

**Afghanistan Reconstruction Trust Fund Proposal  
Afghanistan Power System Development Project  
(September 25, 2008)**

<b>Applicant:</b>	Islamic Republic of Afghanistan (IRoA)
<b>Brief Description:</b>	<p>Islamic Republic of Afghanistan has requested ARTF funds for supporting the following power system development projects:</p> <ul style="list-style-type: none"> <li>i) Rehabilitate and augment the medium and low voltage distribution network in Aybak, Pul-e-Khumri, Charikar, Gulbahar, Jabul-Seraj, Doshi and Khenjan towns, located on North East Power System.</li> <li>ii) Rehabilitation of the transmission switchyards associated with Naghlu, Mahipar and Saroubi hydropower projects for reliable transmission of power generated from these plants to Grid.</li> <li>iii) Institutional capacity building of the executing agencies; project management support; establishment of a unit for promotion of Energy efficiency and Demand Side management; implementing some pilots; and collection of baseline energy usage information for the urban centers under the project.</li> </ul> <p>Following a programmatic approach to rehabilitating and expanding the Afghanistan power system, this proposed project builds and complements the investments made under the ARTF funded Kabul-Aybak-Mazar-e-Sharif Power Project approved in October 2007 (TF 091120) and the IDA Emergency Power Rehabilitation Project (EPRP) approved in June 2004.</p>
<b>Project Development Objective:</b>	The development objective of the project is to support : Increasing access to grid power and the quantity of available power to the consumers in the target areas of the urban centers at Aybak, Pul-e-Khumri, Charikar, Gulbahar, Jabul-Seraj, Doshi and Khenjan.
<b>Performance Indicators</b>	<ul style="list-style-type: none"> <li>a) Increase in electricity access rate in Charikar, Aybak, Doshi, Gulbahar and Jabul-Seraj (% of households).</li> <li>b) Increase in power supply quantity to project areas in Aybak; Pul-e-Khumri; Charikar, Gulbahar and Jabul-Seraj (in MWh).</li> <li>c) Initiation of the energy efficiency promotion activities in Afghanistan.</li> </ul>
<b>Sector:</b>	Infrastructure and Natural Resources, Power Sector
<b>Location:</b>	Samangan (Aybak), Baghlan (Pul-e-Khumri, Doshi, Khenjan), Parwan (Charikar, Gulbahar and Jabul-Seraj) and Kabul (Hydro Power Generating stations) provinces

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<b>Total Project Cost:</b>	The funds requirement for the complete rehabilitation of the distribution system and provision of power to all the potential consumers in these towns would be very large. At this stage the estimated funding is 61 million USD, with 1 million co-financing from IDA funded EPRP.
<b>Amount Requested for ARTF MC Approval</b>	<p>The proposal is to seek ARTF MC approval for \$ 60 million funding for the above power projects. The funds are requested in two phase. Phase-I USD 35 million to cover Pul-e-Khumri, Charikar, Gulbahar &amp; Jabul-Seraj distribution networks; establishing energy efficiency cell at MEW; and corresponding Project Management support.</p> <p>The balance activities for which preparation would be started immediately after the phase-I, shall be covered when the balance USD 25 millions are made available. The details of these phases are available in the proposal.</p>
<b>Implementing Agency</b>	Ministry of Energy and Water (MEW)
<b>Implementing Period:</b>	The implementation period of the phase-I activities of the project is estimated to be 42 months (by January, 2012), including the time required to support hands on operation and maintenance training after completion of investments. The grant closing date would be July 31, 2012 (six months after completion of project activities).
<b>Implementation Arrangements</b>	Existing implementation arrangements under EPRP which have been satisfactory to IDA will be used. More detail can be found in the document.
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<b>Reviewed and Cleared by the Administrator</b>	Loan Department; Legal Department; Country Management and Sector Management Units

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## Afghanistan Power System Development Project

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### Acronyms & Abbreviations

ADB	Asian Development Bank
AISA	Afghanistan Investment Support Agency
ANDS	Afghanistan National Development Strategy
APSDP	Afghanistan Power System Development Project
ARTF	Afghanistan Reconstruction Trust Fund
CASA	Central Asia and South Asia (Electricitytrade project)
CASAREM	Central Asia South Asia Regional Energy Market
CDD	Community Driven Development
CEO	Chief Executive Officer
DA	Designated Account
DABM	Da Afghanistan Breshna Moassasa
DABS	Da Afghanistan Breshna Shirkat
DSM	Demand Side Measures
EC	European Commission
EE	Energy Efficiency
EIRR	Economic Internal Rate of Return
EPRP	Emergency Power Rehabilitation Project
ESMAP	Energy Sector Management Assistance Program
FM	Financial Management
FMA	Financial Management Advisor
GoA	Government of Afghanistan
GoI	Government of India
GSM	Global System for Mobile
IBRD	International Bank for Development
ICB	International Competitive Bidding
ICE	Inter Ministerial Commission on Energy
IDA	International Development Association
IMF	International Monetary Fund
IRoA	Islamic Republic of Afghanistan
KfW	Kreditanstalt Für Wiederaufbau (German Development Bank)
kV	Kilo Volt ( a unit of electricity voltage) = 1000 Volts
LV	Low Voltage (400 Volts)
MC	Management Committee
MEW	Ministry of Energy and Water
MOF	Ministry of Finance
MRRD	Ministry of Rural Rehabilitation and Development
MV	Medium Voltage ( 20 kilo Volts)
MW	Mega Watt (unit of Power) = Million Watts
MWh	Mega watt hour ( Unit of Energy) = 1000 kilo Watt hour
NEPS	North East Power System
OPGW	Optical Fiber encapsulated in Ground Wire
PCB	Poly Chlorinated Biphenyls
PEFA	Public Expenditure and Financial Accountability
PFM	Public Financial Management
ROW	Right of Way
SDU	Special Disbursement Unit

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SOEs  
TF

Statement of Expenses  
Trust Fund

## **I. STRATEGIC CONTEXT AND RATIONALE**

### **A. Key Development Issues**

1. The poor condition of Afghanistan's power sector is severely constraining the development of the country. The prevailing service consists of only a few hours of supply a day to a small percentage of population which has access to the power grid. The situation worsens in winter, when the generation from hydropower resources drops due to reduced inflow of water. There is a huge demand-supply gap in all areas<sup>1</sup> in Afghanistan which have some access to electricity. The larger towns situated on national highways are growing fast and have the potential to become economic hubs in future. All these areas inherited a dilapidated power distribution networks and limited power supply. Lack of power supply is a major impediment to country's development and stimulating economic growth. Providing reliable and better quality power is critical for achieving the country's development goals of poverty alleviation and economic growth. Besides, the lack of power has a negative impact on the credibility of the Government's infrastructure delivery program, an important building block for post conflict state-building.
2. As per the Afghanistan national development strategy (ANDS) finalised recently by the Government of Islamic Republic of Afghanistan (GoA), the development of the energy sector is a key requisite for reducing poverty and stimulating private sector and rural development. The *ANDS core targets over the medium-term, for the power sector, is for the electricity supply to reach at least 65 percent of households and 90 percent of non-residential establishments in major urban areas and at least 25 percent of households in rural areas.*
3. While several projects to rehabilitate and expand the country's generation and transmission facilities are in progress, commensurate investments for distribution systems are yet to take place. The current situation of inadequate power supply is likely to continue for some time, even for areas where investments in generation and transmission have been ongoing. Large proportion of existing consumers have switched fully or partially to electricity from stand-alone diesel generators which, in addition to being substantially more expensive (and therefore undermine Afghanistan's competitiveness, investment climate, economic growth and job creation), are a source of local and global pollution.
4. The need for investments in the power sector is very large. Improvement of distribution systems in major urban areas of Afghanistan would also need large investments. GoA has placed a very high priority on improving the availability and quality of power supply, taking into account regional dimensions. In view of the funding constraints and large investment needs, GoA has decided to initially pick major urban areas on the transmission grid planned under the North East Power System (NEPS) and to roll-out improved services across the large urban areas in Afghanistan located close to the transmission grid.
5. The system transmission and distribution losses and the power generation costs (with significant proportion from diesel based thermal) are high and the collections are low. The situation is better in areas where the power is imported from the neighbouring countries and the consumers are paying tariffs based on recovery of the operating cost. Similar situation prevail

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<sup>1</sup> Situation is slightly better in the boarder towns like Herat, Mazar and Kunduz, which receive imported power from the neighboring countries (Turkmenistan, Iran, Uzbekistan and Tajikistan),

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in some other towns, where diesel based power is generated locally and paid by the consumers. The tariffs for most of the Kabul consumers, which constitute about one third of the total consumer base of the state-owned electricity utility Da Afghanistan Breshna Moassasa (DABM), do not cover the cost of power supply. The situation will become more critical, once commercial agreements for import of power are in place and part of future investments are required to be refinanced by the utility.

