

**ASIAN DEVELOPMENT BANK**

**TAR: AFG 37118**

**TECHNICAL ASSISTANCE**

**TO THE**

**ISLAMIC STATE OF AFGHANISTAN**

**FOR PREPARING THE**

**NATIONAL POWER TRANSMISSION GRID PROJECT**

**February 2004**

## CURRENCY EQUIVALENTS

(as of 15 February 2004)

Currency Unit	–	afghani/s (AF)
AF1.00	=	\$0.02062
\$1.00	=	AF48.50

## ABBREVIATIONS

ADB	–	Asian Development Bank
CSP	–	country strategy and program
CSPU	–	country strategy and program update
DABM	–	Da Afghanistan Breshna Moassesa (Afghanistan Electricity Authority)
EA	–	executing agency
IA	–	implementing agency
IEE	–	initial environmental examination
IRR	–	internal rate of return
kV	–	kilovolt
MW	–	megawatt
MWP	–	Ministry of Water and Power
NLDC	–	National Load Dispatch Center
RRP	–	report and recommendation of the President
SCADA	–	supervisory control and data acquisition
TA	–	technical assistance

## NOTE

In this report, "\$" refers to US dollars.

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## I. INTRODUCTION

1. During the March 2003 Country Strategy and Program Update Mission, the Islamic Transitional Government of Afghanistan reconfirmed its request for a project preparatory technical assistance (TA) from the Asian Development Bank (ADB) to carry out a feasibility study for the proposed National Power Transmission Grid Project, which has been included in the 2003–2005 country strategy and program update. The ADB Fact-Finding Mission visited Afghanistan during 19–28 November 2003 and reached an understanding with the Government on the objective, scope, cost, financing, implementation arrangements, and consultants' outline terms of reference for the TA.<sup>1</sup>

## II. ISSUES

2. Afghanistan's power sector infrastructure has been destroyed or damaged after more than two decades of war. Lack of resources and capacity prevented maintenance, leading to major deterioration and loss of power infrastructure. Afghanistan has no national power transmission grid. The power infrastructure comprises mainly four isolated power systems, each centered around Herat, Kabul, Kandahar, and Mazar Sharif cities. Daily rationing of electricity, frequent brownouts, aging power generation plants, missing overhead transmission and distribution lines, and proliferation of small diesel generators that are inefficient and polluting characterize the power sector. The electrification ratio is estimated to be only about 6% and annual per capita consumption of electricity is estimated to be about 16 kilowatt-hours, which ranks among the lowest in the world. The countrywide total generating capacity has declined from a total of about 450 megawatts (MW) in 1990s to about 240 MW currently.

3. Prior to the start of the conflict in 1980, power transmission lines comprised about 140 circuit-kilometers and about 1,080 circuit-kilometers of 220 kilovolt (kV) and 110 kV transmission lines, respectively. Much of these transmission lines were destroyed during the war period and only some 110 kV are now operating. The damaged 220 kV lines have been downgraded to operate at 110 kV while some damaged 110 kV lines now operate at 35 kV. Rehabilitation of the northern 220 kV transmission lines under the power component of the ADB-financed Emergency Infrastructure Rehabilitation and Reconstruction Project<sup>2</sup> and construction of a new 220 kV Phule Khumri to Kabul transmission line to be financed by the Government of India will interconnect the northern power system centering around Mazar Sharif with the central power system by 2006 to enable import of 150 MW of power from Uzbekistan to meet the acute power shortage in Kabul. However, Afghanistan has no national load dispatch center (NLDC) to manage internal generation as well as imports from neighboring countries.

4. The western power system centered around Herat does not yet have a transmission network system. Its power supply currently comes from a multitude of small and medium-sized privately owned diesel generators, contributing to air and noise pollution. Under construction are a double-circuit 132 kV transmission line from Iran and a single-circuit 220 kV transmission line from Turkmenistan to facilitate import of power from these two countries to displace the polluting diesel generators.

5. The Ministry of Water and Power (MWP) is responsible for the power sector. The Government's Enterprise Act sets out the responsibilities of the various enterprises of the power

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<sup>1</sup> The TA first appeared in *ADB Business Opportunities* (Internet edition) on 9 September 2003.

