ASIAN DEVELOPMENT BANK

TAR: BAN 36107

TECHNICAL ASSISTANCE
(Financed by the Japan Special Fund)

TO THE

PEOPLE'S REPUBLIC OF BANGLADESH

FOR PREPARING THE

POWER SECTOR DEVELOPMENT PROGRAM II

August 2004

CURRENCY EQUIVALENTS

(as of 15 August 2004)

Currency Unit	–	taka (Tk)
Tk1.00	=	$0.0169
$1.00	=	Tk59.20

ABBREVIATIONS

ADB	–	Asian Development Bank
BPDB	–	Bangladesh Power Development Board
DESA	–	Dhaka Electric Supply Authority
DESCO	–	Dhaka Electric Supply Company Limited
IRR	–	internal rate of return
MW	–	megawatts
PGCB	–	Power Grid Company of Bangladesh Limited
PMU	–	Project Management Unit
PSRB	–	Power Sector Reforms in Bangladesh
TA	–	technical assistance

TA CLASSIFICATION

Poverty Classification	–	Other
Sector	–	Energy
Subsector	–	Power
Thematic	–	Sustainable economic growth, governance, and private sector development.

NOTES

(i) The fiscal year (FY) of the Government and its agencies ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2003 ends on 30 June 2003.

(ii) In this report, "$" refers to US dollars.

This report was prepared by a team consisting of Chong Chi Nai (team leader), H. Du, and S. Ahmed.

I. INTRODUCTION

1. During the February 2004 Country Programming Mission of the Asian Development Bank (ADB) for Bangladesh, the Government of Bangladesh reconfirmed its request for a project preparatory technical assistance (TA) from ADB to prepare the proposed Power Sector Development Program II, which has been included in the 2004–2006 country strategy and program update. The ADB Fact-Finding Mission visited Dhaka during 29 February to 11 March 2004 and reached an understanding with the Government on the objective, scope, implementation arrangements, cost, financing arrangements, and consultants' outline terms of reference for the TA.[1] A preliminary framework is in Appendix 1.

II. ISSUES

2. Bangladesh's annual per capita electricity consumption of 110 kilowatt-hours in fiscal year (FY) 2003 was the fourth lowest among the developing member countries of ADB, after Afghanistan, Cambodia, and Nepal.[2] Despite intensive efforts to increase coverage, only about 31% of the population has access to electricity. Consumption of electricity in Bangladesh grew at an average annual rate of 8.2% from FY1994 to FY2002, in line with the forecast made in the 1995 Power System Master Plan Study financed by ADB.[3] The current installed capacity is 4,710 megawatts (MW). However, the effective installed capacity is only about 4,300 MW because some ageing power plants have been derated. With a combined average forced outage and scheduled maintenance of about 600 MW, the available generation capacity is about 3,700 MW. The peak demand met was 3,622 MW on 17 August 2003. Inadequate supply of electricity is a major constraint to economic growth. During FY2003, load shedding in the range of 5–468 MW was resorted to on 210 days for a total of 767 hours. Erratic power supply has tended to increase the unwillingness of consumers to pay their bills, which in turn has led to shortages of funds for maintenance and has further aggravated the situation. Bangladesh is facing an anticipated shortfall of about 2,500 MW of generating capacity during the next 5 years.

3. To address the problems facing the power sector in the country, the Government adopted in 1994 the Power Sector Reforms in Bangladesh (PSRB), which was formulated in consultation with the major development partners[4] in the power sector. The PSRB outlined the reform process proposed to be followed by the Government to gradually remove the constraints in the sector through improvements in sector and corporate governance, introduction of competition, and public-private partnerships.

