

## PROJECT PREPARATORY TECHNICAL ASSISTANCE

1. The objective of the proposed project preparatory technical assistance (TA) is to prepare the Wholesale Metering and Transmission Reinforcement Project (the Project).

### A. Justification

2. The TA is necessary on the following grounds:
- a. The Project needs to be prepared urgently in order to meet the investment needs of Tajikistan.
  - b. There is a need to prepare feasibility study and undertake technical, financial, economic, social and environmental due diligence required to process a grant for the Project.
  - c. There is a need for expertise from competent international consultants considering the Project's technical complexity.

### B. Major Outputs and Activities

3. The major outputs and activities are summarized in Table A4.1.

**Table A4.1: Summary of Major Outputs and Activities**

Major Activities	Major Outputs	Expected Completion Date
- Review relevant study reports - Gather relevant data and information - Review power transmission and investment plan - Update energy sector assessment	- Inception report - Update summary sector assessment	April 2014
- Prepare project design including: (i) technical specifications, (ii) cost estimates, (iii) procurement plan; and (iv) implementation schedule. - Update transmission line alignment corridor - Prepare draft IEE	- PDD - Draft IEE report	May 2014
- Based on the discussion with EA update the PDD and finalize transmission line alignment - Finalize IEE - Initiate site survey and analysis for LARP - Conduct stakeholder consultation - Conduct social analysis (if necessary), and prepare Summary Poverty Reduction and Social Strategy. - Prepare draft LARP	- Updated PDD - Final IEE report - Draft LARP	June 2014
- Update project costs and implementation schedule and prepare disbursement schedule - Prepare economic and financial analyses - Update financial management assessment and financial projection of EA - Assess fund flow, disbursement mechanism and funding arrangements - Update procurement capacity assessment	- Economic and financial analysis report - Fund flow analysis report - Updated financial management assessment report - Updated procurement capacity assessment report	July 2014
- LARP completed - Prepare draft feasibility study report	- LARP - Draft Final Feasibility Study	August 2014
- Assist in preparation of relevant bidding documents for procurement of goods and services	- Draft bidding documents for procurement of goods and services	September 2014

- Based on the discussion with EA finalize the feasibility study - Final Feasibility Study October 2014

ADB = Asian Development Bank, EA = executing agency, IEE = initial environmental examination, LARP = land acquisition and resettlement plan, PAM = project administration manual, PDD = project design document; PMU = project management unit.

Source: Asian Development Bank.

### C. Cost Estimate and Proposed Financing Arrangement

4. The TA is estimated to cost \$1.1 million, of which \$1 million will be financed on a grant basis using ADB's Technical Assistance Special Fund (TASF-V). The government will provide in kind contribution (office space, furniture, and counterpart staff) which will amount to approximately 10% of the TA cost. The detailed cost estimate is presented in Table A4.2. The government has been informed that the approval of the TA does not commit ADB to finance any ensuing Project.

**Table A4.2: Tentative Cost Estimates and Financing Plan**  
(\$'000)

Item	Total Cost
<b>Asian Development Bank Financing<sup>a</sup></b>	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	610.0
ii. National consultants	155.0
b. International and local travel	93.0
c. Reports and communications	2.5
2. Equipment <sup>b</sup>	2.5
3. Workshops, training, seminars, and conferences <sup>c</sup>	2.0
4. Vehicles <sup>d</sup>	15.0
4. Surveys	15.0
5. Miscellaneous administration and support costs for consultants	15.0
6. Contingencies	90.0
<b>TOTAL</b>	<b>1,000.0</b>

<sup>a</sup> Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-V).

<sup>b</sup> Equipment

Type	Quantity	Cost
Printer	2	\$800
Copier	1	\$700
Scanner	1	\$500
Office Network	1	\$500

<sup>c</sup> Workshops, training, seminars, and conferences

Purpose	Venue
Stakeholder Consultations	Ayni and Panjakent

<sup>d</sup> Vehicle

Rental vehicles required during field visits to Ayni and Panjakent and site surveys. Expected length of use 8 months

Source: Asian Development Bank.

### D. Consulting Services

5. The main objective of the consultants assignment is to undertake technical, financial, economic, environmental and social due diligence and prepare a feasibility study to ensure ADB financing of the Project. The Project will be implemented using two turnkey contracts: one for

installation of wholesale meters and billing system, and another for contraction of 220 kV transmission line and substation expansion.

6. For the wholesale metering component, consultants will:

- (i) Review current and proposed projects related to metering, SCADA or communications. In particular energy loss reduction projects in Sugd and Dushanbe funded by multilateral donor organizations.
- (ii) Review all proposed BT metering projects.
- (iii) In conjunction with BT ascertain the locations of commercial boundaries and number of wholesale metering points between generation and transmission.
- (iv) In conjunction with BT ascertain the locations of all commercial boundaries and number of wholesale metering points between transmission and distribution.
- (v) In conjunction with BT review the suitability of existing electronic meters for reuse with the new wholesale metering system.
- (vi) In conjunction with BT consider the suitability for future use of existing free standing high voltage metering current transformers (CT) and voltage transformers (VT).
- (vii) Ascertain the condition of high voltage equipment containing metering CT's and associated VT's.
- (viii) Ascertain condition of Power Line Carrier terminal and line equipment on the 220 kV system.
- (ix) Ascertain suitability of mobile phone networks for transmission of metering data.
- (x) Testing necessary to ascertain the accuracy of existing metering components including CT's and VT's.
- (xi) Future testing of all system components to ensure ongoing accuracy of the metering system.
- (xii) Assess the training requirements, with costs, for providing BT personnel with the competency and institutional capacity to operate and maintain the new wholesale metering system.