6. DABM has inherited a very weak governance structure, with inadequately skilled employees who are paid very low salaries. The motivation level of the employees is very low, limited controls and checks in place impede decision making, and information for operational management is absent. The financial statements were never prepared in the past two decades and there is no forward planning process in place. Consumers, even those ready to pay fair prices for electricity, find the DABM difficult to deal with in solving their power supply problems. The power supply hours/ load shedding timings are uncertain, quality of power is poor, and there are no consumer care centres.
7. Government and Donors all agree to the critical need for the electricity utility to operate under commercial principles, to be consumer responsive and to have a motivated management and workforce to achieve the challenging goals set for this sector. GoA has taken key steps to restructure the electricity utility through corporatization of DABM. The newly corporatized utility is Da Afghanistan Breshna Shirkat (DABS), creation of which was ratified by the Cabinet of Ministers in March, 2008. A high ranking Board of Directors, comprising four Cabinet Ministers and head of Afghanistan investment promotion agency AISA, and an interim Chief Executive Officer have been appointed to facilitate the transition from DABM to DABS. The corporatized Utility is planned to be brought under a new management structure with market-based staff salaries.
8. One of the biggest challenges facing DABS is scarcity of skilled Afghan manpower. Discussions are going on among all stakeholders to build a strategy to meet this challenge. DABS would be Government's priority for creating a sustainable organization structure with market referenced salaries to attract good skills and moulding the new organization to suit its long term vision and mandate. With limited local capacity the sector structure would need to be cautiously designed and developed, as it would be very difficult to attract skilled and qualified persons for most of the positions, and most of the country's institutions are in the very initial phases of development. In the medium term, unbundling of the electricity utility or even creation of an independent electricity regulator would be difficult to pursue and establish. In the beginning, DABS would be an integrated entity with provision to organize its functions and cost sharing with sufficient flexibility for implementing possible additional reforms in the future.
9. Establishment of an appropriate information system for better accountability of DABS is a priority. Devising a metering strategy to gather vital information at different levels (consumers, distribution transformers and feeders), using the latest technologies is under discussion with DABS and the consulting team. The aim would be to devise systems, which would work without much human interface, in view of the lack of human resources and possible mismanagement of information by the vested interests. The finalisation of the metering strategy and its implementation would be high on the agenda of DABS.
10. The power supply during peak and during winter season is expected to be largely from the diesel based generation plants, until the power imports arrangements for substantial winter power supply are functioning. The high marginal cost of diesel power (especially during peak

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time and winter peak season) and severe shortages would require substantial efforts for promotion of energy efficiency and demand side measures, which need to be introduced early on. The sector development being in its infancy, building energy efficiency, demand side management and clean energy into the core sector development strategy would be very critical at this stage.

### **B. Rationale for ARTF Involvement**

11. The building of power sector infrastructure in a war damaged country like Afghanistan is highly capital intensive and involves a difficult process. The investments for this key and most visible infrastructure are essential to stimulate economic growth, support a healthy private sector development and thus contribute to state-building. To date, bilateral donors, and ADB and IDA have provided funding support for power sector investments focusing on rehabilitation of old hydropower plants and construction of the trunk transmission system to enable evacuation of cheap power imports from the neighboring Central Asia countries. The details of past and ongoing engagements of the Donors in the power sector are provided at **Annex 6**.
12. For the generation/ transmission investments to generate full development impact, investments in distribution systems are urgently needed. ARTF has so far provided funding support for three projects in the power sector comprising: Improvement of Power Supply to Kabul ( US\$ 7.4 million, TF 052541); Rehabilitation of Naghlu Hydropower Plant, US\$ 20 million, TF 054718); and Kabul/Aybak /Mazar-e-Sharif Power Project ( US\$ 57 million, TF091120).

The distribution system rehabilitation component of the project builds on and supplements the ARTF-Kabul/Aybak/Mazar-e-Sharif Power Project (TF091120) and together they would help with providing electricity to the people of large urban areas with potential to accelerate the economic growth along the NEPS corridor. ARTF funding is being used for investments in areas where major complementary investments are complete/ under implementation. The success demonstrated by these ARTF funded projects shall help leverage more funds for the critical infrastructure development.

13. The proposed project also supports the ANDS core objectives of extending electricity access to the people of large urban areas in Afghanistan. The electrification and road access to these large urban areas will not only help these areas to realize the potential to become economic hub in future, but also in integration of these provinces with the visible national development and progress. Like several other countries, the provision of these key infrastructure services is considered to be a major sign of development in Afghanistan.
14. The rehabilitation of 110 kV substations associated with hydro power plants Naghlu, Mahipar and Saroubi, which are very old and partially damaged, would be essential for the reliable evacuation of power supply from these three large hydro power plants, as outage of the switchyards could put a large drain on GoA finances and thus could jeopardize several programs of the donors.
15. The project has proposed some distinctive features to take forward Afghanistan power sector development with inclusiveness of consumers/stakeholders being served and also preparing Afghanistan to contribute in the global agenda of Climate Change and low Carbon development path for the energy sector. A special effort will be made to understand the energy related need, expenses and expectation of the stakeholders and especially consumers to design a strategy to

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address some of those elements. A communication unit will be set-up at each project location managed by local Afghans to communicate with consumers and other stakeholders on the development in the project or provide opportunity to provide their suggestions. Similarly, an energy efficiency unit would be established in Ministry of Energy and Water (MEW) to prepare a strategy for integrating energy efficiency and demand side management in the core energy sector strategy. The unit would launch a campaign to promote and educate consumers on energy efficiency equipment and strategies and launch some pilots to demonstrate the impact.

More details on the power sector in Afghanistan and the Bank/ARTF engagement is provided at **Annex 1.**

## **II. PROJECT DESCRIPTION**

### **A. Project Development Objectives**

16. The development objectives of the project are to support an increase in access to grid power and in the quantity of available power to the consumers in the target areas of the urban centers at Aybak, Pul-e-Khumri, Charikar, Gulbahar, Jabul-Seraj and Doshi, Khenjan,. This will be achieved through (i) provision of grid connectivity to Charikar, Gulbahar, Jabul-Seraj, Doshi and Khenajn consumers, currently receiving power supply for a few hours a day through off-grid diesel/hydro generators; (ii) rehabilitation of the transmission switchyards associated with the largest three hydro power plants in Afghanistan- Naghlu, Mahipar and Saroubi; and (iii) augmentation of Pul-e-Khumri and Aybak medium and low voltage distribution network to cover more areas. The priority areas in each town will be agreed with DABM(S) and MEW, based on the critical needs of the distribution system assessed earlier by the consultants (M/s SMEC, Australia) funded under IDA EPRP project.
17. The project would also support setting up of a unit in MEW to promote energy efficiency and demand side management and implement some pilots. It is also planned to: (i) support the capacity building of the distribution utility (DABS) for planning, operation and maintenance of the distribution network, by hands-on, on-site training to be included in the project design; (ii) collect baseline energy usage information for building an understanding of the attitude of consumers for the reforms needed in the sector; and (iii) provide support to DABS for implementation of measures to improve the accountability of energy flows (through system and end-user metering) to facilitate the implementation of commercial improvement measures planned as part of the ongoing support for commercialization of the distribution operations of DABS.
18. For measurement of the outcome, following key indicators have been identified:
  - a) Increase in power supply to project areas in Pul-e-Khumri; Charikar, Gulbahar; Jabul-Seraj; Aybak\* and Doshi\*; (in MWh).
  - b) Increase in electricity access in Aybak\*, Pul-e-Khumri, Charikar, Gulbahar and Jabul-Seraj (% of households).
  - c) Initiation of the energy efficiency promotion activities in Afghanistan.

