or development of any additional policies necessary for sustainable maintenance and effective implementation of RAMS. This may include preparing position papers on policy areas; (iv) prepare a fully costed technical package, including equipment, computer hardware and software, for the required modifications and enhancements to RAMS to include other road assets besides pavements; improve the accuracy of the Network Referencing System; enhance the GIS interface; improve the quality of data, analysis and results of HDM-4 applications; and most importantly the user interface; (v) prepare a training program for all relevant levels of executing agency managers and technical staff in the use of the enhanced RAMS; and (vi) prepare a procurement plan including bidding documents for the acquisition of the equipment, hardware and software for RAMS enhancements and the associated training program.
10. Road safety specialist	3.0	<ul style="list-style-type: none"> (i) Conduct a brief road safety assessment of road network for each province and propose improvements focusing on enhancing safety design elements for all road users; (ii) review the design of the selected subprojects from road safety perspective and propose improvement measures; (iii) deliver a training in road safety design for maintenance works; (iv) propose ways to control overloading; and (v) prepare a draft road safety framework and action plan after consultations with other relevant stakeholders, including increasing road safety management capacity
Subtotal (A)	27.0	
B. National Consultant		

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1. Transport economist	2.0	<ul style="list-style-type: none"> (i) Review the economic analysis prepared by the design consultant engaged by the government; (ii) review existing data such international roughness index (IRI) data, existing traffic data, traffic count and origin-destination data, and axle-load surveys; (iii) produce estimates of traffic flows (annual average daily traffic) on the project road and all other parts of the network experiencing non-trivial changes to flows resulting from the new project. Estimates are to be produced for the without-project scenario and the with-project scenario (considering traffic reassignment from competing corridors and traffic generated by the project). The traffic forecasting methodology (e.g., traffic counts, origin-destination surveys, modelling requirements and forecasting methodology) to be performed for each project is to be agreed with ADB in advance. For cases involving offline construction a basic traffic assignment model may be required; (iv) produce 20-year demand forecasts of traffic on each section, for both the with and without project scenarios, based on forecast growth in e.g., vehicle ownership, GDP and/or population; (v) prepare an economic analysis of the proposed road improvements using Highway Development and Management model (HDM, version 4) or similar software. Calculate the economic internal rate of return (EIRR) for each separate project; (vi) undertake sensitivity analysis on the risk factor basis for various scenarios such as changes to the cost, generated and diversion traffic, construction period, etc.; the economic analysis is to be undertaken in accordance with ADB Guidelines for the Economic Analysis of Projects (2017). The consultant shall be responsible for producing final versions taking into consideration comments made by ADB; and (vii) prepare and submit economic analysis report.
2. Highway design engineer	7.0	<ul style="list-style-type: none"> (viii) Assist to select the proposed subprojects based on approved selection criteria; (ix) consolidate and analyze traffic data; (x) conduct economic analysis for each individual subproject and network level; and (xi) contribute to the feasibility study.
3. Structure engineer	3.0	<ul style="list-style-type: none"> (i) Conduct structure condition survey on selected subprojects; (ii) evaluate the condition and capacity of existing structures of selected subprojects; (iii) propose rehabilitation strategy of structures; (iv) preliminary design of structures, especially on cost effective, multi-hazard resistant design, design the structural elements of roads component and bridges, including detailed structural drawings and specifications; and (v) estimate quantity and cost.
4. Highway maintenance engineer	9.0	<ul style="list-style-type: none"> (i) Review the road maintenance performance for each province, especially the financing, and sustainability; (ii) collect relevant road maintenance data and analyze the financial and technical gap; and (iii) propose improvement measures to improve the maintenance sustainability, especially on data collection, preparation of maintenance plan, budget optimization.
5. Procurement specialist	12.0	<ul style="list-style-type: none"> (i) Undertake a strategic procurement planning analysis and a project procurement risk assessment for each executing agency. Prepare project procurement risk assessment and management plan and propose the capacity building program to strengthen the procurement capacity for each executing agency; (ii) prepare the bidding documents for civil works and Request for Proposal for consultant recruitment; (iii) assist executing agency and/or implementing agency to receive, open and evaluate proposals and bids, conduct clarification meetings, and finalize contracts; (iv) conduct relevant training with ADB's procurement policies and guidelines for EA's staff to strengthen its procurement capacity; (v) assess the capacity of the local road industry to undertake civil works under the Project; assessment should cover both public and private sector, and