<sup>2</sup> ADB. 2003. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Islamic State of Afghanistan for Emergency Infrastructure Rehabilitation and Reconstruction Project*. Manila.

sector. The Afghanistan Electricity Authority (DABM) is among the five quasi-government enterprises in the power sector, and is responsible for the operation and maintenance of generation, transmission, and distribution of electricity in Afghanistan. The president of DABM reports to the deputy minister of power. DABM has a total of about 5,200 staff, but lacks technical skills and access to modern technology, including computers and communication equipment. The capacity building of MWP and DABM is ongoing under subclusters 3D and 3E of TA 3874-AFG: Capacity Building for Reconstruction and Development.<sup>3</sup>

6. The related policy and institutional reforms in the power sector are reflected in the ongoing Postconflict Multisector Program Loan.<sup>4</sup> These policy and institutional reform actions relate to improving institutional efficiency, instituting mechanisms for cost recovery, establishing a regulatory framework, encouraging private sector participation, and so on. MWP has presented an electricity sector policy for approval by the Cabinet, in which it envisions the power sector “By 2010 to evolve into autonomous, financially viable enterprises providing reliable, low cost electric service to all Afghan citizens in an environmentally responsible manner, consistent with sound business practices.” MWP has embarked on a plan to reform the power sector with a fully operational independent regulatory agency by 2010 to regulate deeper private sector participation in generation and distribution. The plan also envisages electricity to reach 75% of all districts, the backbone of a national transmission grid constructed, an electrification ratio of 40%, and reduction of overall system losses from 40–50% to 20–30%. The Government recognizes the need to establish separate policy and regulatory functions; to undertake sector restructuring; and to improve operation, maintenance, and safety standards. This is in line with ADB’s assistance strategy in the power sector, as outlined in the country strategy and program for Afghanistan and its 2003–2005 update, which includes a focus on rehabilitating and developing power infrastructure and promoting key policy and institutional reforms. A stand alone advisory TA on institutional strengthening of MWP has been included in the 2003–2005 CSPU and will be processed in 2004.

### III. THE TECHNICAL ASSISTANCE

#### A. Purpose and Output

7. The purpose of the project preparatory TA is to support the Government’s strategy for poverty reduction through economic growth by assisting the preparation of a national power transmission grid project to interconnect the northwestern power system with the northern and central power systems, thereby improving system stability and security, reducing losses, and improving the reliability of supply in the interconnected power systems. The project will supply the provinces of Badghis, Faryab, and Jawzjan which currently are not electrified from a grid.

8. In particular, the project will provide for approximately 800 kilometers of double circuit 220 kV line from Mazar Sharif to Herat, including the rehabilitation and upgrade to 220 kV of the existing 142 kilometers of single-circuit line 110 kV transmission line from Mazar Sharif to Shebergan (Jawzjan), with new 220/20 kV substations at Andhoy, Maimana, Qala-e-Naw, and Shebergan. At Mazar Sharif and Herat, the 220 kV transmission line will connect into existing 220 kV substations. The project will include a component to develop an NLDC in Kabul to facilitate economic dispatch of generation and power imports from neighboring countries.

<sup>3</sup> ADB. 2002. *Proposed Technical Assistance Cluster to the Islamic State of Afghanistan for Capacity Building for Reconstruction and Development*. Manila. (Subcluster 3D: Capacity Building and Training of Ministry of Water and Power, and Subcluster 3E: Study for Power Interconnection for Regional Trade)

<sup>4</sup> ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Afghanistan for the Postconflict Multisector Program*. Manila.

## **B. Methodology and Key Activities**

9. Key activities to be undertaken under the TA cover four major areas: (i) compliance with ADB's safeguard policies; (ii) economic and financial evaluations; (iii) linkage among economic growth, poverty, and the power sector; and (iv) technical project design.