\*- These activities are proposed under phase-II of the funding and are subject to availability of these funds.

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19. The base line for these indicators and adequate monitoring arrangement to measure these indicators would be agreed and developed during project implementation and progress would be monitored on regular basis. Other intermediate indicators would be developed for better capturing the progress and performance, such as availability of the switchyards being rehabilitated, etc.

### **B. Project Components**

20. The project will have three components:

**Component A - Distribution System Rehabilitation:** This component will support investments for building new medium and low voltage system and installation of missing parts of the low and medium voltage distribution system in areas where network already exists. The main scope of the work would include supply and installation of distribution transformers, underground cables, overhead line materials, aerial bunched cables, protection and distribution equipment, meters and associated equipment, etc. The existing system in the target areas would be brought to the standard voltage system of 20 kV and would also be reorganized to optimize loading to reduce losses and provide satisfactory power supply voltage to the customers. The urban centers covered are those located on the North East Power System- Aybak, Pul-e-Khumri, Charikar, Gulbahar, Jabul-Seraj, Doshi and Khenjan.

**Component B – Rehabilitation of Transmission Switchyards associated with Naghlu, Mahipar and Saroubi hydropower stations:** This component will support investments for rehabilitation of the worn out switchyards at Naghlu and Mahipar associated with power transfer from Naghlu, Mahipar and Saroubi hydropower projects. These hydro power stations, which cover almost 75% of the total installed hydro power capacity in Afghanistan and are the most economical source of generation, feed Kabul and would also be connected to NEPS system when established. The scope would include rehabilitation of transmission switchyard at Naghlu and Mahipar and any other bottleneck in transmission/ protection system. The generating plant rehabilitation work is in progress and the associated transmission line has been rehabilitated.

**Component C - Institutional capacity building, project management support and establishing an Energy Efficiency Unit at MEW:** This component will cover support for:

- a) Establishment of a unit within MEW to promote energy efficiency and demand side measures, including implementation of some pilots, preparing and implementing a communication strategy for awareness among consumers;
- b) Training in operation and maintenance of the distribution/transmission system through hands on training;
- c) Baseline studies and communication with stakeholders;
- d) Project management and implementation support for these investments and other related activities.

The training will be provided to DABS personnel on site by the suppliers/ contractors and specialized trainers on the regular operation and maintenance of the facilities, detection and repair of faults to ensure reliable and quality power supply to the consumers.

The details are provided at **Annex 2**.

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**C. Project Costs by Components**

	<b>Phase-I USD million*</b>	<b>Phase-II USD million*</b>	<b>Total USD million*</b>
Component A - Distribution System Rehabilitation	27.5	10.5	38.0
Component B - Rehabilitation of Transmission Switchyards associated with Naghlu, Mahipar and Saroubi hydropower stations	0	10.0	10.0
Component C – Institutional capacity building, project management support and establishing an Energy Efficiency Unit at MEW	4.0	2.0	6.0
Physical and Price Contingencies	4.5	2.5	7.0
<b>Total Cost</b>	<b>36.0</b>	<b>25.0</b>	<b>61.0</b>
<b>Requested ARTF Financing</b>	<b>35.0</b>	<b>25.0</b>	<b>60.0</b>
Co financing from IDA credit (Cr. 3933-AF)	1.0	0	1.0
<b>Total Funding</b>	<b>36.0</b>	<b>25.0</b>	<b>61.0</b>

\* Taxes are included in the respective component cost.

Further details are provided at **Annex 3**.

**D. Economic Analysis**

21. A cost benefit methodology is adopted to establish the economic feasibility of the project. The investment components selected have high financial and economic viability, as explained below.

22. Component A- Distribution System Rehabilitation. The distribution system investments funded by ARTF (beginning with the US\$57 million Kabul Aybak Mazar-e-Sharif projects under TF091120) cover a significant portion (63%) of the population residing in cities as per the Central Statics Office data. These centers have been traditional industrial and commercial hubs, with large potential for economic development, creation of jobs and poverty reduction. Jabul-Seraj and Pul-e-Khumri house cement and cement products factories; Gulbahar had largest textile factory in Afghanistan, which is destroyed now; Charikar has several fruit processing centers and application for power connection from these factories is pending with the utility. These towns located on the main highway are growing very rapidly with development visible from the main road.

These areas are currently provided no power supply or for few hours maximum in a day. The alternative source for power generation is through inefficient diesel based and polluting small generators, for which the cost of generation is above 50 US cents per unit of power supply at current diesel prices. The current maximum tariffs in the centers covered under this project ranges from 16 to 40 US Cents. The power from Uzbekistan (the main source for these distribution centers) would be costing around US 10-12 cents including the distribution cost, which will have substantial financial and economic benefits to the consumers in the area.

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These investments provide the following benefits - (1) additional consumption to the existing consumers who receive only few hours of electricity per day and depend on expensive diesel generation to meet their household and commercial needs (2) energy sales to new consumers who will be connected to grid electricity. The additional energy estimated to be provided to the existing and new consumers would be around 62 MW. The economic cost is computed by netting out taxes and duties and physical and price contingencies from the capital cost. The O & M expenses are assumed to be 3% of the capital cost. This component produces a robust EIRR of 42% as compared to the opportunity costs of capital at 12% suggesting that this component will significantly improve the access and quality of power service delivery in Afghanistan.

23. Component B - Rehabilitation of Transmission Switchyards associated with Naghlu, Mahipar and Saroubi hydropower stations. The rehabilitation of the three large plants located in the East of Kabul (Naghlu, Mahipar and Saroubi) with total capacity of about 185 MW is under progress. One unit of Mahipar plant and both units of Saroubi have been rehabilitated. The switchyards, which are also very old and partially damaged during conflict, are yet to be rehabilitated. A single day's outage of these switchyards at full capacity would require the system demand to be met by expensive diesel plants and would cost around US\$ 2-4 million to purchase the fuel. The investment costs could be recovered in a week's time.

The investment for rehabilitation of the switchyards associated with the three main plants would ensure high availability of the evacuation system for very economical hydro power generation. Any outage in these switchyards would require the cheap hydro energy to be replaced by the expensive diesel power. The component produces a robust EIRR of 28% as compared to the opportunity costs of capital at 10%.

24. The scenario analysis suggests that the project is robust to situations such as cost escalation, implementation delays, and reduction in revenues.

	Distribution		Transmission	
	E-IRR (%)	E-NPV (Million \$)	E-IRR (%)	E-NPV (Million \$)
Baseline	42%	\$95.54	28%	\$23.69
Cost Escalation by 10%	38%	\$89.29	27%	\$22.69
Cost Escalation by 20%	34%	\$83.05	25%	\$21.59
Delay of 1 year	30%	\$77.79	24%	\$18.86
Delay of 2 year	24%	\$62.02	20%	\$12.97
Revenue decrease by 10%	38%	\$83.67	26%	\$20.32
Revenue decrease by 20%	34%	\$70.92	25%	\$16.95

### III. IMPLEMENTATION

#### A. Institutional Arrangements

25. The institutional arrangements for this project would follow the arrangements and systems established for the ongoing IDA Emergency Power Rehabilitation Project (EPRP) project<sup>2</sup> being implemented by the Ministry of Energy and Water (MEW), including the procurement and financial management systems. The technical aspects of the project will be coordinated

<sup>2</sup> Ministry of Energy and Water is implementing the Afghanistan EPRP (Cr 3933 and TF054718) project under which several systems and procedures have been set for implementation of the investments and technical assistance support.

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with MEW and DABM(S), who have agreed to nominate a core team for each investment project. The team will involve the corporate as well regional utility staff and will coordinate preparation of investment schemes, discussing design issues and identifying priority works.