7. For the transmission component, consultants will:

- (i) Review existing reports and designs to confirm the need of proposed transmission line and substation expansion.
- (ii) Study existing reports including load growth projections and load flow studies, and confirm the transmission project need. The Project justification shall take into account the need for transmission reinforcement for domestic needs.
- (iii) Review proposed designs and line routing and comment on appropriateness or otherwise.
- (iv) Identify, analyze and evaluate impact of the proposed transmission line on the grid operation, protection and communication systems.
- (v) Assess the condition of 220 kV Rudaki and Ayni substations, required reconstruction and rerouting of existing lines.
- (vi) Conduct environmental due diligence, assess environmental impacts and identify mitigation measures and assess their costs, prepare an Initial Environmental Examination (IEE) report and Environmental Management Plan (EMP) in accordance with the ADB Safeguard Policy Statement (2009).
- (vii) Prepare Land Acquisition and Resettlement Plan in accordance with the ADB Safeguard Policy Statement (2009), assess the cost of compensations.
- (viii) Prepare cost estimates for entire transmission component of the Project.

- (ix) Identify implementation and procurement options considering international best practice and domestic contractor capability and recommend optimal approach.
8. Apart from the component specific tasks, the consultants will also:
- (i) Prepare an entire project cost estimate, separating foreign exchange and local currency, including physical and price contingencies, interest during construction, commitment fee and other financing charges.
  - (ii) Prepare the scope, capital and operating cost estimates, implementation schedule, contracting, implementation arrangements; contract award and disbursement schedule.
  - (iii) Identify all project risks and mitigation measures.
  - (iv) Prepare a financing plan for the Project, including proposed ADB lending and co-financing.
  - (v) Prepare a financial valuation of the project using FIRR and WACC computations in order to evaluate the financial viability of the project, in accordance with *ADB's Financial Management and Analysis Guidelines (2005)* and the *Financial Due Diligence Methodology note (2009)*.
  - (vi) Undertake economic analysis, determine the economic rate of return of the proposed investment components, assess their economic viability and provide the economic rationale for the Project including an analysis of alternatives and sensitivity and risk analyses, in accordance with *ADB's Guidelines for the Economic Analysis of Projects (1997)* and *Guidelines for the Financial Governance and Management of Investment Projects Financed by the Asian Development Bank*.
  - (vii) Update financial management and procurement assessment of EA.
  - (viii) Update summary sector assessment and identify system/sector development constraints.
  - (ix) Conduct poverty and social analysis.

9. The TA will employ a firm of consultants. There are 9 positions and 30 person-months for international consultant, and seven national consultant positions with 28 person-months (see Table A4.3). Certain international consultants will be assisted by national consultants. All national consultants will have at least a bachelor's degree from an established university in Tajikistan or other countries and two years of experience in their area of expertise.

**Table A4.3: Summary of Consulting Services Requirement**

	Positions	International Consultants			National Consultants		
		No. of expert	P-M per expert	Total P-M	No. of expert	P-M per expert	Total P-M
1	Metering Engineer (Team Leader)	1	7	7	1	5	5
2	Electrical Engineer	1	4	4	1	5	5
3	Communication Specialist	1	4	4	1	4	4
4	Electricity Billing System Specialist	1	3	3			
5	Transmission/Substation Engineer	1	3	3	1	4	4
6	Civil Engineer	1	2	2			
7	Economic and Financial Expert	1	2	2	1	3	3
8	Environmental Safeguard Expert	1	2	2	1	3	3
9	Social Safeguards Expert	1	3	3	1	4	4
	<b>TOTAL</b>	<b>9</b>	<b>30</b>	<b>30</b>	<b>7</b>	<b>28</b>	<b>28</b>

Source: Asian Development Bank.

## E. Implementation Arrangements

10. The TA is expected to start in March 2014 and complete in November 2014. The State Joint-Stock Barki Tojik will be the executing agency for the TA. A project management unit (PMU) will coordinate all work and report directly to chairman of EA. The project manager has been appointed and is working on the preparatory works. Sufficient resources and qualified personnel will be allocated for the project. The PMU will closely work with the consultants.

11. The executing agency will assist the consultants in data gathering, preliminary analysis, and report writing. The executing agency will provide all necessary assistance to the consultants in liaising with other government ministries and agencies. The executing agency will provide and make available to the consultants, free of charge, the following facilities, services, equipment, materials, documents and information as required by the consultants for carrying out the TA.

- (i) Counterpart staff/technical support.
- (ii) Office space: sufficient office space for the consultant team, with national and international telephone lines, electricity and air conditioning/heating, and internet connections.
- (iii) Office furniture: desks, office chairs, book shelves/cabinets adequate to accommodate the full complement of international and local consultants.
- (iv) Organizational support: assistance in all arrangements for workshops, meetings, and field visits and access to required data, maps and other relevant information.

12. The consultants will be responsible for personal computers and other facilities for producing reports. The consultants will procure the equipment to be financed under the TA in accordance with ADB's Procurement Guidelines. All disbursements under the TA will be made in accordance with ADB's *Technical Assistant Handbook* (2010, as amended from time to time). All equipment purchased under the TA will be passed over to the EA at the end of the TA.

13. The proposed TA implementation schedule is in Table A4.4.

**Table A4.4: Proposed TA Implementation Schedule**

<b>Major Milestones</b>	<b>Expected Completion Date</b>
RFP issuance	January 2014
Proposal evaluation	February 2014
Contract signing	March 2014
Inception mobilization	April 2014
Inception report	April 2014
IEE completion	May 2014
Interim and final due diligence reports	June 2014
LARP completion	August 2014
Draft final report	August 2014
Commencement of advanced contracting	September 2014
Final Report	October 2014

IEE = initial environmental examination, LARP = land acquisition and resettlement plan, RFP = request for proposal  
Source: Asian Development Bank.