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Report No: 41328-PK

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$ 173.6 MILLION

AND PROPOSED CREDIT

IN THE AMOUNT OF SDR 51 MILLION
(US$ 83.1 MILLION EQUIVALENT)

TO THE

ISLAMIC REPUBLIC OF PAKISTAN

FOR AN

ELECTRICITY DISTRIBUTION AND TRANSMISSION IMPROVEMENT PROJECT

IN SUPPORT OF THE FIRST PHASE OF
THE ELECTRICITY DISTRIBUTION AND TRANSMISSION IMPROVEMENT PROGRAM

May 22, 2008

Sustainable Development Department
South Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective January 31, 2008)

Currency Unit = Pakistan Rupees
Rs. 62.66 = US$1
Rs. 1 = US$0.016

FISCAL YEAR
July 1 – June 30

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank	JBIC	Japan Bank for International Cooperation
APL	Adaptable Program Loan	KESC	Karachi Electricity Supply Company
ARP	Abbreviated Resettlement Plan	kV	Kilovolts
BoD	Board of Directors	KWh	Kilo-watt hour
CAS	Country Assistance Strategy	kVA	Kilovolt-Ampere
CEO	Chief Executive Officer	LAA	Land Acquisition Act (1894)
CPAR	Country Procurement Assessment Report	LESCO	Lahore Electric Supply Company
CPPA	Central Power Purchase Agency	M&E	Monitoring and Evaluation
DA	Designated Account	MEPCO	Multan Electric Power Supply Company
DISCO	Distribution company	MTR	Mid Term Review
EBIDTA	Earnings before interest, depreciation, taxes	MVA	Mega volt ampere
ELR	Energy loss reduction	MW	Mega-watt
EMP	Environmental Management Plan	MWP	Ministry of Water and Power
ESA	Environmental and Social Assessments	NCB	National Competitive Bidding
ESI	Environmental and Social Inspector	NEPRA	National Electric Power Regulatory Agency
ESM	Environmental and Social Monitor	NPV	Net present value
F&A	Finance & Accounting	NTDC	National Transmission and Dispatch Company
FATA	Federally Administered Tribal Area	O&M	Operations & Maintenance
FY	Fiscal Year	PAP	Project Affected Person
GDP	Gross Domestic Product	PCB	Poly-Chlorinated Biphenyls
GENCO	Generation company	PD	Project Director
GoP	Government of Pakistan	PDD	Project Description Document
GSC	Grid Station Construction	PD/RE	Project Director/Resident Engineer
GST	General Sales Tax	PD/XEN	Project Director/Executive Engineer
GWh	Gigawatt-hour	PEPCO	Pakistan Electric Power Company
HESCO	Hyderabad Electric Supply Company	PHA	Parks & Horticultural Authority
HR	Human Resources	PIC	Policy & Implementation Cell (MWP)
HVDS	High Voltage Distribution System	PIU	Project Implementation Unit
IAs	Implementing Agencies	PPRA	Public Procurement Regulatory Authority
ICB	International Competitive Bidding	PPIB	Private Power and Infrastructure Board
ICR	Implementation Completion Report	PPP	Power purchase price
IPPs	Independent Power Producers	PRSC	Poverty Reduction Support Credit
IESCO	Islamabad Electric Supply Company	PRSP	Poverty Reduction Strategy Paper
IUFR	Interim Un-audited Financial Report	PSCBP	Public Sector Capacity Building Project

R&D	Research & Development	SOP	Standard Operating Procedure
ROR	Rates of return	STG	Secondary transmission grid
RP	Resettlement Plan	TA	Technical Assistance
RPF	Resettlement Policy Framework	TESCO	Tribal Area Electricity Supply Company
SCADA	Supervisory Control And Data Acquisition	T&D	Transmission and distribution
SDR	Special Drawing Rights		

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Task Team Leaders:	Vladislav Vucetic / Rashid Aziz

PAKISTAN
Electricity Distribution and Transmission Improvement Project

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PAKISTAN

ELECTRICITY DISTRIBUTION AND TRANSMISSION IMPROVEMENT PROJECT

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

SASDE

Date: May 22, 2008	Team Leaders: Vladislav Vucetic/Rashid Aziz
Country Director: Yusupha B. Crookes	Sectors: Power (100%)
Sector Manager/Director: Salman Zaheer	Themes: Infrastructure services for private sector development (P)
Project ID: P095982	Environmental screening category: Partial Assessment
Lending Instrument: Adaptable Program Loan	

Project Financing Data

[X] Loan [X] Credit [ ] Grant [ ] Guarantee [ ] Other:

For Loans/Credits/Others:
Total Bank financing (US$m.): 256.7
Proposed terms: IBRD Flexible Loan with fixed spread, a 30 year maturity, including a 5 year grace period and level principal repayments. The credit is being provided in two portions: one portion in the amount of SDR 18.7 million (US$30.5 million equivalent) in hard IDA terms (i.e. 4.2% interest and 0.75% service charge); and a second in the amount of SDR 32.3 million (US$52.6 million equivalent) in regular IDA terms (i.e. 0.75% service charge). Both portions have 35 years of maturity, including a 10 year grace period.

Financing Plan (US$m)

Source	Local	Foreign	Total
Borrower	53.2	0.0	53.2
International Bank for Reconstruction and Development	82.4	91.2	173.6
International Development Association	24.9	58.2	83.1
Total:	160.5	149.4	309.9

Borrower:
Ministry of Water and Power
Government of Pakistan
Pak Secretariat, Block A
Islamabad
Pakistan
Tel: (92)-51-9202335 Fax: (92)-51-9206272
secretary@mowp.gov.pk
www.mowp.gov.pk

Responsible Agencies:

Lahore Electric Supply Company (LESCO)
22-A Queen's Road
Lahore
Pakistan
Tel: (92)-42-9204801 Fax: (92)-42-9204803
ceo@lesco.gov.pk
www.lesco.gov.pk

Multan Electric Power Company (MEPCO)
MEPCO Complex
Khanewal Road
Multan
Pakistan
Tel: (92)-61- 9210333 Fax: (92)-61-9210350
ceomepco@yahoo.com
www.mepco.com.pk

National Transmission and Dispatch Company (NTDC)
WAPDA House
Lahore
Pakistan
Tel: (92)-42-9202229 / 9202211, ext 2060 Fax: (92)-42-9202053
ceo@ntdc.com.pk
www.ntdc.com.pk

Hyderabad Electric Supply Company (HESCO)
WAPDA Offices Complex
Hussainabad
Hyderabad
Pakistan
Tel: (92)-22-9260023 / 9260161 / 92 Fax: (92)-22-9260361
pso_ceohesco@yahoo.com
www.hesco.gov.pk

Islamabad Electric Supply Company (IESCO)
Street No. 40
Sector G-7/4
Islamabad
Pakistan
44000
Tel: (92)-51-9252937, 9252902 Fax: (92)-51-9252923
ce@iesco.com.pk
www.iesco.com.pk

Pakistan Electric Power Company
WAPDA House, Room 719
Lahore
Pakistan
Tel: (92)-42-9202140 Fax: (92)-42-9202402
ceo@pepco.gov.pk
www.pepco.gov.pk

Estimated disbursements (Bank FY/US$m)									
FY	2009	2010	2011	2012					
Annual	25.7	77.1	102.7	51.2					
Cumulative	25.7	102.8	205.5	256.7					

Project implementation period: Start June 2008 End December 2011
Effectiveness: late August
Expected closing date: June 30, 2012

Does the project depart from the CAS in content or significant in other respects? ***Ref. PAD I.C.***	[ ] Yes [X] No
Does the project require any exceptions from Bank policies? ***Ref. PAD V.F.***	[ ] Yes [X] No
Have these been approved by Bank management?	[ ] Yes [ ] No
Is approval for any policy exception sought from the Board?	[ ] Yes [X] No
Does the project include any critical risks rated "substantial" or "high"? ***Ref. PAD III.E.***	[X] Yes [ ] No
Does the project meet the Regional criteria for readiness for implementation? ***Ref. PAD IV.G.***	[X] Yes [ ] No

Project development objective ***Ref. PAD II.C., Technical Annex 3***
The objectives of the APL1 project are to: (i) strengthen the capacity of the distribution and transmission networks to meet increasing electricity demand in the selected areas more efficiently and with better reliability and quality; and (ii) strengthen institutional capacity of the selected distribution companies and support other priority areas of the power sector reform.

Project description *[one-sentence summary of each component]* ***Ref. PAD II.D., Technical Annex 4***
The project includes the following components: (i) physical strengthening of distribution networks operated by four distribution companies (HESCO, IESCO, LESCO, and MEPCO); (ii) removing some bottlenecks in the transmission grid, operated by NTDC; (iii) technical assistance for capacity building, specialized studies, energy efficiency, and sector reform and (iv) a pilot energy efficiency program, involving installation of energy saving equipment at the customer level.

Which safeguard policies are triggered, if any? ***Ref. PAD IV.F., Technical Annex 10***
Environmental Assessment (OP/BP 4.01); Involuntary Resettlement (OP/BP 4.12); Projects in Disputed Areas (OP/BP 7.60)
The project involves several components in the disputed area of Kashmir, to be carried out by IESCO. These include upgrade of three and extension of two grid stations and five transmission lines.

Significant, non-standard conditions, **if any**, for:
Ref. PAD III.E.
Board presentation:
None.

Loan/credit effectiveness:
None.
Covenants applicable to project implementation:

- End Consumer Tariffs: Until such time that the adjustment for power purchase price (PPP) is automatically passed through to the end consumer tariff, HESCO, IESCO, LESCO and MEPCO to file tariff applications and/or tariff petitions to NEPRA, in accordance with the provisions of the NEPRA Act.
- Timely Tariff Notification: Government of Pakistan to notify NEPRA determined tariffs, or file a request for review, no later than 15 working days following such NEPRA determination, as per NEPRA Act. In case that review is requested, the Government will notify NEPRA determination within a reasonable time period after NEPRA's completion of the requested review, to ensure its timely implementation.
- Timely Payment of Subsidies: Ministry of Finance to transfer invoiced subsidies submitted by DISCOs for energy billed as well as any other monies due on a monthly basis and not later than the 25th of each month in accordance with approved "Standard Operating Procedure (SOP) with Timelines and Responsibilities for Sale and Purchase of Electricity".
- Financial Projections: NTDC, HESCO, IESCO, LESCO and MEPCO to submit, for review by the Bank and MWP by or before June 30 of each year, five year rolling projections integrating financial, operational and investment program information (and including, among other things, projected income statements, balance sheets and cash flow statements).
- Liquidity/Financial Sustainability: NTDC and LESCO to maintain minimum debt service coverage ratio of 1.2 starting in the fiscal year ending June 30, 2009. IESCO and MEPCO to maintain minimum debt service coverage ratio of 1.0 starting in the fiscal year ending June 30, 2009 and 1.2 thereafter.
- Financial Restructuring Plan: HESCO to submit for Bank review and comment a financial restructuring plan by December 31, 2008 and to commence implementation of such plan, as approved by its Board, by July 1, 2009.
- Procurement Action Plan: The Borrower and the project implementing agencies to carry out the Project in accordance with the provisions of the Procurement Action Plan as provided to the Bank on February 21, 2008.
- Energy Efficiency component: The Project Implementing Entities shall prepare project description documents detailing the activities proposed under this component, economic and financial viability, implementation and procurement plans, for approval by the Borrower and the Bank.

I. STRATEGIC CONTEXT AND RATIONALE

A. Country and sector issues

Country Background

1. Pakistan has enjoyed good economic performance in recent years. After a decade of political instability, macroeconomic crisis, and limited economic and social progress in the 1990s, Pakistan has emerged as one of the fastest-growing economies in Asia, with rising per capita income and improved social indicators. Pakistan's Gross Domestic Product (GDP) was US$142.6 billion in 2006-07. Successive years of high growth (real GDP growth of 7.5% in FY04, 8.6% in FY05, 6.6% in FY06, and 7% in FY07) have led to commensurate high growth in electricity demand during this period. Macro-economic performance has deteriorated significantly – inflation has accelerated to double digit levels, the fiscal deficit and current account deficits have widened substantially – during FY08. These developments reflect, inter alia, sharp increases in international oil prices (and, as a direct consequence, higher levels of imports), as well as lack of adjustment by the Government in the face of these shocks. For example, domestic petroleum prices were not adjusted during the first 8 months of the fiscal year in response to increases in import costs, and the Government financed them through the budget by increasing subsidies. Nevertheless, the utilities continue to experience a sharp increase in electricity demand.

2. A program of economic reforms and institutional strengthening was articulated in the 2003 *Poverty Reduction Strategy Paper (PRSP)* entitled "Accelerating Economic Growth and Reducing Poverty: The Road Ahead." The PRSP focuses on second-generation reforms to accelerate growth to over 6% while maintaining macroeconomic stability by reducing the fiscal deficit, improving revenue mobilization, reducing explicit or implicit liabilities of the budget, improving the performance of key public enterprises, particularly in the power sector, and reducing the stock and improving the terms of public debt.

3. The Bank's assistance to Pakistan is guided by the Bank Group's Country Assistance Strategy (CAS) for the Period FY06-09. The CAS focuses on three pillars, aligned with the PRSP: (i) sustaining growth and improving competitiveness; (ii) improving government effectiveness and service delivery; and (iii) improving lives and protecting the vulnerable. The World Bank lending program for 2006-2009 supports the CAS outcomes through a mix of policy-based, fast-disbursing lending operations (a series of one-tranche national Poverty Reduction Strategy Credits – PRSCs – and provincial Development Program Loans/Credits), programmatic sector lending, and investment projects. The CAS proposes substantial lending by the Bank, with significant expansion of Bank assistance in infrastructure -- primarily energy, water, and transport -- and human development.

Power Sector Issues

4. Pakistan's power sector is in deficit, both in energy and financial terms. Electricity sales rose 40% in the five years ending June 30, 2007, while generation capacity remained practically stagnant. It is estimated that the system lacks about 2000 MW to cover peak demand with acceptable reliability. With demand expected to grow at 7-8% per year in the medium-term, current plans for capacity additions need to be revised upward to eliminate shortages. On the financial front, the sector needs significant fiscal support – estimated at US$1.7 billion for FY2007-8 (close to 20% of the projected operating revenues and 1% of GDP) – to cover the revenue deficit.

5. Poor electricity service has been identified as a major constraint to Pakistan's sustained economic growth and, hence, its ability to alleviate poverty. A World Bank report[1] found that about 40% of firms in Pakistan identified electricity as a major constraint for the operation and growth of their businesses. Some

[1] The Investment Climate in South Asia, September 2006.

of this deterioration in services is a result of Pakistan's success at adding about 1 million new (mainly household) connections each year, without a commensurate expansion of generation capacity. Even with these new connections, about a quarter of the Pakistani population has no access to electricity. This has an adverse impact on the delivery of social services, especially in poverty-stricken areas, and on achievement of the Millennium Development Goals.

6. The following issues have emerged as dominant in the sector at this time:

- **Security of supply:** A substantial investment in new generation – some of it on a fast-track basis – is needed to secure a sufficient supply of electricity. Securing gas supplies for current as well as new gas-fired generation plants is expected to be another limitation given the tightening gas supply situation. Furthermore, Pakistan may benefit from instituting effective tendering and contract management processes to reduce generation costs and enhance transparency.
- **Strengthening of transmission and distribution systems and energy efficiency improvements:** The country's transmission and distribution networks are over-loaded, under-invested, and under-maintained, with technical and commercial losses significantly above the norm. Reducing losses from such levels are generally more cost-effective measures for reducing the demand-supply imbalances than adding generation capacity.[2] This should be accompanied by more forceful energy efficiency measures on the demand side, such as: cost-reflective tariffs; promotion of more efficient end-use equipment, technology, and designs; peak load management; etc.
- **Sector financial sustainability:** Regulatory tariffs need to keep up with costs (of operating, maintaining, and expanding the system), particularly in an environment of rising fuel costs given Pakistan's large thermal generation capacity. Equally importantly, the Government needs to make timely payments of all due subsidies to the sector.

7. The Government strategy for the sector builds on the wide-ranging ***power sector reforms*** initiated in the early 1990s, aimed at improving sector performance and long term sustainability through institutional, regulatory, and structural reforms. As part of the reform, the Government opened up the sector to private investment, especially in generation, resulting in significant investments by Independent Power Producers (IPPs). An independent National Electric Power Regulatory Agency (NEPRA) was created in 1998, and WAPDA was unbundled into a number of generation, transmission, and distribution companies. After a period of deteriorating financial performance in the late 1990s, the sector made some significant improvements in the early 2000s, especially in terms of improved collections of bills. Some further reform advances during more recent years include:

- Privatization of KESC in November 2005;
- Completion of WAPDA corporate restructuring: After unbundling WAPDA in 1998 into eight distribution companies, a National Transmission and Dispatch Company (NTDC), four thermal generation companies and a hydropower company, additional actions have recently taken place that substantially completed the restructuring (including transfer of additional high-level officers, division of financial assets and liabilities, and devolution of some major sector services, such as construction of secondary transmission grids);
- Creation of better conditions for financial recovery of distribution companies through: (a) equity injection by the Government through some debt-for-equity swaps; and (b) determination of company-specific tariffs for all WAPDA successor entities, including distribution companies, accompanied by increases in end-user tariffs (February 2007 and March 2008);
- Improved technical and commercial efficiency of several distribution companies, especially those operating in the Punjab; and

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[2] For 2006-07, every one percent reduction in technical losses would have brought additional revenue of some Rs. 4.3 billion (~US$ 63 million – 1.3% of total billing) into the system at prevailing tariffs.

- Accelerated progress in electrification of villages.

8. **The unfinished reform agenda.** The objectives of Pakistan's power sector reforms are yet to be fully achieved, as some important reform measures are yet to be implemented. They include:

- **Structural reform: corporate autonomy, electricity trading, and financial management**: Now that each company in the sector has its own tariff determined by the regulator, the Government is transferring control (and accountability) of financial flows to WAPDA-successor companies. This, in turn, should lead to a functioning wholesale market, in its initial stage based on a single-buyer model, with subsequent transition to more competitive trading arrangements.
- **Corporate governance:** WAPDA had also been exercising corporate governance functions for all WAPDA-successor entities, such as appointments of the Board of Directors and senior management positions. This arrangement contained significant conflicts of interest and the Government, recognizing the need to change these arrangements, has mandated PEPCO to perform sector governance and oversight on its behalf, separated the chairmanships of PEPCO and WAPDA, placed all public-sector thermal generation companies as well as the transmission and distribution companies under PEPCO ,with all public-sector hydroelectric generation companies under WAPDA Hydel, and made significant progress in granting financial autonomy to the DISCOs.
- **Regulation:** Further refinements of the regulatory framework are needed. In particular, the following two issues should be addressed as a priority: (a) establishing a deadline within which the Government is obliged to make regulatory decisions legally binding and to avoid situations where the Government can effectively veto regulatory decisions simply by not notifying them; and (b) improving tariff structure to better target subsidies, reduce cross-subsidies, and make administration of electricity bills easier and less prone to abuse.

B. Rationale for Bank involvement

9. The World Bank has a long history of support to Pakistan's power sector. Although the last investment loan for the sector was approved in 1995 and closed in 2003[3], the Bank remained engaged in policy advice and sector reform, and has backed the reform program through a series of budget-support operations over the last ten years. Therefore, the Bank has a strong vested interest in the success of the Government's reform program and in the sector's ability to provide more reliable and efficient service.

10. The power sector is at a sensitive stage: the old, vertically integrated structure is largely dismantled, but the new entities have yet to assert themselves as fully independent companies with well functioning corporate functions and capacities. Time is needed for them to improve performance, establish a track record and creditworthiness, and attract long-term financing from the commercial market. At the same time, there are urgent and sizable investments that need to be made. A failure to invest in new equipment to meet the rising demand, improve efficiency and reliability of service, and electrify underserved and unserved areas, would be damaging both to the Pakistani economy and to the sector reform.

11. While other sources of investment financing will be available to the sector over the medium term, international development institutions can play a useful role in the transition: other sources include internal cash generation, Government budget, commercial borrowing (domestic and foreign), private equity, and borrowing from multilateral and bilateral development institutions. *Internal cash generation* can contribute to investments but is insufficient to cover the needs of the sector. *Government budget* provides significant operating and capital subsidies, especially for electrification, but the Government would like to see the budget burden reduced rather than increased. *Domestic capital market* is not deep

[3] Loan (SCL-39650) in the amount of $350 million for the Ghazi Barotha Hydropower Project, approved by the Board on 12/19/1995, and closed on 10/31/2003.

enough to provide substantial long-term investment financing, nor is the sector seen as creditworthy for such borrowing. For these reasons, access to *external commercial borrowing* is even more limited and is underpinned by Government guarantees. Government's policy is to attract *private investment* in the sector, especially in *generation* through additional green-field investments (IPPs), as well as through sales of the existing assets. The Government is open to privatizing the *distribution companies,* but will want to draw lessons from the Karachi and global experience to ensure successful outcomes. This leaves the need for substantial external *assistance from international development institutions* for physical investment and technical advice.

12. A number of multilateral development banks and bilateral donors are providing support to the power sector. Asian Development Bank has a substantial loan for strengthening *transmission* network and increasing use of renewable energy (small hydropower). A number of bilateral donors are also financing selected investments in small and medium hydropower plants and transmission. However, no external assistance is being provided to the distribution sub-sector, in spite of its key importance for service provision and overall financial performance of the sector[4].

13. Improving electricity distribution and transmission services is a key element of the overall effort of reforming Pakistan's power sector and strengthening its operating performance. These services are now provided by a number of companies established as result of sector restructuring. The restructuring has created conditions for more transparency, better accountability, and hopefully improved ability of the system to respond to the various challenges faster and with more flexibility, as each company can tailor its strategy according to the specific conditions and problems arising within its service territory. The new companies need to invest in their physical networks to keep up with increasing demand, reduce losses, and improve services. They also need to strengthen the capacity in various areas of corporate functions and establish a track record of performance and creditworthiness. The companies need external support, especially during the next several years of transition, to carry out these complex tasks of financing and implementing investment projects, strengthening corporate functions, and dealing with financial losses.

14. The Bank is in a good position to provide such assistance, given its continued and long involvement in the sector reform, its experience in financing investment projects and capacity building, and its vested interest to see the efforts succeed. The project would complement Bank assistance which may be provided through programs to support macro-economic and policy reforms. Bank involvement in the project would help the companies finance important investments for which there are no alternative financiers.

C. Higher level objectives to which the project contributes

15. Sustaining growth and improving competitiveness of the Pakistani economy is an important pillar of the Bank's Country Assistance Strategy (CAS). The CAS recognizes that attaining this objective requires significant investment in infrastructure, including in the power sector. The CAS also emphasizes the need to strengthen power sector governance. This project, which aims to improve reliability and efficiency of power supply and to help strengthen corporate functions of the implementing agencies, is therefore fully consistent with the CAS.

II. PROJECT DESCRIPTION

A. Program Objectives and Phases

16. The proposed lending instrument for this operation is a two-phase, five-year Adaptable Program Loan (APL). The higher level objectives of the program are to help support economic growth and provision of social services through adequate and more efficient supply of electricity, to be achieved through priority investments in transmission and distribution services (complementing investments in generation) and

[4] It is noted that ADB recently appraised a multi-tranche financing facility for the distribution sub-sector that would complement the Bank project.

structural reforms aimed at improving sector governance, accountability and transparency. The key program indicators will include reliability and efficiency of electricity supply attributable to distribution services; financial performance of the companies included in the program; and the level of the sector financial deficit.

17. Phase 1 of the APL program (APL1 project) will cost $309 million and be implemented over three and a half years; Phase 2 (APL2 project) with total cost of about $300 million is expected to be approved by the end of the second year of APL1 implementation, subject to the agreed triggers being met, and will be implemented over a three year period. The two phases will therefore have overlapping implementation schedules.

18. APL1 (CY2008-CY2011) will finance critical investments necessary to sustain electricity supply service in selected areas and will also include assistance to strengthen corporate functions of the distribution companies. APL2 (CY2010 – CY2013) will continue supporting priority investments with increased focus on loss reduction investments in the high-loss service areas, as well as further institutional support to the companies and the sector. The APL instrument was chosen to mitigate the risks related to project implementation, to add flexibility in adapting to the sector reform, and to allow for a mid-course adjustment of the program, if necessary.

19. The following are the indicative triggers for moving from Phase 1 to Phase 2:

(i) *APL1 successful progress*: Substantial completion of procurement under APL1 -- i.e. 80% of contracts awarded by value -- and satisfactory implementation of the project by the respective project implementing agencies as per the Bank's project supervision reports;

(ii) *Corporate autonomy*: all distribution companies covered by the program to (a) control their financial flows including managing their revenues and expenses (e.g. all revenues from consumers and subsidies from the Government deposited on accounts controlled by respective distribution companies); and (b) have full authority over the management of human resources based on a sound recruitment and compensation policy and subject to achieving staffing levels consistent with the objectives of improved productivity.

(iii) *Wholesale market fully functional*: an independent Central Power Purchase Agency (CPPA) established, fully staffed and functioning, with appropriate governance arrangements and operating rules in place; development of a sound administration function for CPPA to ensure efficient operation of the wholesale market and its evolution toward a more competitive trading arrangement over time.

20. The program supported by the APL is nested within a broader assistance to the power sector of Pakistan, provided by the World Bank Group and other donors. The policy support to the sector comes mainly from the World Bank and Asian Development Bank (ADB). The World Bank focuses its assistance on sector restructuring, corporate governance, regulation, and – through this project – capacity building of distribution companies and investment planning. The ADB assistance centers on the National Transmission and Dispatch Company, wholesale market administration, and corporate governance. More recently, ADB has agreed to support the distribution sector and energy efficiency, complementing the Bank's program. The World Bank policy-based assistance was extended through Poverty Reduction Strategy Credits (PRSCs) which supported a multi-sector reform program, of which the power sector was an important element[5]. In addition, the Pakistan Public Sector Capacity Building Project (report No. 28391 dated April 20, 2004), provides capacity building assistance to the regulatory and policy institutions. Investment assistance to the power sector is provided by a wider range of donor agencies, adding to the investments made from the sector internal funds, the Government of Pakistan, and private investors (see Annex 2 for details). The activities of the donor agencies are coordinated through the

[5] The first PRSC, in the amount of US$ 300 million, was approved by the Board of Directors in September 2004, and PRSC II, in the amount of US$350 million, was approved by the Board of Directors, on May 22, 2007.

Government and through mutual dialogue between agencies. The Bank maintains a particularly close dialogue with ADB, coordinating policy advice and support to the sector reform.

B. Project development objective and key indicators

21. The objectives of the APL1 project are to: (i) strengthen the capacity of the distribution and transmission networks to meet increasing electricity demand in the selected areas more efficiently and with better reliability and quality; and (ii) strengthen institutional capacity of the selected distribution companies and support other priority areas of the power sector reform.

22. In addition to the National Transmission and Dispatch Company (NTDC), four distribution companies (DISCOs)[6] – located in Hyderabad, Islamabad, Lahore and Multan – were identified by the Government to be supported under APL1[7]. The four DISCOs are representative of companies in the sector, ranging from the top to the bottom end of the scale, and were chosen to allow benchmarking of their performance.

23. APL1 has an estimated cost of $309.37 million, of which Bank financing is $256.21 million, and would finance: (i) a 2-year time slice of the investment program in secondary transmission grid (STG) of four distribution companies (HESCO, IESCO, LESCO, and MEPCO); (ii) a 2-year time slice investment in Energy Loss Reduction (ELR) program of IESCO and MEPCO, and a pilot ELR program for HESCO; (iii) a transmission component, to be implemented by NTDC, which includes adding a substation and transmission lines to relieve a bottleneck in serving MEPCO distribution network; (iv) technical assistance for capacity building, specialized studies, energy efficiency, and sector reform; and (v) an energy efficiency component to be implemented by each DISCO[8].

24. While the above general description of project objectives captures the expected outcome for all project entities, the composition of the individual projects with each entity and the associated performance indicators do reflect the differences that exist between the companies. Leaving aside NTDC, whose business is altogether different from that of the distribution companies, HESCO, IESCO, LESCO, and MEPCO differ from each other in terms of the number and composition of their consumers (residential, industrial, commercial, etc.) and their geographic spread; the level and composition of the electricity consumption; the level of technical and commercial losses; general economic development; the income of the consumers; law and order situation; etc. In broad terms, LESCO and IESCO have the lowest level of losses (T&D losses of 12.8% and 12.17% respectively, and collection efficiency of 99% and 98%, respectively, in FY07) and their main challenge is to strengthen and expand the network to keep up with raising demand. MEPCO faces similar challenges, although its losses are somewhat higher (18.7% T&D losses with 98.8% collections) and financial difficulties more challenging. For HESCO, however, the main challenge is to reduce the extremely high losses (about 45.5% in FY07 – comprising of 36.9% T&D losses with 86.5% collections), while at the same time strengthening the capacity of its network to maintain and improve its service. Thus, the project covers the entire range of the problems, which should facilitate transfer of the lessons learned from one company to another, as well as to other companies not covered by the project.

25. The key performance indicators for APL1 will measure the effect of the project on the capacity of the distribution and transmission networks to deliver the amounts of electricity which consumers demand with improved efficiency in terms of the overall annual electricity throughput and the total level of losses (which include both technical and commercial losses). Selected indicators will also measure reliability

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[6] Hyderabad Electric Supply Company (HESCO), Islamabad Electric Supply Company (IESCO), Lahore Electric Supply Company (LESCO), Multan Electric Power Company (MEPCO)

[7] See Section II.E.

[8] The energy efficiency component was added at the request of the Government prior to negotiations. The Bank agreed to include this new component to proactively respond to the Government's request given that such investments are a high priority in view of the deterioration in the power demand supply balance.

and quality of supply and financial performance of implementing agencies. The performance indicator for the TA component will include: (i) the successful completion of trainings, as per the training plan; and (ii) completion of the specialized studies, as planned under the TA. (See Annex 3 for the Results Framework and Monitoring Indicators.)