26. For continuity, the services of the project management consultant, SMEC International (selected through international competitive bidding), are being used for the preparation of this project, to best utilize the synergies with the ongoing projects. The extension of SMEC contract is being funded under the ongoing EPRP project, which has helped in taking up the preparatory work prior to ARTF funding approval.
27. Bidding documents shall be prepared by SMEC International. MEW has also indicated that considering good performance by SMEC, they propose to request for amendment of their contract to include additional activities for implementation and supervision of the contracts.
28. Implementation would proceed in two phases as necessitated by availability of funding support. In the first phase the investments related to Pul-e-Khumri, Charikar, Gulbahar & Jabul-Seraj distribution networks; establishing energy efficiency cell at MEW; and corresponding Project Management support would be covered. The balance activities would be covered in the second phase, subject to availability of additional funds. The project preparation work for second phases would be carried out immediately after the first phase activities.
29. Monitoring and reporting of the project would be carried out by SMEC as part of their overall monitoring of the IDA/ARTF funded projects. **Annex 4** provides further details on the implementation and institutional arrangements for the project.

### **B. Procurement**

30. Procurement for the proposed project will be carried out in accordance with the *World Bank's Guidelines: Procurement under IBRD Loans and IDA Credits* May 2004, Revised October 1, 2006, *Guidelines: Selection and Employment of Consultants by World Bank Borrowers* May 2004 Revised October 1, 2006, and the provisions stipulated in the ARTF Grant Agreement. For contracts to be financed by the Grant, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame are agreed between the Recipient and the Bank team and reflected in the Procurement Plan. The Procurement Plan is updated at least every six months or based on actual project implementation needs and improvements in institutional capacity. IDA-led procurement team has found that procurement capacity in the MEW, supported by their consultants, has improved with satisfactory use of technical assistance.
31. The procurement process followed for the ARTF Kabul /Aybak Mazar-e-Sharif Project (TF 91120) had introduced the flexibility to expand the scope of facilities for similar works based on the initially agreed prices with price variation, subject to the good performance of the existing contractors. It is proposed to use this flexibility for smaller contracts. The decision would be taken based on the price levels discovered through bidding process for the large package to cover Charikar, Gulbahar and Jabul-Seraj towns. The detailed procurement plan is attached as **Annex 5**.

## **C. Financial Management**

32. **Financial Management, Disbursement and Audit Arrangements.** A Public Financial Management (PFM) performance rating system has been recently developed for Afghanistan by the Public Expenditure and Financial Accountability (PEFA) multi-agency partnership program, which includes the World Bank, IMF, EC, and other agencies. Afghanistan's ratings against the PFM performance indicators portray a public sector where financial resources are, by and large, being used for their intended purposes as authorized by a budget that is processed with transparency and has contributed to aggregate fiscal discipline.
33. Financial management and audit functions for proposed project will be undertaken through the agents contracted under the Public Administration Capacity Building project. This is the primary instrument for continuing to strengthen the fiduciary measures put in place for ensuring transparency and accountability of funds provided by the Bank and other donors. Under these contracts, two advisers—Financial Management and Audit—are responsible for working with the government and line ministries to carry out these core functions. The Financial Management Adviser (FMA) is responsible for helping the MOF maintain the accounts for all public expenditures, including IDA-financed projects and for building capacity within the government offices for these functions.
34. At the project level, the Ministry of Energy and Water will utilize the services of the Project Management Consultant, SMEC International, currently working for the Emergency Power Rehabilitation Project for the financial management. SMEC FM staff will work with the MEW Finance Department staff to ensure that all FM requirements are met as and when due.
35. The Financial Management Specialist assigned by SMEC with responsibility for financial management activities of the IDA project will also cover this project. The specialist's responsibility will also include processing of consultants and contractors invoices for payments i.e. preparation of M-16 forms (payment orders), maintaining relevant accounting records, preparation of required monthly, quarterly and annual reports, liaising with Special Disbursement Unit (SDU) at the Treasury to ensure that the Designated Account is replenished as at when due and be responsible for responding to project audits.
36. Quarterly Financial Monitoring Reports will be prepared by the project (SMEC) FM unit. Consolidated project reports will be prepared, reviewed, and approved by the MOF, supported by the FMA.
37. A segregated Designated Account (DA) will be opened at Da Afghanistan Bank (DAB, Central Bank) or at an agreed commercial Bank in Kabul. The DA will be maintained by the MOF. Advances will be requested as needed by MEW; expenditure reporting to the Bank, on the basis of SOEs will be submitted monthly. A single disbursement category for all eligible project expenditures will be used to fund the Goods, Works, Training, Consultants' services and Incremental Operating Costs for the Project. There are no disbursement conditions or conditions for retroactive financing.
38. Funds Flow. Fund management for the Project will follow existing procedures. As with all public expenditure, all payments under the project will be routed through MOF. The FM Adviser will assist the MOF in executing and recording project payments. In keeping with current practices for other projects in Afghanistan, the DA will be operated by the Special

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Disbursement Unit (SDU) in the Treasury Department MOF. Requests for payments from DA (in an amount of US\$ 6 million) funds will be made to the SDU by the project. In addition to payments from DA funds, the project can also request the SDU to make direct payments to consultants or consulting firms, and special commitments for contracts covered by letters of credit. Such requests will follow World Bank procedures. All withdrawal applications to IDA, including replenishment, reimbursement, and direct payment applications, will be prepared and submitted by MOF.

39. **Accounting and Reporting.** The project will establish a project financial management system in accordance with standard Afghan government policies and procedures. This will include use of the Chart of Accounts developed by the Treasury to record project expenditure. Project accounts will be consolidated centrally in MOF, through the SDU and supported by the FMA. Consolidated Project Financial Statements will be prepared for all sources and uses of project expenditures.
40. **Disbursement Method.** Disbursements from the ARTF grant will make use of advances, reimbursement, direct payment, and payments under Special Commitments including full documentation for expenditures on contracts exceeding \$20,000 or against statements of expenditures for expenditures on contracts less than \$20,000 (and for all operating costs; training)
41. A provision for retroactive funding for the eligible expenditures incurred after November 1, 2008 up to a maximum amount of up to US\$ 15 million will be available for the project.
42. **Audit of Project Funds.** The Auditor General, supported by the Audit Agent, is responsible for auditing the accounts of all ARTF-financed projects. Annual audited project financial statements will be submitted within six months of the close of GOA's fiscal year.

### **D. Monitoring and Reporting**

43. The Project Management Unit of the Ministry of Energy and Water, supported by the consultants, consolidates the financial and physical progress reports for the different projects, and is responsible for overall monitoring and reporting to ARTF. The World Bank task team conducts regular supervision missions, and the project status reports are submitted to ARTF every six months. As appropriate and as required, an independent monitoring and evaluation of specific component activities may be carried out to assess the implementation progress and outcome of some components of the project.

### **E. Sustainability and Risks**

44. The project covers investments, which are similar to those being implemented in Afghanistan by several donors and by Ministry of Energy and Water. Based on the experience with the implementation of these projects, the proposed project design would include mitigation measures, wherever possible, to reduce the anticipated risks.
45. Anticipated risks and proposed measures to reduce them are shown in the table below.