10. To ensure compliance with ADB's safeguard policies for the environment and involuntary resettlement, field surveys will be undertaken to identify any environmental impacts and to prepare a full inventory of all land and project-affected households. The surveys will be conducted along the planned alignment of the new transmission lines, the sites of new associated substations and NLDC, and the necessary access roads. Necessary mitigation measures, the most suitable implementation arrangements, and costing of the mitigation measures will also be determined. An initial environmental examination will be undertaken and an environmental impact assessment will be prepared if significant adverse environmental impacts might arise from the construction of new transmission lines, NLDC, and substations. A full resettlement plan will be prepared if the temporary and permanent loss of productive means for affected people might be significant. The project is not expected to cause any specific cultural or social impact on any socioeconomic group, including indigenous peoples, or exclude any group from benefiting from the proposed investment project. The proposed project will lead to an improved quality of life and less dependence on polluting diesel generators, leading to improved environmental conditions.

11. The TA will provide a financial and economic analysis of the envisaged project, and will enhance the financial management capabilities and the financial performance of the executing and implementing agencies. The TA will analyze the economic subsidies involved in the current tariff structure and the extent of cross-subsidization between major consumer groups (and regions, if any). The costs of unserved energy due to unreliability of the system will be estimated; and several scenarios for the load growth forecast will be developed.

12. For finalization of the technical project design, load forecasts will be reviewed in detail with a view to ensuring least-cost technical design and economic viability of the envisaged project. Although the recent World Bank-financed Power Sector Master Plan Study has indicated that the proposed transmission project is technically (and economically) viable, detailed power system analyses will be carried out to verify the technical viability in terms of system stability and reactive power requirements. The supervisory, control, and data acquisition (SCADA) requirements will be studied and an appropriate design adopted for the NLDC.

13. To analyze the way in which the envisaged project is linked to poverty reduction, a poverty analysis will be undertaken using data collected from field consultations. The assessment will be carried for direct, indirect, and macroeconomic effects. Particular attention will be paid to the affordability of upfront connection charges and monthly bills. Indicators for benefit monitoring will also be prepared. Appendix 1 provides the summary initial poverty and social analysis.

## **C. Cost and Financing**

14. The total cost of the TA is estimated at \$900,000 equivalent, of which the foreign exchange cost is \$620,000 and the local currency cost is \$280,000 equivalent. The Government has requested ADB to finance \$750,000 equivalent, comprising the entire foreign exchange cost and a portion of the local currency cost amounting to \$130,000 equivalent. The TA will be

financed on a grant basis by ADB's TA funding program. The Government will finance the remaining \$150,000 equivalent of local currency costs through in-kind contributions of MWP, the Executing Agency. The contributions will include office accommodation and facilities, local communication, counterpart staff, data, and other information needed for the TA. Detailed cost estimates are provided in Appendix 2. The Government has been advised that approval of the TA does not commit ADB to finance any ensuing project.

#### **D. Implementation Arrangements**

15. MWP will be the Executing Agency for the TA. The TA consultants will work closely with MWP and DABM, and will have full access to all documents and data required for implementing the TA. MWP will nominate a core group to work as counterpart staff with the TA consultants, and provide counterpart funds and staff for field visits. MWP will also provide all necessary assistance to the TA consultants in liaising with other government ministries and agencies and with provincial authorities, and in obtaining necessary data and documentation from these ministries, agencies, and provincial authorities. In addition, MWP will liaise with the provinces affected by the envisaged project to ensure nomination of counterpart staff before fielding the TA consultants. The consultants will organize training workshops in Kabul and provide hands-on training to the counterpart staff as part of capacity building and technology transfer.

16. The TA will require about 43 person-months of consulting services (20 international and 23 domestic) and will be implemented over 6 months, starting in about July 2004 and finishing in January 2005. Outline terms of reference for the consultants are in Appendix 3. The international consultants will have expertise in project and energy economics and macroeconomic modeling, financial analysis and financial management, power system planning, transmission analysis and design, SCADA, environmental impact assessment, resettlement, poverty analysis, and other social issues. ADB will engage a consulting firm or a consortium of firms in accordance with its *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for engaging domestic consultants. Consultants will be recruited under the quality- and cost-based selection procedures, and simplified technical proposals will be requested. International consultants will procure the equipment to be financed under the TA in accordance with ADB's *Guidelines for Procurement*, through direct purchase procedures with quotations from at least three suppliers.