C. Project Components

26. The APL1 project (CY2008-CY2011) includes the following components:

i. physical strengthening of distribution networks operated by four distribution companies (HESCO, IESCO, LESCO, and MEPCO);

ii. removing some bottlenecks in the transmission grid, operated by NTDC;

iii. technical assistance for capacity building, specialized studies, energy efficiency and sector reform; and

iv. a pilot energy efficiency program, involving installation of energy saving equipment at the customer level.

27. **Strengthening distribution networks** (US$253.4/US$206.1 million)[9]**:** For IESCO (US$62.6/US$54.3 million) and MEPCO (US$67.2/US$54.2 million), the project includes a two-year time slices of their investment programs in the 132-kV and 66-kV secondary transmission grid (STG) and energy loss reduction (ELR) projects in the distribution grid (11-kV and 0.4-kV). For LESCO (US$72.4/US$57.7 million), the project includes similar scope of the STG investments only; LESCO is to implement its ELR program through its own financing. For HESCO (US$51.3/US$39.9 million), the project includes selected STG investments and pilot ELR project with refurbishment of 5 % of 11kV feeders, which is to test design of the loss reduction measures and can be replicated and scaled up under the Phase 2 of the program. Given the importance of the problem of high losses in HESCO distribution network, major uncertainties and complexities associated with the best course of action for reducing them, HESCO wanted to have access to best international expertise which would be available through Bank financing.

28. Generally, the STG investments include installation of new, and augmentation, conversion, and rehabilitation of the existing grid stations; construction of some new transmission lines; and conversion of transmission to higher voltage. The ELR investments include rehabilitation of the distribution lines, earthing of distribution transformers, installation of sectionalizers, replacement of defective meters, installation of capacitors, etc.

29. Details of the APL program for each company are given in their respective Project Description Documents. A summary is provided in Annex 4.

30. **Transmission network** (US$24.4/US$19.5 million): This component includes construction of a new 2x160 MVA, 220-kV substation at Kassowal, with associated 220-kV and 132-kV lines. Construction of the 132-kV lines from the Kassowal substation will be the responsibility of MEPCO, on whose service territory the substation is located.

31. **Technical Assistance and Capacity Building** (US$16.6/US$15.6 million). This component will include procurement of expertise, information technology systems, and studies to help the companies and sector agencies strengthen their capacity in critical business and policy areas. The following is an indicative list of items included in the project:

[9] For each component and company, the first number in the parenthesis represents project cost and the second number represents the expected Bank financing.

i. *Information and technology systems*: financial management; customers management; management information system; inventory and asset management; work order management; demand management.

ii. *Specialized studies*: power market survey; distribution system planning (to digitize and develop a road-map for system augmentation and expansion); cost-of-service studies (to develop information base for investment planning, tariff applications, and customer service strategies); investment and financial planning; materials requirements planning (to manage procurement and inventory); environmental and social analysis for investment and operation (to ensure compliance with applicable laws and regulations).

iii. *Capacity building*: human resource development and enhancing capacity in different functional areas (planning and technical analysis, procurement and materials management, financial planning and analysis, financial management, customer services, environmental and social protection, etc.) to meet emerging needs. This could be achieved through in-country and overseas training programs; hiring of qualified professionals for a limited period to ensure on-the-job training and transfer of skills; setting up of in-house training institute(s) to meet the needs of trained staff in operational areas; developing an exchange program with other utilities; etc.

iv. *Project implementation*: Some technical assistance and support will be needed in specific areas, such as conceptual design (e.g., for HESCO energy loss reduction program); engineering design; procurement; contract management; project financial management reporting; compliance with environmental and social impact mitigation plans; etc.

v. *Corporate governance*: Support would be provided to sensitize the beneficiary entities on the fundamental aspects of corporate governance. Similarly, MWP and other sector stakeholders (Ministry of Finance, NEPRA, PEPCO) would also be exposed to the basic principles of corporate governance so that the lines of delineation between sector oversight and corporate responsibilities is clearly established.

vi. *Additional TA activities* at the sectoral level (based on the requirements of MWP, PEPCO and NTDC) include the following:

   a. Sectoral and policy studies aimed, inter alia, at strengthening corporate governance, power system planning and other technical aspects; supporting government programs in specific areas, design and implementation of subsidy policies; improving human resource management functions in the new entities; etc;

   b. Specific studies and consultancy assignments to develop and implement energy efficiency and conservation programs;

   c. Capacity building and training programs for MWP, PEPCO and NTDC; and

   d. Computer hardware, software and systems for these departments and entities.

32. **Energy Efficiency** (US$15.0/US$15.0 million). This component will include, inter alia, (i) the replacement of incandescent bulbs with compact fluorescent lamps (CFLs) at customer premises, (ii) the provision of low-tension capacitors to selected industrial and tube-well customers, and (iii) the provision of pre-paid metering, automatic meter reading and remote metering systems for selected residential and commercial customers.

33. The funding for APL2 (CY2010-2013) would tentatively be about US$300 million for additional investments in distribution and transmission networks and for technical assistance. The components will be selected from the investment plan of the companies, on the basis of the priorities at the time.

D. Lessons learned and reflected in the project design

34. Key lessons from Bank's previous engagement in the power sector of Pakistan and elsewhere include:

i. *Strong ownership and commitment by implementing agencies and support by the government*: The project has been designed and prepared by the implementing agencies and reflects their business priorities. The government also fully supports the project and had approved the investments program financed by the project.

ii. *Capacity to implement the project*: This includes a number of elements: technical capacity to manage project implementation; capacity to deal with procurement, financial management, environmental, and social issues; financial capacity to fund the project; and capacity to operate the project and sustain its benefits. The implementing agencies differ with respect to these elements, with all of them having demonstrated ability to operate the assets created by the investments. Distribution companies, however, will be for the first time in a situation to manage investments in secondary transmission grid. This should not pose insurmountable problems, since the workforce and equipment of the organization which used to do this as part of the pre-reform, integrated WAPDA system were transferred to individual DISCOs, but the companies may experience transitional problems. Technical assistance will be provided where needed to complement and strengthen the in-house capacity.

iii. *Availability of counterpart funds*: This is a source of risk for several implementing agencies, especially HESCO and MEPCO. To counter the risk, about 80 % of the project will be financed by the Bank loan/credit.

iv. *Flexibility in design*: The nature of the project is such that it allows changes in design (e.g., vis-à-vis locations, type of equipment, etc.), re-scaling, and procurement packaging, to respond to the changes in load growth, possible events in the network, response of the supplier/contract market, and other factors.

v. *Turnkey contracts for more complex elements*: This approach will be followed to simplify project implementation and mitigate some risks.

vi. *Reduction of losses requires a comprehensive approach*: Investments in physical infrastructure (network, metering, IT systems, etc.) is just an element needed to control losses. In addition, a number of other measures will be needed: strengthening internal governance, management, and organizational structure to weed out internal corruption and collusion of employees with consumers involved in illegal practices; timely and effective response to consumer complaints about service problems; flexible, community-oriented approach in dealing with service delivery and payment collections; law enforcement support and efficient and effective judicial process to deal with electricity theft; good performance of other parts of the system (generation); etc. This component will be designed as part of project implementation in HESCO, where the losses are particularly high and which will require a comprehensive set of measures to address this important problem.

vii. *Enabling policy environment*: The success of investment projects, especially in terms of sustainability of their benefits, critically depends on the policy environment. With sector corporate restructuring formally completed and company-specific tariffs and subsidies in place, the implementing agencies should be in a position to control both project implementation and its operation, and be held accountable for their performance. The government will need to further strengthen governance systems to ensure effective functioning of the accountability framework for the entire sector. Regulatory framework will also need further improvements to ensure timely adjustment in tariffs and tariff-related incentive framework and creation of an environment attractive to investors while protecting consumers in terms of the quality and affordability of service.

E. Alternatives considered and reasons for rejection

35. The objectives of the program and the project – achieving more reliable and more efficient customer service, improved overall financial and operational performance of the companies, and lower fiscal burden of the sector – are impacted by a number of factors, some of which are under the control of distribution and transmission companies, some of which are not. Achieving these inter-related objectives requires a *holistic* approach, a combination of investment, policy, regulatory, and management elements in *all* segments of the system: generation, transmission, and distribution. Any investment strategy that would leave out any one of these segments would be incomplete and would fail to achieve the objectives. Therefore, when considering project alternatives, the issue is not whether to invest in distribution, but what are the specific investments that need to be made and whether the Bank should finance them.

36. The reasons for Bank involvement in distribution are explained in Section II.B above, which also explains how investments in other areas – generation and transmission – are financed. As for the selection of specific distribution project design, there were two considerations: which distribution companies to include; and which specific investments to make.

37. There are eight distribution companies in Pakistan (excluding privatized KESC and the Tribal Areas Electricity Supply Company, the latter of which has not yet received a license from NEPRA). The four companies which are included in the project have been selected through a combination of criteria which included: readiness of the individual investment projects; capacity for project implementation; and getting a mix of projects representative of the problems in the sector, which would allow learning and scaling up through follow up interventions.

38. Individual project components for each distribution company were selected on the basis of technical and economic analysis of candidate projects in each company.

III. IMPLEMENTATION

A. Institutional and implementation arrangements

39. The Project will be implemented by the beneficiary companies: HESCO, IESCO, LESCO, MEPCO, and NTDC. PEPCO, on behalf of the Ministry of Water and Power, will implement the part of technical assistance component which falls outside of the purview of the four distribution companies and NTDC. The companies will rely on their existing structure and staff to implement the project, strengthened by external consultants where needed, especially in the areas of procurement and environmental and social management. Details of the implementation arrangements are discussed in Annexes 6, 7, and 8 (Implementation Arrangements; Financial Management and Disbursement; and Procurement, respectively).

40. The Bank will lend the funds to the Government of Pakistan, which will on-lend them to the project implementing agencies, except for the relatively small part for technical assistance implemented by the Ministry of Water and Power. While the on-lending terms are currently capped at the existing 17% interest rate and the tenor is 15 years inclusive of 2 year grace as per the current policy, the terms are expected to be revised by the Government on the basis that the on-lending terms would reflect prevailing market conditions and, inter alia, the favorable IBRD rates and maturities.

B. Monitoring and evaluation of outcomes/results

41. The Project Development Objectives (PDO), and the project outcome indicators have been clearly defined and the implementing agencies (IAs) will collect data related to project implementation and its outputs and impact. List of project indicators is given in Annex 3. The IAs will prepare quarterly and annual reports, which would be used to monitor the project, its implementation, and outcomes. The reports will also include information on implementation of environmental and social impact mitigation

measures. Wherever appropriate, activity-based networks would be used to do initial project scheduling, periodic monitoring, and for establishing time-cost tradeoffs. The TA components to be implemented by DISCOs include customer level (power market) surveys to support more robust estimation of consumer demand for electricity; such surveys would also yield qualitative information (based on consumer perceptions) which would be used for defining baseline conditions regarding the quality of supply, and to monitor improvements in service quality. Because of the multi-entities framework in the implementation of this project, data from individual entity reports would need to be compiled by PEPCO to provide sector-wide monitoring results. The project reports (entity-level as well as sector-wide) will be shared both with the Government and the Bank. While specific forms and formats would need to be developed in accordance with the requirements of different project components for their execution, following is the generalized description of project reports:

- Project description, segregated by nature of activities (STG or ELR), by location, by major procurement packages, and by scope of work of different contracts;
- Identification of major project activities, broken down by tasks with resource requirements (finances, major equipment, skilled labor, etc);
- Progress in each period and cumulative, identified by: (a) completion of activities/tasks – planned versus actual time; (b) expenditure, budgeted versus actual; (c) critical activities in the period; and (d) expending of additional resources in order to maintain the overall project schedule;
- Milestone report, planned and actual, and impact on overall project schedule;
- Materials delivery and inspection schedule, by major packages, and inventory reports; and
- Problems faced during the period and a narrative description of possible options for resolving the same.

C. **Sustainability**

42. The achievement and sustainability of project benefits depends on the electricity demand reaching the forecasted levels and the ability of the companies to utilize, operate and maintain the assets financed under the project and uphold the efficiency improvements. Given the expected economic growth in Pakistan and the level of current electricity consumption per capita, electricity demand is bound to continue growing for the foreseeable future, and project benefits should be preserved under rather conservative assumption in terms of the level of demand growth.

43. The implementing agencies have proven ability to utilize, operate and maintain the types of assets created by the project, which represent their main line of business. The most sensitive element of the sustainability aspect is the ability of the companies to achieve and sustain the expected efficiency improvements, especially to the extent at which these improvements depend on commercial discipline in the system which the distribution companies are expected to enforce. To strengthen the companies' hands in this area, the project includes technical assistance aimed at improving their capacity in various areas of commercial and technical operation. In addition, measures have been taken to strengthen policy environment through tariff framework, increase in tariffs and subsidies, and efforts to improve financial management of the sector through support to the wholesale market administration, provided by the Bank and other international financing institutions, especially ADB. This would complement ongoing efforts (under the Public Sector Capacity Building Project – Credit 3904-PAK, approved in 2004) to strengthen the regulatory framework – e.g. by enhancing NEPRA's capacity to evaluate legitimate changes in the cost of supply and establish cost covering tariffs, and the Government's and the utilities' understanding of and responsiveness to regulatory requirements. Parallel programs to support the Government's macro-

economic and policy reform programs will focus on further strengthening sector's financial management, governance, and accountability framework.

44. There is a strong ownership of the project, both at the level of the implementing agencies and the government. The ownership and commitment have been demonstrated through project preparation and policy measures, some of which have significant fiscal and political costs.

D. **Critical risks and possible controversial aspects**

Risks	Risk Mitigation Measures	Risk Rating with Mitigation
To project development objectives		
Macroeconomic/fiscal: DISCO resource shortfall as a result of GOP inability to finance required level of subsidies	GOP reviewing options to (i) decrease the differential between determined and notified tariffs to reduce the subsidy obligation and (ii) introduce more frequent tariff adjustments (e.g. monthly, quarterly); Fiscal obligations to be reduced over time; GOP has also implemented fuel price adjustments more frequently in 2008, to reduce overall fiscal deficit	S
Subsidies not disbursed timely	Provisions included explicitly in the budget; covenant under the Loan/Credit for GOP to disburse subsidies as per the Standard Operating Procedures	S
Commercial: poor commercial discipline, including due to unsupportive political environment	Sector reform to strengthen governance and accountability; technical assistance under the project to strengthen capacity of implementing agencies	S
Regulatory: tariffs not adjusted to reflect changing costs	Ongoing reform dialogue with government; covenant under the Project	S
Governance: Lack of institutional capacity to improve accountability	Reform program; TA under PSCBP; TA under this project; Procurement Action Plan to address transparency in procurement	S
Administration of wholesale trading arrangements: lack of financial autonomy	Achieving financial autonomy was a condition of negotiation; ongoing TA from ADB is addressing wholesale trading arrangements; Ongoing reform dialogue with government	M
Electricity generation deficit	Government is stepping up efforts to enhance generation through IPPs;	S

Risks	Risk Mitigation Measures	Risk Rating with Mitigation
	WAPDA; GENCOs; KESC; Implementation of energy efficiency and conservation programs under this Project, ADB and with own funds	
Transmission bottlenecks	ADB and other donors assisting with investments	M
To components results		
Implementation delays (procurement)	Each executing agency has a procurement consultant to supplement its capacity; Government's Procurement Action Plan which includes enhanced procurement oversight capacity of PEPCO through the establishment of a Procurement Monitoring Cell; PEPCO will also retain an International Procurement Advisor; Bank providing training to implementing agency staff	S
Counterpart financing	Tariffs in place; Financial autonomy to be enhanced as part of sector reform program; Subsidies in the budget	M for IESCO, LESCO, and NTDC; S for MEPCO; H for HESCO
Overal Project Risk		**S**

N: Negligible Risk; M: Modest Risk; S: Substantial Risk; H: High Risk

45. The overall project risk is rated as substantial. In particular, governance - at the macro, entity and project levels - is a major concern in Pakistan. Therefore, a comprehensive review of governance arrangements and the associated risks was carried out for this Project, jointly with the Government, PEPCO, the DISCOs and NTDC, and proposals for mitigating such risks were discussed. Annex 11 provides details of this analysis and of the agreed mitigation measures and actions. Although the project risk is rated as substantial, the investments to be financed have high rates of return. The overall benefit to the economy and to the companies compensates the risk.

E. Loan/credit conditions and covenants

46. The IBRD loan and IDA credit for the Pakistan Electricity Distribution and Transmission Improvement Project will be on-lent by the Government of Pakistan to each of the five companies (HESCO, IESCO, LESCO, MEPCO and NTDC) on the following terms: 15 years lending period inclusive of 2 years of grace period[10].

[10] Upon signing of this loan, the Ministry of Water and Power will seek the Finance Minister's approval for modifying the tenors of the subsidiary loans to match the tenor of the IBRD loan.

47. In addition to the usual Bank covenants on project and financial management, audit and reporting requirements, and procurement, the following are the key covenants under the APL1 Loan:

- **End Consumer Tariffs**: Until such time that the adjustment for power purchase price (PPP) is automatically passed through to the end consumer tariff, HESCO, IESCO, LESCO and MEPCO to file tariff applications and/or tariff petitions to NEPRA, in accordance with the provisions of the NEPRA Act.
- **Timely Tariff Notification**: Government of Pakistan to notify NEPRA determined tariffs, or file a request for review, no later than 15 working days following such NEPRA determination, as per NEPRA Act. In case that a review is requested, the Government will notify NEPRA determination within a reasonable time period after NEPRA's completion of the requested review, to ensure its timely implementation.
- **Timely Payment of Subsidies:** Ministry of Finance to transfer invoiced subsidies submitted by DISCOs for energy billed as well as any other monies due on a monthly basis and not later than the 25th of each month in accordance with approved "Standard Operating Procedure (SOP) with Timelines and Responsibilities for Sale and Purchase of Electricity".
- **Financial Projections**: NTDC, HESCO, IESCO, LESCO and MEPCO to submit, for review by the Bank and MWP by or before June 30 of each year, five year rolling projections integrating financial, operational and investment program information (and including, among other things, projected income statements, balance sheets and cash flow statements).
- **Liquidity/Financial Sustainability**: NTDC and LESCO to maintain a minimum debt service coverage ratio of 1.2 starting in the fiscal year ending June 30, 2009. IESCO and MEPCO to maintain minimum debt service coverage ratio of 1.0 starting in the fiscal year ending June 30, 2009 and 1.2 thereafter.
- **Financial Restructuring Plan**: HESCO to submit for Bank review and comment a financial restructuring plan by December 31, 2008 and to implement such plan, as approved by its Board, by July 1, 2009.
- **Procurement Action Plan**: The Borrower and the project implementing agencies to carry out the Project in accordance with the provisions of the Government's Procurement Action Plan as provided to the Bank on February 21, 2008.
- **Energy Efficiency component**: The Project Implementing Entities shall prepare project description documents detailing the activities proposed under this component, economic and financial viability, implementation and procurement plans, for approval by the Borrower and the Bank.

IV. APPRAISAL SUMMARY

A. Economic and financial analysis

48. **Economic and financial analysis of the project.** For the purposes of this analysis, it is assumed that the components proposed for Bank financing by all DISCOs and NTDC are stand alone projects, since each component has its own benefits and cost streams, implementation arrangements, financing plan, etc. Therefore, the analysis was carried out separately for each company's investments included in the APL program.

49. All companies have carried out economic and financial analysis of their projects. Standard methodologies were adopted for the analysis. All costs were converted into economic values, by using import prices, subtracting taxes and duties and other transfer payments, etc. The economic life of the assets is assumed to be 30 years, as appropriate for transmission and distribution equipment.

50. The Project would enable the entities to meet the growth in electricity demand from residential, commercial, industrial and other consumers in a cost effective manner. All DISCOs also expect to achieve significant savings in power purchase costs, due to lower technical and non-technical losses. The increase in electricity sales and saving in power purchases are the main/direct benefits of the Project, and apply to both the economic and financial analysis.

51. The DISCOs will also achieve reductions in breakdowns and outages, and improvements in voltage profile, and in the loading of grid stations and lines. Wherever such benefits can be quantified, the economic benefits were adjusted to include the corresponding amounts.

52. Project costs include capital and recurrent costs. Capital cost estimates were updated to end-FY07 price levels. Recurrent costs include operation and maintenance costs of the assets to be installed under the Project, and the cost of additional electricity purchases by the entities.

53. For the financial analysis, current tariffs (Use of System charges for NTDC) are taken as the value of electricity. Since company specific tariffs were determined by NEPRA, and notified by the Government, the value of additional sales for each company was derived by using its own (weighted) average tariffs.

54. However, electricity tariffs do not necessarily reflect the economic value of electricity for the economy. The economic value of electricity can be derived through various methodologies – e.g. the costs incurred by consumers for alternate sources of power supply, the cost of expanding supply through the grid, etc. For this analysis, the cost of incremental electricity supply through the grid was taken as a proxy for the economic value of electricity. Specifically:

- NEPRA has prepared indicative benchmark tariffs, for various technologies (simple and combined cycle, based on gas, fuel oil, diesel, or multiple fuels). These benchmark tariffs represent an independent estimate of the marginal cost of generation, for the system as a whole. The indicative tariffs for 250 or 500 MW combined cycle plants, based on gas and fuel oil, can be taken as a proxy for the marginal cost of generation.
- The Use-of-System charge for NTDC – as determined by NEPRA – is taken as a proxy for the economic cost of transmission services for the economy. This is derived from NTDC's revenues by removing the value of power purchases/sales.
- Similarly, the Distribution Margin reflects NEPRA's assessment of the cost of providing distribution service in each DISCO's service area.[11]
- The sum of these generation, transmission and distribution costs is taken as the economic value of electricity, and is used for the economic valuation of Project benefits.

55. The Base Case results of the economic analysis are presented in table below. These results confirm that the investments are viable and provide significant benefits to the companies, and to the economy. All components yield high Rates of Return (RORs), have positive Net Present Values (NPVs), and the Benefit/Cost (B/C) ratio exceeds unity for all companies.

Results of Economic Analysis (Base Case)			
	ERR	**NPV**	**B/C Ratio**
HESCO	45.08 %	9,585.64	4.19
IESCO	21.70 %	3,748.31	2.51
LESCO	36.94 %	10,208.31	4.73
MEPCO	17.24 %	7,286.21	3.53
NTDC	32.92 %	4,135.54	2.68

[11] However, NEPRA observed that the DISCOs' investments in recent years were well below the levels included in the tariff petitions. It has therefore not allowed the full investment program as a cost, and has determined tariffs on the basis of investments which it feels the entities will be able to undertake in the coming years. If the DISCOs are able to implement larger investment programs, NEPRA would be willing to consider increasing the Distribution Margin. Therefore, the Distribution Margins determined by NEPRA may understate the full cost of providing distribution service in each DISCO's service area, particularly for financing the required level of investments.

56. Sensitivity analysis was conducted – to evaluate the robustness of the economic benefits to be derived by individual companies, under adverse conditions. The main sensitivities include (unanticipated) escalation in capital costs, delays in project completion, reduction in the benefits to be achieved by the Project, and combinations of all these eventualities. The analysis generally confirms that the project preserves positive net present value under most of these scenarios.

Economic Rate of Return (ERR)					
	HESCO	**IESCO**	**LESCO**	**MEPCO**	**NTDC**
Base Case	45.1 %	21.7 %	36.9 %	17.2 %	32.9 %
Capital Cost increase by 10 %	42.5 %	19.0 %	31.7 %	15.5 %	29.6 %
Capital Cost increase by 20 %	35.8 %	16.7 %	27.7 %	13.9 %	27.4 %
Reduction in Benefits by 10 %	17.9 %	18.7 %	31.2 %	15.4 %	29.7 %
Reduction in Benefits by 20 %	15.1 %	15.8 %	26.0 %	13.3 %	26.6 %
Delay of 1 year	16.6 %	17.3 %	25.8 %	14.7 %	26.3 %
Delay of 2 years	14.1 %	14.5 %	20.6 %	12.8 %	22.3 %
All impacts (10 % cost increase, 10 % reduced benefits, 1 year delay)	24.4 %	13.4 %	20.3 %	11.8 %	22.1 %
All impacts (20 % cost increase, 20 % reduced benefits, 2 year delay)	14.3 %	8.7 %	13.3 %	6.8 %	16.0 %

57. Further details, including on the financial analysis, are presented in Annex 9, Section A.

58. **Financial Performance of the Power Sector.** Pakistan has experienced a rapid increase in electricity demand – electricity sales have increased at a compound rate of 9.4% p.a. between FY04 and FY07. Generation capacity surplus generated by the IPP program in the 1990s has been almost exhausted. The sector energy losses have gradually reduced during this period, from 25.5% in FY04 to 23.2% in FY07. However, the sector financial performance has deteriorated rapidly since FY05 due to significant increase in fuel prices and hence generation costs, without any adjustment in retail between November 2003 and February 2007. Financial deficits from operations have increased to the level of nearly Rs.30 billion in FY07. The deficit has been financed by WAPDA primarily through non-payment of debt service dues to the Government of Pakistan, curtailment of operating, maintenance, and capital expenditures, and commercial borrowings.

59. ***NEPRA Tariff Determination of February 2007***[12]. In February 2007 NEPRA issued a tariff determination for each of the eight DISCOs[13], providing an overall increase of an estimated 27.5% in revenue per kWh from tariffs for all eight DISCOs taken together. However, the revenue per kWh from consumer tariffs *notified* by GoP are only about 6% higher on an average than the earlier tariffs. The difference is absorbed by the GoP through budget subsidies for the differential between determined and notified tariffs. Thus, it is expected that all the DISCOs would be in a much better financial position going forward. Timely payment of tariff subsidies would be critical towards this end. A summary analysis of the impact of NEPRA tariff determination is presented below:

[12] The Government also increased power tariffs by about 10% in mid-February 2008. This increase was announced on the basis of determinations – by NEPRA – of new revenue requirements for all DISCOs (to reflect, e.g., changes in power purchase costs), and revised consumer tariffs. As in case of the February 2007 announcement: (i) some categories – e.g., residential consumers using less than 50 kWh per month – are exempted from this increase; and (ii) the determined tariff increase (overall, and its distribution across consumer categories) varies among DISCOs. The DISCOs are revising their financial projections to accommodate this change in tariffs.

[13] NEPRA does not regulate tariffs for TESCO (Tribal Area Electricity Supply Company), which serves consumers in the Federally Administered Tribal Area (FATA). TESCO collects only nominal amounts from its consumers, less than 5 percent of the billings. These losses are absorbed by the Government and the sector.

Table 1: Impact of NEPRA Tariff Determination (February 2007)

	Average Sale Rate under Old Tariff	Average Sale Rate under New Tariff (Determined)	Increase in Average Sale Rate (Determined)	Average Sale Rate under New Tariff (Notified)	Increase in Average Sale Rate (Notified)	Sale of Power in FY07	Tariff Subsidy for FY07 (Last Four Months)	Projected Sale in FY08	Tariff Subsidy for FY08
	Rs./kWh	*Rs./kWh*	*%age*	*Rs./kWh*	*%age*	*MUs*	*mill Rs.*	*MUs*	*mill Rs.*
IESCO	4.26	4.69	10.0%	4.30	0.8%	7065	921	7728	3023
LESCO	4.33	4.94	14.1%	4.63	6.8%	13947	1462	15698	4938
MEPCO	3.95	4.85	22.6%	4.20	6.1%	10334	2243	11325	7376
HESCO	4.41	6.93	57.1%	4.75	7.6%	4843	3526	5295	11567
GEPCO	4.10	4.91	19.6%	4.31	5.1%	6110	1210	6879	4087
QESCO	3.14	5.20	65.8%	3.62	15.3%	3965	2093	4162	6589
PESCO	3.48	5.37	54.2%	3.67	5.5%	8459	4782	7810	13245
FESCO	3.78	4.53	20.0%	4.01	6.3%	8600	1479	8945	4615
WAPDA	**3.98**	**5.08**	**27.5%**	**4.23**	**6.1%**	**63324**	**17997**	**67842**	**57843**

60. ***Financial Projections for Power Sector.*** Financial projections have been prepared for the power sector as a whole under three scenarios – base case, high case (financially favorable turnout of key parameters) and low case (financially unfavorable turnout of key parameters). It is estimated that in accordance with the new tariff determination by NEPRA, the sector would receive GoP subsidy of about Rs.58 billion[14] during FY08. However, this subsidy would still leave the sector with cash deficit of about Rs.9 billion in the base case and up to Rs.24 billion in the low case, which assumes no improvements in collection efficiency or energy loss reduction. It is seen that in the base case, with reasonable reduction of about 0.5% per annum in transmission and distribution energy losses, and collection efficiency improvement of about 1% per annum, the sector would continue to have annual operational cash shortfall of about Rs.7.5 billion even in FY12. In the high case, with loss reduction of 1.0% p.a. and collection efficiency improvement of 2% per annum (to a maximum collection efficiency of 98%), the sector could turn around provided the GoP subsidies on account of tariff difference is paid on time and the increase in power purchase price is reflected in the revised tariffs every six months. However, in the absence of any efficiency improvement measures, the sector would continue to be loss making (nearly Rs.30 billion per annum) despite the payment of explicit tariff subsidies by GoP as per the new tariff determination. A summary of the results of the financial projections (on a cash basis) for the base case is presented in Table 2, and the results of the scenario analysis are summarized in Table 3.

[14] At the time of negotiations in April 2008, GOP's revised estimate for the tariff subsidy was Rs. 77 billion taking into account increasing power purchase prices that were not passed on at the consumer level.