### **Risks and Risk-mitigation Measures**

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<b>Risks</b>	<b>Mitigation measures</b>	<b>Risk Rating with Mitigation</b>
<p><b>Security concerns:</b> The political and security situations in Afghanistan remain volatile, which might interfere with reconstruction and development efforts. These constraints may limit the speed of implementation.</p> <p>The Supervision of projects may be difficult in high security areas.</p>	<p>This risk is outside the control of the ARTF.</p> <p>The project areas are not in the currently identified high security areas, though area around Mahipar and Naghlu switchyards have recently witnessed some disturbances and are under watch. Appropriate provision for security in the contracts for such areas would be provided. The local construction companies, who are better placed to manage the minor security risks, are being encouraged to participate in bidding process partnering with international companies.</p> <p>The team has introduced the practice of distance visual monitoring of the progress through photographs. Since most of the payments are made against equipment and material supplies ( which can be tracked easily) and the progress is visible at all locations, the risk due to under supervision is not expected to be very high.</p>	<p>High</p> <p>Moderate</p>
<b>Institutional</b>		
Weak Institutional Capacity of the implementing agencies	The capacity gap would be bridged with the use of experienced international/national consultants to support DABS/MEW counterpart for design, procurement and project management. Lessons learned and new procedures on procurement instituted from the ongoing IDA project will help ensure that similar bottlenecks can be avoided in the next project.	Substantial
Appropriate budget provision for the project	To meet the requirement of MoF for opening of Letter of Credits, discussion will also be held with MoF and MEW to provide adequate budget for opening of Letter of Credits for this project.	Moderate
<b>Governance Issues</b>		
Corruption on large contracts	ICB procurement would be used for most packages, where prior review of the procurement process at different stage shall be mandatorily done by the Bank team. The use of streamlined procedures for implementation of the projects has helped in reducing time delays in contracts award (as demonstrated for the last ARTF project (TF 091120) approved in Oct 2007. Similar procedures would be used for this project also.	Moderate
Impact of forthcoming Elections	<p>The impact of forthcoming elections on the investments covered under the project is not assessed to be significant- as the designs and scope would be firmed up much earlier, with the help of independent consultants. With no counterpart funding, the risk of counterpart fund diversion is not there. The decision process is simplified with implementation of the stream lined procedures and risk of excessive delays in contracts finalization is low.</p> <p>Though the impact in terms of using expensive diesel generation in large quantum on the Utility operations could be substantial. This impact is expected to be reduced with likely lower cost power availability from Uzbekistan in year 2009. Further, with corporatization of the power utility in process, the new Corporate is not likely to commit funds without explicit government/ donor support for this activity.</p>	<p>Moderate</p> <p>Substantial/ Moderate</p>
<b>Technical/Design</b>		

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<b>Risks</b>	<b>Mitigation measures</b>	<b>Risk Rating with Mitigation</b>
Appropriateness of the Project Design for Afghanistan	The project would broadly follow the design standardized by the previous studies. A core team comprising of personnel from MEW/DABS/ consultants would be reviewing and finalize the project design by incorporating lessons from previous projects.	Low
<b>Sustainability</b>		
Non realization of complementary investments	The contracts for complementary investments have already been in place and the progress on ground is quite good. The current schedule and progress on these investments indicate earlier completion than the proposed project. The discussions are being held with Uzbekistan, Tajikistan and Turkmenistan for increased power imports are progressing well. The Bank through the ongoing IDA project has financed technical and legal support for these discussions. It is expected that within the time line of the proposed projects, power would be available from the neighboring countries. The main risk is delay in realization of benefits by a short period.	Moderate
Inappropriate operation and maintenance of the facilities post commissioning	The project design includes hands on training by the contractors in operation and maintenance of the facilities for sustained operation. It is also envisaged that the contractor will provide hands on support for maintenance and fault repair for the first six months of the project after completion.	Moderate/ Substantial
Financial Sustainability- in view of high distribution losses, poor billing and metering arrangements, low collection levels and low tariffs in Kabul	Several initiatives have been taken under ongoing IDA project to lead DABM (S) ( the power utility) on the path of financial sustainability- it includes, setting up of loss reduction unit, computerisation of billing, Corporatization, etc. Government of Afghanistan is fully committed and supporting this change process and other donors are collaborating on this area. Corporatization of DABM has already been approved by the Cabinet of Ministers	Substantial
Social and Environmental Safeguards  Land acquisition or relocation of squatters in the right-of-way may cause delay in project implementation	Social & Environmental impacts of the projects are expected to be small and overall positive. An environmental and social safeguard framework already exists for similar works, which is under implementation. The same would be extended to this project.  A Social Assessment will be conducted to identify if any land acquisition or resettlement will be necessary and to plan any social impact mitigation.  It is proposed to test the oil in a sample of old transformers for presence/ absence of Polychlorinated biphenyls (PCB) through sample tests of PCB material. If found present, appropriate handling strategy would be prepared as part of the project, suitable to Afghanistan environment.  With completion of proposed works, significant positive environmental impact would be achieved through replacement of several small inefficient polluting and noisy generators with the environmentally more benign grid supply.	Low/ Moderate

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<b>Risks</b>	<b>Mitigation measures</b>	<b>Risk Rating with Mitigation</b>
Procurement and Financial Management	The consultants and MEW team working on previous power project funded through Afghanistan EPRP (Cr 3933, TF054718 and TF 091120) are familiar with the requirements in these areas. The team as part of interaction for other project will work on completing any further gaps identified in these areas.	Moderate/ Substantial (for FM)

Overall risk rating is assessed to be Substantial/ Moderate for the project.

**F. SOCIAL AND ENVIRONMENTAL ISSUES**

46. The project is expected to cover mainly replacement of the old and dilapidated equipment in the Naghlu and Mahipar switchyards and distribution system of Pul-e- Khumri, Aybak, Doshi, Khenjan, Gulbahar, Jabul-Seraj and Charikar to strengthen/build the medium and low voltage distribution system to reduce bottlenecks in the power supply system of the part of urban centers covered under the project. Wherever required new locations for the distribution transformers and route for new medium/low voltage lines will be identified by DABS in consultation with the municipality/urban authority of the respected urban center. The low voltage links would be mostly through underground cables or insulated overhead cables, which shall be erected as per the appropriate international standards following the safety practices. The medium voltage line would be for a short distance on the poles by the side of the main road.
47. Overall, the project would reduce losses, thus dependency on thermal fuels; significantly reduce the use of inefficient and polluting small local diesel generators of the consumers. The project is expected to have limited adverse environmental impacts, and has been rated as environmental category "B." The Environmental and Social Safeguard Framework developed and agreed upon with Ministry of Energy and Water, and in use for similar projects in the sector, would be applied. The frame work forms part of the contract. The contractor would be asked to nominate one focal person to supervise and report implementation of the Environment and Social Safeguards included in the contract. Overall impact of the project is expected to be significantly positive to the environment.
48. No or only limited land acquisition is expected to take place, since the project manly comprises distribution system rehabilitation. However, in view of experiences from ongoing projects in this sector and the explosive and unplanned growth of urban centers in Afghanistan over recent years, a Social Impact Assessment will be carried out including social impact mitigation plan if necessary to avoid land acquisition or relocation of informal settlements along the right-of-way (ROW) disrupting or delaying implementation,
49. It has not been established whether the old transformers in use in Afghanistan have any Polychlorinated biphenyls, considered to be a serious health hazard, if not handled carefully. It is proposed to purchase a portable testing kit to ascertain the presence/absence of the PCBs in the transformer oil and depending upon the test results, an appropriate handling scheme shall be prepared in consultation with the experts.

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50. Much of the older transformers and equipment under the Project are expected to be from the Soviet occupation period, some possibly pre-Soviet era (40 years old). Studies have not been done on the extent, if any, of PCB contamination of this equipment. It is planned to carry out testing of oil samples from the transformers in the project area, where ever old transformers are in use to find out the level of PCB contamination. If any PCB contamination is discovered, beyond the acceptable limits, suitable mitigation measures will be adopted.
51. The construction standards would meet the environment and social framework prepared and agreed for such works with Ministry of Energy and Water. Every endeavor will be taken to minimize disruption of supply to existing customers. Necessary precautions will be taken to prevent soil erosion and pollution of water bodies due to the activities of the project.
52. Supply interruptions required for the construction works will be planned in a rotational manner so that the inconvenience to the consumers would be minimized. Public awareness campaigns will be organized to facilitate better interaction with the local communities so that any adverse effects to the residents avoided or minimized.

