

TERMS OF REFERENCE FOR CONSULTANTS

1. The TRTA Facility will require a total of 70 person-months of consulting services (22 international and 48 national including 10 person-months of non-key personnel) in the areas of network planning and technical analysis for energy sector projects, procurement, financial management, financial analysis, economic analysis, environment safeguards and social development (involuntary resettlement, indigenous peoples, gender and poverty assessment). The survey works required for the project identification and analysis, trainings and workshops will be carried out as and when required in consultation with executing and implementing agencies.

A. Consultants to be recruited as Individuals

2. **Power System Distribution Specialists (International, 4 person-months and National, 13 person-months).** This international specialist shall be able to review the survey data and Power System Planning Report prepared by the power distribution system survey and planning team, identify gaps if any, and recommend the best international practices to achieve the desired outputs and outcomes. This consultant shall progressively review the reports of the survey and planning team and provide continuous feedback in preparing a robust power distribution planning report. The expert shall provide necessary support and guidance to staffs of implementing agencies collecting planning data for distribution planning and project preparation. Preferably, the international expert would have a master's degree in electrical engineering, minimum 15 years of experience in a power distribution utility and advising utility management globally. The national expert should have a degree in electrical engineering, minimum 5 years of experience in a power distribution utility.

3. **Power Sector Specialists (Transmission and Generation) (International, 3 person-months and National, 5 person-months).** The international power sector specialist, together with national experts, shall work with the implementing agencies supported states in the TA in reviewing their existing power sector plan and identify possible investments, provide technical and management expertise to implementing agencies, provide necessary guidance, recommendation and undertake all the required technical support in selecting the development of priority projects across transmission, and generation sectors. The diagnostic studies to identify specific investment requirements to improve the power sector performance will be undertaken and impact of these investments in terms of improvement in financial performance and service quality will be assessed. International consultant should have a master's degree in electrical/power engineering together with 15 years of experience in energy sector project development. The national experts should have similar qualifications with 8 years of experience.

4. **Supervisory Control and Data Acquisition (SCADA) and Communication Specialists (International, 2 person-months and National, 3 person-months).** The specialists will prepare technical specifications for a new communication and SCADA system in the new substations, considering amongst others, the required signaling facilities, data transmission and communication channel requirements, telephone system. The use of fiber optical transmission system based on optical pilot ground wire on the new distribution lines should be given priority in their assessment. The international communication and SCADA specialist should have a degree in electrical or communication/electronic engineering or a related area, and at least 12 years of working experience including communication systems and SCADA in the utility industry. The national expert should have similar qualifications with 8 years of experience.

5. **Environmental Specialists (International, 3.5 person-months and National, 4 person-months).** The consultants will undertake preliminary due diligence of projects proposed

in India for ADB financing. This will include identifying any potential environmental issues and defining the scope of environment studies to be undertaken to meet the ADB's Safeguards Policy Statement (2009) requirements. Preferably the consultants have at least a master's degree in environmental science or similar area and has at least 15 years of experience in technical assistance of development agencies like ADB, particularly in the power sector. The consultants will assess environmental impact on candidate project sites, list impacts on soil, air and water and recommend relevant mitigation measures. The consultants will work in delivering the outputs which include but are not limited to:

- (i) Conduct environmental impact assessment (EIA) for proposed project sites and prepare Environmental Assessment reports and required environmental management plans to determine mitigation measures in the respective design, construction, and maintenance phases of, and national regulatory requirements in accordance with the ADB's Safeguard Policy Statement;
- (ii) Prepare rapid environmental assessment checklist and determine environmental category for each proposed site;
- (iii) Map the environmentally sensitive areas through checking the integrated biodiversity assessment tool and prepare a summary of environmental issues identified, e.g., any critical habitats might be triggered for each project to support the determination of its environmental categorization;
- (iv) Conduct species surveys, if critical habitats triggered, in collaboration with ADB consultants, to determine the candidate project impacts and how to mitigate them based on the requirements of IFC performance standard 6;
- (v) Conduct avian species study if needed to provide suggestion on site selection in order to avoid the any fly way or critical habitats;
- (vi) Conduct air quality assessment for biomass to provide mitigations for subprojects in degraded airsheds;
- (vii) Prepare environmental assessment reports depending on the individual project categorization (environmental category A or B or C) assigned by ADB in accordance with the ADB's Safeguard Policy Statement;
- (viii) Organize and coordinate required environmental surveys and special baseline condition surveys in collaboration with ADB consultants. Responsible for preparation, implementation, documentation, and reporting of the baseline, e.g. water quality (pH, BOD, COD, DO, N, P, heavy metals etc.) and monitoring field surveys for vegetation, terrestrial fauna and aquatic life;
- (ix) Document and organize public consultations, including local stakeholders, in project sites;
- (x) Carry-out safeguards training, workshops, seminars, and other capacity building activities to facilitate improvement of EA/IAs safeguards capacity as required.
- (xi) Conduct additional environmental surveys as required; and
- (xii) Perform other functions as may be assigned or delegated by ADB team leader from time to time during the assignment.