4. The PSRB envisions, in the long-term, a structure of the power sector based on (i) separation of sector regulation and operation; (ii) autonomy and commercial orientation of the sector entities; (iii) separation of generation, transmission, and distribution; and (iv) increased private sector participation. Under such a structure, a new regulatory authority would be responsible for (i) setting electricity tariffs and determining the corresponding performance norms; (ii) collecting, verifying, and disseminating sector statistics; (iii) reviewing and approving long-term power planning; (iv) creating and maintaining a nondiscriminatory and commercial business environment in the sector; and (v) adjudicating disputes between sector entities. While transmission will remain in the public sector, generation and distribution assets will have both

---

[1] The TA first appeared in *ADB Business Opportunities* (Internet edition) on 12 February 2004.
[2] In 2003, the annual per capita consumption was 16 kilowatt-hours in Afghanistan, 50 kilowatt-hours in Cambodia, and 93 kilowatt-hours in Nepal.
[3] ADB. 1993. *Technical Assistance to Bangladesh on Preparation of a Power System Master Plan.* Manila.
[4] ADB, Department for International Development, Japan Bank for International Cooperation, Kreditanstalt für Wiederaufbau, the United States Agency for International Development, and the World Bank.

public and private ownership. The objective is to eliminate monopolies and foster competition. Commercial discipline and good customer service are expected to be achieved through competition among entities in the power sector.

5. ADB has established a long-term partnership with the Government to restructure and reform the power sector. ADB's power sector strategy for Bangladesh consists of (i) changes in the business environment through corporatization, commercialization, and increased private sector participation; (ii) institutional improvements in Bangladesh Power Development Board (BPDB) and Dhaka Electric Supply Authority (DESA); (iii) creation of new power sector agencies such as the Power Grid Company of Bangladesh Limited (PGCB), Dhaka Electric Supply Company Limited (DESCO), West Zone Power Distribution Company Limited, and Ashuganj Power Company Limited that could serve as role models for the power sector; (iv) enlarging the scope of rural electric cooperatives and promoting the development of renewable energy; and (v) strengthening the long-term planning and regulatory processes in the Bangladesh power sector. During the Local Consultative Group Meeting on Energy in August 2003, all involved development partners fully acknowledged the progress that the power sector in Bangladesh has achieved during the last decade with ADB as the lead development partner.

6. Under the reform program supported by ADB and other development partners, the Government has made the following major achievements since 1994:

(i) creation of a competitive diverse market of independent public and private generation companies;
(ii) restructuring of the sector by transferring all transmission assets and operations to a new transmission company, PGCB;
(iii) creation of a manageable and competitive environment through bench-marking, corporatization of DESCO and West Zone Power Distribution, and restructuring of distribution areas from other public-operated distribution areas; and
(iv) in establishing a transparent energy sector, on 10 March 2003 Parliament passed the new Energy Regulatory Commission Act 2003 as the basis for establishing an Energy Regulatory Commission.[5]

7. With the initiation of reforms in 1994, the organization of the sector has changed. In 1994, all generation was with BPDB; a decade later, several public-private and private sector entities have been licensed to construct and operate power-generating facilities. Independent power producers now account for about 40% of net power generation in Bangladesh.

8. In September 2001, the Government made a special budget allocation of Tk690 million (about 30% of its total dues) to settle its outstanding dues to BPDB and DESA. This process is continued and expanded under ADB's Power Sector Development Program[6] to include DESCO and rural electric cooperatives, along with a comprehensive financial restructuring of the sector, focused on BPDB, DESCO, DESA, and PGCB.

[5] The United States Agency for International Development and ADB are assisting the Government in establishing the Energy Regulatory Commission, and in providing capacity building to comprehensively amend the existing legislation, regulations, and tariffs in the sector to bring into effect the principles noted in para. 4.

[6] ADB. 2003. *Report and Recommendation of the President to the Board of Directors for the Power Sector Development Program in Bangladesh*. Manila.

9. ADB recently evaluated its power assistance program[7] in Bangladesh and several key lessons may be drawn. At the project level, these include the need to (i) minimize extensive delays with public sector project implementation; (ii) improve local capacities in project preparation, implementation, and operation and selection of appropriate technology; (iii) improve ownership of TA; (iv) improve financial management capacities; and (v) avoid use of piecemeal approaches to financing change processes such as improving financial systems.

10. At the strategic level, first, ADB's approach to sector reform, which is based on pilot testing change and learning by doing, succeeded in facilitating change. By the success of the individual projects and newly created entities, the approach clearly demonstrates the direction that future reforms should take. Second, the pace of privatization in an environment such as Bangladesh, especially in transmission and distribution, is likely to be slow. Prioritization is important. Third, attaining commercial viability takes time and requires a financial and commercial overview of the sector, particularly over issues such as tariffs and debt defaults among sector entities and the Government.