## **Sector Background**

1. Ravaged by chronic conflict and political instability for almost two decades and coupled with no maintenance, insufficient investment and outright theft of the material, Afghanistan was left with a severely destroyed power system. The recent years have seen the beginning of the rehabilitation of the power sector, but it is clear that many more years will be required before the power sector will be able to function adequately and meet the economy's demand for electricity. The investment needs in the power sector are enormous and the progress has been slower than desired due to weak institutional capacity and difficult security situation. The demand is rapidly growing - the capital city of Kabul itself has grown nearly 10 times in population from about 400,000 in 2001.
2. The data from the National Risk and Vulnerability Assessment, based on a major national household-level survey carried out in 2005, indicates that only about 16% of the population has access to electricity through the power utility. Some of the provinces have even less access, with rural areas being hardly served. According to DABM statistics, the utility caters to only about 517,000 consumers all over the Afghanistan. The lack of access to electricity and availability to significant population continues to hamper economic growth and raises question on the credibility of the government's capacity to provide this key infrastructure for country's growth. Government of Afghanistan (GoA) recognizes this issue very well and is working with donors to bring speedy results on the ground. GoA also realizes that the power sector is severely constraining the development of the country.
3. The power sector operations are managed by the country-wide power utility, Da Afghanistan Breshna Moassasa (DABM), which does not have adequately skilled human resources to handle this difficult situation. DABM works under the administrative control of Ministry of Energy and Water. There is no separate regulator and these functions are vested with the Ministry of Energy and water. The power system has been so far functioning in isolated grids, operated and managed by the regional Breshnas, under the overall control of DABM. The financial and administrative situation of DABM is quite poor due to lack of commercial skills, adequate financial systems and lack of training. There were no accounts prepared for the DABM over last two decades. The first account for the Afghan year 1385 (ending March 2006) were recently prepared with the help of the Bank funded consultants after two decades. The accounts for the year 1386 are under compilation. The accounting system would need major change (move from cash base to accrual, reflection of cost of investments and full cost of power generation including fuel). It is expected that the accounts for the restructured DABS would be in much better shape.
4. GoA has established an Inter Ministerial Commission on Energy (ICE) to facilitate coordination between different Ministries and Donors, which is chaired by Minister of Economy and several other Ministers or their representative participates with all key Donors. Minister of Energy and Water, Minister of Mines and Minister of Finance are core members and the Ministries of Foreign Affairs, Urban Development, Rural Rehabilitation and Development, and Commerce are other participating ministries. ICE provides an excellent platform for coordination as well as dissemination of information among the stake holders.
5. The system transmission and distribution losses (estimated by DABM around 35 % in Afghan year 1385) and the power generation costs with significant proportion from diesel based

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thermal plants are high (above USD 50 cents per kWh) and the collections are low. The situation is better in areas (Herat, Mazar-e-Sharif, Kunduz, Andkhoy) where the power is imported from the neighboring countries and the consumers are paying tariffs based on recovery of the operating cost. Similar situation prevail in some other towns, where diesel based power is generated locally and paid by the consumers. The tariffs for most of the Kabul consumers, which constitute about one third of the total consumer base of DABM, do not cover the cost of power supply. Though tariffs, except for low end consumers in some areas<sup>3</sup> are high ranging from US 8 cents to 84 cents.

6. GoA, recognizing the importance of the sector, has taken key steps to corporatize and commercialize the power utility DABM. The newly corporatized utility is Da Afghanistan Breshna Shirkat (DABS), creation of which was ratified by the Cabinet of Ministers in March, 2008. A high ranking Board of Directors, comprising four Cabinet Ministers and head of Afghanistan investment promotion agency AISA, has been nominated to facilitate the transition from DABM to DABS. The corporatized Utility is planned to be brought under a new and visionary management structure with efficient human resources and salaries commensurate to the markets. The staff would be provided training and adequate skills to commercially and effectively manage the sector with adequate consumer responsiveness. Though these decisions are facing several implementation challenges, especially non availability of skilled Afghan human resources and the difficulty in attracting good consultants wary of the deteriorating security situation.
7. Government of Afghanistan's initial strategy, supported by the Donors had been to focus on projects which would provide quicker results on the ground. These investments included providing small diesel generators to areas, where the distribution network still existed; urgent rehabilitation of the existing generation plants; emergency spares for operation of the plants; and technical support for overseeing these works, etc.
8. Government of Afghanistan has started looking at a medium term view, with Afghanistan National Development Strategy (ANDS) finalized. The ANDS core targets for power sector, over the medium-term for national development, include: *"electricity will reach at least 65 percent of households and 90 percent of non-residential establishments in major urban areas and at least 25 percent of households in rural areas"*. The medium term plan includes enhancing energy security through rehabilitation of clean and low cost major hydro plants (underway); add local resources based more generation capacity to meet unmet and future demand (coal based power plant associated with Aynak copper mine, expanding small and medium hydro plants as well as start work on one or two large hydro plants based on optimized development of water resources; tap surplus power from neighboring Central Asian countries; focus on transmission and distribution grid expansion with initial target on large urban centers located close to the grid and the rural electrification program). Some of these are described below.
9. A large transmission system known as the North East Power transmission System (NEPS) from the border of Uzbekistan to Kabul being financed by several donors (including the Bank) is in advance stage of completion and will allow significant volumes of lower cost electricity imports from the Central Asian Republics for Kabul and other major load centers. This would be extended to join other neighboring Central Asian countries such as Tajikistan and

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<sup>3</sup> Low end consumers (upto 300 unit consumption) are charged at 3-4 US cents. The tariff is uniformly low at 4 US cents in areas importing cheap power from neighboring countries.

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Turkmenistan to tap surplus power. Efforts are underway to show some results on the ground by early 2009, at least in Kabul, by accelerating the ongoing programs. Afghanistan is also actively participating in developing Central Asia and South Asia regional energy trade (CASA 1000 and CASAREM).

10. MRRD (Ministry of Rehabilitation and Rural Development) has been supporting rural electrification of villages with micro hydro and solar based power projects, supported by National solidarity program. Donors are helping in preparing foundation for integrating energy efficiency and demand side management in the core development strategy for the sector (ARTF, ESMAP); integrating sustainable development practices by taking care of environmental and social issues in time and integrated with projects (World Bank); create national managed system planning capabilities for taking optimal investment decisions (ADB and World Bank) and training of the Ministry and Utility staff (several donors).
11. However, the sector, like in several other countries, faces several challenges, some of which are listed below.
12. The priorities for the development of the power sector include the inter-related issues of (i) distribution, (ii) financial sustainability, and (iii) utility restructuring. The distribution system is the weak link in the chain leading from power generation to the consumer and will compromise achievements in the areas of generation and transmission unless urgent efforts are made to address this problem. The capital requirements of distribution rehabilitation and expansion are significant—estimated at some billion dollars—and the country’s future capacity to marshal the required level of investments will depend, in part, on its success in restoring financial viability to the sector and in restructuring the national utility, DABM.
13. The utility’s commercial performance needs to improve and be more accountable, the consumer orientation needs to be brought into the mindset of Utility employees. At present, power tariffs are considerably below full cost recovery in many locations (most notably, in Kabul). Without movement towards full cost-recovery in the medium term, the present efforts to rehabilitate and expand the system will not be sustainable. With low income levels and high (current) cost of power supply, a package of measures would need to be taken to redress this situation. It would include reducing the high cost of generation and improve operational efficiencies; introduce end use energy efficiency and demand side management to lower consumer bills; improve service quality and consumer responsiveness; fix metering, billing and collection system; and rationalize tariffs. The medium to long term aim would be to bring the Afghanistan power operations at par with good utility practices. It is important to view the utility’s own funds as a source of future investments in distribution and consequently to instill in DABS a solid commercial orientation.
14. The metering and billing system need to be redesigned to minimize human interface in convergence with the latest technologies and provide flexible options like pre-payment to the consumers. Some best practices, successful in other countries would need to be tested and introduced in Afghanistan to improve the metering, billing and collection system, including outsourcing to ensure the Utility is financially sustainable in the medium to longer term, covering its all operating costs and majority of investments from its own revenue. Discussions are on way with stakeholders on designing a good metering strategy to capture appropriate information, using latest technologies like GSM operators networks, which have wider reach.
15. In all cases of power imports, there is a need to bring the power purchase agreements to international standards, analyze the commercial impacts of power purchase agreement, the

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capacity of the network to handle contracted power in case of contingencies. The World Bank is working on helping develop a simple decision model to understand the impact of power import from so many sources (domestic as well as other countries). The power transmission and dispatch system need to be modernized and prepared for all operational contingencies. A system for operation and maintenance of the large transmission system under establishment would be required to ensure high availability of the power transmission system, at par with the international utilities. (ADB has agreed to fund these activities).