17. The consultants will submit an inception report focusing on the work program, not later than 2 weeks after their services begin, an interim report 2 months after inception, and a draft final report will be submitted 4 months after inception. Tripartite meetings will be held in Kabul to discuss the inception, interim, and draft final reports. At the initial stage of TA implementation, a workshop will be held to discuss the work to be undertaken by the consultants and ADB's requirements related to environment protection and resettlement. The consultants will prepare status reports for their specific scope of works, highlighting any issues that could become critical to the timely completion of the TA. Within 3 weeks after the tripartite meeting to discuss the draft final report, the consultants will submit a final report, in a format acceptable to ADB and incorporating all comments received from the Government and ADB.

#### **IV. THE PRESIDENT'S DECISION**

18. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of \$750,000 on a grant basis to the Islamic Transitional Government of Afghanistan for preparing the National Power Transmission Grid Project, and hereby reports this action to the Board.

## SUMMARY INITIAL POVERTY AND SOCIAL ANALYSIS

<b>A. Linkages to the Country Poverty Analysis</b>	
Sector identified as a National Priority in Country Poverty Analysis? <span style="float: right;">Yes</span>	Sector identified as a National Priority in Country Poverty Partnership Agreement (PPA)? <span style="float: right;">No PPA yet</span>
<p><b>Contribution of the sector/subsector to reduce poverty in Afghanistan</b></p> <p>Much of Afghanistan's electric power infrastructure was damaged and/or destroyed during 20 years of war. War also prevented new investments from being made. Reestablishing and restoring electric power infrastructure is critical for the revival and resumption of economic activities, which could create employment, generate income, and improve security and stability. The poor, who constitute the majority of the population of Afghanistan, will benefit directly through job opportunities for unskilled and semiskilled laborers during the reconstruction of electric power infrastructure facilities. The proposed national power transmission grid project will also provide social and economic opportunity to the beneficiaries, particularly the poor, that will help reduce poverty.</p>	
<b>B. Poverty Analysis</b>	<b>Proposed Classification: Poverty Intervention</b>
<p><b>What type of poverty analysis is needed?</b></p> <p>Poverty analysis will use existing surveys and provincial data combined with consultations in the field, and will include a poverty profile for project areas and an assessment of direct, indirect, and macroeconomic impacts. Mechanisms through which the poverty and vulnerability of the near poor are reduced and how reduction takes place, together with key assumptions and risks, will be summarized in a matrix to give an overview of the distributional impacts across key socioeconomic groups and consumers, households, businesses, and public sector institutions such as hospitals and health clinics. Poverty analysis will comprise an assessment of the transmission and distribution project, and an assessment of the impacts on existing and new consumers. The analysis will also determine the affordability of connection costs and other up-front charges and tariffs.</p> <p><b>Direct Effects on Poverty</b></p> <p>The analysis will establish a poverty and vulnerability profile, examine the impacts of direct access to electricity, and assess the affordability of up-front charges and tariffs. The study will be based on a review of existing data and studies, complemented by consultations with consumers in the proposed project areas.</p> <p><b>Indirect Effects on Poverty</b></p> <p>The study will include a review of the impact on development aspects, interlinking the effects of increased power supply with sectoral growth patterns and employment on poverty in the identified target provinces. It will use provincial data, sectoral data, and socioeconomic surveys. It will examine the impact potential of sectoral growth patterns, absorption of unskilled versus skilled labor, and implications for income and income source diversification for households across socioeconomic groups. It will pay particular attention to sectoral shifts in production activities, agricultural productivity, the ability of the poor to benefit from job opportunities, the level of need for unskilled labor in job opportunities, migration, and the sustainability of poverty reduction effects.</p> <p><b>Macroeconomic Effects on Poverty</b></p> <p>The study of macroeconomic effects will focus on the impact of the project on power consumption patterns, the type of economic growth that the proposed project supports, its effects on geographic income/expenditure disparities, and the sustainability of poverty reduction. The study will include an analysis of the constraints that specific groups of the poor and vulnerable may face in benefiting from economic growth. The analysis will be based on geographic growth patterns across sectors and other relevant key macroeconomic variables over time, combined with poverty and social indicators derived from socioeconomic surveys.</p>	