Table 2: Summary of Projections for Energy Balance and Financial Performance of the WAPDA System

Financial year ending June 30	Historical 2004-05 (actuals)	2005-06 (actuals)	2006-07 (actuals)	Projections 2007-08 (proj.)	2008-09 (proj.)	2009-10 (proj.)
Energy Balance						
Electricity Generated and Imported (Gross) (MkWh)	73,521	82,225	87,837	94,883	101,692	108,938
Electricity Purchased by T&D system (MkWh)	71,662	80,320	85,869	92,781	99,440	106,525
Transmission loss (%)	7.1%	7.2%	7.1%	7.0%	6.9%	6.8%
Distribution loss (%)	17.6%	17.2%	16.7%	16.2%	15.7%	15.2%
Electricity sold to disco consumers (MkWh)	52,835	58,549	62,561	67,566	72,295	77,356
Overall system loss (including aux. cons)	24.8%	24.1%	23.2%	22.8%	22.2%	21.6%
Revenue and Collection						
Average revenue of discos (Rs/kWh) (Determined)	3.96	4.03	4.35	5.17	5.34	5.52
Average revenue of discos (Rs/kWh) (Notified)	3.96	4.03	4.06	4.31	4.49	4.66
Collection % of discos	94%	91%	88%	92%	92%	93%
Sector Cash deficit projection						
Cash Receipts						
Collection from Sale of Power	200,300	226,300	241,500	299,601	338,775	381,758
Collection from GoP subsidy	0	0	24,000	57,843	61,892	66,225
Non-operational income	9,200	19,200	12,300	12,915	13,561	14,239
Total Cash Receipts (excluding GST, ED, & W/Tax)	209,500	245,500	277,800	370,359	414,228	462,221
Cash Outflow to operations						
Power purchase payments to IPPs and New Capacity	106,000	135,700	154,800	221,119	263,241	302,741
EPP Charges				153,502	186,950	224,171
CPP Charges				67,617	76,291	78,570
Fuel Cost	51,700	63,400	84,300	86,829	89,434	92,117
Debt Service Liability - GoP	21,500	22,000	17,800	17,800	17,800	17,800
Debt Service Liability - Others	8,300	10,500	8,800	8,800	8,800	8,800
Establishment and Maintenance	26,900	31,600	36,500	38,508	40,433	42,455
Other payments	6,600	6,800	5,300	6,233	6,233	6,233
Total	221,000	270,000	307,500	379,289	425,941	470,145
Surplus/(deficit) from operations	-11,500	-24,500	-29,700	-8,930	-11,712	-7,925
Internal resources required for investments	12,674	23,900	36,000	36,000	36,000	36,000
Total Surplus/(deficit) of the sector	-24,174	-48,400	-65,700	-44,930	-47,712	-43,925
Sector Surplus / Deficit (including Subsidy)	-24,174	-48,400	-89,700	-102,773	-109,605	-110,149
Financing of Deficit						
Net GST / W.H.Tax	-2,300	400	400			
Bank Borrowing - Short Term	0	4,200	52,400			
WAPDA Bonds / SAKUK Bond	0	8,000	0			
GoP Subsidy	0	0	0			
Conversion of Debt Service into GoP Equity	21,500	22,000	0			
Development Financing	500	6,800	11,300			
Net Change in Cash Balance	-4,474	-7,000	-1,600			

	FY08	FY09	FY10	FY11	FY12
Base Case	-8930	-11712	-7925	-8274	-7543
High Case	4761	3258	8434	2264	3056
Low Case	-23522	-29374	-32149	-30333	-33647

61. Given the downturn in Pakistan's macro situation following EDTIP appraisal (mainly resulting from GOP not passing on the increase in petroleum prices to end-consumers), additional analysis was conducted prior to project negotiations to investigate how the deterioration in the macro-fiscal situation impacts the debt service coverage ratios for LESCO, IESCO, and MEPCO (HESCO is not subject to this financial covenant under the Project given its weak financial health). The analysis simulated the tariff increase of March 2008, monthly/quarterly delays in GOP subsidy payments, and a higher power purchase price resulting from the increase in oil prices during FY08. The results showed that each company's DSCR takes a heavy hit in the year of the power purchase price increase (FY08), i.e., before EDTIP becomes effective (FY09). Subsequently, assuming fuel prices remain at levels observed in April,

2008, even a one-month delay in GOP subsidy payments heavily constrains the DSCRs. Therefore, it is critical that GOP maintains strict payment discipline with respect to its subsidy obligations.

62. It may be noted that the actual sector loss (on an accrual basis) would be higher than the cash loss projections shown above. It is also worthwhile to mention that the aggregate picture masks different challenges faced by individual DISCOs. The following sections provide a summary of the entity level analysis of HESCO, IESCO, LESCO, MEPCO and NTDC which are proposed to be beneficiaries of the Bank project. Annex 9 provides the details of the analysis including financial performance for the last five years and projections up to FY14 for each of these entities. Financial projections have been prepared under three scenarios – base case, high case and low case for each entity.

63. ***Hyderabad Electricity Supply Company.*** HESCO has made financial losses consistently since its inception (1998) and the company has been dependant on Government subsidy for survival. In FY07 its revenue was not adequate even to cover its power purchase cost and financial loss stood at Rs.8.5[15] billion – nearly 30% of the revenue during the year. The poor financial performance can be attributed to: (i) persistent problems with high technical and commercial losses, in large part attributable to theft (in FY07 36.9% of electricity delivered to HESCO—including losses in the secondary transmission grid—was not accounted for in the bills to HESCO's end-consumers); (ii) poor collection of bills (in FY07 only 86.5% of billed amount was collected); (iii) adverse mix of consumers, with high share of residential, less remunerative consumption, stemming in part from difficult socio-economic condition of consumers.

64. The NEPRA tariff determination of February 2007 provides an estimated 61% increase in revenue per kWh, though the Government has notified an average increase of only 7.6%. The difference will be paid by the Government. However, the NEPRA determination provides an ambitious energy loss target of about 33.03% for FY07 (against an actual loss level of 39.2% in FY06 and 36.9% in FY07) and revenues are likely to fall short of covering all the costs. Summary outcomes of financial projections are shown below:

Earnings before Interest, Tax and Depreciation

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	3193	3926	5623	6915	8347	9932	11675
High Case	4419	5937	7640	9545	11684	14084	16763
Low Case	2032	1855	3143	3594	4101	4671	5302

million Rs.

Net Profit

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	-1285	-1011	-63	587	1291	2227	3385
High Case	-6	985	1920	3098	4540	6195	8087
Low Case	-2553	-3482	-3465	-4268	-5026	-5760	-6524

million Rs.

GoP Subsidy

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	12991	13901	14874	15915	17029	18221	19496
High Case	13170	14355	15647	17055	18590	20264	22087
Low Case	12812	13453	14126	14832	15574	16352	17170

million Rs.

[15] This figure is based on unaudited figures available during the appraisal in September 2007. Audited figures which became available in December 2007, which include additional subsidies paid by the Government, reveal a net financial loss of Rs. 4.3 billion – about 14.35% of revenue.

Deficit Financing

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	172	2382	1544	678	103	116	0
High Case	0	0	0	0	0	0	0
Low Case	1231	4754	5061	5660	6414	7165	8412

million Rs.

65. With the NEPRA tariff determination of February 2007, HESCO has a positive cash flow from operations in FY08 (before working capital adjustments and financial costs) even in the pessimistic scenario (low case), but the company would require deficit financing to meet the overall cash gap, unless it strives hard to achieve energy loss reduction. Government of Pakistan has offered to subsidize consumer electricity tariffs starting from February 2007 and this would imply a payment of about Rs.104 billion in the least sales growth scenario (low case) and Rs.121 billion in the highest growth scenario (high case), over the 2008-14 period. The subsidy to be paid would be even higher if the government decides not to pass on the impact of increase in power purchase cost to the consumers. HESCO's financial performance would critically depend on reducing energy losses and improving collection efficiency. In addition it needs to focus on prioritizing its investment program to reduce addition of debt. Load growth and changes in sales mix, especially in view of rural electrification program may strain HESCO's financials in the future and may have to be addressed through appropriate revision of tariff determination once such a stage is reached.

66. ***Islamabad Electricity Supply Company***. IESCO's commercial performance is characterized by high collection efficiency (98.1% in FY07) and relatively low energy losses (12.17% in FY07 including losses in the secondary transmission grid). Key financial parameters – the self financing ratio, debt-net worth ratio and the debt service coverage ratio – of the company are seen to be comfortable across the years in the base case. While the company's financial performance in the past has been volatile with a high sensitivity to variations in power purchase cost, the NEPRA determination of February 2007 provides for a pass-through power purchase price. Summary outcomes of financial projections are shown below:

Earnings before Interest, Tax and Depreciation

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	2310	2510	3821	4536	5318	6237	7316
High Case	2421	3462	5120	6041	7115	8363	9813
Low Case	2114	1644	2487	2805	3183	3630	4159

million Rs.

Net Profit

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	596	626	1392	1794	2240	2784	3434
High Case	650	1214	2182	2701	3323	4076	4970
Low Case	422	-190	414	472	551	682	883

million Rs.

GoP Subsidy

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	2896	3200	3536	3907	4318	4771	5272
High Case	2935	3288	3682	4124	4619	5173	5794
Low Case	2830	3057	3301	3566	3851	4159	4492

million Rs.

Deficit Financing

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	0	0	0	0	0	0	0
High Case	0	0	0	0	0	0	0
Low Case	0	0	0	0	0	0	0

million Rs.

67. IESCO is expected to have positive net profits under all scenarios. However, it would be important that variations in cost of power purchase get reflected in tariff revisions with the minimum possible time

lag. With the new NEPRA tariffs, IESCO is not expected to need any deficit financing, though Government of Pakistan would be paying a tariff subsidy of Rs. 25 billion over the FY08 to FY14 period. Key financial parameters – the self financing ratio, debt-networth ratio and the DSCR of the company are seen to be comfortable across the years in the base case.

68. ***Lahore Electricity Supply Company***. LESCO has registered positive net profits between FY04 and FY06, but posted a loss of Rs. 1.2 billion in FY07 based on unaudited accounts[16] – mainly because the revised NEPRA tariff could not be applied for the whole year. The company's commercial performance is good with high collection efficiency (99% in FY07) and low energy losses (12.8% in FY07). Its sales mix (broadly stagnant since FY01) with 42% industrial consumption is highly favorable. Summary outcomes of financial projections are shown below:

Earnings before Interest, Tax and Depreciation

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	3695	5143	6212	7420	8787	10331	12076
High Case	5324	6777	8428	10303	12427	14521	16652
Low Case	2576	3938	4547	5241	6031	6933	7963

million Rs.

Net Profit

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	1057	1703	2075	2661	3397	4250	5251
High Case	2194	2892	3740	4808	6037	7247	8496
Low Case	42	814	802	965	1246	1641	2179

million Rs.

GoP Subsidy

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	6385	6832	7311	7822	8370	8956	9583
High Case	6505	7090	7728	8424	9182	10008	10909
Low Case	6266	6579	6908	7254	7616	7997	8397

million Rs.

Deficit Financing

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	0	0	0	0	0	0	0
High Case	0	0	0	0	0	0	0
Low Case	0	0	0	0	0	0	0

million Rs.

69. LESCO has a reasonable commercial and financial performance, and its finances are likely to remain robust in all scenarios. It is able to meet its cash operational costs in all scenarios. LESCO as well as other DISCOs should take up with NEPRA the issue of timely recovery of PPP increases through tariffs. Given its good operational and commercial performance, LESCO is not expected to require deficit financing in any of the scenarios. The self financing ratio and debt service coverage ratio are expected to be very comfortable in all scenarios, particularly as the internal accruals increase in the future. The main areas for the company to focus on are (i) continued investment and administrative actions to keep energy loss at low levels, focusing on the secondary transmission network; (ii) ensure prioritization and financial viability of investments including rural electrification; (iii) seek timely compensation for PPP increases from the regulator.

70. ***Multan Electric Power Company***. MEPCO has made a cumulative loss of Rs.10.3 billion between FY03 to FY07. MEPCO's revenues covered cash operating expenses between FY03 and FY05, but in FY06 and FY07, it incurred a substantial negative EBIDTA due to sharp increase of 16% and 7% in power purchase price in the respective years. In FY07, the company's energy losses were 18.7% (including losses in the secondary transmission grid) - an improvement over 20.5% in FY06. The collection efficiency in FY07 stood at 98.8 percent. The February 2007 tariff determination provides an estimated increase of about 29.5% in "average determined tariff", against which the Government of

[16] Based on audited accounts available after appraisal, LESCO posted a profit of Rs. 0.96 billion.

Pakistan has provided an estimated increase of about 12% in consumer tariff, with the difference to be covered by subsidies. Summary outcomes of financial projections are shown below:

Earnings before Interest, Tax and Depreciation

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	2024	4384	5678	6652	7711	8401	9157
High Case	2119	5801	7062	8452	9982	10996	12101
Low Case	1977	3206	4220	4619	5066	5570	6138

million Rs.

Net Profit

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	-1062	786	1320	1711	2208	2507	2887
High Case	-971	1730	2293	3018	3884	4421	5028
Low Case	-1106	-313	57	-134	-272	-360	-364

million Rs.

GoP Subsidy

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	6463	6786	7125	7481	7855	8248	8661
High Case	6586	7047	7540	8068	8633	9237	9883
Low Case	6401	6657	6923	7200	7488	7788	8099

million Rs.

Deficit Financing

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	0	0	0	0	0	0	0
High Case	0	0	0	0	0	0	0
Low Case	0	0	0	0	0	0	0

million Rs.

71. With the NEPRA tariff determination of February 2007, MEPCO is able to cover its cash operational costs (including interest and loan repayment obligations) in all cases from FY10 onwards, and in the high case from FY08 itself. However, this assumes that increase in cost of power purchase is adjusted in tariff every six months. It also assumes that GoP pays the tariff differential subsidy in time. MEPCO has been funding its past losses by withholding payments to NTDC, which had accumulated to Rs. 12 billion as of June 30, 2007. MEPCO cannot continue to withhold further payments to NTDC and would be compelled to take short term borrowings for bridging the gap, leading to higher interest burden. While aggressive efforts at improving efficiency and reducing losses would be necessary, these may not be sufficient to ensure tariff adequacy. It is important to note that these calculations already take into account Government of Pakistan's explicit subsidy against the difference between determined and notified tariffs, amounting to Rs.53 billion during the period between FY08 and FY14 in the base case. The subsidy outgo would be even higher if the government decides not to pass on the impact of increase in power purchase cost to the consumers.

72. ***National Transmission and Dispatch Company***. NTDC reported a cumulative loss of Rs. 7.4 billion between FY03 and FY06 attributable to the single buyer business. In FY05, the revenues from sale of power were inadequate to cover the cost of power purchase. In FY06, despite increased revenues from greater pass through of generation costs in the DISCO PPP as well as due to notification of a separate and enhanced transmission tariff, NTDC reported a loss of Rs.1.12 billion, mainly because of a provision of Rs.10.4 billion towards bad and doubtful debts. However, in FY07 the company has shown a healthy profit of Rs. 10.7 billion. Going forward the transmission and single buyer business are proposed to be segregated with NTDC focusing only on transmission wheeling business – from the present year onwards accounts of both business are being distinctly maintained, though timelines for full segregation are not known yet.

Earnings before Interest, Tax and Depreciation

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	17251	19081	21089	23296	25725	28398	31342
High Case	17762	20035	22579	25430	28630	32221	36253
Low Case	16746	18160	19678	21314	23078	24983	27038

million Rs.

Net Profit

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	8019	9417	10672	12035	13506	15139	16960
High Case	8351	10037	11640	13422	15394	17624	20152
Low Case	7683	8810	9747	10738	11778	12911	14155

million Rs.

73. NTDC's transmission business has robust financials in both the base case and low case scenarios. The key issues going forward are (i) segregation of the single buyer business of CPPU; and (ii) financial autonomy of NTDC where it is allowed to retain its revenues. The NEPRA transmission tariff gives NTDC financial strength to carry out necessary investments and to function commercially. The focus areas for NTDC are ensuring high availability of existing transmission network.

B. **Technical**

74. The design of the project is driven by three broad sets of criteria: (i) the need to strengthen capacity of distribution and transmission network to cope with increased electricity demand and ensure adequate service standards; (ii) the need to reduce technical and commercial losses and improve efficiency of the networks, especially in distribution; and (iii) the need to strengthen institutional capacity of the companies in various business areas. Relative weights of these criteria differ among the project companies, mainly due to differences in their technical and commercial losses. While the losses are relatively low for LESCO and IESCO, MEPCO has more problems, and this issue dominates HESCO's business. The design of the projects for the individual companies reflects these differences. Because of the importance of the loss reduction for HESCO and the severity and the complexity of the problem, final design of this project component is to be done during project implementation. It is thought that utilizing the resources of the Bank loan/credit and technical expertise that can be mobilized with Bank's assistance should lead to a better design and outcome. The idea is to implement a design that will be proposed in a couple of HESCO's circles on a pilot basis[17], and then – if the approach proves successful – scale it up to other service areas and even to other companies, under separate follow up operations.

75. NTDC component is part of NTDC's much larger investment plan, which the company is financing from a number of sources – its own funds, commercial borrowing, bilateral donors, and ADB loans. The component is needed to improve delivery of electricity to MEPCO and, therefore, mitigates some of the risks which MEPCO faces in terms of reliability of supply to its customers. It would also keep the Bank more closely involved with the issues facing NTDC in its key role in sector reform (implementation and administration of the wholesale market).

76. All five companies have prepared respective Project Description Documents (PDDs) detailing project design and its justification. The proposed physical investments are consistent with 5-year investment plans approved by the Government; the only potential exception may be the Electricity Loss Reduction component for HESCO, whose final design is to be determined as part of project implementation. The PDDs have also been reviewed by the Bank. The proposed investments involve proven technologies, appropriate to the needs of the companies, and generally meet the accepted international standards.

77. The technical assistance components have been selected on the basis of the needs of the companies to strengthen their capacity to manage their businesses.

[17] A "circle" is a confined, contiguous service area served by a set of substations, which has its own energy and financial accounting and, thus, can be monitored in terms of energy losses, as well as in terms of the associated financial performance (billing and collections).

C. Fiduciary

78. **Procurement**: Procurement for the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004 revised August 1, 2006; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004 revised August 1, 2006, and the provisions stipulated in the Legal Agreement.

79. Goods procured under this project would include: power and distribution transformers, transmission towers, conductors, insulators, switchgear, circuit breakers, panels and associated hardware. Civil works associated with the construction and rehabilitation of distribution systems including grid stations and transmission lines. Consultant services will be procured for the TA portion of this Loan/Credit.

80. Procurement activities will be carried out by IESCO, LESCO, MEPCO, NTDC, HESCO, and PEPCO. The agencies were not staffed with procurement specialists, with the exception of NTDC and LESCO. (LESCO has access to specialized procurement assistance through its consultants.) An assessment of the capacity of the various DISCOs to implement procurement actions for the project has been carried out by Bank staff. The assessment reviewed the organizational structure and staffing for implementing the project. A detailed description of each of the DISCOs, the types of procurements that they are expected to carry out and their capacity to implement procurement plans is given in Annex 8. Where qualified staff is not available in the short term, DISCOs with weak procurement capacity have acquired services of consultants to assist with the preparation of bidding documents and subsequent bid evaluations. PEPCO has been assessed to have adequate procurement capacity to implement the TA portion of the loan/credit.

81. A key risk area, and one that raises significant concern, is the occurrence of collusive practice and post-bid negotiation in the procurement of certain goods (e.g. distribution transformers, energy meters and conductors). Historically, WAPDA (and subsequently the DISCOs) restricted procurement of specific goods to local manufacturers citing government SROs (Statutory Notification (S.R.O.) 827 (I)/2001, Import of Engineering Goods (Control) Order dated December 3, 2001) that mandate this and protect domestic suppliers. This practice included negotiating prices and splitting the orders between the firms which submitted identical prices, in violation of the Public Procurement Rules, 2004. It is noted that of the approximately US$257 million to be financed by the Bank under the APL1 project, approximately 10% of the procurement activities would fall under the list of engineering goods where domestic suppliers are protected and where local suppliers have in the past colluded on prices. Furthermore, it is noted that the evidence so far indicates that procurement of goods which are not subject to this SRO has resulted in competitive bid prices. The project companies (HESCO, IESCO, LESCO, MEPCO, and NTDC) and government agencies are keen to take actions to ensure that procurement is done competitively and transparently. To that end, the Government has prepared a broader "Procurement Action Plan" (PAP) which includes various measures designed to improve procurement practices. (See Annex 8 for the main features of the PAP.) PEPCO, which assists the government in corporate governance matters related to the power sector, is coordinating this effort with the project companies and the government. Key features of the plan include a commitment to ensure open and transparent bidding for contracts under this project. Some actions in this regard have already been taken that include the removal of requirement to bid only local vendors, the prohibition on post bid negotiation, allocation of quotas among local manufacturers, removal of price difference recovery clauses from purchase orders, and discontinuation of uniform price setting for certain categories of equipment.

82. Going forward, PEPCO will work with the relevant government entities to amend SRO 827 to remove the clauses that restrict international competition in the procurement of engineering goods. They will also acquire the services of consultants to provide oversight of and develop new procurement procedures as well as a process for the debarment of firms that violate procurement stipulations. Under the new measures, PEPCO, in consultation with the DISCOs, will devise a communications strategy which will be adopted by DISCOs as being part of their procurement procedures.

83. **Financial management system** in DISCOs is well documented and professional staff is employed in key positions, with most of the staff in place. Functions of the sections in the Finance Directorate and job descriptions of key positions have been clearly stated. Accounting, including inventory management, is being computerized (in all implementing agencies except MEPCO) under Enterprise Resource Planning (ERP). DISCOS are companies registered under the Companies Ordinance, that have now been granted financial autonomy by allowing escrow accounts to collect revenue and incur expenditure there from. NTDC, PEPCO, IESCO, LESCO, MEPCO and HESCO, would be required to establish their separate Designated Accounts (DA), in accordance with the agreed procedures for Operation and Maintenance of the DA, issued by the Finance Division, Ministry of Finance, Government of Pakistan, Islamabad for receiving funds for Bank's eligible share of financing. On the basis of six-monthly projections from respective DISCOs, the Bank would deposit an initial advance into each DA. Each DISCO may wish to advance funds from the DA to their field offices, enabling them to meet Bank's eligible share of project financing, provided these advances are accounted for within 90 days of the date of advance. The respective field offices shall also establish separate local currency accounts for receipt of Bank's eligible share of financing in the respective cities where they are located.

84. Financial management system in NTDC is also well documented and professional staff is employed in key positions, with most of the staff in place. Functions of the sections in the Finance Directorate and job descriptions of key positions have been clearly stated. Accounting including inventory management is computerized. Internal controls are also effective barring a weak control in the computerized accounting system. Despite being a company registered under the Companies Ordinance, NTDC is not financially or administratively autonomous, as WAPDA has key controls over financial flows. However, this would not affect implementation of the project as counterpart funds would be available as per approved budget.

85. Overall financial management arrangements are satisfactory and provide reasonable assurance that funds would be used for intended purposes.

86. Key positions in PEPCO's Finance Department are manned by chartered accountants. Accounting policy and procedures are documented and controls in processing payments including payroll are effective. However, controls in book keeping are not being exercised. It was agreed that this would be taken care of. Financial management arrangements for the project would be adequate once these weaknesses are addressed.

87. **Disbursement Arrangements.** The proposed IBRD Loan of US$173.6 million and IDA Credit of SDR 51.0 million (US$83.1 million equivalent) is expected to be disbursed over a period of 3.5 years and would cover approximately 80 % of the total project cost although each contract would be 100% eligible for financing. The withdrawals from the loan would be made on the basis of Interim Un-audited Financial Reports (IUFR). The expected disbursement schedule is presented in the table below.

Estimated Disbursements (Bank FY/US$ million)				
FY	2009	2010	2011	2012
Annual	25.7	77.1	102.7	51.2
Cumulative	25.7	102.8	205.5	256.7

Project Implementation Period: Start: June 2008 End: December 2011
Expected Effectiveness Date: August 2008
Expected Closing Date: June 30, 2012

88. **Designated Account:** To facilitate disbursement, DISCOs, NTDC and PEPCO would open segregated Designated Accounts (DA) under the terms and conditions acceptable to the Bank. The proceeds of the DA would be used for payment of all eligible foreign/local expenditures. Each DA would be replenished quarterly on the basis of actual expenditures (IUFRs) and projections for the next semester. In addition, the DISCO shall be at liberty to use the option of "direct payments" from the Loan/Credit to finance large payment to the third parties and or to use Special Commitment procedure.

89. **Retroactive Financing:** Retroactive financing up US$23.9 million would cover eligible expenditures for Project activities incurred on or after April 1, 2008 and before the loan/credit signing date.

D. **Social**

90. Environmental and Social Assessments (ESAs) have been completed by all the entities namely (IESCO, MEPCO, LESCO, HESCO and NTDC). The ESAs completed cover the first year of Bank funding while ESAs and mitigation measures for subsequent years will be completed and cleared by Bank prior to initiation of project interventions.

91. The main social issues related to project implementation and operation includes the following:

i. *Loss of land*: Land will be required for the grid stations. This will include permanent land acquisition from private owners, government owned land and land provided by housing societies. Land for locating the transmission towers will not be acquired, unless there is loss of access for productive use by the owner. There will be temporary land take during construction of transmission lines. NTDC had acquired the land required for the grid stations in 1978. IESCO and HESCO will both acquire 16 acres[18] (6.48 hectares) of land each for the grid stations using the Land Acquisition Act (1894), while MEPCO will acquire 20 acres (8.10 hectares) for the grid stations. LESCO will require 127.5 kanals (6.45 hectares) and will acquire this from private owners, some government owned land and from a Housing Society.

ii. *Loss/damage to crops*: Where transmission lines pass over cultivated land there might be damage to crops during construction phase. For IESCO it will entail damage to 666 acres (269.63 hectares) impacting on 453 affectees. NTDC entails damage to 500 acres (202.43 hectares) of land affecting crop losses to 488 persons while for HESCO 792.56 acres (320.87 hectares) will be affected for which compensations will be paid for damage to crops. LESCO will impact on 24 kanals (1.21 hectares) impacting crops of 18 affectees. MEPCO would require 80 acres (32.39 hectares) for accessing transmission lines during construction and crop damage on 1339 acres (542.11 hectares) impacting 669 persons. This is a major impact and will be mitigated through payment of cash compensations. These are mainly crops in the cultivated area through which the transmission lines pass and will be damaged (and compensated) during project construction period.

iii. *Damage to infrastructure*: For IESCO there is no direct infrastructure affected, however some roads, water channels etc. might be impacted during construction that will be mitigated. For NTDC and HESCO, there are some minor damage to infrastructure, katcha (non-concrete/mud) huts/sheds and poultry farms. LESCO will also impact two wooden kiosks and a katcha (non – concrete/mud) shed. These will be compensated at replacement cost as per the entitlement matrix in the RP/ARP.

iv. *Loss of livelihood*: This is limited to livelihood connected with crops/fruit trees that may be damaged by project construction in all cases and for LESCO also temporary loss of livelihood for three squatters/encroachers.

v. *Loss of trees*: These are trees located in the route of the transmission lines.

vi. *Loss/block of access*: Movement of vehicles and machinery during construction phase may impact communities residing in close proximity. This however is expected to have medium level of impact. These will be mitigated through various means including vehicles avoiding passing through communities, use of silencer to minimize noise, restricting traffic to only work areas, working only during day time, etc.

vii. *Noise and vibration*: This will result from movement of vehicles machinery during construction and will be mitigated through use of silencers, work during daytime only etc.

[18] 1 hectare = 2.47 acres

viii. *Safety hazards*: Construction activities will involve operation of heavy construction machinery, vehicular traffic excavation and filling operations along with location of fuel storage at camp sites. The unmitigated risk is high. Mitigation will include protective fencing of construction sites, reduces speed of vehicular traffic, construction camps located at least 500 m away from communities, provision of fire fighting equipments to camps etc.

ix. *Public health*: Public health issues may arise in all project sites, particularly grid stations and camp sites. These are however, expected to be negligible when mitigated. Mitigation will include provision of septic tanks and soakage pits of adequate size, location of camps at least 500 m from communities' ground water wells, camps to have appropriate solid waste disposal mechanism etc.

x. *Damage to irrigation network*: In the MEPCO project area activities may potentially damage irrigation network and operation of project vehicles and construction machinery in the cultivation fields can damage water courses. In NTDC some water courses will be impacted. Mitigation measures include avoiding working close to canals and water courses, and repair all damages caused by project activities, along with providing structures to protect water courses (in NTDC area of work).

xi. *Gender*: Due to close proximity of construction sites where the same route may be used by community women there may be negative impact of the project on women. Mitigation measures will include use of alternate routes for construction from that of communities and ensuring that cultural norms are respected by construction crew.

xii. *Child Labor*: Although child labor is not prevalent in any of the project areas, but the provisions of the Child Labor Act will be made a part of the construction contracts to ensure no child labor is employed at the project sites or companies.

92. **Social Safeguards:** OP 4.12 is triggered in all cases with loss of land, crops, trees, infrastructure, utilities, and in some minor cases, loss of livelihood. IESCO, MEPCO, HESCO, LESCO and NTDC have all developed Resettlement Plans (RPs) since the number of affectees is more than 200. However, the impact is not major, as most affectees will lose crops and trees and mitigation measures are in place. LESCO has developed an Abbreviated Resettlement Plan (ARP) since the number of affectees is less than 200. Detailed mitigation is proposed in these RPs/ARP (for details see Annex 10).

93. **Consultations:** The ESAs are the result of stakeholders consultations including primary (direct affectees and beneficiaries) and secondary stakeholders (all those who may be impacted indirectly or have interest in the project) and their views have helped inform the design. Thus, consultations have been held at grassroots level, with direct and indirect stakeholders, institutional stakeholders, community organizations and NGOs. The ESAs have also detailed a participation framework for stakeholders' participation over the subsequent phases of the project cycle.