16. Alternative strategies to complement the electricity Utility for providing rapid access to electricity to the people of Afghanistan would need to be evolved, once the power sourcing tie-ups are firmly in place, as it may be difficult for the institutionally weak Utility to achieve the access goals set in the ANDS strategy.
17. The Bank engagement in the sector is to work closely with the GoA, the power utility DABM/DABS and other stakeholders to help GoA move towards the objectives of ANDS and prepare them to meet the ensuing challenges. It is also recognized that any plans and recommendations put forward to GOA for the country's medium-term development must be grounded in a realistic appreciation of the considerable financial and capacity constraints that the Government and its development partners are likely to face for the foreseeable future. Going forward in the medium term visible movement towards increasing access to grid based electricity, bringing more efficiency in operations, customer responsiveness and Afghan owned strategic plans to handle the challenges and take decisions would be some of the outcomes, the World Bank would look from its engagement in the sector.
18. On the investments side, the Bank/ARTF supported projects have resulted in successful running of the 45 MW North West power plant meeting critical power demand in the Capital city of Kabul; rehabilitation of 110 kV transmission link between Naghlu and Kabul; electrification of 2000 communities through small diesel, micro hydro and solar based plants; Rehabilitation of one unit of Mahipar hydro power project; street lighting and distribution network extension in Kabul. The ongoing projects covers rehabilitation of Naghlu hydro project; missing links in the North East power transmission project (OPGW, 110 kV link with Kabul); CASA (Central Asia South Asia) regional electricity link; Rehabilitation of the power distribution system of Mazar-e-Sharif (including augmentation of 220/20 kV substation); part of Kabul LV/MV distribution system; and Aybak power system (220/20 kV transmission substation and medium voltage interconnection with distribution system). The work is progressing reasonably well considering several implementation challenges faced in Afghanistan, including difficult working conditions during peak winter, delays in transportation of materials through Iran/Pakistan (Afghanistan being a land-locked country) and the deteriorating security situation.

Summary of Donor engagement in the power sector us provided as Annex 6.

## **Detailed Project Description**

The project comprises three components:

**Component A- Distribution System Rehabilitation:** This component will support investments for Aybak, Pul-e-Khumri, Charikar, Gulbahar, Jabul-Seraj, Doshi and Khenjan towns, located on North East Power System. As the project is proposing to seek funds in two phases, Distribution System for Aybak, Doshi and Khenjan towns would be covered in phase-II of funding. However, the preparation work would be continued immediately after Phase-I activities are done. The project would cover installation of the missing parts of the distribution system connecting medium voltage trunk lines/ cables to customers (e.g. distribution transformers, under ground cables, over head line materials, aerial bunched cables, protection and distribution equipment, meters and associated equipment, etc.) The existing system would be upgraded to standard medium voltage and reorganized to optimize loading to reduce losses and provide satisfactory voltage to the customers.

In areas like Doshi and Khenjan there is no existing distribution system and it would be green field work. In other areas, the existing distribution system, which was mainly supported by mini hydro or Diesel based generation is in dilapidated condition. Further, the existing medium voltage level is different than the standard medium voltage of 20 kV adopted in Afghanistan. This would also mean changing any of the existing medium distribution voltage system and distribution transformers. The capital outlays, as such are very high at this stage- though the standardization would be of great help in future. The adoption of higher medium voltage would also result in reduction of medium voltage distribution losses.

All the areas covered for the distribution system rehabilitation are situated on the NEPS power system linking power supply to Uzbekistan and latter with Tajikistan and Turkmenistan. These areas are also well connected through the national high way and thus would be possible centers for economic and industrial development. 220/20 kV Grid Substations are being established with Donor assistance (GoI, KfW and ARTF), which will feed the medium voltage distribution network to be established in these areas. Any existing hydro power station shall also be integrated with the network. Though, the diesel generators may be moved to other non-electrified locations.

The funding requirement for covering the complete urban centers and the neighboring villages may be much higher and as such the current phase of investments would need to be supported by additional investments when power is available and the denser areas are covered. Urban centers like Charikar, Pul-e-Khumri and Aybak are growing much rapidly.

The project would follow the metering strategy being developed for Kabul and other areas under the ongoing Emergency Power Rehabilitation and ARTF projects. Under the proposed project a strategy for using modern consumer metering system to establish accountability within the Utility staff for the energy sold to consumers covered in the areas under scope of the project. There are no meters at the sending end of feeders or the distribution transformers. Some consumers have faulty meters and the other existing meters are electro-mechanical and many are at or near the end of their economic life. The aim would be to have convergence with available communication technologies like GSM mobile networks, etc. Feasibility to introduce remote disconnection for non –payment and prepayment metering would also be studied and implemented. The feeder and distribution

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transformer metering will be ordered as part of the main package and consumer metering procurement would be initiated separately based on the metering strategy agreed for Afghanistan. The consumer metering procurement would be taken up separately.

The basic approach for investments would be:

- SMEC and DABM would update the information in the distribution system improvement reports prepared in 2005 to incorporate any major changes after the study.
- Prepare the bidding document to with provision for flexibility to implement the priority areas agreed with DABM /MEW within the available funding.
- The design would be appropriate with the medium to long term development plans of the Urban Centers.

### **Component B – Rehabilitation of Transmission switchyard associated with Naghlu, Mahipar and Saroubi hydropower stations:**

This component, to be covered under phase-II of funding would support rehabilitation of the old and dilapidated switchyards located at Naghlu and Mahipar, which serve all the three major hydro power projects providing power to Kabul. While investments are already committed for rehabilitation of hydro power projects (part of the work for Mahipar and Saroubi plants rehabilitation has been completed); the transmission line between Naghlu and Kabul has been rehabilitated under IDA/ARTF/KfW and EC funded projects. The switchyard would be the only missing link in establishing the reliable hydro power plants operation and transmission of power to the grid. The switchyards being more than 30 years old have lived their lives, as well as have been partially damaged due to the armed fighting during conflict.

The challenge would be in rehabilitation of the substations without major power interruptions. The ideas like mobile 110 kV switchgear bay is under consideration, while designing the bid documents.

### **Component C – Institutional capacity building, project management support and establishing an Energy Efficiency Unit at MEW:** This component will cover support for:

- a) Establishment of a unit at MEW to build capacity for building energy efficiency (EE) and demand side measures (DSM) in core energy development plans. For the initial 3-4 years, the core staff in the unit and the supporting consultants would be funded by the project. The unit would prepare the strategies to implement EE and DSM measures and plans to implement these as well as tap the large pool funding expected to be available for these efforts. Other key functions of the unit would to prepare and implementing a communication strategy for awareness among consumers; implementation and test some pilots for EE and DSM aspects. With high cost of power generation through diesel as well as severe shortages, Afghanistan is quite suitable to mainstream the EE and DSM measures in the sector investment strategies. Wherever possible and cost effective, the renewable options would also be promoted by this unit. The training would be planned through a mix of exposure to similar institutes elsewhere, hands-on the job and through workshops.
- b) Training in operation and maintenance of the distribution/transmission system. The training will be provided to DABS personnel on site by the suppliers/ contractors and

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specialized trainers on the regular operation and maintenance of the facilities, detection and repair of faults to ensure reliable and quality power supply to the consumers.

- c) Baseline studies and communication with stakeholders. The purpose of this survey would be to have an understanding of the current energy usage, coping strategies and understand the attitude and expectations of the consumers from the reforms in the sector. One important aspect would be to build communication with the consumers for a more congenial Utility consumer relationship.
- d) Project management and implementation support for these investments and other related activities. The engineering and procurement activities for this project are covered from the IDA EPRP project, but the implementation and project management activities for this project and preparatory engineering and procurement activities for the next project are planned to be covered under this component.

**Table A.1: Project Cost by Component for ARTF Proposed Funding**

**Project Costs by Components**

	<b>Phase-I USD million*</b>	<b>Phase-II USD million*</b>	<b>Total USD million*</b>
Component A - Distribution System Rehabilitation	27.5	10.5	38.0
Component B - Rehabilitation of Transmission Switchyards associated with Naghlu, Mahipar and Saroubi hydropower stations	0	10.0	10.0
Component C – Institutional capacity building, project management support and establishing an Energy Efficiency Unit at MEW	4.0	2.0	6.0
Physical and Price Contingencies	4.5	2.5	7.0
<b>Total Cost</b>	<b>36.0</b>	<b>25.0</b>	<b>61.0</b>
<b>Requested ARTF Financing</b>	<b>35.0</b>	<b>25.0</b>	<b>60.0</b>
Co financing from IDA credit (Cr. 3933-AF)	1.0	0	1.0
<b>Total Funding</b>	<b>36.0</b>	<b>25.0</b>	<b>61.0</b>

Taxes are included in the respective component cost.