<b>C. Participation Process</b>			
<p>The project design will be developed through stakeholder consultations. Community consultation will be carried out to determine selection priority including engineering solutions to minimize resettlement impacts, if any. Based on the technical requirements, opportunities for local communities, particularly displaced populations and ex-combatants, to work on the civil works such as earthworks will be incorporated.</p> <p><b>Stakeholder Analysis</b>  A stakeholder analysis will be an integral part of the economic (distributional), poverty, and resettlement assessments. The analysis under the economic and poverty assessments will be mainly descriptive and qualitative to assess the distribution of expected costs and benefits. For transmission line routings, consultations with people, local communities, local institutions, and government organizations in affected areas will be undertaken. The project preparatory technical assistance (TA) will include a design for a full participation strategy to be applied before and during the construction period. The strategy will include the design for disclosure of public information about the project scope, schedule, impacts and entitlements, grievance procedures, and consultation and participation when planning and implementing resettlement. Local authorities need to assign counterpart staff to work with the consultants during the TA.</p>			
<b>D. Potential Issues</b>			
<b>Issue</b>	<b>Significant/ Not Significant/ Uncertain/ None</b>	<b>Strategy to Address Issues</b>	<b>Plan Required</b>
Resettlement	Uncertain	The national load dispatch center and new transmission lines, substations, lines routes, and towers will be designed in consultation with local authorities and people residing in the affected areas to avoid sensitive areas such as settlements, national parks, forests, holy places, etc.	Not known
Gender	Uncertain	The implementing agency will ensure that women and men are given equal opportunities for employment on the project. Contractors will be required to ensure equal payment for equal work. The supervision consultant will monitor these actions.	A specific clause will be included in the bidding documents.
Affordability	Not significant	The impact of improved power infrastructure facilities on affordability to consumers will be monitored. Special provisions for connections may be required.	None
Labor	Not significant	Employment opportunities within the project will be available equally to all, on the basis of professional competence, irrespective of gender, ethnicity, or religion.	None
Indigenous People	None	No indigenous people and communities will be negatively affected by the Project.	None
Other Risks/ Vulnerabilities	Institutional Capacity	The capacity of the implementing agency to address social dimensions, particularly social safeguard policies, is very inadequate. A TA cluster for capacity building for reconstruction and development for Afghanistan was approved in 2002. One of its components is to strengthen key infrastructure agencies in ensuring social safeguard policies and incorporating social dimensions in developing power sector projects.	TA

**COST ESTIMATES AND FINANCING PLAN**  
(\$'000)

Item	Foreign Exchange	Local Currency	Total Cost
<b>A. Asian Development Bank Financing<sup>a</sup></b>			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	400	0	400
ii. Domestic Consultants	0	36	36
b. International and Local Travel <sup>b</sup>	80	10	90
c. Reports and Communications	5	3	8
2. Equipment including Computer Hardware and Software <sup>c</sup>	15	0	15
3. Workshops and Training	15	10	25
4. Technical and Socioeconomic Surveys	0	20	20
5. Vehicle Hire	0	20	20
6. Miscellaneous Administration and Support Costs for the Consultants	20	14	34
7. Contract Negotiations <sup>d</sup>	5	0	5
8. Contingencies	80	17	97
<b>Subtotal (A)</b>	<b>620</b>	<b>130</b>	<b>750</b>
<b>B. Government Financing</b>			
1. Office Accommodation	0	50	50
2. Counterpart Staff	0	60	60
3. Others	0	40	40
<b>Subtotal (B)</b>	<b>0</b>	<b>150</b>	<b>150</b>
<b>Total</b>	<b>620</b>	<b>280</b>	<b>900</b>

<sup>a</sup> Financed by ADB's technical assistance funding program.

<sup>b</sup> Includes domestic air and land travel costs of international and domestic consultants.

<sup>c</sup> Includes office hardware (a photocopier, four desktop computers, and a printer) and computer software for word processing, spreadsheet analysis, and Internet access.

<sup>d</sup> Cost related to participation of one Government official as observer during contract negotiations.

Source: Asian Development Bank estimates .