11. The sector assistance program evaluation concluded that ADB should maintain its role as coordinating development partner in the sector and is in a unique position to do so. It has a wide range of experience covering all areas of activity in the power sector; an excellent sectoral overview; key skills in its resident mission; a long-term track record of working effectively with the key policy makers in the sector; and widespread support and trust in the development partner community, the Government, and sector entities. ADB will continue to review and monitor the reform and restructuring process and conduct regular policy dialogue with the Government. ADB will continue to assist the Government to pursue further restructuring and deepen reforms to promote good governance, sector efficiencies, and greater private sector participation in the power sector.

III. THE TECHNICAL ASSISTANCE

A. Purpose and Output

12. The objective of the TA is to assist the Government, BPDB, DESCO, DESA, and PGCB to prepare the proposed Power Sector Development Program II, aiming to improve sector performance both technically and financially. The Program is expected to address issues constraining sector development through continuing policy reform and restructuring of the sector and complementary investments in priority projects. The complementary investments will finance priority projects that will be determined by updating the 1995 Power System Master Plan. Studies for financial restructuring of BPDB and DESA[8] and for creating BPDB as a holding company of all power sector companies will be undertaken.

B. Methodology and Key Activities

13. Detailed study of sector structure, financial restructuring, poverty reduction, and investment planning will be undertaken to meet the reform objectives and to facilitate greater private sector participation in the power sector. Advice on policy matters and stakeholder communication will be provided throughout TA implementation.

---

[7] ADB. 2003. *Sector Assistance Program Evaluation of Asian Development Bank Assistance to Bangladesh Power Sector.* Manila.

[8] ADB. 2002. *Corporatization of Dhaka Electric Supply Authority.* Manila.

14. The scope of work consists of (i) supporting further restructuring and deeper reforms, and providing policy advice; (ii) developing a short to medium-term reform agenda and a long-term reform plan; (iii) proposing options for a sector structure after further unbundling of BPDB and reconfiguration of distribution; (iv) reviewing accounts and accounting practice and preparing financial statements for FY2004 based on international accounting standards for BPDB and DESA; (v) developing a 10-year financial projection model and identifying liabilities to be taken over by unbundled successor entities of BPDB; (vi) updating the 1995 Power System Master Plan to identify priority projects that are based on least-cost analysis; (vii) undertaking financial, economic, environmental, resettlement, and social analyses of selected priority projects suitable for ADB financing; (viii) assessing the reform impact on the poor and recommending mitigating measures; (ix) supporting communications with stakeholders; and (x) providing continuing capacity building and training to the counterpart staff on reform-related issues.

15. 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 2 provides the summary initial poverty and social analysis.

C. Cost and Financing

16. The total cost of the TA is estimated at $1.1 million equivalent, of which the foreign exchange cost is $679,000 and the local currency cost is $421,000 equivalent. The Government has requested ADB to finance $840,000 equivalent, comprising the entire foreign exchange cost and a portion of the local currency cost amounting to $161,000 equivalent, on a grant basis from the Japan Special Fund, funded by the Government of Japan. The Government will finance the remaining $260,000 equivalent of local currency costs through in-kind contributions of the Executing Agency and implementing agencies. These will include office accommodation and facilities, local communications, counterpart staff, local transportation to consultants and counterpart staff for field visits in Bangladesh, engineering reports, and other information needed for the TA. Detailed cost estimates are provided in Appendix 3. The Government has been advised that approval of the TA does not commit ADB to finance any ensuing project or program.