94. **Grievance Redressal:** A grievance redressal mechanism has been developed. For IESCO, MEPCO, and HESCO, a complaint register will be maintained by the Environmental & Social Inspector (ESI) who, in consultation with the Project Director (PD), Contractor's Manager and Environmental & Social Monitor (ESM), will provide redressal. For LESCO, the XEN (Construction) will maintain the complaint register. The complainants will be informed and their views on the solution will also be entered in the complaint register. For un-resolved issues, the complaints will be forwarded to the Grievance Redressal Committee (GRC) composed of the PD (as the head) and ESI, ESMs and a non project community representative (acceptable to all) as members. For NTDC, along with the PD, a representative each of the Environmental Social Cell, local government/line department, the contractor and local community (acceptable to all parties) will be members of the Grievance Redressal Committee. In the case of LESCO, the GRM will comprise the Project Engineer/Project Director as the head, supported by the socio-economist from the Social Cell, a representative of the supervision consultant and a non-project person representing the community.

95. **Social Staff:** All DISCOs (HESCO, IESCO, MEPCO, and LESCO) and NTDC have dedicated staff in place to implement the social mitigation measures.

96. **Training:** All the Project entities will provide training in social development and social safeguards to relevant staff in the entities to enable them to implement the project in a socially sensitive manner and in compliance with the social safeguards policies of the Bank.

97. **Monitoring:** Monitoring proposed includes compliance and effect monitoring. External monitoring by an independent third party is also proposed to validate the internal monitoring of social issues. A list of social monitoring indicators is provided in Annex 10.

E. Environment

98. **Environmental Aspects:** As of September 2007, all the five companies have submitted their ESAs for the first year of project investments. These ESAs identify the potential environmental issues and their management through a comprehensive environmental management plan.

99. **Key Environmental Issues.** The proposed interventions by majority of the companies are environmentally benign with most of the environmental impacts confined to the construction phase and are temporary in nature. Appropriate control and housekeeping measures – recommended in the respective EMPs of the ESA studies – would address and manage these issues adequately. The proposed environmental and social monitoring would ensure compliance and effectiveness of these control measures.

100. Each ESA report presents a complete analysis of the project alternatives in terms of siting of grid stations and locating transmission line routes, environmental and socially acceptable technical options and opting for PCB-free insulating oils for transformers and capacitors. In case of IESCO, where a section of the Murree-Minhasa transmission line has to pass through a thick forest, efforts have been made to minimize the environmental damage by keeping the route along the existing line and within the same corridor. In case of LESCO, first year project interventions are confined mainly within the city of Lahore and its suburbs. The company has proposed an adequate traffic management plan to avoid traffic disruption during the construction of transmission line in the city and also commits to arrange the proposed works with minimal disruption to power supply for the area. For other DISCOs the routing of transmission line and siting of grid stations is mainly through agricultural land/abandoned lands with minimal environmental consequences.

101. The key environmental impacts of the construction phase of the project as identified in these ESA reports included soil erosion and degradation, water contamination and damage to natural vegetation. Good house-keeping practices, as proposed in the EMP will protect the soil and water contamination from such spill-overs. A limited number of trees, vegetation and crops are also to be removed mainly to construct transmission lines (from an area directly under these lines as well as required to approach the transmission line corridor). Some trees will also be removed to construct new grid stations in almost all the DISCOs. ESAs suggest remedial measures including compensatory plantation at adequate locations including within grid stations. DISCOs have also been advised in the ESA studies not to use any chemicals for the pruning of trees/removal of natural vegetation and only to use mechanical methods for the purpose. Each company is to follow and practice WAPDA's safety protocols during the construction and operation stages of the project to ensure occupational health and safety aspects. All the companies have been asked during the project appraisal to update their ESA reports by adding section on health & safety.

102. The key environmental impacts of the operation phase of the proposed project as identified in the ESA reports included contamination of soil and water, and damage to natural vegetation and wildlife. Soil and water can be contaminated as a result of inappropriate waste disposal at the grid stations. The natural vegetation and wildlife can be adversely impacted during the transmission line patrolling and maintenance activities (particularly along the forested segment of the Murree - Minhasa transmission line). Appropriate sewage collection and disposal systems as proposed in the ESA studies will ensure that soil and water are not contaminated by the sewage from the grid stations. Similarly, sound solid waste

collection and disposal mechanisms as included in the ESAs will forestall any soil or water contamination caused by inappropriate waste disposal. To prevent/minimize the impacts on the natural flora and fauna, the IESCO's ESA study proposes the transmission line maintenance activities to be carried out in consultation and coordination with the relevant Forest and/or Wildlife departments.

103. The potential ill-effects of electromagnetic field (emf) though not envisaged for the project but have been managed by adopting standard design and engineering practices and avoiding routes of transmission lines passing through residential areas to the extent possible.

104. The project is also supporting the use of PCB-free insulating oils in the transformers and capacitors. None of the companies is currently buying transformers with PCB based oils. However, companies like IESCO have used PCB based oils in the past, and used oil in such transformers is replenished with the same type. ESA prepared for IESCO outlines program for developing a phase-out plan with adequate costing for that purpose.

105. **Environmental Management Plan (EMP).** Each company has proposed a comprehensive environmental management plan (EMP) in their ESA reports in order to provide an implementation mechanism for the suggested mitigation measures. These EMPs provide the organization structure for the proposed environmental management during the project, and defines the roles and responsibilities of various project players. All the companies have recruited at least one environment specialist to oversee the contractors' compliance with the proposed EMP during the project implementation. A number of trainings are also proposed to raise the awareness of the project staff on environmental aspects. Each company has estimated the budgetary requirements to implement the EMPs and have committed to set aside these amounts for its effective implementation. Bank will ensure through its legal agreement that each company makes EMP part of its bidding document for the contractor.

F. Safeguard policies

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP 4.01)	[x]	[ ]
Natural Habitats (OP/BP 4.04)	[ ]	[x]
Pest Management (OP 4.09)	[ ]	[x]
Physical Cultural Resources (OP/BP 4.11)	[ ]	[x]
Involuntary Resettlement (OP/BP 4.12)	[x]	[ ]
Indigenous Peoples (OP/BP 4.10)	[ ]	[x]
Forests (OP/BP 4.36)	[ ]	[x]
Safety of Dams (OP/BP 4.37)	[ ]	[x]
Projects in Disputed Areas (OP/BP 7.60)*	[x]	[ ]
Projects on International Waterways (OP/BP 7.50)	[ ]	[x]

106. The Project involves several components in the disputed area of Kashmir, to be carried out by IESCO. These include upgrade of three and extension of two grid stations and five transmission lines.

G. Policy Exceptions and Readiness

107. There are no policy exceptions required by the project. The project is ready for implementation.

* *By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas*

PAKISTAN: Electricity Distribution and Transmission Improvement Project

I. COUNTRY BACKGROUND

1. Pakistan's economy has experienced a resurgence in the last six years. After a decade of political instability, macroeconomic crisis, and limited economic progress, Pakistan has emerged as one of the fastest-growing economies in Asia, with rising per capita income, and improved social indicators. Pakistan's Gross Domestic Product (GDP) was US$142.6 billion in 2006-07. Successive years of high growth (real GDP grew 7.5% in FY04, 8.6% in FY05, 6.6% in FY06, and 7% in FY07) have led to commensurate high growth in electricity demand during this period.

2. A program of economic reforms and institutional strengthening was articulated in the 2003 *Poverty Reduction Strategy Paper (PRSP)* entitled "Accelerating Economic Growth and Reducing Poverty: The Road Ahead." The main focus of the PRSP is on second-generation reforms to accelerate growth to over 6%, while maintaining macroeconomic stability. The PRSP identified and outlined a framework for reducing threats to macroeconomic stability, based on: (i) reducing the overall fiscal deficit; (ii) improving revenue mobilization; (iii) reducing explicit or implicit liabilities of the budget; (iv) improving the performance of key public enterprises, in particular the power sector; and (v) reducing the stock and improving the terms of public debt. Other pillars of the PRSP included strengthening governance and furthering devolution, accelerating investments in human capital, and targeting the poor and vulnerable. The PRSP targets are in line with the progress necessary to meet the Millennium Development Goals (MDGs), and the PRSP projects significantly higher expenditure allocations for education, health, and poverty-related infrastructure. A subsequent government document, the Planning Commission's 2005 *Medium Term Development Framework for 2005-10*, further articulated and expanded the federal government's investment program. The Government is currently in the process of finalizing a second PRSP.

3. The Bank's assistance strategy for Pakistan is guided by the Bank Group's *Country Assistance Strategy (CAS)*, discussed by the Board on June 2, 2006. The CAS focuses on three pillars, aligned with the strategic priorities of the Government's PRSP: (i) sustaining growth and improving competitiveness; (ii) improving government effectiveness and service delivery; and (iii) improving lives and protecting the vulnerable. The World Bank lending program for 2006-2009 supports the CAS outcomes through a mix of policy-based fast disbursing lending operations (a series of one-tranche national *Poverty Reduction Strategy Credits – PRSCs* – and provincial Development Program Loans/Credits), programmatic sector lending, and investment projects.

4. The PRSC program includes, as one of its main elements, *reform of the power sector* through unbundling, corporatization, commercialization, and regulatory reforms, as a key to achieving long term sustainable growth in Pakistan. Thus, the PRSC program is an important complement to the Bank investment lending to the sector.

SECTOR OVERVIEW

In 2006-07, Pakistan's national electricity system sold some 71,000 GWh (generated by a total installed capacity of 19,681 MW) to nearly 18.9 million customers. For these sales, end-consumers were billed some Rs. 329 billion[19] (~US$5.4 billion). Electricity sales[20] have risen by 40% in the five years ending

[19] In 2006-07, the ex-WAPDA distribution companies sold electricity worth Rs. 284.3 billion (including taxes but excluding sales to KESC and IPPs) and KESC sold Rs. 44.7 billion to end-consumers (total billing as per prevailing tariffs). Therefore, the total electricity sold to end-consumers by the Pakistan electricity system was Rs. 329 billion.

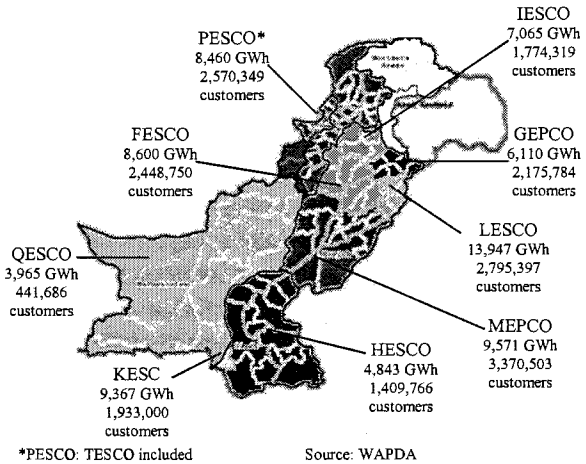
[20] Electricity sales are taken as a proxy for electricity demand. Load-shedding means that demand is higher.

June 30, 2007, while installed generation capacity remained practically the same. Network capacity has also not risen commensurate to demand growth. The system is experiencing a power deficit of over 2,000 MW and a cash deficit of some US$1 billion per year. The power deficit is not likely to be relieved soon. Demand is expected to grow at some 7-8% per annum and expected generation capacity additions up to 2011-12 are not expected to be sufficient to relieve power shortage and eliminate load-shedding.

Pakistan's Electricity System

Distribution: As Figure 1 shows, Pakistan's electricity market is served by (i) the eight distribution companies carved out of the former integrated utility, Water and Power Development Authority (WAPDA) and (ii) by the privatized integrated utility Karachi Electric Supply Corporation (KESC). In 2006-07, the Punjab province accounted for some two-thirds of electricity sales followed by Sindh at 21% (including Karachi 14%), NWFP (13%), and Balochistan (6%). In 2006-07, LESCO distributed the largest amount of electricity among the country's distribution companies with KESC and MEPCO the next two largest (see Figure 1). By number of customers, MEPCO served the highest number of customers: over 3.3 million across thirteen districts in the southern Punjab. Three out of the remaining eight DISCOs serve 2.5 million customers or more.

Fig. 1. Service Areas of Distribution Companies
Units sold & number of customers (2006-07)



*PESCO: TESCO included

Source: WAPDA

Transmission: The National Transmission and Dispatch Company (NTDC) is in charge of operating the transmission system (220-kV and 500-kV network) and performing the dispatch function. The high-voltage transmission network is a country-wide integrated network but it does not cover many sparsely populated regions of Balochistan, Sindh (especially the Thar region) and Jammu & Kashmir. The integrated network has no interconnections with neighboring countries. Cross-border interconnections exist at the lower voltage levels with Iran, via a local 132-kV line and two short 20-kV lines, which serve the local border areas in Balochistan and are not integrated with Pakistan's main transmission grid.

Generation: Installed generation capacity was 19,681 MW in June, 2007. WAPDA remains the country's major power generation company accounting for 57% (11,278 MW) of the country's installed capacity in 2007 divided between 6,444 MW of hydropower[21] and 4,834 MW of thermal generation[22]. Seventeen thermal IPPs account for almost a third (6,155MW) of installed capacity. The remaining capacity is accounted for by KESC's thermal generation (1,756 MW in four plants), nuclear generation capacity (462 MW in two plants) and one hydropower IPP (30 MW). The electricity generated by these plants rose by 22% from nearly some 80,600 GWh to 98,200 GWh in the three years ending June, 2007 (while electricity sales grew 27%).

[21] Ninety-eight percent of WAPDA's hydropower capacity is concentrated in five plants: Tarbela (3,478 MW), Ghazi Barotha (1,450 MW), Mangla (1,000 MW), Warsak (243 MW), and Chasma (184 MW). The remaining two percent comprises of nine plants ranging from 1 MW to 20 MW.

[22] WAPDA's thermal generation capacity is distributed across four GENCO's and two small isolated units: GENCO-1 is Jamshoro Power Generation Company (1024 MW installed/825 MW available), GENCO-2 is Central Power Generation Company (1690 MW installed/1225 MW available), GENCO-3 is Northern Power Generation Company (1915 MW installed/1725 MW available), and GENCO-4 is Lakhra Power Generation Company (150 MW installed/120 MW available). Isolated generation units in Pasni and Panjgoor, Balochistan, have a capacity of 55 MW/38 MW.

Pakistan's generation fuel mix is dominated by thermal plants at two-thirds of total capacity with hydropower accounting for nearly all the rest. Gas-fired plants[23] accounted for nearly a half of electricity generated in 2006-07 with nearly a quarterby furnace oil. A third of generated electricity in 2006-07 was by hydropower plants and 2% by nuclear plants. This makes electricity supply highly dependent on the availability of natural gas and furnace oil as well as hydrology. Despite ambitious plans for wind capacity, the announcement of a wind power policy and issuance of letters of intent to prospective wind farm developers, Pakistan has a negligible wind power capacity.

Sector Structure

In 1992, the Government of Pakistan (GoP) approved a strategic plan for power sector restructuring and initiated wide-ranging reforms to address persistent crisis in the sector. The main objectives were to increase investment, improve service, and strengthen the sector's financial performance, with particular emphasis on attracting private investors to help achieve these objectives.

The reform design included four principal elements: (i) *corporate* (unbundling of WAPDA into separate generation, transmission and dispatch, and distribution companies, with a number of companies in the generation and distribution segments); (ii) *ownership and investment* (privatization of the existing distribution and generation companies and expansion of the sector through investment in the existing and new companies); (iii) *institutional* (separation of the policy, regulatory, and ownership functions); and (iv) *market structure* (establishing appropriate trading and financial settlement arrangements for the wholesale market, first based on a regulated single-buyer model, followed by progressive introduction of competition and more liberalized wholesale and, eventually, retail markets).

Corporate structure. The power sector used to be organized into two vertically integrated utilities (excluding Jammu and Kashmir): Karachi Electricity Supply Corporation (KESC), serving the city of Karachi and its adjoining areas (about 13-15% of Pakistan's power market), and the Water and Power Development Authority (WAPDA), serving the rest of the country. Both utilities owned and operated generation facilities, as well as transmission and distribution networks. The structural part of the reform focused on WAPDA as the dominant utility, whereas the strategy for KESC was simply to privatize it as a vertically integrated utility. In November 1998, the WAPDA transmission system became the National Transmission and Dispatch Corporation (NTDC) and WAPDA's eight area electricity boards became eight distribution companies (Figure 1). In generation, WAPDA's hydroelectric capacity is now under one company (WAPDA Hydel) and WAPDA's thermal capacity is distributed across four GENCOs[15]. In November 2005, 73 % of KESC shares were sold to a strategic investor while the Government retained 26% ownership.

Ownership and Investment. The Government of Pakistan remains the dominant shareholder in the power sector. Currently, all transmission and distribution (except KESC) remains under full government ownership. The Government retains a quarter of KESC shares. WAPDA Hydel and WAPDA GENCOs, which account for 58% of generation, also remain in government ownership.

The Government's policy is to increase participation of the private sector in order to attract investment and improve commercial performance of the power industry through better management, improved efficiency, and stronger commercial performance. As mentioned above, nearly a third of generation capacity is owned by private investors (IPPs), and KESC was privatized at the end of 2005. Government continues to pursue private investment in generation through green-field IPPs and privatization of the existing thermal generation (the privatization of Jamshoro Power Generation Company is planned). The Government also intends to privatize ex-WAPDA distribution companies. Under the Power Policy 2002, the Government encourages private investment through a number of tax incentives and other undertakings by the Government (payment guarantees, indexation for inflation and exchange rate changes, simplification and streamlining of approvals, etc.).

[23] All natural gas consumed in Pakistan is indigenous.

Institutional structure. The Ministry of Water and Power (MWP) is the Government's principal agency responsible for the power sector's policies, plans, and supervision. The Ministry of Finance (MoF) plays a key role in the areas related to the financial aspects of the sector: subsidy policies, investment support, financial restructuring of state owned companies, financial guarantees to investors and creditors, etc. MoF is expected to play an increasingly active role in the governance of the state-owned electricity companies, a function which has so far been performed largely by WAPDA.

Technically, ownership of WAPDA and WAPDA-successor entities rests with the President of Pakistan, who has given the ownership proxy to the chairman of the Pakistan Electric Power Company (PEPCO), an agency established in 1998 and entrusted the task of managing WAPDA corporate restructuring. Until September 2007, the Chairman of WAPDA has also been appointed by the President as the Chairman of PEPCO (this practice has been discontinued and the two posts are now held separately). Therefore, in practice, WAPDA exercised ownership responsibilities over its successor companies (setting the targets for and monitoring operational and financial performance, controlling appointments of the boards of directors and senior management, deciding on investment programs[24], etc.). Further, each distribution company's financial flows were managed by WAPDA which means these companies did not enjoy true financial autonomy (and accountability). As of February 2008, four DISCOs have been provided full control over their financial flows, and the Government plans to allow the remaining four companies to assume full control by the end of the fiscal year.

The Private Power and Infrastructure Board (PPIB) and the Privatization Commission (PC) are the power sector's interfaces with the private sector. PPIB, created in 1994, promotes and facilitates private sector participation in the sector under the supervision of the MoW&P. PPIB acts as a "one-window" facility to private sector investors in matters concerning establishing power projects and related infrastructure. The Privatization Commission (PC) is entrusted with selling or giving under concession shares of the federal government in electricity companies as part of its broader mandate of selling federal government property as approved by the Cabinet and implementing the government's privatization policy.

Sector regulation, including tariff setting, licensing, and related responsibilities, are performed by the National Electric Power Regulatory Authority (NEPRA). NEPRA was established first in January 1995, through a Presidential ordinance and was formally established in January 1998. For interaction with federal and provincial governments, NEPRA is placed within the cabinet division. NEPRA's board has five members: a nominee from each of the four provinces plus a chairman. NEPRA is autonomous in discharging its duties, although its tariff decisions have to be notified by the Government in order to become legally binding.

Market Structure. The unbundling of WAPDA created the need for establishing a wholesale electricity trading system, with explicit contracting and operating rules and associated administrative organization. The current policy calls for the establishment of a single buyer model, whereby a central agent (the Central Power Purchase Agency or CPPA) signs contracts for electricity purchases from power generation companies, as well as power sales contracts with distribution companies[25]. The CPPA is currently placed within NTDC, but is expected to become an autonomous agency during 2008. NTDC is also responsible for dispatch of power plants (performed according to merit order based on plant's variable operating costs), and for metering and establishment of physical energy balances in the market. The CPPA is responsible for receiving invoices from and for payments to the power plants that it has contracts with, as well as for issuing invoices and collecting payments for electricity delivered to distribution companies. All prices are regulated by NEPRA. This arrangement was chosen to provide a smooth transition from the previous practices, but is to be replaced eventually with a more competitive arrangement based on bilateral contracts and a balancing market.

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[24] Investment programs above a certain threshold are approved by the GoP.

[25] Contracts with the existing IPPs are held by WAPDA Power Privatization Organization (WPPO). This arrangement is to stay to avoid a lengthy legal process of transferring these contracts to CPPA. CPPA is to sign contract with WPPA rather than directly with the IPPs. New IPPs are expected to deal directly with CPPA.

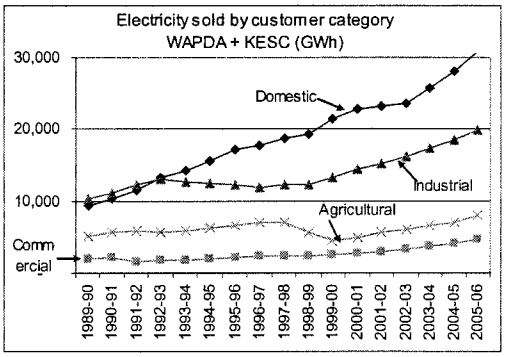
Demand-Supply Balance

Demand. In 2006-07, Pakistan's national electricity system sold some 73,000 GWh (generated from a total installed capacity of 19,681 MW) to 18.9 million customers. Total electricity consumption in Pakistan (energy billed by ex-WAPDA DISCO's and KESC) rose by 40% in the five years ending June 2007.

This growth of 7% CAGR[26] has been much faster than the growth rate in the 1990s—4 percent. In the past decade, sales to domestic consumers have typically accounted for nearly a half of total national sales followed by industrial customers accounting for a third (see Figure 2). Consumption by domestic consumers is the dominant source of growth rising continuously at 7.7% annually since 1989-90 (9.3% p.a. nationally in the three years ending June 30, 2006). Robust growth in electricity consumption by industrial customers (7% in the three years ending June 30, 2006) has also supported the recent growth trend after a decade of near-stagnation.

The total number of customers rose from about 15 million in 2002-03 to nearly 18.9 million in 2006-07—nearly a million new customers per year. Some 90% of these additions were domestic consumers fuelled by economic growth and a strong village electrification drive by the government. During this three-year period, the number of electrified villages rose by a total of nearly 60%, from 73,807 to 117,524 in 2006-07. But despite these increases, only some 65% of Pakistan's population has access to grid-connected electricity. Pakistan's per capita electricity consumption level (431 kWh per capita in 2005-06) is low compared to China (1,585 kWh), Thailand (1,865 kWh), Brazil (1,955 kWh), and Malaysia (3,166 kWh)[27]. It is clear that there is plenty of room for significant electricity consumption growth along Pakistan's path to becoming a middle income country (with a higher electrification rate).

Fig 2. Domestic customers: fastest rise



Source: WAPDA

Expected demand growth. The recent high growth in electricity demand has exceeded projections. And this rapid demand growth is expected to continue for the foreseeable future, fueled by continuing economic growth and the government's determination to continue with aggressive electrification of villages.

Table 1. Expected electricity sales growth 2007-08 to 2011-12

Assumed annual GDP growth rate	6.0%	6.5%	7.0%
Electricity sales growth rate	6.9%	7.5%	8.1%

In the four years ending June 2007, Pakistan experienced particularly high economic growth. But, with greater turmoil on the political front, here the *five*-year period ending June 30, 2007, is taken as an approximation for the subsequent five-year period. A simple calculation based on the rate of annual electricity sales growth and the annual rate of real GDP growth rate during the five years ending June 2007, gives 1.2 as the elasticity of electricity demand with respect to real GDP[28]. Assuming three scenarios of annual GDP growth, the rate of electricity sales growth can be expected to fall between 6.9% and 8.1% (Table 1).

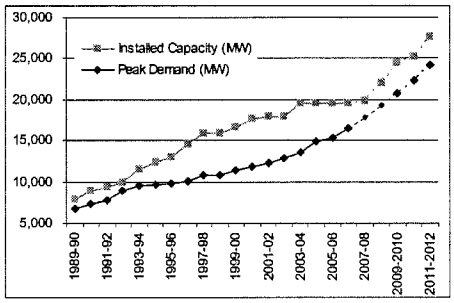
[26] All annual growth rates are Compound Annual Growth Rates (CAGR).

[27] Source for comparator countries: Little Green Data Book (2007) The World Bank.

[28] That is, for every one percent rise in the rate of real GDP growth, there was a corresponding rise of 1.2 percent in the rate of electricity demand growth. This calculation assumes that electricity sold (i.e., billed) is equal to demand. Given that Pakistan experienced shortages in this period, and true demand was higher than electricity billed, this calculation under-estimates the elasticity.

Supply. While Pakistan's nominal installed capacity of 19,681 MW in June, 2007, appears well above the year's maximum diversified demand of 15,685MW[29], not all of this capacity was available for generation. The de-rated, summer-time capacity was only 17,898 MW in 2006-07 (and 13,216 MW in winter due to hydrology when electricity consumption is also considerably lower). But with the varying level of water in reservoirs, the amounts of water draw-downs determined by water usage other than power generation (especially irrigation), and planned maintenance or unplanned outages of power plants (including due to gas supply limitations), etc., the actual energy served can be significantly lower. The peak demand figures do not reflect the true demand[30]. For example, the ex-WAPDA system served peak demand of 13,051 in June, 2006, while the true demand was estimated by WAPDA at 13,847 MW implying load shedding of 796 MW or 5.7 percent.

Fig 3. Narrowing Gap



Peak demand is national 'un-diversified' peak demand
Sources: PPIB, WAPDA, KESC --- implies projection

Demand-Supply Gap. Figure 3 presents the peak demand and installed generation capacity expected up to 2011-12. Here, the national undiversified peak demand of 15,999 MW for 2006-07 is advanced by a 7.9% annual rate of demand growth. The expected available generation capacity numbers are based on the latest available list of expected generation capacity additions from PPIB (August 30, 2007). After years of surplus in the late 1990s and the early part of this decade, the gap between peak demand and installed capacity has been narrowing.

In 2006-07, load-shedding was required even though the undiversified national peak demand in that year was significantly lower than the available capacity of 17,898 MW. This implies that the actual capacity available at peak demand periods was in the vicinity of 15,999 MW (nearly 19% lower than the installed capacity).

Nearly 8,200 MW of generation capacity additions are planned by 2011-12 with an investment of US$6.7 billion. Adding this to the current actual capacity of the system, the system should be able to deliver some 23,500 MW by 2012. But peak demand is expected to grow to 24,100 MW during this period. Therefore, the 1,600 MW to be added every year (with an investment of US$1.3 billion per annum) till 2011-12 is not expected to be sufficient to catch up with the rising demand and eliminate power shortages.

Further, some 90% of the currently planned capacity additions will be thermal generation. The tight gas supply situation is a limitation for current gas-fired generation and gas supply for power beyond 2010 is uncertain. With this, imported oil supplies are expected to lead to a rise in generation cost in a system already dominated by thermal generation.

System performance

While expected generation capacity additions are unlikely to meet rising demand, the system's losses of electricity and revenue are high.

System reliability. The network has not evolved to keep pace with demand growth. Pakistan's electricity generation plants tend to be concentrated in the north (hydropower) and south (thermal plants), while the loads are concentrated in the central areas of the country (the Punjab). Therefore, there is a need for a strong high-voltage transmission system, with sufficient flexibility and redundancy to handle shifts in

[29] The demand peaks in the KESC and WAPDA systems are not co-incident. WAPDA Power System Statistics refers to the algebraic sum of these peak demand figures (2,354 MW and 13,645 MW, respectively, in 2006-07 adding up to 15,999 MW) as 'undiversified' peak demand. This undiversified peak demand number is assumed to be 2 percent higher than the 'diversified' demand (15,685 MW).

[30] An estimated peak demand (unconstrained by supply) which should have been served in the absence of load shedding which occurs typically in the periods of peak demand.

flows in response to changes in the availability of the plants. The country-wide blackout on September 24, 2006 was an unpleasant reminder of such problems.

While electricity sold by the system rose by 27% in the three years ending June 2006, the ex-WAPDA transmission and secondary transmission network only grew moderately: transformation capacity by 5.8% and circuit length by 7.8 percent. The result is increased over-loading of the transmission network. Some two-thirds of transformers on the primary network are running at 80% loading or above. The situation among some distribution companies is better with healthy increases in transformation capacity evidenced by loss reduction (but not for all DISCOs: HESCO's transformer capacity has actually fallen by 9% between December 2005 and June 2007). The system's total number of trippings (interruptions) per 100 km of distribution network rose from 147 in 2005 to 267 in 2006-07. The overall result is that bottlenecks in the transmission and distribution network require occasional load shedding even if generation is available. And while technical service standards call for the voltages in the network to be maintained within 5% of their nominal values, they often differ by more than 20% in some service areas.

Technical Losses. Overall, Pakistan's electricity system[31] lost 25.6% of the electricity it generated in 2006-07 (down from a high of 30.8% in 1998-99). The bulk of these losses are due to the country's over-loaded, under-maintained, and under-invested transmission and distribution systems (electricity lost in the generation sub-system—plants' own use—has typically been around 3% of electricity generated).

Losses have come down slightly over the past decade. In the WAPDA system, transmission losses have fallen from 7.8% in 1998-99 to 6.5% in 2006-07 while distribution losses have fallen from 18% to 14.6% during the same period[32]. In the KESC system, transmission and distribution losses have fallen from 45.7% in 1998-99 to 34.2% in 2006-07.