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

### A. Scope of Work

1. The scope of work of the technical assistance (TA) consultants will cover four major areas: (i) compliance with the Asian Development Bank's (ADB) safeguard policies; (ii) economic and financial analyses; (iii) linkage among economic growth, poverty, and the power sector; and (iv) technical project design. The consultants' terms of reference will include, but not necessarily be limited, to the following tasks. The length of service in person-months for each role is shown in parentheses.

#### 1. Team Leader and Transmission Line Engineers (4.5 person-months international, 4.0 person-months domestic)

2. The consulting firm will appoint a team leader who will be the focal point for all communication with the Government, the Ministry of Water and Power (MWP) as the Executing Agency, and ADB and will be ultimately responsible for all deliverables. The team leader will coordinate with the Government and other development partners to ensure no duplicate work is done, and to prepare a matrix of work being undertaken in the power sector by external aid agencies. In addition, the team leader will prepare (in line with ADB's *Guidelines for Procurement*) the expected procurement packages, draft bidding documents for procurement of goods and works, and draft invitation documents for recruitment of implementation consultants.

3. The transmission line engineers will undertake the following tasks, including preparation of relevant sections of the Report and Recommendation of the President to the Board of Directors (RRP).

- (i) In consultation with MWP and Afghanistan Electricity Authority (DABM), carry out a visual survey of the proposed 220 kV transmission lines and prepare a conceptual design. The design should follow the same technical standards, with respect to line, protection, and communication design parameters established for other recent projects.
- (ii) Undertake power flow and system analysis of the proposed integrated system to confirm technical parameters and to enhance system reliability.
- (iii) Assess the unexploded ordnance risk within the right-of-way for the transmission lines and access paths to substations, in liaison with the United Nations agency concerned.
- (iv) Prepare detailed specifications, lists of materials equipment, and construction works necessary for the complete project scope, and estimate their costs separated into foreign and local cost components.
- (v) Outline project implementation, procurement, and construction arrangements, including contract packaging and an implementation schedule; assess the capability of the MWP's construction unit to assist in the implementation.

#### 2. Substation Engineers (2.0 person-months international; 3 person-months domestic)

4. The substation engineers will undertake the following tasks, including preparation of relevant sections of the RRP.

- (i) In consultation with MWP and DABM, prepare conceptual designs for new 220/20 kilovolt (kV) substations at Andhoy, Maimana, Qala-e-Naw, and Shebergan; and additional bays at existing Mazar Sharif and Herat substations to provide for the new north-to-northwest transmission interconnector.
- (ii) Prepare detailed specifications, lists of materials equipment, and construction works necessary for the complete project scope, and estimate their costs separated into foreign and local cost components.
- (iii) Assess the specific manner in which prospective project system assets will be managed, operated, and maintained by MWP and DABM, by using their evolving institutional capacity.
- (iv) Prepare a terms of reference for consulting services required for the prospective project implementation.

**3. Supervisory, Control and Data Acquisition Engineer** (3 person-months international)

5. The engineer will undertake the following tasks, including preparation of relevant sections of the RRP.

- (i) Carry out a feasibility study to develop a national load dispatch centre (NLDC) in Kabul. The NLDC should ultimately be responsible for operating the future national power transmission grid at 110 kV and above, including major generation and cross-border supplies.
- (ii) In consultation with MWP and DABM, the engineer will identify possible sites for the NLDC in Kabul, and prepare the scope of work and estimated costs, separated into foreign and local cost components, needed to implement the complete NLDC project scope, including associated remote terminal units at existing and planned grid substations throughout Afghanistan.
- (iii) Prepare a terms of reference for consulting services required for the prospective project detailed design, building construction, equipment procurement and implementation.

**4. Financial Analysts** (1.5 person-months international; 2 person-months domestic)

6. In accordance with *Guidelines for the Financial Governance and Management of Investment Projects Financed by the Asian Development Bank (2001)*, the financial analysts will undertake the following tasks, including preparation of relevant sections of the RRP.