D. Implementation Arrangements

17. The Project Management Unit (PMU) of the Power Division of the Ministry of Power, Energy and Mineral Resources will be the Executing Agency for the TA. Under the supervision of the PMU, BPDB, DESA, DESCO, PGCB, and other distribution entities will implement the TA with assistance of an international consulting firm. A coordination steering committee chaired by Secretary of the Power Division with a qualified and experienced representative each from BPDB, DESA, DESCO, PGCB, and other distribution entities will be set up before the TA consultants are fielded. The TA consultants will liaise with the coordination steering committee and work closely with PMU and the implementing agencies, and will have full access to all documents and data required for TA implementation. The TA consultants will need to coordinate closely with the consultants involved in the corporatization of DESA (footnote 8). The implementing agencies will each nominate a core group of staff to work as counterpart staff with the TA consultants, including provision of counterpart funds and staff for field visits. PMU and the implementing agencies will provide, free of charge to the consultant team, (i) office

accommodation and facilities, including secretarial support; (ii) land transportation within Bangladesh; and (iii) engineering inputs for the consultants' work. The consultants will pay for international communications connected with implementation of the TA. PMU and the implementing agencies will assist the consultants in data gathering, preliminary analysis, and report writing. PMU and the implementing agencies will also provide all necessary assistance to the TA consultants in liaising with other government ministries and agencies, and in obtaining necessary data and documentation from ministries and agencies. The TA consultants will make their own arrangements for personal computers and other facilities for production of their reports. The TA consultants will organize training workshops in Dhaka and provide hands-on training for the counterpart staff as part of capacity building and technology transfer.

18. The TA will require about 20 person-months of international and 25 person-months of domestic consulting services. It will be implemented in three parts over a 7-month period, commencing in October 2004 and finishing in May 2005. The consultant teams responsible for the power sector reform and restructuring program and the Power System Master Plan Update will be fielded when the steering coordination committee and counterpart staff have been nominated. The consultant team responsible for preparing the investment projects will only be fielded after the Power System Master Plan has been updated to define a list of priority projects. Outline terms of reference for the consultants are provided in Appendix 4. The international consultants will have expertise in power sector restructuring, energy economics and macroeconomic modeling, financial analysis and financial management, power system planning, least-cost generation expansion, transmission analysis and design, environmental assessment, resettlement, poverty assessment, and social impact analysis. A consulting firm or consortium of firms will be engaged by ADB in accordance with its *Guidelines on the Use of Consultant*s and other arrangements satisfactory to ADB for the engagement of domestic consultants. Consultants will be recruited through 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.

19. The consultants will submit an inception report focusing on the work program no later than 2 weeks after commencing their services. An interim report and a draft final report will be submitted 2 months and 5 months after inception, respectively. The consultants will carry out all its tasks in Bangladesh, including preparation of reports, to maximize capacity building and technology transfer. Tripartite meetings will be held in Dhaka to discuss the inception, interim, and draft final reports. The consultants will prepare status reports for their specific scope of works highlighting any issues that could become critical for 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, incorporating all comments received from the Government and ADB.

IV. THE PRESIDENT'S DECISION

20. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of $840,000 on a grant basis to the Government of Bangladesh for preparing the Power Sector Development Program II, and hereby reports this action to the Board.

PRELIMINARY PROGRAM FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
Goal Economic development and reduction of poverty through improved governance, financial and operational performance of the power sector	New electrical connections within 2 months of applications by 2008 Competitive dispatch of power stations by 2006 Gradual decrease of Government's subsidies to the power sector	Quality of supply reports by the sector utilities Monthly MIS reports of BPDB, DESA, DESCO, and PGCB	
Purpose Power sector further reformed through financially restructuring of two major companies (BPDB and DESA) and long-term sustainability of the sector without Government's support Improved customer service and quality of supply	Power system losses decreased from 26% to 20% by 2008 Accounts receivable not to exceed 2 months billing 500,000 new consumer connections Write off of unrealizable dues and part of overdue debt-servicing liabilities of BPDB and DESA. No load shedding by 2008	Power company MIS reports ADB review missions	Tariffs are restructured to encourage energy conservation and improve economic growth National load dispatch center operational by 2007 Timely private and public investment in new generation plants according to current government plans
Outputs Financial restructuring of BPDB and DESA assessed Power System Master Plan updated Technical, least-cost, economic, and financial justification for the project Project procurement and implementation plans, and bidding documents for all contract packages	Draft TA final report of the consultant by March 2005	Project implementation progress report and completion report Tripartite meetings	Quality of Government's internal resources for project preparation Availability and reliability of necessary data and statistics