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		<p>include recommendations on contract packaging, and recommendations on how to develop the private sector; and</p> <p>(vi) review executing agency and implementing agency's procurement capacity and recommend a strengthening plan.</p>
6. Financial specialist	3.0	<p>(i) Must possess adequate relevant experience and an accounting qualification such as CPA/CA/ACCA;</p> <p>(ii) conduct a financial management assessment of the EAs, including (a) assessing whether previous financial management assessments have been conducted by ADB or other agencies and, if so, reviewing the results and ascertaining whether these can be used as input, (b) assessing capacity for planning and budgeting, management and financial accounting, reporting, auditing, internal controls, and information systems, (c) reviewing proposed disbursement and funds-flow arrangements, and (d) concluding on the financial management risk rating and identifying and confirming measures for addressing identified deficiencies. The assessment should be carried out in accordance with ADB's Financial Management Technical Guidance Note: Financial Management Assessment (2015);</p> <p>(iii) conduct an assessment of financial sustainability, commenting on the ability of the executing agencies to properly fund ongoing operation and maintenance costs arising from the project;</p> <p>(iv) support the preparation and agreement of cost estimates and a financing plan, which are based on verifiable data and are sufficient to support project implementation;</p> <p>(v) recommend possible financial covenants to be included in the loan agreement and</p> <p>(vi) conduct financial analysis for all toll roads.</p>
7. Environment specialist	9.0	<p>(i) Support the international environment specialist in undertaking the IEE/EIA preparation including collecting all background data required for completing the IEE/EIA designed and identified by the International Environment Specialist.</p> <p>(ii) finalize the Rapid Environmental Assessment (REA) checklist for ADB to assign Environmental categorization for the project roads. The REA will be submitted as part of the Interim report;</p> <p>(iii) prepare the IEE (or EIA if necessary) of the project roads in accordance with the requirements of the ADB's Safeguard Policy Statement (2009); and the relevant legislation of Pakistan;</p> <p>(iv) prepare a fully costed environmental management plan (EMP) as part of the IEE (or EIA), in accordance with the SPS 2009 requirements; and</p> <p>(v) based on the IEE (or EIA) and the climate change assessment, provide inputs to the draft bid documents, project administration manual (PAM) and final feasibility study report.</p>
8. Resettlement specialist	8.0	<p>(i) Review and finalize the land acquisition and resettlement plan (LARP) prepared by the design consultants engaged by the provincial governments;</p> <p>(ii) conduct a scoping exercise in project location including associated facilities, to determine areas with land acquisition and resettlement (LAR) issues and/or indigenous people (IP) issues document steps to be taken to avoid/minimize LAR and/or IP issues through adjustments in project alignment/design; prepare options for discussion with other team members to avoid or minimize resettlement or IP impacts of the project;</p> <p>(iii) assess permanent and/or temporary LAR for associated facilities such as access roads, worker's camps, dump sites, etc.;</p> <p>(iv) work and discuss with other team members including the project engineers and executing agency and/or implementing agency or finding alternatives to avoid or minimize the project LAR and IP issues/impacts;</p> <p>(v) survey and screen the proposed subproject sections for any involuntary resettlement (IR) impacts; if there are impacts, prepare resettlement plans for those sections, in accordance with ADB's Safeguard Policy Statement (2009), Appendix 2: 'Safeguard Requirements 2: Involuntary Resettlement;</p>

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		(vi) assess WSD's capacity to manage social issues including issues related to IR and SDAP and propose strengthening strategies; (vii) gather information about available ROW limits of the project roads and assess land subject to acquisition for rehabilitation and improvement of the road as per project design; review land acquisition history available ROW land; and if the land acquisition was made in anticipation of ADB Financing; and (viii) collect and analyze the land acquisition details (i.e. when the transfer was made, what was the land acquisition mechanism, who was involved, how much land acquired, was it at the market rate, compensation payment status and any affected land users, etc.).
9. Social development specialist (gender)	3.0	(i) Conduct poverty and social impact assessments of the proposed project, provide recommendations on how to make the project design more socially inclusive for the poor, women, and ethnic minorities in a social development action plan (SDAP); (ii) conduct a poverty, social, and gender analysis of project impacts in consultation with the community, executing agency and/or implementing agency, and based on the results, recommend gender design features and targets for the DMF, draft a gender action plan (GAP) or develop measures to ensure that women/girls benefit from the project and earmark the necessary funds for the implementation of the GAP; (iii) identify other potential social risks associated with the project, such as risks of increased HIV/AIDS transmission or human trafficking. Assist the executing agency and implementing agency in preparing appropriate mitigation measures and include in the SDAP; and (iv) prepare (a) poverty and social assessment (PSA); and (b) summary poverty reduction and social strategy (SPRSS) in accordance with ADB's Handbook for Poverty Reduction and Social Assessment (2012), Guidelines for Gender Mainstreaming Categories of ADB Projects (2012) and Strengthening Participation for Development Results: An Asian Development Bank Guide to Participation (2012).
Subtotal (B)	56.0	
Total (A+B)	83.0	