6. Climate Risk Analyst (National, 2 person-months). The consultant will conduct climate change assessment (CCA) and climate risk vulnerability assessment (CRVA) following ADB guidance, using modeling software for site-specific analysis. The candidates should have master's degree in climate change with 10 years of professional experience in environmental impact assessment including 8 years of work in climate change risk assessment and management, preferably on energy sector projects financed by international financial institutions, specifically ADB and World Bank. Experience in climate risk analysis of energy projects, and

familiarity with Indian climate risk scenarios and policies relevant to climate change and energy investment projects would be an asset.

7. **Social and Gender Specialist (International, 3.5 person-months).** The consultant will undertake due diligence of the proposed projects for ADB financing in terms of social safeguards and gender. This will include identifying any potential resettlement and indigenous people's issues, defining the scope of social studies to be undertaken, and prepare categorization forms and social safeguard plans to meet ADB's Safeguards Policy Statement requirements. Also, based on gender analysis, develop a gender features for some gender elements (SGE) and gender action plan (GAP) for effective gender mainstreaming (EGM) categorized projects. The consultant will be responsible to integrate social safeguards and gender considerations in the project documents and carry-out safeguards training, workshops, seminars, and other capacity building activities to facilitate improvement of IAs safeguards capacity as required. Preferably the expert has at least a master's degree in social science or similar area and has at least 10 years of experience in technical assistance of development agencies like ADB, particularly in the power sector.

8. **Social and Gender Specialist (National, 5 person-months).** The consultant will undertake due diligence of the proposed projects for ADB financing in terms of social safeguards and gender supporting the international social and gender specialist. The consultant will be in charge of the groundwork including but not limited to undertaking survey, collecting field data, and conducting consultation with project stakeholders including affected persons. Preferably the expert has at least a bachelor's degree in social science or similar area and has at least 5 years of experience in technical assistance of development agencies like ADB, particularly in the power sector.

9. **Energy Economist (International, 1.5 person-months)** The economist will prepare detailed economic analysis in accordance with ADB (2017) Guidelines for the Economic Analysis of Projects. Specific tasks include:

- (i) Review the macroeconomic context of the project to provide an understanding of the economy's overall performance and outlook, and of how specific macroeconomic factors may affect project performance;
- (ii) Undertake demand analysis for the project services and or analysis of the expected constraint that the project should address. Demand analysis provides the basis for identifying the goods or services needed by users and for estimating the scale of, and economic benefits from, the investment project;
- (iii) Identify the project rationale for public intervention which can be based on the failure of (a) markets to adequately provide what society wants, or (b) public institutions to deliver public goods or services;
- (iv) Help develop the "theory of change" for the project, which links demands/problems to be solved by the project, the project intervention, outputs, expected outcomes and impacts. The theory of change should be consistent with economic theory and evidence;
- (v) Identify project alternatives. Least-cost analysis to be undertaken to identify the preferred alternative. The basis for selecting the preferred alternative should be clearly explained, particularly if it is not the least-cost alternative in economic terms;
- (vi) Undertake and compare project benefits and costs in economic terms using with-project and without-project scenarios for each major project component. The basic criteria for assessing the project economic viability will be economic net present value and economic internal rate of return for subprojects (if included in project design) and