**Table A.2: Estimated Costs by Category of Expenditure (US\$ million) Phase-I**

<b>Expenditure Category</b>	<b>Amount of the Grant Allocations (US\$ )</b>
Goods, Works, Incremental operating costs and Technical Assistance	35
<b>Total</b>	<b>35</b>

**Table A.3: Estimated Costs by Category of Expenditure (US\$ million) after approval of both Phases**

<b>Expenditure Category</b>	<b>Amount of the Grant Allocations (US\$ )</b>
Goods, Works, Incremental operating costs and Technical Assistance	60
<b>Total</b>	<b>60</b>

**Afghanistan Power System Development Project**  
(September, 25 2008)

The IDA project will be co-financing the cost of engineering and procurement consultants for the project.

## Implementation Arrangements

The implementation period of the project is estimated to be 42 months (by January, 2012), including the time required to support hands on operation and maintenance training after completion of investments for Phase-I investments. The Phase-I will cover Pul-e-Khumri, Charikar, Gulbahar & Jabul-Seraj distribution networks; establishing energy efficiency cell at MEW; and corresponding Project Management support. The balance activities would be covered in Phase-II. The preparatory work for Phase-II would be taken up immediately after the Phase-I preparatory activities have progressed well. The grant closing date would be July 31, 2012 (six months after completion of project activities). The zero date for the project is August 1, 2008.

The engineering and procurement services would be provided by consultants M/s SMEC, who are already assisting MEW with design, procurement and project implementation of IDA and ARTF power projects for MEW. The amendment to their contract has been co-financed by the ongoing IDA project.

MEW and MoF have indicated their preference to use the services of SMEC also for project management and implementation of this project, in view of their good track record. Further, (SMEC) were selected through international competitive bidding process and have the advantage of an early start and achieving economies of the scale with the large part of their team already in place. The Bank would consider this after formal request is sent by MEW.

Key milestones are expected to be completed as per the following schedule:

### Component A - Distributions system rehabilitation

Update Project Design and start of Procurement Process	2–12 months
Receipt of bids for Supply & Install contract	5–15 months
Effectiveness of Contract	8–18 months
Completion (progressively)	26-36 months
Operation & Maintenance Support/Training	32-42 months
Closing of contracts	within 6 months of contracts completion

The contractor would be selected following ICB procurement and will execute the project on Supply & Install basis.

### Component B – Rehabilitation of Transmission facilities associated with Naghlu, Mahipar and Saroubi hydropower stations,

Note The time line would be revised after Phase-II funding approval is made available.

Update Project Design and start of Procurement Process	4 months
Receipt of bids for Supply & Install contract	6 months

Effectiveness of Contract	8 months
Completion (progressively)	28 months
Operation & Maintenance Support/Training	29-34 months
Closing of contracts	within 6 months of contract completion

The contractor would be selected following ICB procurement and will execute the project on Supply & Install basis.

**Component C - Institutional capacity building, project management support and establishing an Energy Efficiency Unit at MEW**

This component will be implemented over the time frame of the complete project. The requirement of institutional capacity building and support for the implementation of the investments has been broadly identified and would be fine tuned during implementation.

Major component of the support is build as part of the design of contracts, where the initial maintenance and operational support is envisaged for six months period after completion of the facilities. The project management contract envisages increased role from the local skills available with DABM/MEW to leave trained staff after completion of the project. The Survey firm would be selected based on the experience.

## Procurement Plan

### I. General

1. Project information:
  - Country: Afghanistan
  - Project Name: Afghanistan Power System Development Project-II
  - Grant No:
  - Project Implementing Agency (PIA): MEW supported by M/s SMEC, Australia
2. Bank's approval Date of the procurement Plan [Original July 29, 2008] {the procurement plan is under revision to reflect the phased funding of the project}
3. Date of General Procurement Notice: August 31, 2008 (expected)
4. Period covered by this procurement plan: six months

### II. Goods and Works and non-consulting services.

1. Prior Review Threshold: Procurement Decisions subject to Prior Review by the Bank as stated in Appendix 1 to the Guidelines for Procurement:

	Procurement Activity	Prior Review Threshold	Comments
1.	Works	500,000	
2.	Goods	200,000	
3.	Directing Contracting	All	

2. Prequalification. Bidders for Nil contracts will be prequalified in accordance with the provisions of paragraphs 2.9 and 2.10 of the Guidelines.
3. Proposed Procedures for CDD Components (as per paragraph. 3.17 of the Guidelines: Not Applicable
4. While majority of the procurement would be done through ICB, provision would be kept in the grant agreement for procuring some contracts through other methods like National Competitive Bidding, Shopping etc.

#### Reference to (if any) Project Operational/Procurement Manual:

**Any Other Special Procurement Arrangements:** Provision has been made to reimburse the Government of Afghanistan (GoA) for payments it makes for project expenditures up to US\$ 15 million between November 1, 2008 and the date of the signing of the grant.

## Procurement Packages with Methods and Time Schedule

### A. Goods

1	2	3	4	5	6	7	8	9
Ref No.	Description of Assignment	Estimated Cost	Procur. Method	Pre-qualification	Domestic Prefer.	Review by Bank (Prior/Post)	Expected Bidding Opening Date	Comments
M E W (tbd)	Rehabilitation and Expansion of Gulbahar, Chrikhar and Jabul-Seraj Distribution network	16,000,000	I C B (Supply & Install) (S&I)	No	No	Prior	Dec. 2008	
M E W (tbd)	Rehabilitation and Expansion of Pule-Khumri, Distribution network	6,000,000	I C B (S&I)	No	No	Prior	Jan. 2009	
M E W (tbd)	Rehabilitation of 110 kV Naghlu and Mahipar switchyards @	10,000,000	I C B (S&I)	No	No	Prior	Mar 2009	
M E W (tbd)	Rehabilitation and Expansion of Aybak, Doshi and Khenjan Distribution network@	12,500,000	I C B (S&I)	No	No	Prior	Mar 2009	
M E W (tbd)	Energy Meters #	3,500,000	ICB (S)	No	No	Prior	Mar 2009	

@- These activities are phase-II activities and the contracts would be finalized after receiving Phase\_II funding approval.

# Depending upon the time line of Phase-II funds approval, the meters may be procured in two lots (separately for Phase-I and separately for Phase-II activities)

### B. Works:

1	2	3	4	5	6	7	8	9
Ref No.	Description of Assignment	Estimated Cost	Procur. Method	Pre-qualification	Domestic Prefer.	Review by Bank (Prior/Post)	Expected Bidding Opening Date	Comments
	NIL							

### III. Selection of Consultants

**1. Prior Review Threshold:** Selection decisions subject to Prior Review by Bank as stated in Appendix 1 to the Guidelines Selection and Employment of Consultants:

	Selection Method	Prior Review Threshold	Comments
1.	Competitive Methods (Firms)	100,000	

	<b>Selection Method</b>	<b>Prior Review Threshold</b>	<b>Comments</b>
2.	Individual Consultants	50,000	
3.	Single Source (Firms/ Individual)	All	

**2. Short list comprising entirely of national consultants:** Short list of consultants for services, estimated to cost less than \$ 50,000 equivalent per contract, may comprise entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

**3. Consultancy Assignments with Selection Methods and Time Schedule**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>R e f. No.</b>	<b>Description of Assignment</b>	<b>Estimated Cost</b>	<b>Select. Meth.</b>	<b>Review by Bank (Prior/Post)</b>	<b>Expected Proposals Submission Date</b>	<b>Comp.</b>	<b>Comments</b>
1.	To be identified during implementation.						

**Summary of the Donor Engagement in the Power Sector in Afghanistan**

**The details are in separate file.**

**NEPS Diagram.**

**The diagram is in a separate file.**