Despite these reductions, losses still represent a major loss of potential revenue. Since the national system sold some 73,104 GWh for Rs. 329 billion in 2006-07, these sales translate into a per unit revenue of Rs. 4.50/kWh in 2006-07. For 73,104 GWh of electricity sold, the national system generated 98,242 GWh[12] but lost 25,138 GWh (25.6% of generation). This means that (after adjusting for 3% losses in generation) every additional 1% reduction in 2005-06 transmission and distribution losses would have increased system revenues by some Rs. 4.3 billion (US$68 million).

Table 2 shows the progress in each distribution company's losses between 2002-03 and 2006-07. IESCO and FESCO have reduced their distribution losses to below ten percent. If the three companies with large losses (KESC, HESCO, and PESCO) cut their listed amounts of electricity lost by a quarter, their sales would rise by 10-13 % (there is sufficient suppressed demand to absorb such a rise). This would mean an additional Rs. 7.7billion (US$123 million) in revenue every year for the system assuming 100 % collections.

Table 2. Distribution losses

	Distribution losses as % of energy received		Electricity lost in distribution (GWh)
	2002-03	2006-07	2006-07
IESCO	11.0%	8.9%	690
FESCO	11.2%	9.7%	920
GEPCO	13.0%	10.3%	703
LESCO	14.7%	12.8%	2,052
QESCO	18.1%	14.1%	651
MEPCO	17.5%	15.6%	1,769
PESCO (incl TESCO)	27.6%	29.4%	3,525
HESCO	34.9%	33.9%	2,487
KESC	34.8%	29.2%	1,422

Note: For KESC, 2006-07 figure is an estimate; numbers do not include losses in secondary transmission grids

Collection losses. The system also loses some revenue in collection losses: electricity billed for which payments are not collected. In 2006-07, the ex-WAPDA DISCOs billed Rs.317.9 to their customers (including to KESC, IPPs, etc.) but only collected Rs. 280.9 billion which means that 11.6% of their billings (Rs. 37 billion, ~US$600 million) were not collected. Nearly a half of this loss is due to the Tribal Areas Electricity Supply Company (TESCO, which is managed by PESCO). TESCO did not collect 95 % of its billings amounting to a collection loss of nearly Rs. 10.3 billion (~US$170 million). TESCO is a specialized case because it is the Government's political decision to subsidize electricity in this area. But

[31] Simply the difference between electricity generated and electricity sold (includes electricity lost in generation, transmission, and distribution). Generation and sales numbers are both adjusted for exports/imports between WAPDA and KESC.
[32] These numbers are net of generation.

companies like HESCO (87% collection as a proportion of progressive billing in 2006-07), PESCO (88%) and QESCO (88%) can follow the example set by FESCO, GEPCO, and LESCO (each above 99%).

Collections from government customers need improvement. For the ex-WAPDA system, some three-quarters of billings were to private customers in 2005-06 and 2006-07. And collections from private sector customers have averaged 97% of progressive billings. But collections from government customers hovered around 75% of progressive billings in these years (including losses in TESCO). The highest collection loss to government customers was with HESCO which was unable to collect over 10% of its billings to government customers amounting to a loss of Rs. 1.5 billion (~US$25 million).

Financial Sustainability

Sector deficit. Table 3 demonstrates (with only major cost elements) that tariffs in the ex-WAPDA distribution system were below cost recovery in 2005-06. When generation and transmission costs as well as technical and commercial losses are reduced from billed revenues (as per prevailing tariffs), there was a sector deficit of Rs. 44.5 billion (~US$740 million). Even if technical losses are reduced by 50% (to a more reasonable 8.6%) and collection losses were completely eliminated, the ex-WAPDA distribution system would barely break even. NEPRA determinations have brought DISCO tariffs closer to the actual cost of delivery but GOP-notified tariffs remain below NEPRA-determined tariffs for all DISCO's (except LESCO, since March 1, 2008).

Table 3. Deficit in ex-WAPDA distribution system

2005-06	Value (Rs. Billion)	As %age of billing
Total electricity billing	280.9	100%
Costs		
Power generation cost	244.2	86.9%
Transmission cost	13.0	4.6%
Cost of distribution loss (17.2% of electricity delivered)	44.2	15.7%
Cost of collection loss (8.5% of electricity billing)	23.9	8.5%
Net Surplus/Deficit	(44.5)	-15.8%

Source: WAPDA and World Bank calculations

The case of KESC is similar despite tariff adjustments for increases in fuel prices and power purchase cost. KESC's Rs. 44.7 billion in 2006-07 collection for sale of energy was matched by Rs. 44.6 billion in power generation/purchase costs (net of tariff adjustment on account of increase in fuel prices) and Rs. 4.2 billion in transmission and distribution costs. This implies a net financial gap of Rs. 4.1 billion just to generate and deliver electricity. These financial gaps have been caused by a combination of high thermal generation costs[33] combined with persistently high technical/commercial losses in some distribution areas and below-cost tariffs.

Investment. Some US$12.4 billion of investment is planned for Pakistan's power sector until 2011-12. About one half of this investment (US$6.7 billion) is expected to be in generation for an additional 8,177 MW of capacity (nearly 1,600 MW per year)—mostly by private investors. NTDC plans investments of US$2.3 billion in transmission system expansion and augmentation during this period. The DISCOs plan to invest an estimated US$3.1 billion from 2007/08 to 2011/12. KESC plans to invest US$268 million in rehabilitating its transmission and distribution networks between 2007/08 and 2009/10.

Tariffs. During the last few years, end-user tariffs were held constant in the ex-WAPDA system in spite of rising costs (the last tariff adjustment preceding the one in February 2007 was made in November 2003). In February 2007, NEPRA increased end-user tariffs implying an average increase in revenue per kWh of 27.5% bringing them closer to cost recovery levels. In response, the Government only notified an increase of about 6% in revenue per kWh to ease the burden for end-consumers. The Government is committed to providing the difference between NEPRA-determined tariffs and Government notified tariffs as a subsidy, directly from the budget. This tariff subsidy component is estimated to be Rs. 57.8 billion (~US$950 million) in 2007-08.

[33] WAPDA estimates that, in 2005-06, hydropower cost Rs. 0.83/kWh (1.38 US cents/kWh), WAPDA's thermal generation cost Rs. 3.25/kWh (5.42 cents/kWh), and thermal generation by IPP's cost Rs. 5.02/kWh (8.37 cents/kWh).

The February 2007 tariff adjustment marked a major shift in tariff policies in two important ways. For the first time, each distribution company has its own tariffs determined by the regulator. This is a significant departure from the previous situation where end-user tariffs were determined for WAPDA integrated company (generation, transmission, distribution), with internal distribution of revenues determined by WAPDA. The new policy is critical for giving the distribution companies the *financial autonomy* they need to function as truly autonomous enterprises, as envisaged under the sector reform program. Also for the first time, the regulator allowed end-user tariffs to be different for different distribution companies. Such *transparent signaling of geographically differentiated supply costs*, while politically potentially sensitive[34], should mean more transparent management of economic development, and should also bring a downward pressure on the cost of the high-cost companies.

Subsidies. The Government has supported the sector through equity injections, loans, and subsidies. This support (averaging US$1 billion per year in the three years ending June 2007) has not been sufficient to cover the deficit and support expansion needs, however, and the sector has been forced to incur additional commercial debt and reduce maintenance and investment, compromising further its service quality and ability to improve efficiency.

While NEPRA allowed geographically differentiated end-user tariffs, recognizing differences in the service costs, the Government nevertheless decided that the same consumer categories should pay the same price across the country[35] and officially notified the same end-user tariffs across the country. The difference between the regulatory tariffs and tariffs notified by the Government is to be paid by the Government budget as a separate consumer subsidy. In addition, the Government is also bearing some other costs, such as taxes on electricity consumption for households, almost the entire cost of electricity supply by TESCO, part of the cost of electricity consumed by tube wells in Balochistan, etc. (See Table 4.) For FY08, the total fiscal cost of the sector is estimated at about Rs. 102 billion or US$1.7 billion (Rs. 80 billion to the ex-WAPDA companies and Rs. 22 billion to KESC), close to 30% of the sector's projected operating revenues. Even with these subsidies, the sector is still projected to experience deficit, hopefully decreasing and eventually disappearing as efficiency improves, tariffs adjust, and the losses start coming down as result of investments and other efficiency-enhancing measures imposed through the governance and regulatory systems.

[34] The service territories of distribution companies coincide with provincial boundaries, which make the determination of company-specific tariffs politically more sensitive. Only one province, Punjab, is served by more than one distribution company (five).

[35] There are some exceptions, such as tariffs for agricultural tube wells in Balochistan.

Table 4. Fiscal Impact of Electricity Sector (WAPDA + KESC)

(million Rs.)	<---- Actual ---->		Estimated	<---------- Projected ---------->				
	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12
Subsidies for WAPDA								
Tariff Subsidy (Notified Tariffs - Determined Tariffs)			24,000	57,843	61,892	66,225	70,860	75,821
Ratio of GoP Tariff Subsidy to Total WAPDA Collections				15.6%	14.9%	14.3%	13.9%	13.5%
GST Tax Subsidy	14,739	17,080	17,934	18,831	19,772	20,761	21,799	22,889
Baluchistan Tubewells	2,479	2,900	3,045	3,197	3,357	3,525	3,701	3,886
Adhoc Subsidy	2,627	2,868						
AJK Subsidy	1,286	1,374						
Tariff Discount	905	1,010						
Conversion of DSL into Equity	21,549	21,726						
Total Subsidies for WAPDA T&D Sector	43,585	46,958	44,979	79,871	85,022	90,511	96,361	102,596
Subsidies for KESC								
Tariff Subsidy	-	9,128	14,075	17,594	18,474	19,398	20,367	21,386
GST Subsidy	2,200	2,661	2,800	3,500	3,675	3,859	4,052	4,254
Cash Shortfall	6,482	6,548	-	-	-	-	-	-
Tubewells	63	70	74	92	96	101	106	112
Tariff Discount	925	146	153	192	201	211	222	233
Adhoc		208	218	273	287	301	316	332
PGCL		239	251	314	329	346	363	381
Total Subsidies for KESC T&D Sector	9,670	19,000	17,571	21,964	23,063	24,216	25,426	26,698
Total Fiscal Impact of T&D Sector (WAPDA + KESC)	53,255	65,958	62,550	101,836	108,084	114,726	121,787	129,294
Total size of sector (WAPDA + KESC)								
Energy Generated and Imported (Gross, GWh)	81,937	91,285	97,204	104,719	112,020	119,782	128,035	136,809
Total billings to end-consumers (Rs. million)	275,760	302,741	328,958	338,344	373,589	412,379	450,403	491,465
Subsidies as proportion of total billings	19%	22%	19%	30%	29%	28%	27%	26%

CURRENT ISSUES IN THE POWER SECTOR

Immediate priorities

Pakistan's power sector is in deficit in energy as well as financial terms. As Pakistan is attempting to continue on a path of healthy growth over 6% (articulated in its PRSP), the power sector is becoming a bottleneck for the economy and a threat to competitiveness. To address this urgent situation, the following priorities have emerged:

- **Security of supply:** Planned generation capacity additions are not expected to fully relieve power shortage and eliminate load-shedding. A considerable effort will be needed to raise investment and add further generation capacity on a fast-track basis. Sixty percent of planned generation plants are to run on gas and imported oil. Securing gas supplies for current as well as new gas-fired generation plants is expected to be another limitation given the tightening gas supply situation that will need to be addressed.

- **Improvement of transmission and distribution systems:** The system urgently needs to reduce technical and commercial losses. Transmission and distribution losses for the national system stand at a quarter of net generation as the country's networks are over-loaded, under-invested, and under-maintained. For 2006-07, every 1% reduction in technical losses would have brought additional revenue of some Rs. 4.3 billion (~US$68 million) into the system at prevailing tariffs.

- **Sector financial sustainability:** Tariffs must keep up with costs (of operating, maintaining, and expanding the system) particularly in an environment of rising fuel costs given Pakistan's large thermal generation capacity. Currently, a regulatory lag of some six months exists between a rise in fuel prices and the corresponding tariff adjustment from NEPRA. And Government must make timely subsidy payments to cover the difference between determined and notified tariffs. In addition, commercial losses must be reduced.

- **Energy efficiency at the end-user level:** Investments in energy efficiency are low-cost ways of reducing the demand-supply gap. Demand growth could be moderated by forceful *energy*

efficiency measures such as: cost-reflective tariffs particularly for consumer categories that have traditionally been subsidized; more aggressive time-of-use metering and tariffs to discourage consumption during peak load hours; and promotion of more efficient end-use equipment and technology (lighting, refrigeration, air-conditioning, industrial motors, industrial processes, etc.). International experience suggests that a vigorous campaign for awareness among domestic consumers (the fastest growing category in Pakistan) can go far in advancing energy efficiency goals.

The unfinished reform agenda

The objectives of the power sector reforms commenced in 1992 are yet to be fully achieved: (i) *private investment* has been attracted into the generation sub-sector but after a high in the mid-1990s, there has been a persistent low in recent years (KESC's privatization has not borne results yet and the ex-WAPDA DISCOs are yet to be privatized), (ii) *quality of service to the end-user* has been compromised significantly by power shortages (during peak demand summer months, power riots have been witnessed) and by over-loading of the transmission and distribution networks, (iii) *sector financial strength* has not been achieved and instead of being a net contributor to the national treasury, the sector creates a fiscal burden to the tune of $US 1 billion per year (this is adverse to another PRSP goal: reduction in the fiscal burden).

The reform agenda clearly has some way to go. The immediate steps in this agenda are:

- **Structural reform: corporate autonomy, electricity trading, and financial management**: Though WAPDA was largely unbundled in 1998, the successor companies were not given financial autonomy and WAPDA continued to tightly manage the financial affairs of the sector. Only now, after each distribution company was given its own tariff by the regulator, the basic conditions are in place for the companies to be given financial and, thus, corporate autonomy. This would also enable proper functioning of the wholesale market, designed on the basis of the single-buyer model, with subsequent transition to more liberalized trading arrangements. The single-buyer institutional arrangements are to be fully put in place during 2008.
- **Corporate governance:** WAPDA had also exercised de-facto control over appointments of the boards of directors and senior management for all WAPDA-successor entities. This had been another important leverage through which corporate autonomy of the WAPDA-successor companies was controlled. While perhaps useful during a transition period as the companies and the government built capacity, this arrangement contains significant conflicts of interest, since a generation company ("residual" WAPDA) controls other entities whose performance has direct bearings on the business of the "residual" WAPDA (other generation companies, dispatch, trading, etc.). Furthermore, the arrangement makes it more difficult for the Government of Pakistan, the real owner which underwrites the sector financially, to directly oversee the companies and impose performance requirements. Recognizing the need to change these arrangements, GOP has mandated PEPCO to perform sector governance and oversight on its behalf, separated the chairmanships of PEPCO and WAPDA, placed all public-sector thermal generation companies as well as the transmission and distribution companies under PEPCO ,with all public-sector hydroelectric generation companies under WAPDA Hydel, and made significant progress in granting financial autonomy to the DISCOs.

- **Regulation:** Further refinements of the regulatory framework are needed. In particular, the following two issues should be addressed as a priority: (a) establishing a deadline within which the Government is obliged to notify regulatory decisions and make them legally binding; failing that, the regulatory decisions would be deemed legally binding by default. This is important to avoid a situation where the Government simply decides not to notify a regulatory decision, thus effectively vetoing it, which undermines regulatory autonomy and authority, (b) continue reforming tariff structure by reducing the number of tariff categories and blocks (to simplify administration and help fight theft), and reducing cross-subsidies between consumer categories.

Annex 2: Major Related Projects Financed by the Bank and/or other Agencies

PAKISTAN: Electricity Distribution and Transmission Improvement Project

Major Related Projects Financed by the Bank and/or other Agencies				
	Bank Projects	**Status**	**Amount (US$ m)**	**Ratings**
	(under Implementation)			
1.	Second Poverty Reduction Support Credit (Cr. 4302-PAK)	Approved by the Board in May 2007; includes support for power sector reform program.	350	
2.	Public Sector Capacity Building Project (Cr. 3904-PAK)	Approved in May 2004. Bank financed TA, which includes components to strengthen electricity regulation and policy making and implementation.	61	ISR rating – S
	(closed projects)			
1.	Ghazi Barotha Hydropower Project (Ln. 3950-PAK)	Approved by the Board in December 1995; Closed on October 31, 2003). Supported the least cost generation expansion plan, through the development of a 1450 MW hydropower plant.	350	ICR rating – S
	Other donors/lenders			
	Transmission			
1.	Upgrading of Load Despatch system (Phase II) Financier: JBIC	Supports the upgrading of NTDC's National Power Control Center *in Islamabad, and other related infrastructure.	32 (equiv.)	
2.	Dadu-Khuzdar 220 kV transmission line and 220 kV grid station at Khuzdar Financier: JBIC	Loan negotiations being completed	(total project cost) 48.4	
3.	Power Transmission Enhancement Project (Phase I) Financier: ADB	Extension/augmentation of seven 500 kV and ten 220 kV grid stations, associated transmission lines, and other equipment. Phase I of Multi-Tranche Financing Facility (MFF) approved by ADB Board on 13 December, 2006	300 (Phase I loan only)	
4.	Rewat-Lahore 500 kV transmission line Financier: KfW	Construction of 2nd circuit 500 kV line between Rewat and Lahore.		
5.	500 kV grid station at Ghakkar Financier: KfW	Construction of new 500 kV grid station at Ghakkar		
	Generation			
1.	IFC project (IPP)	Engro Power (217 MW CCGT)	56	

	Other donors/lenders	**Status**	**Amount (US$ m)**	**Ratings**
2.	Small-medium Hydropower projects Financier: Abu Dhabi, other Gulf countries	Construction of 100-150 MW hydropower generation plants at Duber Khwar, Khan Kwar, Allai Khwar (and other sites)		
	Distribution			
1.	Power Distribution Enhancement Financier: ADB	Supports investment programs of all eight DISCOs, covering (STG, ELR, and DOP). Phase I of Multi-Tranche Financing Facility (MFF) to be submitted to ADB Board for approval in 2008	260 (Phase I loan only)	
2.	KESC Financiers: IFC ADB	Approved by IFC Board in April, 2007. This is part of KESC's overall financing program (of 950 m)	 125 150	

Annex 3: Results Framework and Monitoring

PAKISTAN: Electricity Distribution and Transmission Improvement Project

Results Framework

PDO	Project Outcome Indicators	Use of Project Outcome Information
(i) Strengthen capacity of the distribution and transmission networks to meet increasing electricity demand in the target areas more efficiently and with better reliability and quality; and (ii) strengthen institutional capacity of distribution companies and support other selected elements of electricity sector reform.	• Amount of electricity handled by the network • Operational losses (T&D and collections) • TA indicators: Increased functional capacity manifested by preparation of new investment projects for distribution companies	To verify achievement of the PDOs and feed into strategy for further investments in distribution and transmission.
Intermediate Outcomes	**Intermediate Outcome Indicators**	**Use of Intermediate Outcome Monitoring**
• Increase in access • Reliability of power supply • Quality of power supply • Financial performance • TA: Increased capacity in different functional areas	• Number of customers served • Number and duration of line trippings • The voltage within the norms as prescribed by the regulators • Subsidies required from the Government • Increased number of trained staff	To verify the intended improvements in the performance of the system to be delivered by the project.

MEPCO	Data Collection and Reporting					
	Baseline (2006-07)	**MTR (end 2010)**	**ICR (end 2012)**	**Frequency and Reports**	**Data Collection Instruments**	**Responsibility for Data Collection**
Outcome Indicators						
• Amount of electricity handled by the network (GWh/year)	11767	13295	14398	Quarterly	Report from Companies and Bank's implementation support mission	Companies
• T&D Losses (defined as (electricity purchased less electricity billed to consumers) divided by electricity purchased)	18.7 %	18.1 %	17.4 %	Quarterly		Companies
• Collections (% of billings)	98.8 %	99 %	99 %	Quarterly		Companies
• TA: Completion of local and foreign training by MEPCO staff (No)		70	123	Quarterly		Companies
Intermediate Outcome Indicators						
• Number of customers served (million)	3.37	4.17	4.68			
• Number of line tripping below / above 20 minutes	87/123	73/102	63/87			
• Voltage conditions (for 132 kV)	124	134.5	132.5			
• Costs not covered from consumer revenues: (Operating Costs + Financial Charges – Revenues or Charges from Consumers – Amortization of Grants)						
o Rs. Million	6280	6388	5983			
o As percent of revenues	13.5 %	11.7 %	11.0 %			
• Preparation of a Training Plan, and identification of trainees/institutions; and submission of report on Effectiveness of Training		Training Plan initiated	Effectiveness of Training Report			

LESCO	Data Collection and Reporting					
	Baseline (2006-07)	**MTR (end 2010)**	**ICR (end 2012)**	**Frequency and Reports**	**Data Collection Instruments**	**Responsibility for Data Collection**
Outcome Indicators						
• Amount of electricity handled by the network (GWh/year)	15999	19438	22153	Quarterly	Report from Companies and Bank's implementation support mission	Companies
• T&D Losses (defined as (electricity purchased less electricity billed to consumers) divided by electricity purchased)	12.8 %	12.1 %	11.7 %	Quarterly		Companies
• Collections (% of billings)	99 %	99 %	99 %	Quarterly		Companies
• TA: Completion of local and foreign training by LESCO staff (No)		45	77	Quarterly		Companies
Intermediate Outcome Indicators						
• Number of customers served (million)	2.80	3.14	3.40			
• Number of line tripping below / above 20 minutes	1005/263	808/211	626/164			
• Voltage conditions (for 132 kV)	114	131	133			
• Costs not covered from consumer revenues: (Operating Costs + Financial Charges – Revenues or Charges from Consumers – Amortization of Grants)						
o Rs. Million	4416	6049	5507			
o As percent of revenues	6.8 %	6.9 %	5.3 %			
• Preparation of a Training Plan, and identification of trainees/institutions; and submission of report on Effectiveness of Training		Training Plan initiated	Effectiveness of Training Report			

IESCO	Data Collection and Reporting					
	Baseline (2006-07)	**MTR (end 2010)**	**ICR (end 2012)**	**Frequency and Reports**	**Data Collection Instruments**	**Responsibility for Data Collection**
Outcome Indicators						
• Amount of electricity handled by the network (GWh/year)	7065	9533	11640	Quarterly	Report from Companies and Bank's implementation support mission	Companies
• T&D Losses (defined as (electricity purchased less electricity billed to consumers) divided by electricity purchased)	12.2%	11.6 %	11.4 %	Quarterly		Companies
• Collections (% of billings)	98.1 %	98.5%	98.6%	Quarterly		Companies
• TA: Completion of local and foreign training by IESCO staff (No)		80	186	Quarterly		Companies
Intermediate Outcome Indicators						
• Number of customers served (million)	1.77	2.10	2.36			
• Number of line tripping below / above 20 minutes	232/18	181/15	174/11			
• Voltage conditions (for 132 kV)	130.5	131.8	132			
• Costs not covered from consumer revenues (Operating Costs + Financial Charges – Revenues or Charges from Consumers – Amortization of Grants)						
o Rs. Million	881	3484	4068			
o As percent of revenues	2.8 %	7.6 %	6.9 %			
• Preparation of a Training Plan, and identification of trainees/institutions; and submission of report on Effectiveness of Training		Training Plan initiated	Effectiveness of Training Report			

HESCO	Data Collection and Reporting					
	Baseline (2006-07)	**MTR (end 2010)**	**ICR (end 2012)**	**Frequency and Reports**	**Data Collection Instruments**	**Responsibility for Data Collection**
Outcome Indicators						
• Amount of electricity handled by the network (GWh/year)	7681	8946	9807	Quarterly	Report from Companies and Bank's implementation support mission	Companies
• T&D Losses (defined as (electricity purchased less electricity billed to consumers) divided by electricity purchased)	36.9 %	32.4 %	29.4 %	Quarterly		Companies
• Collections (% of billings)	86 %	88 %	90 %	Quarterly		Companies
• TA: Completion of local and foreign training by HESCO staff (No)		109	148	Quarterly		Companies
Intermediate Outcome Indicators						
• Number of customers served (million)	1.41	1.63	1.80			
• Number of line tripping below / above 20 minutes	132/352	96/257	78/208			
• Voltage conditions (for 132 kV)	100	114	117			
• Costs not covered from consumer revenues (Operating Costs + Financial Charges – Revenues or Charges from Consumers – Amortization of Grants)						
o Rs. Million	12560	15098	15524			
o As percent of revenues	35.9 %	33.0 %	29.0 %			
• Preparation of a Training Plan, and identification of trainees/institutions; and submission of report on Effectiveness of Training		Training Plan initiated	Effectiveness of Training Report			

NTDC component:

Intermediate

After one year: All three contracts in place, supply of material started, final spotting completed by Contractor

At the end of APL1: Transmission line and sub-station completed and charged

Final

Under the peak loading conditions:

Loading on Yousafwala grid station to be reduced from 98% to 77%, and on Piranghaib grid station from 92% to 74%

Transmission line losses reduced by 9.6 MW

Annex 4: Detailed Project Description

PAKISTAN: Electricity Distribution and Transmission Improvement Project

The Electricity Distribution and Transmission Improvement Project is designed to strengthen the existing electricity distribution and transmission infrastructure and provide resources for meeting the demand growth stemming from the economic growth and Government's objective to increase access to electricity. In addition, the Project also aims to strengthen the institutional capacity of the distribution companies (DISCOs) to undertake the physical investment program in a consistent and sustainable manner. In keeping with these objectives, the Project has four main components:

i. **Physical investments in distribution grid:** (a) to increase its capacity to handle the higher load and (b) to reduce losses in the network. The first objective is to be met through investments in secondary transmission grid (voltage levels above 11 kV up to and including 132 kV lines and substations) and distribution lines (11 kV and lower voltage). The secondary transmission grid (STG) distributes bulk supply across the service territory of distribution companies, taking power from the transmission network (220 kV and higher voltage) and supplying it to local distribution network for retail supply to end consumers. The second objective (reduction of losses) is to be met through Electricity Loss Reduction (ELR) investments in distribution grid.

ii. **Physical investments in transmission**: construction of a new 220/132 kV substation and associated 220-kV lines.

iii. **Technical assistance** for capacity building, specialized studies, energy efficiency and sector reform.

iv. **Energy efficiency:** installation of energy efficient bulbs, capacitors, meters and other equipment, to address demand side management

The project will include four distribution companies: Islamabad Electric Supply Company (IESCO), Lahore Electric Supply Company (LESCO), Multan Electric Power Company (MEPCO), Hyderabad Electric Supply Company (HESCO), in addition to the National Transmission and Dispatch Company (NTDC) and the Pakistan Electric Power Company (PEPCO). The project components have been selected with the objective of building the network capacity for existing and anticipated customers, reduction of losses, enhancement of quality of service, and increased reliability of supply.

This description covers investments that have been identified by the companies for Bank financing, with the scope that extends beyond the project financed by APL1.

I. Investments in Distribution Networks

A. Islamabad Electric Supply Company

Islamabad Electric Supply Company (IESCO) was established in 1998 and serves a population of 7.5 million with a consumer base of 1.77 million covering an area of 23 thousand square kilometers. IESCO assets include 88 grid stations with 136 power transformers (2,368 MVA), about 2,971 kilometers of secondary transmission (132/66/33-kV) lines, 19,506 kilometers of 11-kV and 22,566 kilometers of low voltage (LV) lines with 33,880 distribution transformers (2,918 MVA).

Based on tariff categorization, the consumer mix of IESCO at the end of FY2006-07 in terms of the number of consumers was as follows: Domestic 1,490,449 (84%); Commercial 264,673 (15%); Industrial 10,773 (0.6%); Agriculture 6,348 (0.4%) and others 2,081 (0.1%). The total energy sold was 7,065 GWh

out of which 42.3% was to domestic, 11.9% to commercial, 22% industrial, 21.3% to bulk customers, and 1.1% to agriculture customers. IESCO purchased 7,756 GWh of electricity at different points and sold 7,065 GWh, implying a loss level of 8.9% (there were additional losses in the secondary transmission grid). The collection efficiency of the company was 98.1 percent.

Currently the main issue hampering the performance of IESCO is overloading of the network. The Power transformers are overloaded and the high voltage (HV) distribution lines (11-kV) and LV distribution lines (400 V and below) are long, resulting in lower voltages at customer interface points and higher losses. The use of information technology and network automation is low, which hampers the flow of information and leads to increase in downtime.

IESCO has formulated an investment program for the period of five years (2004-09) which includes investment in the Secondary Transmission System (STG), Energy Loss Reduction (ELR) programs in the network of 11-kV and lower voltages and in the Distribution of Power (DOP) program which deals with supply for new consumers. The total investment planned is Rs.8,114 million (US$135 million). Out of this investment STG and ELR component is Rs.7,334 million (US$122 million), while the investment in DOP is Rs.780 million. DOP investments will be funded from IESCO internal resources and are not included in the Project.

The Project components have been selected based on system adequacy for enhancing the quality of service, system reliability, and reducing losses.

Projects for Banks funding

IESCO is looking for a three year slice of investment in STG & ELR from its five-year investment program. The scope of work is as follows.

STG PROJECTS – GRID STATION COMPONENT

- Construction of four new 132/11kV Grid Stations.
- Augmentation of Power Transformer in two existing Grid Stations
- Conversion of four existing 66kV Grid Stations to 132 kV system
- Conversion of three existing 33kV Grid Stations to 132 kV system
- Extension of line bays at six Grid Station locations.

STG PROJECTS – SECONDARY TRANSMISSION LINE COMPONENT

- Construction of secondary transmission lines of 548 kms at various locations
- Re-conductoring and/or replacement of two existing secondary transmission lines (44 kms)

ELR COMPONENT

- Implementation of 30 HV and 575 LV feeder proposals in the plan period
- Replacement of 200 existing D-fuse Links and Fitting
- Replacement of 60,000 defective and/or aged Energy Meters
- Replacement of 50,000 defective Customer Services including PG Connectors
- Replacement of Faulty Earthing Installed at 200 distribution transformers
- Replacement of 40,000 loose joints in 20 feeders
- Installation of 40 line sectionalizers
- Installation of 9 MVAr HT capacitor banks at 20 locations

- Inclusion of 500 LV capacitors of various rating
- Procurement of T&P and vehicles.