- (i) Prepare cost estimates including physical and price contingencies and interest during construction.
- (ii) Carry out in-depth financial analysis of the proposed investment (and any defined subprojects), including calculation of the financial internal rate of return (IRR) and weighted average cost of capital, taking into account all the financial costs and benefits of the proposed Project. Identify all risks to project revenue and costs and conduct relevant sensitivity analyses on the financial results. Prepare an appendix of the project financial analysis to be included in the RRP.
- (iii) Prepare a financing plan for the Project, including proposed ADB lending, any prospective cofinancing, and appropriate counterpart funds for local currency expenditures.

- (iv) Identify the specific sources and projection of revenue from the Project, which will ensure the financial viability of the Project, also taking into account the reduction of system losses (both technical and nontechnical) and any improvements in operational efficiency. Prepare financial projections, income statement, balance sheet and projected cash flow statement.
- (v) Undertake a financial management assessment of MWP, including planning and budgetary control, financial and management accounting practices and procedures, internal control and auditing. Suggest appropriate financial covenants to monitor financial soundness of DABM.

**5. Project Economists** (2 person-months international, 2 person-months domestic)

7. In accordance with ADB's *Guidelines for Economic Analysis of Projects*, the project economists will undertake the following tasks, including preparation of relevant sections of the RRP.

- (i) Conduct an economic and distributional evaluation of the Project by comparing with-and without-project cases for different load growth scenarios. Include calculation of the economic IRR, taking into account economic costs and benefits.
- (ii) Identify risks and undertake appropriate risk and sensitivity analyses with respect to economic IRR in accordance with ADB's *Handbook for Integrating Risk Analysis in the Economic Analysis of Projects*.
- (iii) Identify stakeholders and conduct a distributional analysis of net project benefits in accordance with ADB's *Handbook for Integrating Poverty Impact in Economic Analysis for Projects*. Calculate the poverty impact ratio and the cost effectiveness of the Project in reducing poverty, and undertake appropriate risk and sensitivity analysis with respect to the poverty impact ratio.
- (iv) In close cooperation with the project team and MWP, establish and develop a database and project performance management system with adequate and quantifiable time-bound indicators and relevant baseline data for benefit monitoring and evaluation.
- (v) Prepare, according to ADB standards, a project framework that clearly identifies the goals and objectives of the proposed project, required inputs, targets or benchmarks, monitoring mechanisms, potential risks, and assumptions.
- (vi) Identify the main issues of the present electricity tariffs, including the tariff setting mechanism, efficiency of current tariff structure/level, and the main barriers to tariff reforms.
- (vii) Recommend measures to remove the barriers to tariff reforms and propose a new tariff structure/level to improve DABM's financial position.

**6. Environmental Specialists** (2 person-months international; 3 person-months domestic)

8. In accordance with the relevant guidelines and policies for environmental assessment, the environmental specialists will undertake the following tasks, including preparation of relevant sections of the RRP:

- (i) Conduct an initial environmental examination (IEE) for the transmission line rights-of-way and substation and NLDC sites, taking into account the likely

- impacts associated with their locations, designs, and construction activities, as well as the long-term impacts during operation.
- (ii) Recommend appropriate environmental mitigation measures for identified significant impacts and monitoring plans to address the impacts. Assess the environmental benefits of the proposed activities and any capacity-strengthening measures that may be needed for the implementation of environmental management and monitoring plans.
  - (iii) Prepare an IEE report and its summary based on the environmental assessment requirements of ADB's *Environmental Guidelines for Selected Infrastructure Projects*, ADB's *Environmental Assessment Guidelines* and any applicable procedures or guidelines for environmental assessment as required by the Government.
  - (iv) Prepare an environmental impact assessment and its summary if the IEE shows significant adverse environmental impacts may arise from the construction of new transmission lines, substations and the NLDC.
  - (v) Ensure that the costs for implementation of recommended mitigation measures, environmental management and monitoring plans, and any capacity strengthening measures, are included in the proposed Project's development costs.

**7. Poverty Analysts** (3 person-months international; 3 person-months domestic)

9. In accordance with ADB's *Handbook on Poverty and Social Analysis* and *Handbook for Integrating Poverty Impact in Economic Analysis of Projects*, the poverty analysts will analyze the social, poverty, and development impact of the ensuing proposed and undertake the following tasks, including preparation of relevant sections of the RRP.