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
Project administration memorandum, and recommended project monitoring and reporting system Initial social assessment for each project component, and resettlement plans Appropriate environmental category based on findings of the project preparatory TA. Draft terms of reference and estimated cost of implementation consulting services			
Activities Assess financial restructuring of BPDB and DESA Update Power System Master Plan Carry out economic, financial, environmental, resettlement, and social analyses	Commencement date - October 2004 Completion date - May 2005	TA progress reports	No delay in TA letter signing
Inputs Consultants Government's internal resources	20 person-months of international and 25 person-months of domestic consultants ADB TA grant of $840,000 Government provision of $260,000 of in-kind contributions	TA progress reports and completion report	Competent consultants Counterpart staff and budget available on time

ADB = Asian Development Bank, BPDB = Bangladesh Power Development Board, DESA = Dhaka Electric Supply Authority, DESCO = Dhaka Electric Supply Company Ltd., MIS = management information systems, PGCB = Power Grid Company of Bangladesh, Ltd., TA = technical assistance.

INITIAL POVERTY AND SOCIAL ANALYSIS

A. Linkages to the Country Poverty Analysis

Is the sector identified as a national priority in country poverty analysis?	☒ Yes ☐ No	**Is the sector identified as a national priority in country poverty partnership agreement?**	☒ Yes ☐ No

Contribution of the sector or subsector to reduce poverty in Bangladesh:

Increased efficiency in the energy sector is an essential component for economic growth in Bangladesh. According to the Bangladesh Bureau of Statistics 2000, national access to power is about 31%, which is considered to be small and insufficient even by standards of low-income countries. In 2000, nationally, 12% of the poorest households had electricity connections, 3% in rural and 46% in urban areas. People who have access to electricity receive poor, unreliable service with regular power outages and low voltage. Improved energy services are essential for the country's economic growth and other social services. Efficient power supply is essential for the manufacturing and service industry, particularly the micro and small industries, including the garment sector, which employs several million poor, particularly women. Agricultural production is also dependent on energy, especially electricity.

B. Poverty Analysis — Poverty Classification: Other

What type of poverty analysis is needed?

The first block of domestic power consumption of 100 kilowatt-hour per month is subsidized in Bangladesh. In the financial year 2002 the highest electricity consumption was in the residential category. The envisaged program, which is similar to the Dhaka Power Transmission and Distribution Project, can be expected to have indirect benefits on the lives of poor people who use small amounts of electricity and women who engage in micro-level production activities (Greater Dhaka Power Transmission and Distribution Project Phases II and II A, Evaluation Report/EV550-1994).

While the policy and investment components are not specifically designed to have poverty impacts, they are likely to result in indirect positive impacts on the poor in terms of income and employment, and public services such as health, education, and municipal services. According to Bangladesh Power Development Board (BPDB), the following key improvements are expected: (i) consumers will receive uninterrupted, improved electricity supply; (ii) commercial and industrial operations will be uninterrupted; (iii) low voltage problems, which are particularly damaging to remote rural areas, will improve; and (iv) replacement of old lines with insulated lines will improve safety. The benefits will be in employment; income; better supply of essential services like water, street lights, and diagnostic and health services; and cost saving for energy and maintenance of equipments with better supply of power.

On the policy side, improved governance which includes streamlining of financial operations and billing arrangements, and corporatizing and financial restructuring of BPDB and Dhaka Electric Supply Authority (DESA) will result in better service to the public. The establishment of an independent regulator will result in transparent and consultative procedures for issuing tariff rulings and distribution services. Reduced costs of products can be expected from price rationalization and efficiency gains. Employees will benefit from a new management structure and skills training.

On the investment side, the new peak power generation unit to be established will provide regular and improved electricity supply. The new plant will provide considerable environmental benefits; cost savings on standby generators; and improved efficiency in the manufacturing business, including garments, pharmaceuticals, and electronics. All categories of workers and particularly those in the ready-made garment industries are likely to benefit from better working environments and reduced hours of work.