Project alternatives: A number of alternatives to STG and ELR sub-projects were considered while finalizing each sub-project, such as:

- Alternatives for STG

  1. Installation of captive power
  2. Augmentation / addition of power transformers vs Grid Station at new location
  3. Grid sub-station with combination of transformer capacity
  4. Lines for capacity enhancement
  5. Increase in conductor size

- Alternative for ELR schemes

  1. Installation of capacitor on LV and HV system
  2. Bifurcation of LV and HV feeders
  3. Re-conductoring

Project Benefits

The full project is expected to provide both tangible and non-tangible benefits. The expected benefits include: an addition of 200 MVA capacity from the new grid stations and augmentation of transformers, which is anticipated to benefit an additional 130,000 new customers; bringing down the average length of 11kV feeders from 28km to 26km and improving the voltage profile; reduction in losses and improvement of the quality of supply (approximately 14 MW/55 GWH is expected to be saved, reducing the loss level by 2.0 – 2.5% from the existing levels.

Performance Indicators

Reliability: the total number of trippings of 132-kV Secondary transmission lines is expected to be reduced from 4.4 tripping per 100 km of line per year to 3.5; the average number of outages per customers is expected to go down from 63 to 45; and duration of outage per customer in hours to be reduced from 14 to 10. Expected reduction in the loss level is 2.46% compared to existing levels.

B. <u>Lahore Electric Supply Company</u>

Lahore Electric Supply Company (LESCO) is a public limited company established in 1998 responsible for distribution of power in five districts of Punjab province (Lahore, Sheikhpura, Nankana, Kasur and Okara). In FY2006-07 LESCO had 2,795,397 customers, which included 2,246,865 (80.4 %) domestic; 432,664 (15.5 %) commercial; 58,416 (2.1 %) industrial; 43,811 (1.6 %) agricultural; and 13,641 (0.4 %) other.

The total energy sold in 2006-07 was 13,497 GWh, out of which 40.5 % was domestic, 8.3 % commercial, 42 % industrial, 6.1 % agricultural, and 3.10 % other consumption. At present, most of LESCO's network is overloaded because of the expanding consumer base and growth in load demand of the existing consumers. At end-FY07, LESCO's distribution system comprised of 23,039 km of 11kV (HT) lines and 14,098 km of LT lines with 65,180 distribution transformers. LESCO purchased 15,999

GWh in FY07 and sold 13,947 GWh implying a loss level of 12.8 percent. The collection efficiency was 99.04 percent.

To improve the quality of supply and to meet the growing demand, LESCO has formulated an investment plan for a period of five years which includes distribution of power (DOP), energy loss reduction (ELR) on 11kV and below, and secondary transmission (STG) grid sub-station, with a total investment of Rs.20,981 million (349.70 US$ million). LESCO will fund the DOP and ELR portion from its own resources, while its STG project will be funded from the Bank loan.

The STG projects have been selected with the objective of strengthening the network capacity to serve the increased demand, enhancing the quality and efficiency of service, and increasing the reliability of supply. The project has been developed on the basis of load flow studies carried out on the existing peak load condition and stimulated future system conditions of LESCO system network in next five years. The Project components have been selected so as to meet the objectives at the lowest cost. The following considerations were given a priority while selecting the various options:

- Where space was not available, the least cost option for augmenting the capacity was replacement of the transformers at the same grid station;
- Installation of additional transformer where space was available and the present transformer was fully loaded;
- New grid stations were proposed at places in order to shift some load from a nearby overloaded grid station and also to meet the increased demand of new areas;
- Conversion of existing low voltage grid of 66-kV to higher voltage level at 132-kV;
- The 132-kV network strengthening by re-conductoring, and rehabilitation of existing transmission lines with high capacity conductors by taking into consideration the efficient power dispersal from new power plants, smooth load flows, and optimum reduction of losses.

Projects for Banks Funding

The total outlay for LESCO's program is US$72.35 million. The following sub-projects have been identified for funding under Bank loan of US$57.65 million:

1. Installation of nine new 132/11-kV grid stations including five GIS sub-stations;
2. Augmentation of power transformers at five existing grid stations;
3. Conversion of one existing 66-kV grid station to 132-kV system;
4. Extension of transformer and line bays at five existing grid stations;
5. Construction of new secondary lines of 49.5 kms.

Project Benefits

The full project is expected to have both tangible and non-tangible benefits. The main expected quantified benefits will be additional capacity of 527 MVA. Overall, the project will enable LESCO to facilitate the pending consumer connections, avoid load shedding and add 17,000 industrial and 110,000 commercial consumers reduce the loading of 132kV power transformers, and reduce the transmission losses by 12 MW with about 250 GWh in energy saved.

Performance Indicators

The performance indicators will reflect the benefits achieved by implementation of the project. Some indicators include:

- Additional consumers: the consumer base is expected to increase from 2.8 million in 2006-07 to 3.4 million in 2011-12.
- Improvement of voltage profile: the average voltage to increase from 114 kV to 133 kV;
- Reduction of transmission line losses: the total losses to be reduced by 12 MW.

C. Multan Electric Power Company

Multan Electric Power Company (MEPCO) was established in 1998 to supply electric power in a service territory spread over thirteen districts of southern Punjab province. The population in the area of 25.7 million is predominantly rural (70 %). MEPCO's consumer base in FY2006-07 consisted of 3.4 million customers. MEPCO network has 104 grid stations, 174 power transformers with installed capacity of 3,128 MVA. Total length of transmission lines is 4,282 km (2,803 km of 132 kV, 1479 km of 66 kV and 45 km of 33 kV lines). At end-FY07, MEPCO's distribution system comprised of 60,542 km of 11kV (HT) lines and 40,648 km of LT lines with 101,470 distribution transformers.

In FY07, MEPCO had 2,923,417 (86.7 %) Domestic, 355,267 (10.5 %) Commercial, 36,152 (1.1 %) Industrial, 54,168 (1.6 %) Agricultural, and 1,499 (0.05 %) other customers. The total energy sales were 9,571 GWh out of which 48.3 % was to Domestic, 5.6 % Commercial, 25.3 % to Industrial and 18.9 % to Agriculture customers.

MEPCO prepared a five year investment program of Rs. 12,783 million (US$213.05 million) which includes investment in Secondary Transmission Grid (STG) sub-station of Rs. 9,257 million (US$158.28 million), Energy Loss Reduction (ELR) of Rs. 2,176 million (US$36.27 million), and Development of Power (DOP) of Rs. 1349 million (US$22.50 million). The investment on DOP will be financed from consumer contribution and internal resources. MEPCO is looking for financing a three year slice of its five-year investment program in STG & ELR from the proposed project.

The STG and ELR projects have been selected with the objective of enhancing the capacity of the network to supply the increasing load, improving the quality and efficiency of service, and increasing the reliability of supply. Similarly as for the other distribution companies, the Project components have been selected so as to meet the objectives at the lowest cost.

The details of Project posed for funding from the Bank are as follows:

STG

1. Installation of six new 132/11 kV grid stations
2. Augmentation, Extension and Conversion of fifteen existing Grid Station
3. Construction of new secondary lines (196.5 kms).

ELR

1. Refurbishment of 50 HT feeders
2. Refurbishment of 655 LT feeders
3. Installation of 40 MVAr capacitor banks
4. Augmentation / Additional 1032 distribution transformers
5. Replacement of 97,725 faulty energy meters.

Project benefits

The full project is expected to have both tangible and non-tangible benefits. The expected quantified benefits include: Additional capacity of 1033 MVA to enable MEPCO to release the pending consumer's connection, avoid load shedding and reduce losses by 5.3 percent. For the APL1 project, the benefits will be additional capacity of 397.5 MVA and reduction of losses of 1.2-1.4 percent.

Project Indicators

The implementation of the project will lead to tangible and non-tangible benefits. Some of the benefits are:

- Additional transformation capacity of 397.5 MVA .
- The losses to be reduced from 18.7 % to 17.4 %
- The system voltage profile will improve from 124 kV to average 132.5 kV and power factor will improve above 90 % in the system
- The reliability of the system will improve and outages per consumer will be reduced.

D. Hyderabad Electric Supply Company

Hyderabad Electric Supply Company (HESCO) was also established in December 1998 for distribution of electricity in Sindh province (except for the city of Karachi and some of its neighboring areas, which are supplied by Karachi Electric Supply Company Ltd (KESC)). HESCO supplies electricity to 22 districts which have a population of 2,058,400. About 30 % of the population has no access to electricity. In FY2006-07, HESCO had 1,409,766 connections, of which 79.9 % were domestic, 16.8 % commercial, 1.7 % agricultural, 1.5 % iIndustrial & bulk, and 0.1 % others.

The assets of the company include 3,635 km of 132-kV and 1,740 km of 66 kV transmission line, 116 grid stations (out of which 79 are 132 kV with 131 transformers and 37 are 66 kV with 46 transformers). HESCO's distribution system comprises of 41,985 km of 11 kV (HT) lines and 20,227 km of LT line with 49,732 distribution transformers.

HESCO purchased 7,330 GWh in FY2006-07 and sold 4,842 GWh with a loss of 2,488 GWh (33.9 %) in its distribution network (there were additional losses in the secondary transmission grid). In the same year, HESCO billed Rs. 24,264 million, of which it collected Rs. 21,006 million, or about 86.6 percent.

HESCO, as all other distribution companies, prepared an investment program which includes STG, ELR and DOP investments to expand the system and improve its efficiency and reliability. However, HESCO's losses are much higher than in the other three companies and HESCO needs to focus very strongly on the loss reduction program.

HESCO has prepared a five year investment plan for STG amounting to Rs. 8,930 million (USD 148.83 million). This includes installation of new sub-station, augmentation, extension and conversion of existing sub-station, construction of new transmission lines along with rehabilitation of transmission lines. The implementation of STG project is expected to reduce losses, improve system voltages, improve reliability and increase the capacity of HESCO to serve new area. In line with the discussion of redesigning the ELR, it was agreed that the priority for implementation of STG project will be identified keeping in view the requirement of the identified circle and the modified scope will be posed to Bank for financing.

The detail of project posed for funding from Bank is as follows

STG

1. Construction of four new grid station
2. Extension of one sub- station
3. Augmentation of four grid sub-station
4. Conversion of four grid sub-station from 66kV to 132kV
5. Construction of 117.24 kms of transmission lines

ELR: the present ELR program has been identified keeping in view that it can be replicated in whole of HESCO. The ELR program comprise of 39 feeders at 11kV level (approximately 5% of 11kV feeders) with an average loss over 30 percent. It is expected that after implementation of the program the losses will be reduced by at least 9% from the present level (that is 1.55% overall). The scope includes:

1. Installation of 442 kms of aerial bunch cable
2. Installation of meters on 100 & 200 kVA transformers
3. Replacement of 90,780 consumer meters
4. bifurcation/ rehabilitation of feeders

II. Transmission Network: Kassowal 220/132-kV Substation

National Transmission & Dispatch Company (NTDC) has been entrusted the role of carrying out transmission business in Pakistan, except in the area served by Karachi Electric Supply Company. NTDC operates and maintains ten 500kv and twenty-nine 220kV grid stations along with 12,167 km of associated transmission lines.

NTDC has signed a loan agreement of US$800 million with ADB which will be disbursed in several tranches and most of the major investments will be covered by that loan. In addition, NTDC is financing a number of smaller investments through the loans from various donor agencies. JBIC is financing a SCADA system and a transmission line in Balochistan (Dadu-Khuzdar), and several other agencies are also funding some investments. The proposed scheme for construction of a 220-kV substation at Kassowal is one of the integral constituents of the overall augmentation and strengthening plan of NTDC. The project includes construction of (i) a 220kV grid station at Kassowal with installation of 2x160 MVA, 220/132 kV transformers and associated equipment, (ii) four 220kV line bays, two 220kV transformer bays, six 132kV line bays and two 132kV transformer bays, and (iii) construction of two twin bundle double circuit lines for connecting with the existing 220 kV Vehari-Yousafwala double circuit transmission line. This grid station will meet the growing demand of MEPCO in the area and will strengthen the existing NTDC system.

Project benefits

The commissioning of 220 kV Kassowal Grid Station will reduce the loading of 200 / 132 kV grid station feeding MEPCO load center, improve the voltage profile and reduce the system losses.

Performance Indicators

As per the load flow studies carried out in 2005 with peak load for the year 2009 based on the load forecast and generation plan the of loading on Yousafwala grid – station will be reduced from 98% to 77 %, and on Piranghaib Grid station will be reduced from 92% to 74% with implementation of this grid sub-station. The implementation of the sub-station will also reduce transmission line losses by 9.6 MW

III. Technical Assistance

The Technical Assistance (TA) Component is based on the PC-II documents submitted to the Planning Commission by the four DISCOs (namely HESCO, IESCO, LESCO and MEPCO), NTDC and Ministry of Water & Power (along with other sector entities namely Ministry of Finance, PEPCO, NEPRA) for Bank financing of their critical needs in human capacity development and in the improvement of their knowledge infrastructures. The distribution companies have requested technical assistance in five areas: revamping of in-house training centers, capacity building, specialized studies, project management/office automation, and governance. With this technical assistance, the objective of each distribution company is to build a technically and conceptually strong workforce which will enable each company to emulate international best practice in its operations. In addition, an energy efficiency and demand-side management component will be implemented by MWP/PEPCO comprising activities, inter alia, for implementing a program for disseminating energy-saver lights, legal and policy reforms to encourage energy efficiency, plan for the rehabilitation of state-owned thermal generation plants, etc, Table 1 provides the summary of TA by different entities, followed by a detailed description of each activity.

Table 1: Summary of Technical Assistance Component (US$ '000)

	Revamp of Training Center	Capacity Building	Specialized Studies	Project Management & Office Automation	Governance Reforms	TOTAL
HESCO	110	1,111	500	150	24	1,895
LESCO	913	533	904	267	24	2,640
IESCO	913	1.256	1.662	247	24	4.101
MEPCO	1,161	916	738	267	24	3,105
NTDC	-	-	-	164	-	164
MWP/PEPCO	200	158	1,354	-	-	1,712
Sub-Total	**3,186**	**3,974**	**5,158**	**1,204**	**95**	**13,617**
Implementation plan for energy efficiency program						250
Implementation of energy saver (CFL) lighting program						250
Design and implementation of public awareness campaign for energy conservation						750
Support for legal/policy functions						250
Design of rehabilitation program for public-sector thermal generation plants						500
Sub-total						**2,000**
TOTAL – TA Component						**15,617**

HESCO:

Revamping of training center: The following activities are planned: development of circles training centers, revision of curriculum, development of training kits, and acquisition of relevant equipment.

Capacity building: HESCO places great emphasis on human resource development and has envisaged training programs, local and foreign, in the following functional areas for its officials:

- Planning & Design of Distribution System (Load forecasting and projections, Load flow and short-circuit analysis, Loss Reduction, GIS mapping, Grid station & Transmission line design, Power system protection, Power distribution planning)
- Materials and Procurement Management (ICB / NCB / LIB Procurement, Contracts management, Bid Evaluation, Inventory Control Systems, Warehouse Management, Materials Accounting)
- Finance and Accounting (Basic financial concepts, Investment analysis, Financial modeling, Cash Flow Management, Receivables Management)
- Customer Management (Mechanism of customer service, Complaint redressal system, Marketing and commercial aspects, Communication & Outreach program, Demand Side Management)
- Environmental and Social evaluation (Basic introduction to Environmental and Social impact assessment, Implementation of Mitigation Plans, Introduction to Resettlement Planning)
- Operations management (Operation/Maintenance of Grid equipment, Protection and instrumentation, Metering, Testing & Inspection)

Specialized studies: HESCO has planned a number of specialized studies as follows:

- ELR Strategy / Review, Design & Implementation Support
- Feasibility of SCADA system
- Feasibility and design of digitization of HESCO network
- Power market Survey in HESCO
- Load forecasting
- Power market survey
- Load flow studies

Project management/office automation:

- Project Management (Orientation on project cycle, Cost Estimation, Financial and economic evaluation, Project Scheduling)
- Needs Assessment for HESCO automation
- Pilot HESCO Network, Data Base/MIS
- Digitizing equipment / software
- Software (PSS/E, Microsoft office, Autocad, etc) License + update

Governance reforms: In order to improve corporate governance, participation in the following training programs is planned: (a) Certificate Course in Corporate Governance; (b) Orientation program in Corporate Governance; and (c) Moving Towards Competitive Power Sector.

The estimated cost of HESCO TA is US$1.9 million, and the benefits are expected to be in the form of: (a) robust and comprehensive preparation of the physical investment components; (b) timely and effective completion of the envisaged investment projects; and (c) enhanced capacities to undertake similar projects on their own without major outside help. The performance indicator would be the number of trainings undertaken by HESCO staff and studies completed during the course of the project.

LESCO:

Revamping of training center: LESCO intends to undertake a comprehensive study to revamp its Regional Training Centre (RTC) to impart modern training to its officers and staff. The following activities are planned in this regard:

- Training Needs Assessment By Category

- Review of existing curriculum
- Customization of Curriculum for Line Staff (i..e. ALM, LM, LS, Managerial and Technical); GSO (Operations SSA, SSO, ASSA congruent with SCADA); P&I (TNA); Maintenance (TNA); GSC (ALM, LM, LS); P&D; IT; Commercial; and Administration
- Identification of simulation software,
- Laboratory design and recommendations
- Junior and middle-management (Technical & Management) training on acquired software for: Operations; GSO; Construction; Planning & Design; Commercial; Accounts; Material Management; and Safety (for all categories)
- Training of Trainers/ Curriculum (in parallel)
- Restructuring/ Recommendations for Regional Training Centre (RTC)
- Hardware & Software Acquisition

Capacity building: LESCO has identified a number of areas in which it wishes to strengthen its staff capacities, including for project management:

- Preparation of investment Projects (Technical evaluation, Cost Estimation, Financial and economic evaluation, Environmental & Social evaluation)
- Planning & Design of T&D System (Load forecasting and projections, HVDS design and pre-paid metering, Loss Reduction, GIS mapping, Grid station & Transmission design, Power distribution planning)
- Procurement Management (ICB / NCB Procurement, Contracts management)
- Materials Management (Inventory Control Systems, Warehouse Management, Materials Accounting)
- Financial and economic planning (Basic financial concepts, Investment analysis, Financial modeling)
- Commercial Management (Mechanism of customer service, Complaint redressal system, Marketing and commercial aspects, Communication & Outreach program, Demand Side Management)
- Environmental & Social evaluation (Basic introduction to Environmental & Social concepts, Implementation of Mitigation Plans)
- GSO Personnel (Operation /Maintenance of Grid equipment, Protection and instrumentation, Metering, Testing & Inspection)
- Human Resource Development

Specialized studies: LESCO has planned a number of specialized studies as follows:

- Cost of Service
- Load Forecasting & Power Market Survey
- Design of R&D function in LESCO
- Load Flow Study
- HVDS Feasibility/ABConductor
- Organizational Development
- Physical Verification of Assets and their Valuation

Governance reforms: In order to improve corporate governance, participation in the following training programs is planned: (a) Certificate Course in Corporate Governance; (b) Orientation program in Corporate Governance; and (c) Moving Towards Competitive Power Sector.

The estimated cost of LESCO TA is US$2.6 million, and the benefits are expected to accrue in the form of timely execution of the physical components of the project. The performance indicator would be the number of trainings undertaken by LESCO staff and studies completed during the course of the project.

IESCO:

Revamping of training center: IESCO intends to undertake a comprehensive study to revamp its Regional Training Centre (RTC), so as to impart the modern training to its officers and staff. It also plans to expose its staff to international standards through technical journals, technical society memberships, and links with international libraries. The following activities are planned in this regard:

- Training Needs Assessment By Category
- Review of existing curriculum
- Customization of Curriculum for technical and management areas for BPS-17 staff only
- Identification of simulation software,
- Laboratory design and recommendations
- Training of Trainers/ Curriculum (in parallel)
- Restructuring/ Recommendations for Regional Training Centre (RTC)
- International standard/specs
- Technical journals
- Technical Society Memberships
- Linkage with international Libraries

Capacity building: IESCO has identified a number of areas in which it wishes to strengthen its staff capacities, including those of the project organization:

- Preparation of investment Projects (Technical evaluation, Cost Estimation, Financial and economic evaluation, Project Scheduling, Safety and Quality Management)
- Planning & Design of T&D System (Load forecasting and projections, HVDS design and pre-paid metering, Load flow and short-circuit analysis, Loss Reduction, GIS mapping, Grid station & transmission line design, Power system protection, Power distribution planning)
- Materials and Procurement Management (ICB / NCB / LIB Procurement, Contracts management, Bid Evaluation, Inventory Control Systems, Warehouse Management, Materials Accounting)
- Financial and economic planning (Basic financial concepts, Investment analysis, Financial modeling, Cash Flow Management, Receivables Management, cost control, and the selection of the most feasible projects)
- Commercial Management (Mechanism of customer service, Complaint redressal system, Marketing and commercial aspects, Communication & Outreach program, Demand Side Management)
- Environmental & Social evaluation (Basic introduction to Environmental & Social aspects, Implementation of Mitigation Plans, Introduction to Resettlement Planning)
- GSO Operations (Operation /Maintenance of Grid equipment, Protection and instrumentation, Metering, Testing & Inspection)

Specialized studies: IESCO has planned a number of specialized studies as follows:

- Cost of Service
- Load Forecasting & Power Market Survey
- Design of R&D function in IESCO

- Load Flow Study
- HVDS Feasibility/ABConductor
- Overhead to Underground transmission network
- Establishment of Local Dispatch Centre
- Radio Communication System
- Physical Verification of Assets and their Valuation
- Network Mapping and establishment of Central Data Base System
- Updating of manuals, guidelines, etc

Project management/office automation: IESCO plans to acquire project management and office automation technologies for greater operational productivity. This would entail:

- Software acquisition + Renewal (Autocad, etc)
- LAN/WAN acquisition and installation

Governance reforms: In order to improve corporate governance, participation in the following training programs is planned: (a) Certificate Course in Corporate Governance; (b) Orientation program in Corporate Governance; and (c) Moving Towards Competitive Power Sector.

The estimated cost of IESCO TA is $4.1 million. IESCO has already focused on institutional development and the activities under its TA program are expected to further strengthen its capacities. The performance indicator would be the number of trainings undertaken by IESCO staff and studies completed during the course of the project.

MEPCO:

Revamping of training center: MEPCO plans to undertake a comprehensive revamp of its Regional Training Centre (RTC), so as to impart modern training to its officers and staff. The following activities are planned in this regard for a consultant to:

- Curriculum upgrade (review of current curriculum, identification of training needs, preparation of new curriculum for technical and management areas for training of staff and officers of BPS-17),Identification of suitable training software,
- Training of trainers,
- Design of modern technical training laboratories, and
- Restructuring of training center.

Capacity building: MEPCO has identified a number of areas in which it wishes to strengthen its staff capacities:

- Preparation of Investment Projects (Technical evaluation methods and techniques, Cost Estimation methods, Financial and economic evaluation, Project Scheduling using CPM/PERT, Safety and Project Quality Assurance)
- Planning & Design of Transmission and Distribution System (Load forecasting and projections, HVDS design and pre-paid metering, Load flow and short-circuit analysis, Loss Reduction, GIS mapping/SCADA, Grid and Transmission line planning/design, Power system protection, Power distribution planning)
- Materials and Procurement Management (ICB / NCB / LIB Procurement, Contracts management, Bid Evaluation, Inventory Control Systems, Warehouse Management, Materials Accounting)

- Financial and Economic Planning (Basic financial concepts, Investment analysis, Financial modeling, Cash Flow Management, Receivables Management)
- Commercial Management (Mechanism of customer service, Complaint redressal system, Marketing and commercial aspects, Communication & Outreach program, Demand Side Management)
- Environmental & Social Evaluation (Basic introduction to Environmental & Social aspects, Implementation of Mitigation Plans, Introduction to Resettlement Planning)
- Operations Management (Operation /Maintenance of Grid equipment, Protection and instrumentation, Metering, Testing & Inspection)
- IT and Computer Systems (Orientation to basic computer concepts, Training on technical/commercial software)

Specialized studies: MEPCO has planned a number of specialized studies as follows:

- Cost of service
- Load forecasting/power market survey, computerized load flow study
- Design of R&D function in MEPCO
- Physical Verification of Assets and their Valuation
-
- High Voltage Distribution System feasibility/Introduction of AB Conductor, and
- Development of modifications to current 132kV transmission lines to introduce bundled conductor towers/poles

Project management/office automation: MEPCO will undertake training of staff on management of projects as well as programs. MEPCO also intends to upgrade its computer facilities and develop computer-based systems.

- Computers and office equipment,
- Networking software,
- Project management software
- Digitizing Equipment

Governance reforms: In order to improve corporate governance, participation in the following training programs is planned: (a) Certificate Course in Corporate Governance; (b) Orientation program in Corporate Governance; and (c) Moving Towards Competitive Power Sector.

The estimated cost of MEPCO TA is $3.1 million. The TA component is expected to meet the institutional needs of the company to undertake the physical investments in an effective manner. The performance indicator would be the number of trainings undertaken by MEPCO staff and studies completed during the course of the project.

Government (MWP, PEPCO and NTDC)

MWP will carry out sector studies and reviews – e.g. for strengthening corporate governance, power system planning, loss reduction programs, system stability and transient analysis; supporting the government's hydel and rural electrification policies and plans for electricity imports; developing improved subsidy policies; and further streamlining the policy and procedures for new IPPs.

MWP and PEPCO will also develop and implement energy efficiency and conservation programs. This could include legislation to support Energy Efficiency and Conservation activities; rules and regulations – e.g. for equipment performance standards; detailed design of an energy saver lighting campaign; and

programs to build awareness and consumer support for energy efficiency and conservation activities. The Government also accords high priority to improving the efficiency and performance of existing public sector thermal plants, and will conduct (through PEPCO) a detailed diagnostic and design study to develop rehabilitation plans for such plants.

PEPCO will carry out (and coordinate their implementation across the DISCOs, NTDC and other entities) a number of studies related to the Procurement Action Plan (see section --- above). PEPCO will also carry out studies and reviews aimed at strengthening the organizational structures, human resource base, and internal systems for accountability and control within the corporate entities.

MWP, PEPCO and NTDC will acquire computer hardware and other office equipment, software and systems for project management, networking, and other IT needs. MWP is implementing a comprehensive automation program, including a power sector database, monitoring and appraisal/evaluation systems, and other information systems – and the first phase of such automation will be supported under the Project.

The training needs of MWP, PEPCO and NTDC include procurement and legal aspects, environment and social analysis and oversight, planning techniques and tools, sector oversight and monitoring, etc.

The estimated cost of the Government's TA component is Rs 296 million (of which the Bank portion is approximately US$3.8 million equivalent to Rs 236 million). The main benefit of this component would be an improved policy environment for the sector, as reflected in gradually improving technical, operational and financial performance; increased private investment; and enhanced access and quality of supply. The performance indicator for this component would be (a) completion of the studies, (b) adoption of the recommendations for strengthening sector governance, power system planning, etc, and (c) implementation of energy efficiency and thermal plant rehabilitation programs.

Annex 5: Project Costs

PAKISTAN: Electricity Distribution and Transmission Improvement Project

APL1 Project

Company	Project component	Cost (US$ mill.)			Financing (US$ mill.)	
		Local	Foreign	Total	Own Funds	Bank Loan/Credit
IESCO	Secondary Transmission Grid (STG)	15.56	24.92	40.48	6.03	34.45
	Energy Loss Reduction	5.88	16.21	22.09	2.21	19.88
	Subtotal	21.44	41.13	62.57	8.24	54.33
LESCO	Secondary Transmission Grid (STG)	49.20	23.15	72.35	14.70	57.65
	Energy Loss Reduction					
	Subtotal	49.20	23.15	72.35	14.70	57.65
MEPCO	Secondary Transmission Grid (STG)	23.86	28.29	52.15	9.96	42.19
	Energy Loss Reduction	10.00	5.00	15.00	3.00	12.00
	Subtotal	33.86	33.29	67.15	12.96	54.19
HESCO	Secondary Transmission Grid (STG)	16.27	10.04	26.31	6.39	19.92
	Energy Loss Reduction *	20.00	5.00	25.00	5.00	20.00
	Subtotal	36.27	15.04	51.31	11.39	39.92
NTDC		14.40	10.00	24.40	4.90	19.50
Energy Efficiency and Conservation		0.00	15.00	15.00	0.00	15.00
Subtotal		**155.17**	**137.16**	**292.78**	**52.19**	**240.59**
Technical Assistance	Distribution Companies	4.35	7.39	11.74		11.74
	Ministry/PEPCO/NTDC	0.97	3.88	4.85	0.97	3.88
Total Financing Required for T A		5.32	11.27	16.59	0.97	15.62
Front End Fee			0.43	0.43		0.43
Total Financing Required for the project		**160.49**	**149.31**	**309.90**	**53.16**	**256.64**

Physical and financial contingencies are included in the project cost
*Tentative, will be finalized after study by Consultant.