- (i) Conduct field surveys and prepare a socioeconomic and poverty profile of primary project beneficiaries in the target provinces. Clearly identify direct and indirect benefits to different consumer categories. Develop poverty and social maps based on primary and secondary data. Provide quantitative and qualitative data to substantiate the profiles of the beneficiaries.
- (ii) Based on initial findings and in consultation with the project team, determine if the project is appropriate to be classified as core poverty intervention, and give in the sa rationale for the classification. Coordinate with the team to ensure poverty targeting is feasible and appropriate mechanisms are built into the design and describe the procedure. If the core poverty intervention classification is accepted, carry out a distributional analysis in consultation with the project economic analyst.
- (iii) Analyze (a) access to electricity, current energy sources, costs and usage; (b) affordability of tariffs, monthly payments, up-front connection costs, consumption levels; and (c) consumer satisfaction for poor and near-poor households in target provinces.
- (iv) Analyze the interlinkage with increased power demand and implications for sector change and employment generation for the poor.
- (v) In coordination with the project economists, prepare a project performance management system, including adequate quantifiable time-bound indicators and relevant baseline data for monitoring and evaluating social and poverty impact benefits. Maintain a database on data collected, and ensure that questionnaires include questions that can be used for benefit monitoring and evaluation.
- (vi) Prepare a summary poverty and social analysis according to the ADB format.

**8. Resettlement Specialists** (2 person-months international; 6 person-months domestic)

10. In accordance with ADB's *Policy on Involuntary Resettlement* and *Handbook on Resettlement*, the resettlement specialists will undertake the following tasks, including preparation of relevant sections of the RRP.

- (i) In accordance with the relevant ADB guidelines and publications, and the requirements of the Government, identify and prepare socioeconomic profiles (20% sample survey) of the project-affected communities. Carry out field surveys as necessary. Ensure that data is disaggregated by gender and vulnerable groups are identified. Include initial involuntary resettlement and indigenous people's checklists in the inception report.
- (ii) Determine if the Project will have any adverse impacts on indigenous peoples/ethnic minorities, and, if necessary, prepare an indigenous peoples' development plan in accordance with the ADB's policy on indigenous peoples.
- (iii) Undertake a full census and inventory of assets that may be lost (in terms of loss of homes, agricultural and other lands; or access to current income-generating activities, including impacts caused by permanent or temporary acquisition) of affected people and a baseline socioeconomic survey of the affected population.
- (iv) Prepare an entitlement matrix listing all likely effects, permanent and temporary, and a study to determine the replacement costs of all categories of losses. Prepare an indicative, itemized budget for land acquisition and resettlement costs with specific sourcing and approval process.
- (v) If the Project is likely to involve significant<sup>5</sup> resettlement, prepare a resettlement plan with full participation of stakeholders and the executing and implementing agencies. Prepare a short resettlement plan if the resettlement aspects of the Project are classified as not significant. Ensure project-affected persons and local nongovernment organizations are fully informed and consulted about the Project and its impacts, and work with the Government to determine the most suitable mechanism for disclosure of resettlement plans.
- (vi) If more than 200 people are affected, prepare a detailed resettlement plan and a summary resettlement plan for the RRP. Prepare an indigenous peoples development plan, if required.

**B. Reporting**

11. The consultants will submit an inception report focusing on the work program, not later than 2 weeks after their services begin, an interim report 2 months after inception, and a draft final report will be submitted 4 months after inception. Tripartite meetings will be held in Kabul to discuss the inception, interim, and draft final reports. At the initial stage of TA implementation, a workshop will be held to discuss the work to be undertaken by the consultants and ADB's requirements related to environment protection and resettlement. The consultants will prepare status reports for their specific scope of works, highlighting any issues that could become critical to the timely completion of the TA. Within 3 weeks after the tripartite meeting to discuss the draft final report, the consultants will submit a final report, in a format acceptable to ADB and incorporating all comments received from the Government and ADB.

<sup>5</sup> Resettlement is "significant" where 200 or more people experience major impacts. Major impacts are defined as when the affected people are physically displaced from housing and/or more than 10% of their productive assets (income generating) are lost.