Unstable power supply and peak period cuts affect peoples' lives in various ways. Poor, and particularly women who work as frontline piece workers, are severely affected by power loss. Low income, long working hours, and sometimes bringing in children to make up lost hours result from unstable power supply. Many electrical items are damaged due to power interruption. Small business units such as photo studios, cyber cafes, beauty parlors, photocopy shops all complain of disruption to business and loss of income during power outage, especially during peak times. Health clinics and diagnostic services are also seriously disrupted as equipment become nonoperational due to low voltage or

have a shorter service life because of constant power outage. Patients are inconvenienced by having to wait long hours or to return due to disruption of services. Municipal water supply and streetlights are also of poor quality due to power disruption.

Beneficiaries expressed the need for regular and expanded power supply. Perceived benefits from an improved system include increase in income and employment through stable production activities in existing and new units. Costs and production losses could be minimized by reducing damage to equipment. Basic municipal and other services would be improved.

C. Participation Process

Is there a stakeholder analysis? ☒ Yes ☐ No

Is there a participation strategy? ☒ Yes ☐ No

D. Gender Development

Strategy to maximize impacts on women:
The Executing Agency and implementing agencies will ensure that women and men are given equal opportunities for employment on the investment project. Contractors will be required to ensure equal payment for equal work.

Has an output been prepared? ☐ Yes ☒ No

E. Social Safeguards and other Social Risks

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
Resettlement	☐ Significant ☐ Not significant ☒ None	The investment projects will be designed in consultation with local authorities and people in the project areas to avoid sensitive areas such as settlements, national parks, forests, holy places, etc. Use of government land free of encumbrances will be maximized.	☐ Full ☐ Short ☒ None
Affordability	☐ Significant ☒ Not significant ☐ None	Electricity is already subsidized.	☐ Yes ☒ No
Labor	☐ Significant ☒ Not significant ☐ None	Voluntary transfers only. Employment opportunities within the investment project will be available equally to all, on the basis of professional competence, irrespective of gender, ethnicity, or religion.	☐ Yes ☒ No
Indigenous Peoples	☐ Significant ☒ Not significant ☐ None	No issues.	☐ Yes ☒ No
Other Risks and/or Vulnerabilities	☐ Significant ☒ Not significant ☐ None	Not required.	☐ Yes ☒ No

COST ESTIMATES AND FINANCING PLAN
($'000)

Item	Foreign Exchange	Local Currency	Total Cost
A. Asian Development Bank Financing[a]			
1. Consultants			
a. Remuneration and Per Diem			
i. International Consultants	460.0	0.0	460.0
ii. Domestic Consultants	0.0	100.0	100.0
b. International and Local Travel	75.0	0.0	75.0
c. Reports and Communications	10.0	0.0	10.0
2. Equipment (hardware and software) [b]	20.0	0.0	20.0
3. Workshops and Training	20.0	10.0	30.0
4. Socioeconomic Surveys	0.0	20.0	20.0
5. Miscellaneous Administration and Support Costs	0.0	10.0	10.0
6. Contract Negotiations[c]	5.0	0.0	5.0
7. Contingencies	89.0	21.0	110.0
Subtotal (A)	**679.0**	**161.0**	**840.0**
B. Government Financing			
1. Office Accommodation and Transport	0.0	90.0	90.0
2. Remuneration and Per Diem of Counterpart Staff	0.0	120.0	120.0
3. Administrative Support and Others	0.0	50.0	50.0
Subtotal (B)	**0.0**	**260.0**	**260.0**
Total	**679.0**	**421.0**	**1,100.0**

[a] Financed by the Japan Special Fund, funded by the Government of Japan.
[b] Includes office hardware (four high performance desktop computers, a network laser printer, a photocopier, and a facsimile machine) and computer software for wordprocessing, spreadsheet analysis, and Internet access.
[c] Cost related to participation of one Government official as observer during the contract negotiations.
Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The Asian Development Bank (ADB) is considering financing a Power Sector Development Program II loan to Bangladesh to support further sector reforms and restructuring of sector finances. The aim is to improve performance of and facilitate greater private sector participation in the power sector. Consulting services (20 person-months of international and 25 person-months of domestic consultants) are required to assist ADB to prepare the proposed Program, including updating the 1995 Power System Master Plan and preparing relevant sections of ADB's report and recommendation of the President for the Board of Directors. The Executing Agency will be the Project Management Unit (PMU) of the Power Division of the Ministry of Power, Energy and Mineral Resources. The Bangladesh Power Development Board (BPDB), Power Grid Company of Bangladesh Limited (PGCB), Dhaka Electric Supply Authority (DESA), and Dhaka Electric Supply Company Limited (DESCO), and other power distribution entities will be the implementing agencies. The consultant teams responsible for the power sector reform and restructuring program and the Power System Master Plan update will be fielded when the steering coordination committee and counterpart staff have been nominated. The consultant team responsible for preparing the investment projects will only be fielded after the Power System Master Plan has been updated to define a list of priority projects. The ensuing loan is envisaged to include the following tentative components:

(i) complementary priority investments as determined by updating the 1995 Power System Master Plan; and
(ii) financial restructuring of BPDB and DESA, preparation for creating BPDB as a holding company of all public power sector companies, and a partial divestment of DESA's shares in DESCO.

A. Support for Power Sector Reform and Restructuring

2. The consultants' terms of reference will include, but not necessarily be limited, to the following tasks.

(i) Review all reform actions taken by BPDB and DESA, and assess the current status of their reforms.

(ii) Develop a short to medium-term reform agenda with a time-bound action plan based on the Government's paper, "Power Sector Reforms in Bangladesh," and assess the political economy of the country and its impact on effecting the proposed reform agenda.

(iii) Develop a set of key financial performance indicators with target levels for BPDB and DESA, to enable evaluation of their performance.

(iv) For a major financial restructuring of the balance sheets of BPDB and DESA, make an in-depth review of their current financial position, including (a) BPDB's accounts receivable from DESA for power supply, (b) BPDB's accounts receivable from other customers for distribution of electricity, (c) BPDB's debt service liabilities to the Government and other creditors, (d) DESA's accounts receivable from supply of electricity, (e) DESA's accounts payable to BPDB, and (f) DESA's debt service liabilities to the Government and other creditors.

(v) Prepare a comprehensive proposal on how to make necessary write-offs in turning the reconstituted BPDB and DESA into companies that are financially profitable and viable in the long-term.

(vi) Based on the projections in item (iv), assess the impact of the reform program on the Government's budget, and estimate the costs of adjustment.

(vii) Organize, in collaboration with ADB, the Government, PMU, and the implementing agencies, seminars and workshops on the outputs of the technical assistance (TA) and other reform issues, and be resource persons for such seminars and workshops in Dhaka.

(viii) Conduct, in accordance with ADB's *Handbook on Poverty and Social Analysis* and *Guidelines for Impact of Program Loans on Poverty*, a poverty impact and social assessment to assess the direct and indirect effects on poor and vulnerable groups of the proposed reform policy, such as tariff increase, mandatory meter installation, and labor rationalization. All information should be disaggregated by gender, and poor and vulnerable groups. The poverty and social assessment will recommend mitigation measures as well as measures to enable poor and vulnerable groups to benefit from the reform program.

(ix) Develop an appropriate monitoring mechanism to enable the Government, BPDB, DESA, and PMU to monitor implementation of the proposed program.

(x) Update the reform plan and prepare a program framework according to ADB's standards and formats.

(xi) Prepare an environmental assessment of the policy matrix.

B. Power System Master Plan Update

3. The consultants' terms of reference will include, but not necessarily be limited to, the following tasks.

(i) Conduct a power market survey and assist BPDB, PGCB, PMU, and distribution entities to review and revise previous load forecasts and propose maximum and minimum load growth scenarios.

(ii) Assist BPDB to review power system data and update as necessary.

(iii) Assist BPDB and PMU to carry out simulation studies using WASP III software (or a later version) with updated power system data to arrive at a least-cost generation expansion plan.

(iv) Assist BPDB, PGCB, and PMU to carry out transmission analyses using the CYME power system analysis software.

(v) Assist PGCB to update its transmission expansion plan.

(vi) Assist BPDB, PGCB, and PMU to prepare financial projections up to the year 2025, with emphasis on cash flows for the recommended power system

expansion plan, and conduct financial and economic analyses to determine if the proposed development program is justified.

(vii) Prepare the Power System Master Plan update report in collaboration with BPDB, PGCB, and PMU.

(viii) Prepare an environmental assessment of the power system master plan update.