IESCO : Two year ELR + one year STG
LESCO: Two year STG
MEPCO: Two year ELR and two year STG
HESCO : One year STG and estimate of ELR
NTDC : Kassowal sub-station and transmission line

Indicative Investments identified by the companies (APL1 and APL2)

Company	Project component	Local US$ million	Foreign US$ million	Total US$ million
IESCO	Secondary Transmission Grid sub- Station	15	58	73
	Energy loss reduction	9	26	35
	Sub-total	24	84	108
LESCO	Secondary Transmission Grid sub- Station	60	64	124
	Energy loss reduction	-	-	-
	Sub-total	60	64	124
MEPCO	Secondary Transmission Grid sub- Station	51	47	98
	Energy loss reduction	15	0	15
	Sub-total	66	47	113
HESCO	Secondary Transmission Grid sub- Station	20	25	45*
	Energy loss reduction	25	25	50*
	Sub-total	45	50	95*
Total Base line cost		195	245	440
	Physical Contingencies**			
	Price contingencies**			
Total Financing required for Distribution		195	245	440
NTDC	220kV sub-station at Kossawal and interconnected transmission lines	14	10	24
Total Financing required for Transmission		14	10	24

* Tentative

** Physical contingency and Financial contingency is included in the project cost

Annex 6: Implementation Arrangements

PAKISTAN: Electricity Distribution and Transmission Improvement Project

Borrower and Executing Agency
The Borrower is the Government of Pakistan (GoP), represented by the Economic Affairs Division (EAD). Responsibility for project oversight rests with the Ministry of Water & Power (MWP). There are six executing agencies: the four distribution companies, namely IESCO, LESCO, MEPCO and HESCO; the transmission entity, namely NTDC; and PEPCO.

Overall Scheme for Implementation
The implementation arrangements are designed so as to provide the maximum possible flexibility, and to ensure that potential adverse performance of an implementing agency does not impact the overall project objectives. There are three distinct components namely Distribution, Transmission and Technical Assistance (for entities and the Ministry/other sector institutions), and these are envisaged to be implemented by the respective beneficiary entities.

Distribution Companies Component
1. There are four Distribution Companies (IESCO, LESCO, MEPCO and HESCO) participating in this project, and would be implementing their respective components. There are three sub-components for each distribution company (except LESCO, which is implementing its ELR project separately), as follows:

    a. Secondary Transmission Grid (STG);
    b. Energy Loss Reduction (ELR); and
    c. Technical Assistance (TA) to support reforms, Institutional Upgradation, and preparation of energy efficiency and conservation programs.

2. In case of STG sub-component, the Distribution Companies responsibilities, in general, shall include procurement and contract management for the activities they manage, financial management of project funds, preparation of progress reports, updating of project costs and financing plans[36]. For this sub-component, a distinct project team would be organized which shall be responsible for developing and monitoring the plans for procurement of goods and services, construction supervision, cost information and flow of funds, implementation schedules, compliance with environmental and social plans, and other related matters. In most instances, procurement of goods and services would be handled through the specialists in the project organization headed by a Project Director in each of the Distribution Companies[37], and contractors would be installing the equipment/secondary transmission lines in accordance with agreed design parameters. Distinct and verifiable milestones, along with respective responsibilities, would be agreed upon upfront as per the contractual arrangements and progress-related financial payments would be made to the contractors accordingly.

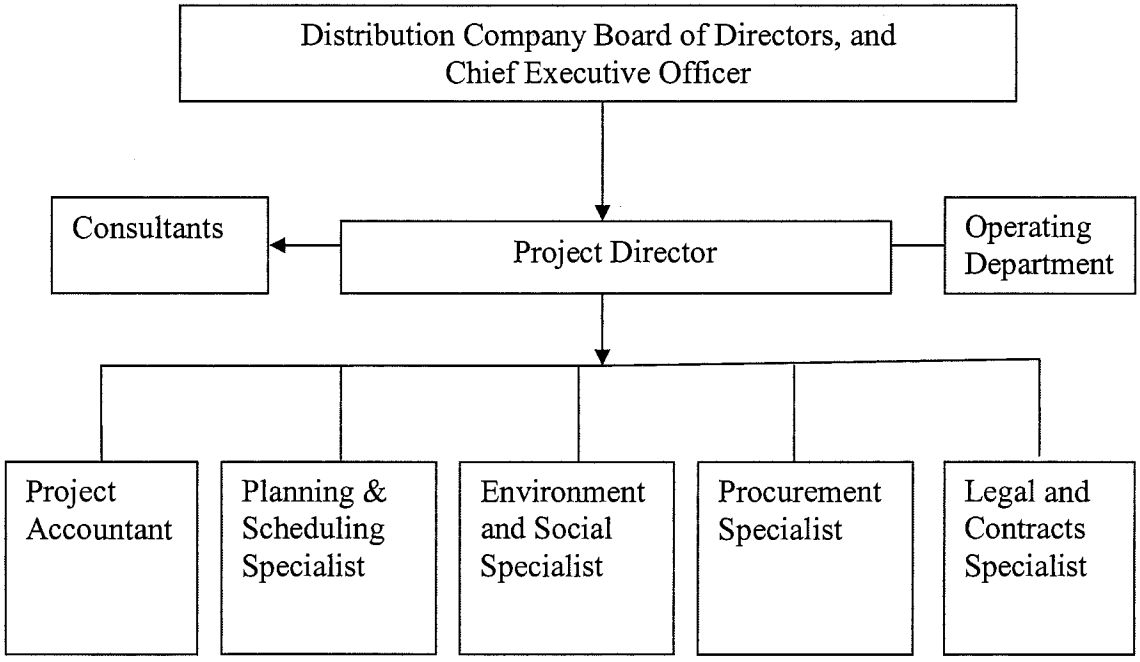
3. The ELR sub-component shall be implemented by the existing operating staff of the Distribution Companies, as the ELR schemes are intricately related to the existing distribution network (augmenting LT lines and transformers, bifurcating feeders, replacement of meters, etc). Material would be procured by the project organization, and transferred to the field-stores in the targeted

[36] In a few specialized cases, turn-key contracts are envisaged to be awarded.
[37] In view of the similarity of STG projects, it is possible that the four Distribution Companies may consolidate their specialized needs for such services, purely on commercial considerations.

locations. The Distribution Companies staff would implement the schemes, and upon completion, provide the project organization with the necessary reports.

4. The TA sub-component shall be implemented by the respective department in the Distribution Company where institutional upgradation is sought, in close coordination with the project organization. It is anticipated that the TA needs would largely be in the technical, materials management, commercial, regulatory and finance departments (in the form of systems, hardware, training, etc), and they would have the primary responsibility to identify needs, and the manner in which to overcome the deficiencies. In order to have a single focal point, the project organization would be kept fully abreast with the progress on implementation of the TA component.

5. The generalized structure of the Project organization for implementing this component would be as follows:



6. In case of procurement of equipment and services, the World Bank guidelines would be followed for International Competitive Bidding (ICB), National Competitive Bidding (NCB), and/or local shopping, depending on the nature of procurement packages which have been developed in close coordination with the Bank team. Approval of the General Procurement Notice (GPN), Terms of Reference (TOR), bidding documents, bid evaluation reports, contracts, etc would be sought as per the guidelines. In case of financial management arrangements, the Bank processes would be followed, and the capacity of the distribution companies in implementing these processes has been assessed; wherever necessary, capacity strengthening would be appropriately undertaken.

7. For implementing the environmental and social impact mitigation measures, the project organization shall have a full-time professional available. Wherever it would be difficult to retain the services of such professionals, consultants who undertook the Environmental & Social Assessment (ESA) for the respective distribution companies would be engaged to ensure that the Environmental & Social Management Plans are fully adhered to.

8. The Project Director (PD) would be directly accountable to the Chief Executive Officer (CEO), and the Board of Directors (BoD) of the distribution company. While having complete freedom of action, the PD would make periodic presentations on the progress on the project and receive guidance on important matters from the CEO and BoD. He would also interact with the operational managers/staff of the company through the CEO to avoid any potential issues. As for the Monitoring & Evaluation (M&E) arrangements, formats for physical achievements, financial disbursements, and project-related issues would be used to report progress to all concerned (Company management, Ministry of Water & Power, Energy Wing - Planning & Development Division, the World Bank).

9. Capacity assessment of IESCO, LESCO, MEPCO and HESCO has been undertaken, and while the core expertise does exist in each entity, additional skills are envisaged in the areas of procurement, project planning and scheduling, environmental and social compliance, and legal/contracts management. There would be a need to train existing staff in these project-related activities, and wherever necessary, use of outside consultants may be called for. LESCO has established an Environmental and Social Cell, while the other three companies have hired full-time Environmental Engineer (with existing staff assisting on social compliance matters). It would be important that the available staff is provided the necessary training at the earliest so as to ensure their timely contribution to the project.

National Transmission & Dispatch Co. (NTDC) Component

10. The construction of 220kV sub-station at Kassowal, and interconnected transmission lines, would be undertaken by National Transmission & Dispatch Co. (NTDC), through the following arrangements:

    a. NTDC shall use the staff from its Project and Construction Divisions to constitute a project organization which would be responsible for the implementation of this component. It is expected that the project organization would be headed by the Project Director, and would have professionals with skills in project accounting, planning and scheduling, procurement, contracts management, and environmental and social impacts management.
    b. NTDC shall comply with the World Bank procurement and financial management arrangements and guidelines. It may be pointed out that NTDC has implemented a number of Bank-financed projects in the past, have the requisite professionals, possess the necessary capacities (as assessed by the Bank as part of the project preparation), and would have little difficulty in complying with the Bank guidelines.
    c. For the environmental and social management arrangements, NTDC would retain the services of the consultants which undertook the ESA study for the project to ensure compliance.
    d. Elaborate M&E arrangements and reporting would be ensured, so as to keep the CEO and BoD of NTDC fully informed. Also, outside agencies such as Wapda, PEPCO, Ministry of Water & Power / Planning & development would be fully informed through periodic reports on the physical and financial performance on the project.

11. NTDC has implemented several Bank-funded projects in the past, and possesses strong project management capacities in general. However, there are specific areas where NTDC staff needs to be provided training so as to acquaint them with the revisions of Bank processes and procedures.

Technical Assistance (TA) Component of Ministry of Water & Power

12. The main activities under the Government's TA component (e.g. related to the PAP, preparing and implementing the energy saver lighting program) will be implemented by PEPCO. PEPCO also has

adequate capacity and experience to implement these activities (Annexes 7 and 8 provide details on the capacity assessment of PEPCO). MWP and NTDC will be supported by PEPCO – as required – in carrying out their respective activities under this component.

13. PIU-MWP and PEPCO possess services of experienced professionals in the areas of engineering, project management, finance and accounting, legal and contracts management. It is envisaged that as needed, the beneficiary entities may request for such services for the effective implementation of their respective project components. It is anticipated that, as a start, PIU-MWP and PEPCO would develop project implementation guidelines for all executing agencies so as to set forth all operational and procedural steps regarding sub-component evaluation, reviews and approval, flow of information, detailed description of project organization's functions, procurement and financial management arrangements and standards and tasks, and standards for reports.

Energy Efficiency Component

14. This US$15 million energy efficiency component was added during negotiations as an urgent priority of the new government. Each of the DISCOs (i.e. LESCO, HESCO, IESCO and MEPCO) will prepare separate Project Description Documents and submit the same to the Government and the Bank for approval. These would clearly explain the technical, the economical and financial viability of the sub-projects alongwith implementation procedures and specific capability of the relevant DISCO for actual implementation in their respective areas of jurisdiction The component is expected to be completed in a period of 2 years. Actual project implementation in the field is expected to take not more than 18 months, while 6 months are necessary for start-up and winding-up of the component.

Annex 7: Financial Management and Disbursement Arrangements

PAKISTAN: Electricity Distribution and Transmission Improvement Project

FUNDS FLOW AND DISBURSEMENT ARRANGEMENTS

1. NTDC, IESCO, LESCO, MEPCO, HESCO, and PEPCO have the capacity to (a) maintain proper books of accounts for the project funds; (b) allocate funds to various decentralized locations based on identified and justified implementation needs; (c) monitor the use of accounting from project representatives in each of these locations on a regular basis; (d) prepare and submit regular requests to the Bank together with appropriate supporting documentation to evidence receipt and utilization of all Bank funds and (e) provide reasonable assurance that project funds would be used for intended purposes. The funding arrangements are expected to work as described below:

a. NTDC, IESCO, LESCO, MEPCO, HESCO and PEPCO shall establish segregated Designated Accounts (DA), in accordance with the agreed procedures for Operation and Maintenance of the DA, issued by the Finance Division, Ministry of Finance, Government of Pakistan, Islamabad to receive funds for Bank's eligible share of financing;

b. The Bank would deposit initial advance into the each DA, on the basis of quarterly projections of expenditures from each DISCO, NTDC and PEPCO;

c. Each implementing agency may advance funds from the DA to meet requirement of their field offices, provided these advances are accounted for within 90 days of the date of advance;

d. The respective field offices shall establish separate local currency accounts for receipt of Bank's eligible share of financing in the respective cities where they are located;

e. The expenditures from the DA shall be for eligible expenditures only;

f. Interim Un-audited Financial Reports (IUFR) shall be tailored for the project at the negotiation stage and included in the disbursement letter, which will provide, at a minimum, the summary/total of category wise expenditures collected from various field offices, as well as by each DISCO;

g. Standard Summary Sheets shall also be designed for the project and included in the disbursement letter together with supporting documentation for all expenditures above the procurement prior review threshold;

h. A reconciliation statement for DA in the standard format showing inter alia, the deposits received from the Bank, the amounts advanced to the field offices, on what date each advance was made, and the amounts awaiting documentation from each field office. In addition, the reconciliation statement, should identify each field office which did not account for the 90-days accounting cycle with an explanation for the delay;

i. Field office and DISCO's will be given a maximum of three months to submit their accounting for utilization of the DA funds. Their accounting will consist of a copy of the Bank statement for the account in which the project funds are held, a progress report showing physical achievements; and at a minimum, a summary of expenditures by category in IUFR/summary sheet format;

j. DISCOs will follow up regularly with each field office if proper accounting has not been submitted within three months period. No further advance will be made from each DISCO to delinquent locations until proper accounting has been received from them;

k. Any amount withdrawn from the DA and not accounted for within six months will be refunded to DA;

l. All supporting documentation will be retained by each DISCO and shall be made available for review by the Bank's supervision missions;

m. Each field office, after incurring actual eligible expenditures, shall submit IUFR to their respective DISCO for seeking reimbursement from the Bank; and

n. While each DISCO will seek reimbursement from the Bank of a regular quarterly basis, it would further advance funds to its field offices, on a regular basis, to meet their future requirements.

Disbursement. DISCO and field offices have adequate financial management capacity for IUFR-based disbursements.

Retroactive Financing. Retroactive financing up to 10 % of the Loan/Credit amount (i.e. US$23.9 million) would cover eligible expenditures for Project activities incurred on or after April 1, 2008 and before the loan/credit signing date.

2. The allocation of Loan/Credit proceeds by disbursement category and allocations will be made as indicated in Table 1 below:

Table 1: Allocation of Loan/Credit Proceeds

Category	Amount of the Loan Allocated (expressed in USD)	Amount Portion A of the Credit Allocated (expressed in SDR)	Amount Portion B of the Credit Allocated (expressed in SDR)	Percentage of Expenditures to be financed (inclusive of taxes, except for Categories (1)(b) and (2)(b))
(1) Goods, works, consultants' services, training and workshops for:				100%
(a) IESCO under Parts A.1 and C of the Project;	58,496,000			
(b) LESCO under Parts A.2 and C of the Project;	60,290,000			
(c) MEPCO under Parts A.3 and C of the Project;	34,710,000	9,500,000	4,360,000	
(d) HESCO under				

Parts A.4 and C of the Project; (e) NTDC under Parts B and C of the Project; and (f) MoW&P through PEPCO under Part C of the Project	0 19,670,000 0		25,670,000 2,270,000	
(2) Goods under Part D of the Project for: (a) IESCO; (b) LESCO; (c) MEPCO; and (d) HESCO	 0 0 0 0			100%
(3) Front-end Fee	434,000	0	0	Amount payable pursuant to the Loan Agreement
(4) Premia for Interest Rates Caps and Interest Rate Collars	0	0	0	Amount payable pursuant to Loan Agreement
(5) Unallocated*	0	9,200,000		
TOTAL AMOUNT	173,600,000	18,700,000	32,300,000	

The unallocated amount corresponds to the energy efficiency component reflected in Category 2. Upon approval by GOP and the Bank of each project implementing entity's Project Description Documents for this component, the respective amount will be reallocated from Category 4 to Category 2.
Note: US$/SDR exchange rate used = 1.62976

Financial Management Arrangements in DISCOs, NTDC and PEPCO

The Project: The project has three components: strengthening electricity distribution networks to reduce losses and improve supply; strengthening electricity transmission network to reduce bottlenecks and improve system's reliability and quality; and technical assistance for project implementation, capacity building, and investment planning and sector reform.

Strengthening of transmission network would be done by NTDC's four Grid Station Operations (GSO) units or extra High Voltage Department (EHV for turn-key projects) headed by Chief Engineers. The Chief Engineers have Executive Engineers (XENs) and Sub Divisional Officers (SDOs) under them who implement the projects. Deputy Manager (Corporate Accounts) and Assistant Manager (Accounts) are posted at each GSO in Islamabad, Lahore, Multan and Hyderabad.

NTDC purchases electricity from power generation companies through Central Power Purchase Agency (CPPA) for onward sale to electricity distribution companies. GENCOs provide high voltage electricity (500 KVAs) that is stepped down to 220/132 KVAs and supplied to DISCOs. Preference is for hydel energy that is a lot cheaper (PKR 0.90/unit) compared to thermal energy (PKR 3.50 – 10.00 /unit). Terms and conditions regarding rate, quantity, period and payment terms are stated in the Power Purchase Agreement between NTDC and power generating companies (GENCOs). DISCOs are billed on a monthly basis on the basis of meter reading at the grid stations. Purchase and sale of electricity is done through Central Power Procurement Agency (CPPA), NTDC's subsidiary, which is to be soon separated from NTDC and become an independent company. Invoices are generated by CPPA on a monthly basis, however, settlement of account is currently done by WAPDA through a yearly Global Entry that settles payable/receivable amounts to/from NTDC/DISCOs. This system has been replaced in IESCO, LESCO and MEPCO by the Escrow Account system wherein revenue is being collected and payments made to CPPA. Escrow Account would be opened in HESCO once SOP is issued by the Government.

Distribution networks would be done by DISCOs themselves and/or by NTDC. Typically, there are seven Circles under which there are thirty two Divisions and one hundred sixty Sub-divisions. Circles are headed by Chief Engineers, Divisions by Executive Engineers (XENs) and Sub-divisions by Sub-division Officers (SDOs). Project Director (Chief Engineer, Construction) would be in charge of the project in each DISCO. Chief Engineers Grid Station Construction (GSC) and Secondary and Transmission Grid Station of NTDC would be responsible for construction and installation work respectively. Once the grid station is complete it is handed over to the Grid Station Operations.

NTDC's GSC staff (including accounting) has been absorbed in DISCOs. Tariff has been finalized by the Government that provides some autonomy to the electricity distribution companies and NTDC. Full financial autonomy would be ensured once Escrow Accounts are fully operational in all DISCOs.

PEPCO, that would manage TA component of US$3.71 million, is a management company that provides services to NTDC, DISCOs and GENCOs. It charges fee to these entities based on their net assets. The fee is worked out in a manner to meet PEPCO's operational expenses.

Capacity building would be done under TA for each implementing agency.

Executive summary: Financial management system (staffing, budgeting, accounting, internal control, inventory management, fixed assets management, financial reporting and audit in DISCOs, PEPCO and NTDC is well documented and professional staff is employed in key positions. Most of the staff is in position. Functions of the sections in the Finance Directorate and job descriptions of key positions have been clearly stated. Accounting, including inventory management is computerized in most of the participating companies. A uniform computerized system is being developed by PEPCO under Enterprise Resource Planning (ERP) that would be launched in 2008 in all of the implementing agencies (except MEPCO). Internal controls are generally effective.

Despite being companies registered under the Companies Ordinance, DISCOs (except IESCO where it is working well) and NTDC were not financially autonomous. Financial autonomy has now been granted by allowing use of escrow accounts to the DISCOs. Escrow accounts are operational in all DISCOs except HESCO where this system is expected to be in place shortly.

Overall financial management arrangements are satisfactory and provide reasonable assurance that funds would be used for intended purposes.

Financial management arrangements in NTDC, PEPCO and DISCOs are generally satisfactory. However, there are some control weaknesses in PEPCO that would be addressed for the project. It was assured that

accounting staff would remain in place in the relevant departments that would be directly involved in project implementation. These include Banking and Compilation Sections in the Finance Directorate, Project Director Extra High Voltage (EHV-I), Project Director Grid Station Construction (GSC), Project Director (Construction), Materials Management – STG, Materials Management – Distribution (DISCOs) and Internal Audit.

Inventory and fixed assets management systems issued by WAPDA/PEPCO are being followed in all entities. The systems are generally fine; however, there is no systematic coding system for tagging of fixed assets. *It was agreed that a scheme would be developed for coding and tagging of assets. It was also assured that assets procured out of project funds would be tagged appropriately.* This is being addressed through ERP. HESCO has already made headway in this direction. There is also a need to review the basis for allocating labor and overhead costs to fixed assets and rates of depreciation to bring these in line with effective lives of the assets. Doing so would help in allocation of correct values to work-in-progress/assets and also operating cost. This aspect would be further discussed with the respective managements during implementation of the project.

Formats and contents of reports that would be used for disbursement (on the basis of six-monthly forecasts) of Bank funds were explained, discussed, and agreed with the respective Finance Directors and General Manager (Finance), PEPCO. These reports would be finalized during negotiations.

Although Audit Committees have been formed in all the five implementing agencies, the one in MEPCO is not fully functional yet. *It is important that MEPCO's Audit Committees be fully operationalized to assure independent internal audit and also to provide guidance to the Internal Audit Department. This aspect would be monitored during implementation review.* Internal audit arrangements have been initiated in PEPCO and the internal audit department would be adequately staffed shortly.

Internal audit departments in the DISCOs have identified significant amounts that were not billed initially. These amounts were subsequently billed and recovery is in process. Controls need to be built into the billing system so that such instances are minimized.

External auditors have given qualified opinion on financial statements of DISCOs for the financial year 2005-06 due to some issues most of which have been addressed subsequently.

A separate audit would not be required for the project and entities' audited financial statements showing sources and uses of project funds would be submitted to the Bank within six months of the close of each financial year. A reputable firm of chartered accountants would be acceptable as auditor for Bank's fiduciary purposes. Auditor General would continue to conduct audit of companies as mandated in the Constitution.

Country issues: There are no major issues in the corporate sector which is governed by the Companies Ordinance and the Securities and Exchange Commission of Pakistan. The institutes of chartered accountants and cost and management accountants also play an important role in professional management of the corporate sector.

Corporate Governance: Companies in the energy sector are governed by rules issued by the National Electric Power Regulatory Authority (NEPRA) and the Companies Ordinance, 1984. NEPRA has issued rules and guidance on guaranteed standards of performance, database and complaint mechanism, resolution of billing and metering disputes and annual reporting. Guaranteed standards of performance cover the following:

- Restoration following interruptions
- Maximum number of interruptions

- Duration of interruptions
- Benchmarks for average interruption frequency index
- Benchmark for average interruption duration index
- Time frame for new connections
- Voltage standards
- Frequency standards

Annual reporting by DISCOs includes:

- System performance
- Consumer service performance
- Plans for improvement

Transmission companies are required to report on the following:

- Performance levels
- System reliability
- Tie line reliability
- System security
- Voltage
- Frequency

In addition to above, NEPRA also monitors compliance on a periodic basis and takes action against defaulters. NEPRA Act also provides that each provincial government shall establish offices of inspection and have the power to enforce compliance of the relevant rules.

As far as the Companies Ordinance is concerned, it covers the following:

- Qualifications and election of directors
- Powers of directors
- Responsibilities of directors
- Appointment and removal of chief executive
- Disclosure of interest in contracts by directors
- Accounting
- Financial reporting
- Qualifications and appointment of auditors
- Holding of shareholders' and directors' meetings
- Penalties for non-compliance

Since government holds all the shares, it is empowered to elect directors for a period of three years in the annual general meetings. The government has elected three of the seven directors from the private sector to bring in expertise in management. The number of directors is being increased to eleven as per instructions from PEPCO. Of the additional four directors, two would be selected from the private sector and the other two from the public sector.

The Securities & Exchange Commission of Pakistan (SECP) may initiate investigation on application by members or the Registrar of Companies.

The two legislations assure reasonable transparency, accountability and disclosure of information. SECP has issued a code of corporate governance but it applies to only listed companies which the participating companies are not. However, they may be encouraged to adopt the code for better management.

As far as inefficiencies, leakages and mal-practices are concerned these may be overcome by regular monitoring. Internal audit departments in DISCOs provide an effective oversight on revenue (billing) and compliance of policies and procedures.

Risk assessment and mitigation:

Risk	Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Condition of Negotiations, Board or Effectiveness (Y/N)
Inherent Risk			No
➢ Country level	Substantial/ Moderate		
➢ Entity level	Substantial	Effective corporate laws and professional financial management staff	
➢ Project level	Substantial	Effective financial management arrangements in DISCOs and NTDC	
Control Risk			No
➢ Budgeting	Moderate	Availability of adequate staffing and effective monitoring	
➢ Accounting	Moderate	Clearly laid down policies and procedures exist	
➢ Internal control	Moderate	Effective checks and balances exist	
➢ Funds flow	Moderate	Availability of funds through the approved budget	
➢ Financial reporting	Moderate	Computerized accounting system	
➢ Auditing	Moderate	Audit by a leading firm of chartered accountants	

Overall FM risk rating: This is Substantial, mainly due to inherent control risks in the power sector in Pakistan.

Strengths:

- ➢ Professional staff at key positions
- ➢ Well documented functions of departments
- ➢ Job descriptions for all positions
- ➢ Clearly laid down financial policies and procedures
- ➢ Effective internal controls including strong internal audit
- ➢ Computerization of accounts and inventory

Weaknesses and action plan:

- ➢ Lack of financial independence – being addressed through use of Escrow Accounts
- ➢ Lack of power to appoint staff on key positions – PEPCO's (instead of WAPDA's) approval is required for senior appointments
- ➢ Vacant positions to be filled up – being done on a need basis
- ➢ Control weaknesses in PEPCO's book keeping – management agreed to take corrective measures

Implementing entities: DISCOs, PEPCO and NTDC are companies limited by shares registered under the Companies Ordinance, 1984. They are managed by a Board of Directors comprising of seven directors (being increased to nine) of which three are from the private sector. Directors in NTDC and DISCOs are nominated by the Pakistan Electric Power Company Ltd. (PEPCO), another Government owned organization.

DISCOs and NTDC were not financially independent. However, DISCOs have now been made financially autonomous as they now collect their revenues through the Escrow Accounts authorized by the Government. Escrow accounts have been operationalized for LESCO, IESCO, and MEPCO. HESCO's account will be operationalized after issuance of SOP by the Government.

DISCOs and NTDC can appoint officers up to Grade 18. Positions above this grade are approved by PEPCO.

DISCOs purchase electricity from Central Power Purchasing Agency (CPPA) in NTDC. Requirement is based on historical data and new connections. At present, settlement is made by WAPDA through a yearly Global Entry that settles payable/receivable amounts to/from NTDC/DISCOs.

DISCOs' customers may be classified in the following categories:

Industrial
Residential
Commercial
Agricultural
Other

Currently, DISCOs' bills to consumers are collected in DISCOs' collection accounts and transferred to their main collection accounts in the Head Office. Day-end balances in the Head Office accounts are transferred (on WAPDA's instructions) to WAPDA. However, Finance Directors are authorized to retain funds for the Head Office and for transfer to the formations (operating units) in accordance with the budget (current and capital) approved by the Board of Directors.

An SOP (in working papers file) issued by MOW&P has been implemented in IESCO, LESCO and MEPCO for collection of bills, payment of electricity purchased, O & M and taxes & levies. The SOP states time line for various activities and transfer of funds. The Government has operationalized escrow accounts for LESCO, IESCO, and MEPCO. HESCO's account will be operationalized after issuance of SOP by the Government. Following accounts are operated under the new system:

- Main Collection Account
- Main Escrow Account
- O & M Disbursement Account
- Taxes & Levies Account

The above bank accounts are in the control of the DISCOs.

DISCOs' bill collection would be in the Main Collection Account 10%of which would be transferred to O & M Escrow Account on a daily basis. The bank would transfer funds from the Main Collection Account to the Main Escrow Account and Taxes & Levies Account on 25th of every month for payments in respect of electricity purchased and GST. Payment would be made to CPPA from the Main Escrow Account.

Procedures have also been developed for verification of bills from NTDC to IESCO.

Implementation arrangements: Major expenditure for the project includes material, labor, consultancy and overheads. Material would be procured by the Materials Management Departments and suppliers would be paid from the Designated Account maintained in the Finance Directorate. Work in respect of STG and Energy Loss Reduction (ELR) would be conducted by Project Directors (GSC) and (Construction) respectively. Contract labor would be paid by the Project Directors out of funds to be transferred to their bank accounts from the Designated Account. All payments would be pre-audited by the Pre-audit Section in the Finance Directorate. Banking Section would raise the Funds Demand for Finance Director's and Chief Executive Officer's approval after which the Cashier would issue cheques. The Banking Section would reconcile the Designated Account on a monthly basis. The Designated Account would be operated under joint signatures of signatories from two groups.

Participating entities' existing financial management systems would be used for the project.

Functions of the Finance Directorate and Staffing in DISCOs: Finance Directorates in the DISCOs, PEPCO and NTDC adequately cover all aspects of financial management and adequately staffed. Details of various sections in the directorates and their functions are in the working paper file.

Staffing - DISCOs: Staffing arrangements are shown in the attached organogram. Finance Directors are professional accountants. Managers are either professionally qualified or have passed the departmental examination. Assistant Managers and Accounts Officers are either commerce graduates or have passed their level of departmental examination. Accounts Assistants too have to pass their level of departmental examination. Subjects covered in the various levels of departmental examination are in the working papers. *Key positions are filled up and DISCOs have assured that the departments that would be involved in implementation of the project would remain adequately staffed during the life of the project. Finance Director's position in IESCO that fell vacant recently is in final stages of recruitment.*

A Divisional Accounts Officer and a couple of Accounts Assistants are available at the XEN level. No accounting staff is required for the Circles or the Divisions since these offices are supervisory in nature. Field formations (Sub-divisions) have an Accounts Officer and a couple of Accounts Assistants.