- total project. Border parity pricing should be applied for major tradable cost and revenue items, along with other appropriate conversion factors;
- (vii) The economist is expected to conduct or coordinate collection of baseline economic and financial data. These data should have clear sources and should represent the situation with and without the project;
 - (viii) Assess if the project is sustainable (if its net benefits endure throughout its life at a level sufficient to meet the economic viability criteria) in accordance with ADB's guidelines for Financial Management and Analysis of Projects 2005. For revenue generating projects, financial analysis for project participants will be an important element of sustainability analysis. For public sector projects assess the availability of funds to finance project expenditures, especially funds drawn from the government budget;
 - (ix) Undertake distributional analysis of project benefits to project beneficiary and stakeholder groups, and the extent to which they gain from benefits or bear costs associated with the project. Undertake poverty impact assessment where necessary;
 - (x) Undertake sensitivity and risk analysis. Where possible undertake a quantitative risk analysis (such as Monte Carlo simulation) and explicitly include probability distributions of key uncertain variables; and
 - (xi) Assist the project team leader to carry out project appraisal and prepare necessary documents for ADB project approval (supplementary appendix, summary appendix for Report and Recommendation to the President).

10. **Financial Management Specialist (International, 3 person-months).** The expert will support executing agencies in carrying out the financial management assessment as per ADB guidelines. The expert will conduct financial due diligence (FDD) in accordance with ADB's requirements.¹ Relevant guidance is available at <http://www.adb.org/projects/operations/financial-management-resources>. The FDD will include:

- (i) Conduct a financial management assessment of the executing and implementing agencies, 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;
- (ii) 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;
- (iii) Prepare financial projections and conducting financial analyses of the executing and implementing agencies, and incremental recurrent costs, to determine financial sustainability, and reviewing proposed cost-recovery and tariff policies, including affordability;
- (iv) Conducting financial evaluations (financial cost-benefit analyses) including sensitivity analyses of project components that have a cost-recovery objective;
- (v) Where significant risks are identified to project financial sustainability or viability, proposing relevant financial performance indicators to be incorporated in financial covenants; and

¹ ADB. 2014. Financial Management, Cost Estimates, Financial Analysis, and Financial Performance Indicators. *Operations Manual*. OMG2/BP. Manila

- (vi) Assess and reach agreement on financial reporting, auditing and public disclosure arrangements for the project, and, as appropriate, identifying and agreeing arrangements for receiving financial statements from executing and/or implementing agencies.

11. **Procurement Specialist (International, 1.5 person-months).** The procurement specialist (thereafter the consultant) will be qualified with a degree in science, commerce, economics or engineering or equivalent, with graduate qualifications and at least 10 years of work experience in the power sector. Working experience in the South Asian region and specifically in India would be preferable. The tasks of the consultant will include, but not be limited, to the following:

- (i) Review the existing procurement system of the state utilities and draft risk assessment and suggest mitigation measures as per ADB's Guide on Assessing Procurement Risks and Determining Project Procurement Classification (2015, as amended from time to time);
- (ii) Propose an appropriate contract packaging strategy and formulate a procurement plan in consultation with the executing agency following ADB Procurement Policy and Regulations (2017, as amended from time to time) and its associated project administration instructions Assist the utilities procurement team in preparing the bidding documents;
- (iii) Support and advice the utilities during the bidding process and assist them in reviewing the bid evaluation reports and draft contracts as necessary;
- (iv) Provide necessary guidelines to EA in carrying out electronic bidding if necessary; and
- (v) Conduct short training for EA on the ADB Procurement Policy and Regulations.

12. **Procurement Specialist (National, 6 person-months).** The procurement specialist (thereafter the consultant) will be qualified with a degree in science, commerce, economics or engineering or equivalent, with graduate qualifications and at least 7 years of work experience in the power sector. Working experience in India would be preferable. He/she will support the international consultant in procurement activities for the project and other tasks mentioned in paragraph 11 as required.

13. **Project Implementation Analyst (National, 10 person-months).** The Project Implementation Analyst (thereafter the consultant) will be qualified with a degree in business administration or other related fields, with at least 15 years of work experience in project implementation and project management, including proficiency in ADB project implementation procedures and systems. He/she will oversee administrative and financial aspects of the TA. The consultant will be based in ADB Headquarters, Philippines.