C. Preparation of Investment Projects

4. The consultants' outline terms of reference will include, but not necessarily be limited to, the following tasks.

(i) Review BPDB's, DESCO's, DESA's, and PGCB's power systems and their medium-term investment plans, and identify priority projects in the updated Power Sector Master Plan for ADB funding, with a focus on peak generation, transmission, and urban distribution.

(ii) Review and update cost estimates, including physical and price contingencies and interest during construction. Update lists of materials, equipment, and works necessary to implement the investment projects.

(iii) Indicate project implementation and procurement arrangements, prepare a tentative project implementation schedule, and undertake tentative contract packaging.

(iv) In accordance with *Guidelines for the Financial Governance and Management of Investment Projects Financed by the Asian Development Bank (2001)*, carry out in-depth financial analysis of the proposed investment projects, 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 investment projects. 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 report and recommendation of the president (RRP).

(v) Prepare a financing plan for the investment subprojects, including proposed ADB lending, any prospective cofinancing, and appropriate counterpart funds for local currency expenditures.

(vi) Identify the specific sources and projection of revenue from the investment projects, to indicate the financial viability of the investment subprojects, also taking into account the reduction of system losses and any improvements in operational efficiency. Develop a financial projection model and prepare a 10-year financial projection for all Implementing agencies involved covering income statement, balance sheet, and cash flow statements. The projections should take the investment and restructuring actions into account.

(vii) Assess the financial management of the Implementing agencies, 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 the implementing agencies.

(viii) In accordance with ADB's *Guidelines for Economic Analysis of Projects*, conduct an economic and distributional evaluation of the investment projects 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.

(ix) 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*.

(x) 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.

(xi) Review and revise initial environmental examination reports prepared by the implementing agencies for the investment projects, to meet 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 required by the Government. Assist the implementing agencies to prepare environmental impact assessments and their summaries if the initial environmental examination reports show significant adverse environmental impacts.

(xii) Ensure that the costs for implementing recommended mitigation measures, environmental management and monitoring plans, and any capacity strengthening measures, are included in the proposed investment projects' development costs.

(xiii) In accordance with ADB's *Handbook on Poverty and Social Analysis* and *Handbook for Integrating Poverty Impact in Economic Analysis of Projects*, analyze the social, poverty, and development impact of the investment projects. Prepare a poverty impact assessment and a summary poverty and social analysis according to the ADB format. Identify the impact on indigenous peoples, and prepare an appropriate indigenous peoples plan, as necessary, in accordance with ADB's *Policy on Indigenous Peoples*.

(xiv) In accordance with ADB's *Policy on Involuntary Resettlement* and *Handbook on Resettlement* 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.

(xv) 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) by affected people, and a baseline socioeconomic survey of the affected population.

(xvi) 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.

(xvii) If the investment projects are likely to involve significant[1] resettlement, prepare a resettlement plan with full participation of stakeholders and the executing and implementing agencies. Prepare (a) a short resettlement plan if the resettlement aspects of the investment subprojects are classified as not significant; (b) a summary resettlement plan; and (c) an indigenous peoples development plan, if required.

D. Stakeholder Communication

5. In collaboration with other consultants, the domestic consultant will do the following:

(i) Support PMU and BPDB, DESA, DESCO, and PGCB in developing a strategy for communication with its employees and consumers at state and local levels.

(ii) Support PMU and BPDB, DESA, DESCO, and PGCB in identifying a suitable modality for communication with stakeholders and appropriate bodies to represent major consumer groups.

(iii) Support PMU and BPDB, DESA, DESCO, and PGCB and/or other consumer bodies in organizing workshops and seminars for building consumers' awareness of the reform and reflecting their views in the reform process, including reduction of non-technical losses.

(iv) Support PMU and BPDB, DESA, DESCO, and PGCB and other consultants in organizing workshops and seminars with the employees and outside stakeholders to disseminate the outputs of the TA and information about the reform program.

E. Reporting

6. 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 5 months after inception. Tripartite meetings will be held in Dhaka to discuss the reports. 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 including the Power System Master Plan update, in a format acceptable to ADB and incorporating all comments received from the Government, PMU, implementing agencies, and ADB.

[1] 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.