Overall staffing position is satisfactory and adequate to provide assurance that project funds would be used for intended purposes.

The Finance Directorate in NTDC is staffed as shown below:

Finance Director	Chartered Accountant (left – being replaced)
(LESCO's Finance Director is holding dual charge in the meanwhile.)	
Director General (F&A)	Chartered Accountant (left – being replaced)
4 Deputy Managers	Departmental Examination qualified
7 Assistant Managers (2 vacant)	Departmental Examination qualified
13 Accounts Officers	Departmental Examination qualified
19 Accounts Assistants	Departmental Examination qualified

Job descriptions of the above positions are documented and assure adequate controls. *The Finance Directorate and lower formations are adequately staffed to provide effective financial management support for the project.*

Finance Directorates in the four participating DISCOs, PEPCO and NTDC are generally staffed adequately. However, some positions are vacant in NTDC and the four DISCOs. ***It was assured that***

these positions would be filled up and the following sections that would be part of the project implementation would remain fully staffed during life of the project:

- Compilation Section in the Finance Directorate
- Banking Section in the Finance Directorate
- Project Director Extra High Voltage (EHV-I) - NTDC
- Project Director Secondary Transmission Grids (GSC)
- Project Director (Construction)
- Materials Management – STG
- Materials Management – Distribution (DISCOs)

Budgeting - DISCOs: Accounting formations submit in April budget on prescribed formats to the Budget Section in the Finance Directorate. Budget is based on expenditure incurred during the last year and new activities planned for the ensuing year. The Budget Section scrutinizes requirements and prepares a consolidated budget for the organization which is approved by the Board of Directors. Approved budget is communicated to the accounting formations which submit monthly statement of budget and expenditure along with reasons for variances to the Budget Section. Budget execution is monitored by the Budget Section and the Finance Director on a monthly basis. Payments are made after checking availability of budget. A consolidated budget monitoring report is presented to the Board of Directors. Additional budget requirements are approved by the Board of Directors.

Budget Section is headed by an Assistant Manager who reports to the Manager Finance who is normally a qualified accountant. An Accounts Officer and Accounts Assistants provide support to the Assistant Manager. *Staff is adequate to fulfill budgeting needs of the project.*

Budgeting - NTDC: Budgets for operational expenses and development projects are approved by the Board of Directors. All accounting units submit budget to the Finance Directorate where it is vetted by the Budget Section. Budget is based on expenditure incurred during the last year and new activities planned for the ensuing year. The Budget Section scrutinizes requirements and prepares a consolidated budget for the organization which is approved by the Board of Directors. Approved budget is communicated to the concerned offices in September each year which submit monthly statement of budget and expenditure along with reasons for variances (in excess of 5%) to the Budget Section. Budget execution is monitored by the Budget Section (on each transaction), the Finance Director and General Manager Finance WAPDA on a monthly basis. Budget releases by WAPDA remain within the overall budget approved by the National Electric Power Regulatory Authority (NEPRA) that approves three years' budget for NTDC based on the tariff. Revenue budget is not prepared as NTDC does not have control over revenue.

Budget Section is headed by an Assistant Manager (presently vacant) who reports to a Deputy Manager and a Manager (Cost & Management Accountant). Accounts Officer, Accounts Assistant and Junior Clerk are in place.

Budgeting and monitoring arrangements are effective. A module is being developed in the accounting package that would replace the current Excel-based budget monitoring system.

Budgeting in PEPCO: Main expenditure in PEPCO comprises of salaries and benefits. Human Resource & Administration provides input to he Finance Department that prepares the budget for approval by the Board of Directors. Budget monitoring is exercised using Excel worksheets.

Payment processing system in the participating companies is adequate – details are in the working papers file. Payments are approved as per delegation of authority. A Project Director would be designated in PEPCO who would have the over all responsibility for the TA component.

Accounting - DISCOs: Financial Manual issued by PEPCO is being followed for accounting purposes. Main features of the manual are:

- Chart of Accounts
- Description of account heads
- Books of account to be maintained
- Financial reports
- Policy guidelines
- Payroll procedures
- Fixed assets coding scheme
- Fixed assets policies and procedures
- Accounting of construction projects
- Procurement procedures
- Disbursement procedures
- Budgeting
- Accounting
- Financial reporting

The Manual adequately covers all aspects of financial management. Chart of Accounts is adequate to reflect project activities. Staffing also is adequate barring some vacant middle/lower level positions that would be filled up on a need basis. List of books of account maintained in DISCOs is in the working papers file.

Accounts are being maintained using computerized system in all entities except MEPCO. It was agreed that computerization would be considered for accurate and timely recording and financial reporting.

Checked and approved payment vouchers are forwarded to the Banking Section that issues cheques, maintains bank books and reconciles with the respective banks. Manager Corporate Accounting heads the accounting functions. Deputy Managers and Assistant Managers assist the Manager in performing the corporate accounting functions. A Divisional Accountant and two Accounts Assistants are posted in each accounting formation. General Ledger is maintained by the Consolidation and Financial Reporting Section that also consolidates trial balances received from the accounting formations. Ledger is posted from Ledger Posting Summaries prepared by all sections on a monthly basis. Bank accounts are reconciled on a monthly basis. Inter office balances are looked after by the Inter-office Transactions Section. *Receivables and payables were being reconciled on a yearly basis by the Receivables/Payables Section. It was suggested that this should be done on a monthly or quarterly basis. This is now being followed.*

Accounting system including inventory management is being computerized in some DISCOs while others are also following suit. Field formations send their trial balances to the Finance Directorate by 20th of the following month for review and consolidation.

Fixed assets accounting is done by the Fixed Assets Maintenance Section. Fixed assets record is reconciled with the respective control accounts in the General Ledger. Tagging of assets has not been done in any DISCO. *It was assured that assets procured out of project funds would be tagged for identification*. Physical verification is done by the internal and external auditors periodically and annually respectively. Insurance of only grid stations is arranged by WAPDA on a charge.

Accounting - NTDC: Financial Manual issued by PEPCO is followed. Formations maintaining imprests maintain books of account (bank book and general ledger) and submit monthly trial balance to the Finance Directorate for consolidation. Accounting functions including consolidation are done by the

Compilation Section in the Finance Directorate. The Section is headed by an Assistant Manager who is supported by 2 Accounts Officers, 2 Accounts Assistants and a Junior Clerk. The Banking Section that issues cheques, maintains bank books and reconciles these with the respective banks by 10th of the following month.

Accounting system has been computerized using customized software. Payments are processed through the computerized system. *A control weakness in operation of the system is that the staff authorized to post temporary transaction is also authorized to post the transactions to the ledger. This would be addressed once staff is fully in place.* It was assured that this would be taken care of before the start of the project.

Fixed assets accounting is done by individual formations. *Assets are not currently tagged;, however, this would be done for assets procured out of project funds.* Value of fixed assets at various locations is reconciled with the control accounts. Physical verification is done by the auditors on an annual basis. Insurance of only grid stations is arranged by WAPDA on a charge.

The accounting system is considered adequate to report project sources and expenditure.

Accounting – PEPCO: PEPCO's accounts are maintained using manual accounting system. Accounting Manual issued by WAPDA is followed. The manual covers basic accounting policies and procedures. Weaknesses like over writing in bank book and ledger, bank account not being reconciled for many months and inadequate segregation in writing books of account were observed during appraisal. *It was assured that these weaknesses would be taken care of in maintaining project's books of account.*

Fixed asset management: Fixed assets management system issued by WAPDA/PEPCO is being followed in all entities. The system is generally fine; however, there is no systematic coding system for tagging of assets. *It was agreed that a scheme would be developed for coding and tagging of assets. This is being taken care of in ERP. HESCO has taken inventory of its assets and is preparing to tag its assets.*

Assets procured are capitalized at historical cost while cost of material, direct labor and overheads are charged to assets constructed by the implementing agencies. *Direct labor and overheads are debited to Capital Work in Progress, however, charged to assets at 8 and 7 % of material cost respectively. This results in unadjusted balances in the Capital Work in Progress account and incorrect valuation of assets. It was agreed that this aspect would be reviewed by the management. HESCO recently increased rates of depreciation for a couple of classes of assets while IESCO is also actively considering this.*

Straight line method of depreciation is being used for charging depreciation and rates of depreciation fixed by WAPDA are being followed.

Category of Assets	Rate of Depreciation
Buildings	2.0 %
Plant & equipment	3.5 %
Transportation equipment	10.0 %
Construction equipment	10.0 %
Computer & office equipment	10.0 %
Other assets	2.0 %

These rates of depreciation seem quite low (2.0%-10.0%) and may not reflect the actual depreciation charge hence resulting in an inflated profitability of the companies. It would be appropriate to consider revision keeping in view effective life of the respective assets.

Inventory management: In NTDC procurement and material management is headed by a Chief Engineer. He is supported by two Managers for procurement, a Manager for material control, an Assistant Manager for administration and a Budget & Accounts Officer with adequate support staff. There are eleven warehouses that are adequately staffed i.e. XEN, Assistant Stores officer (engineer), Storekeeper and security staff. Four Stock verifiers carry out a 100% physical verification on an annual basis and 25 % periodically. Inventory is computerized and data entry is done by the Computer Section.

A yearly procurement plan is prepared in DISCOs that is approved by the Board of Directors. Heads of Operations at various locations submit to the local store that forwards the request to the regional store if material is not available with them. The regional store procures material after approval by the CEO. MIS department consolidates receipts and issues in COBOL) from all the stores and prepares a consolidated statement for management's review. Bin cards are maintained for each item in the stores. Inventory would be computerized in Oracle within the coming 12 months.

In DISCOs inventory is managed by the Materials Management Departments for STG and Distribution. Materials Management Departments is headed by Managers who are engineers. Stores are headed by Store Officers. There is an effective system for procurement of material and inventory management and adequate procedures are in place for receipt of material, checking quality and quantity, recording receipts and issues of material. Material Inspection Department issues certificates as to the quality of material. Field formations submit requests for issuance of material on a prescribed format. Inventory level at the field and central warehouses is monitored on a weekly basis.

Inventory is being managed using both manual and computerized systems. Receipts and issues are recorded in the manual system on a daily basis and posted into the computerized systems on a daily/fortnightly/monthly basis. Bin cards are used in the stores that show quantities only while the manual and computerized systems record both quantity and value. Inventory is valued on a moving average basis. Values are reconciled with the control accounts in the general ledger maintained at the warehouses and consolidated using the computerized system.

Internal audit department physically verifies 25%-50% of the inventory (tools and plant) during their surprise checks.

Internal control and internal auditing: *There are adequate controls in processing payments and accounting due to appropriate staffing and segregation of duties.* Availability of budget is checked for each payment. Job descriptions of all positions are written up and followed. Bank accounts are operated under joint signatures one of whom is from the Finance & Accounts department. Post Audit and Internal Audit departments assure that approved policies and procedures are being followed. Bank accounts are jointly operated by two signatories.

Internal audit departments are headed by Managers who report functionally to the Chief Internal Auditor, WAPDA. Most of the audit staff is commerce graduate. *Although Audit Committees have been formed in NTDC and DISCOs, the one in MEPCO is not fully functional yet. It was agreed that Audit Committees would play their role in all entities participating in the project.* Internal audit arrangements are being initiated in PEPCO.

Internal audit departments are adequately staffed in five entities. Staff members are divided into audit parties. Each audit party comprises of an Audit Officer, an Assistant Audit Officer and 2-3 Audit Assistants. Internal Audit Departments conduct audit of revenue, Grid Station Operations and Grid Station Construction (except IESCO).

Audit cycle starts in September and all formations are audited during the 12-month period. Formation wise audit report is submitted to the Chief Internal Auditor, WAPDA, the Chief Executive Officer (CEO), Audit Committee (where functional), the auditee and auditee's next higher office. The Chief Internal Auditor discusses the audit report with the CEO. Significant amounts have been billed and recovered as a result of audit observations. *This is a reflection of internal audit departments' efficiency; however, it reflects weaknesses in the billing system all the same.*

The CEO instructs formations to address auditors' observations. There are two sections in the Internal Audit Department that follow up on their observations and recommendations on an ongoing basis.

Audit observations are broadly classified in the following categories:

- Non/Less recovery of advance from contractors/suppliers
- Non recovery of cost of burnt meters/transformers replaced
- Misappropriation of stores
- Cash embezzlement (a small amount)
- Dismantled material neither returned to warehouse nor to any site
- Funds blocked in inventory
- Expenditure incurred without budget
- Account not rendered in respect of advances
- Violation of purchase procedures

Special audit is conducted on the request of CEO in case of serious irregularities.

Observations are standardized and followed up on a regular basis. A database of audit observations is being developed for systematic follow up. Audit for FY'06 was completed in September'06 in which the following aspects were covered:

- Receipts and payments
- Operation and maintenance work and utilization of stores
- Adherence to procedures and rules

Enterprise Resource Planning (ERP): ERP is underway in all the implementing agencies (except MEPCO) and is expected to be completed during 2008. ERP would cover computerization of accounts in Oracle, human resource management, billing, inventory and fixed assets management.

Funds flow and disbursement arrangements: Bank's Designated Accounts would be operated in all implementing agencies by the Finance Directorate under joint signatures from two groups – one each from the Finance and Executive. Demands for payment would be raised by the respective departments for payment from the Designated Account that would be under the Banking Section. Entities' prescribed procedures would be followed for processing payments and accounting for the project. Consolidation Section would maintain the project ledger while the Banking Section would maintain the bank book that would be reconciled with the bank on a monthly basis. *Chart of Accounts is adequate to reflect project activities.*

Disbursements would be made on the basis of IUFR showing forecast for the next 6 months.

Financial reporting: Monthly statement of budget and expenditure incurred is presented to the management. Trial balance is extracted on a monthly basis for Finance Director's review. *The accounting system in all implementing agencies has the ability to produce financial reports for the project.* IUFRs would be prepared on a quarterly basis showing sources and uses of funds and forecast for the next 6

months. Format and contents would be agreed during negotiations. Quarterly and annual financial statements would be prepared on the basis of International Accounting/Financial Reporting Standards. The due date for submission of IUFRs will be within 45 days of the end of each quarter.

Report based system for disbursement of Bank funds was explained and discussed. Format and contents of IUFRs were discussed with the financial management officials and copies thereof provided. These would be finalized during negotiations.

NEPRA has issued guidelines for power generation, transmission and distribution companies according to which accounts have to be submitted by 30th September each year (by 31st December for FY'07). NEPRA has designed a uniform accounting and financial reporting system for companies in the energy sector. A manual has been developed and finalized after stakeholders' workshop. MEPCO and HESCO have provided their comments on the manual to PEPCO. The manual is in force and DISCOs have started producing and submitting financial statements to NEPRA in accordance with the manual.

Provision for bad debts - DISCOs: Provision for bad debts is made @ 5 % of billing as approved by the Board of Directors. This is done on the basis of aging analysis in LESCO. Director Commercial prepares an ageing analysis and forwards defaulters' list to the First Class Magistrate posted in each DISCOs who sends notices to the defaulters. The case is decided in the Sessions Court/High Court. The Director Commercial puts up a note to the Board of Directors for write off based on the decision.

Information technology - NTDC: Information Technology Department is professionally staffed and headed by a director. It has completed networking in 17 offices and developed and implemented the following systems. They also provide training to staff.

- Warehouse/Inventory Management
- Human Resource Management
- General Ledger
- Banking

Planned activities:

- Payroll
- Pension
- Fixed assets
- Budgeting
- CPPA Metering

Auditing: Auditors (firm of chartered accountants) are appointed in the Annual General Meeting for a term of one year from the top 5 firms advised by PEPCO.

Audit for FY'07 has been completed. DISCOs and NTDC are mandated to submit audited financial statements to Securities & Exchange Commission of Pakistan (SECP) by end October each year. Government auditors also cover DISCOs and NTDC in their audit of WAPDA.

Audited financial statements of NTDC and DISCOs for FY'06 were reviewed. Auditors have given a qualified opinion in DISCOs' cases due to a number of reasons some of which are beyond entities' control. However, not all observations are material or potentially relevant to the project. The ones that are material and could possibly affect the project include the following. These issues are being addressed and have been taken in to account in the assessment.

- Capital work-in-progress being uncertain
- Material issued to contractors included in Capital work-in progress un verifiable
- Inter division accounts not reconciled
- Security deposits not kept in a separate account as required by the Company Law
- Global reconciliation of stores suggested
- Excess/shortage of contribution from customers over actual expenditure not being refunded/claimed from customers
- Inter office accounts not reconciled
- Physical verification of fixed assets not carried out
- Written down value of assets sold not charged to sale proceeds as per policy
- International Accounting Standard not being followed for charging depreciation
- Capital work in progress not capitalized though completed
- Details not available for material issued to contractors for electrification
- Labor and overheads charged to Capital Work In Progress on actuals but charged as a percentage to projects on completion
- Bank accounts not fully reconciled
- Inter company accounts not fully reconciled

Most of the issues raised in the Management Letters of DISCOs that are under their control have been addressed. NTDC's auditors have been requested to provide the Management Letter.

PEPCO's audited financial statements for FY'07 were reviewed - auditors have given an un-qualified opinion and there are no major issues.

Audit for FY'07 has been completed and qualifications and observations are being addressed. Implementing agencies have been requested to provide copies of the audited financial statements along with the Management Letter to the Bank. Auditors for FY'08 would be selected from leading firms of chartered accountants.

Audit requirements for the project were explained to the Finance Directors of DISCOs and NTDC and Chief financial Officer of PEPCO. A separate audit would not be required. Entities' audited financial statements showing by way of a note sources and uses of project funds would be acceptable to the Bank. A reputable firm of chartered accountants would be acceptable as auditors for Bank's fiduciary purposes. Auditors and their TORs would be cleared with the Bank. Auditor General's office would continue to conduct audit on an annual basis as mandated by the Constitution.

Financial statements, audited by reputable firms of chartered accountants, showing separately sources and uses of funds in respect of the project would be submitted to the Bank within 6 months of the close of each financial year – as shown below:

Audit Report	Due Date
Continuing Entity Financial Statements – NTDC	31 December
Continuing Entity Financial Statements – PEPCO	31 December
Continuing Entity Financial Statements – HESCO	31 December
Continuing Entity Financial Statements – IESCO	31 December
Continuing Entity Financial Statements – LESCO	31 December
Continuing Entity Financial Statements - MEPCO	31 December

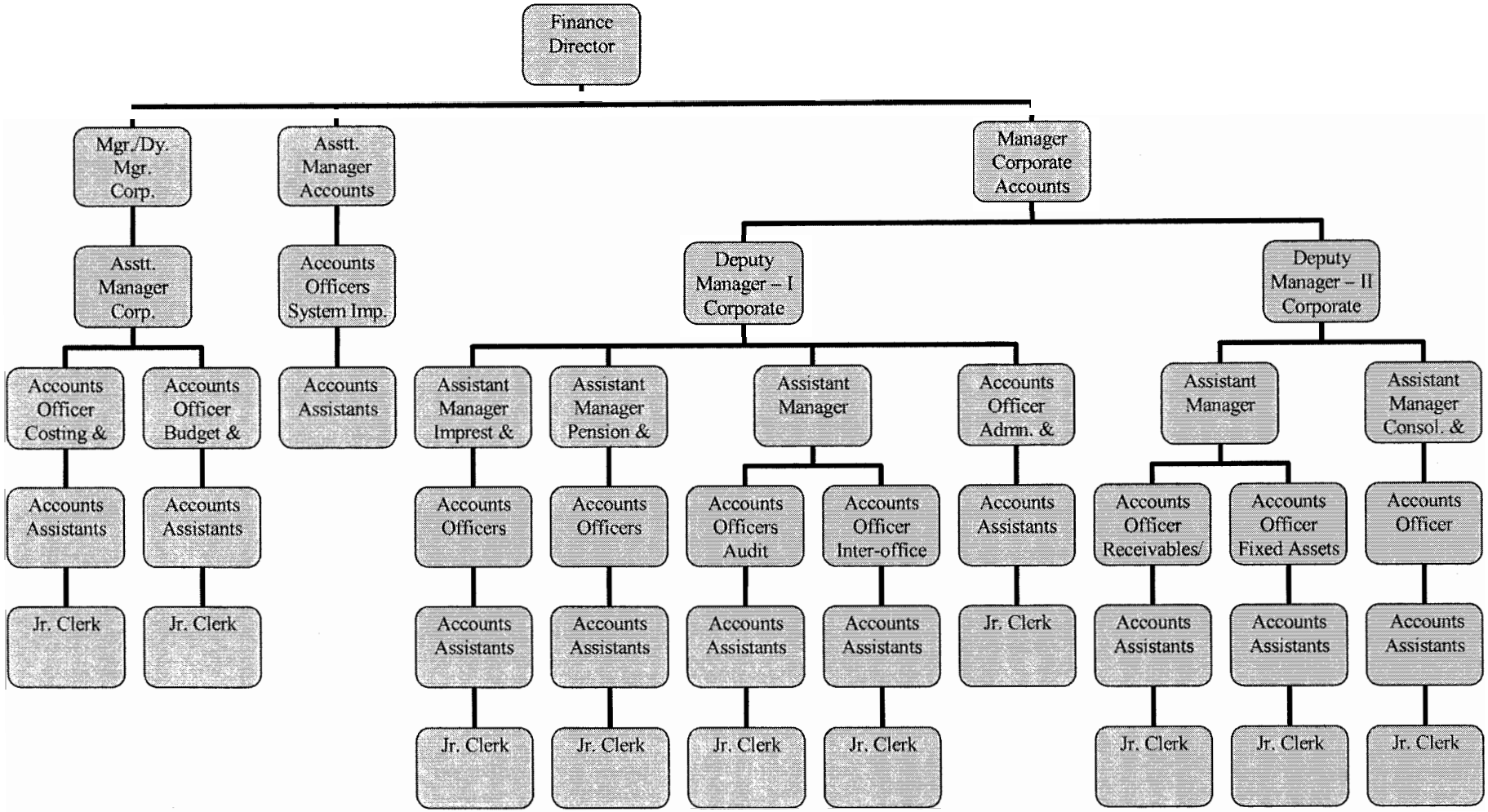
International Standards on Auditing would be used for audit purposes.

Conditionality: No conditions either for negotiations or presentation to the Board.

Supervision plan: Since the implementing agencies do not have prior experience in implementing a Bank-financed project, quarterly interaction would be needed in the initial period after which normal implementation review may be required.

Financial Management Assessment Questionnaires of the six implementing agencies are in working papers file.

Organogram of Finance Directorate for DISCOs



Annex 8: Procurement Arrangements

PAKISTAN: Electricity Distribution and Transmission Improvement Project

A. General

1. Procurement for the proposed project will be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004 revised August 1, 2006; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004 revised August 1, 2006, and the provisions stipulated in the Legal Agreement. The various items under different expenditure categories are described in general below. For each contract to be financed by the Loan/Credit, 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 Borrower and the Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

2. **Procurement of Works**: Works procured under this project would include: Civil works associated with the construction and rehabilitation of distribution systems including Grid Stations and Transmission Lines. Almost all civil works contracts are of small value except for one transmission line contract, estimated to cost US $5.0 million. This will involve the foundation, erection of towers and stringing of conductors. Considering the size and nature of the remaining Works contracts to be procured under this project, it is unlikely that any international contractors will be attracted for the impending contracts. Consequently, Works contracts will be procured using NCB procedures National Standard Bidding Documents agreed with or satisfactory to the Bank.

3. **Procurement of Goods:** Goods procured under this project would include: Power and Distribution Transformers, Transmission Towers, Conductors, Insulators, Switchgear, Circuit Breakers, Panels and associated Hardware, energy efficient CFLs, LV capacitors, and meters. ICB procedures shall be followed for each Goods contract estimated to cost more than US$200,000 equivalent. Domestic Preference will be allowed to local manufacturers on ICB contracts. Goods estimated to cost up to US$200,000 per contract may be procured through NCB procedures acceptable to the Bank. Small value off-the-shelf goods estimated to cost up to US$50,000 equivalent may be procured following shopping procedures in accordance with the Bank's procurement guidelines.

4. **Improvement of Bidding Procedures under National Competitive Bidding:** The following improvements in bidding procedures will apply to all procurement of Goods and Works under National Competitive Bidding, in order to ensure economy, efficiency, transparency and broad consistency with the provisions of Section 1 of the Guidelines:

- Invitation to bid shall be advertised in at least one national newspaper with a wide circulation, at least 30 days prior to the deadline for the submission of bids;
- bid documents shall be made available, by mail or in person, to all who are willing to pay the required fee;
- foreign bidders shall not be precluded from bidding and price preference as per the Procurement Guidelines shall apply to national bidders in the bidding process;
- bidding shall not be restricted to pre-registered firms;
- qualification criteria shall be stated in the bidding documents;
- bids shall be opened in public, immediately after the deadline for submission of bids;

- bids shall not be rejected merely on the basis o f a comparison with an official estimate without the prior concurrence of the Bank;
- before rejecting all bids and soliciting new bids, the Bank's prior concurrence shall be obtained;
- bids shall be solicited and contracts shall be awarded on the basis of unit prices and not on the basis of a composite schedule of rates;
- contracts shall not be awarded on the basis of prior negotiated rates;
- contracts shall be awarded to the lowest evaluated and qualified bidder; and
- post-bid price negotiations shall not be allowed with the lowest evaluated or any other bidders.

5. **Procurement of non-consulting services:** A technical assistance component will be implemented by the Government, that will include capacity building, specialized studies, energy efficiency, and sector reform.

6. **Selection of Consultants:** Contracts with consulting firms will be procured in accordance with Quality and Cost Based Selection procedures or other methods given in Section III of the Consultants' Guidelines. For contracts with consulting firms estimated to cost less than $500,000 equivalent per contract, the shortlist of consultants may comprise entirely national consultants in accordance with the provisions of paragraphs 2.7 of the Consultant Guidelines. The first Consultancy services contract, regardless of value and thereafter, Consultancy contracts estimated to cost above $200,000 per contract and all single source selection of consultants (firms) will be subject to prior review by the Bank.

7. **Selection of Individual Consultants**: Services for assignments that meet the requirements set forth in the first sentence of paragraph 5.1 of the Consultant Guidelines may be procured under contracts awarded to individual consultants in accordance with the provisions of paragraphs 5.2 through 5.3 of the Consultant Guidelines.

B. Assessment of the agency's capacity to implement procurement

8. Procurement activities will be carried out by IESCO, LESCO, MEPCO, NTDC and HESCO. The agencies are not presently staffed with procurement specialists with the exception of NTDC and LESCO. In addition, LESCO has access to specialized procurement assistance through its consultants. These entities currently are subject to Public Procurement Regulatory Authority (PPRA) Rules 2004 of the Federal Government.

9. The World Bank's CPAR dated June 30, 2000, provides some assessment of the general procurement environment in Pakistan. Since that time competitive selection procedures have been introduced widely through PPRA rules of 2004. PPRA set up by the Government of Pakistan has been strengthening the procurement capacity of the government line agencies through a series of dissemination and training workshops. It is currently in the process of preparing Standard Bidding Documents that will further streamline the process. A second tier appeals process is also under preparation, which will improve the transparency of the procurement. Private sector firms dealing with the public sector entities are generally of the opinion that although the procurement of the government is not free of corruption, there has been perceptible improvement during the last three to five years. An additional key generic issue is the generally low capacity within government line departments to prepare and evaluate bids in a timely manner.

10. An assessment of the capacity of the various DISCOs to implement procurement actions for the project has been carried out by Asif Ali, Senior Procurement Specialist. The assessment

reviewed the organizational structure and staffing for implementing the project. The interaction between the DISCOS' staff responsible for procurement was carried out between September 2005 and November 2006. One of the key issues that were identified during the course of the assessment and subsequent meetings was the prevalence of cartels of manufacturers and vendors. For goods like distribution transformers, energy meters, and conductors etc., bidders regularly quote identical prices and then negotiate prices down. The orders are then distributed among the bidders on a pro rata basis. This practice has been going on for several years dating back to before the DISCOs were spun off, and continue across all DISCOS. For their part, WAPDA and the DISCOs have a history of restricting the market to only local manufacturers, citing government SROs (Statutory Notification (S.R.O.) 827 (I)/2001, Import of Engineering Goods (Control) Order dated December 3, 2001) that mandate this, and subsequently negotiate prices with bidders in violation of the Public Procurement Rules, 2004. The Bank team held further discussions with the project companies (HESCO, IESCO, LESCO, MEPCO, and NTDC) and government agencies. The discussions indicated that the distribution companies appear to be keen to take actions to ensure that procurement is done competitively and transparently. To that end, the Government has prepared a broader "Procurement Action Plan" (PAP), which includes various measures designed to improve procurement practice. PEPCO, which assists the government in corporate governance matters related to the power sector, is to coordinate this effort with the project companies and the government, as some of the measures may need to be implemented by the government. The government also stated its willingness to address the problem. A communication received from the GoP, containing the Procurement Action Plan and attachments is available on the project files.

11. The main features of the Plan are:

I. **Ensure open and transparent bidding**: The government will remove requirements regarding domestic bidding of engineering goods and work to dismantle the cartels by:

   a. Amending SRO 827 to allow International competitive bidding. Action for this will be initiated within [two months], by recommending to the Ministry of Commerce, and it is expected that the amendments will be in place in [six months] after having gone through a process of consultation and approval by the Cabinet.

   b. All DISCOs will amend their operating procedures to discontinue uniform price setting, post bid negotiation and allocation of quotas among suppliers. Directives from PEPCO to this effect have already been issued. Revised Procurement Procedures will be adopted by respective DISCOS by [March 31, 2009]

   c. Removing price difference recovery clauses from purchase orders.

   d. Developing a communications plan for dissemination of new procurement process to potential bidders.

II. **Address indications of collusion in the two bids under EDTIP**: PEPCO/ DISCOs will:

   a. Proceed to cancel bids in consultation with the Bank (formal requests have been received), and rebid the contracts

   b. For bids outstanding, and in pre-bid meetings, inform potential bidders about modalities regarding transparency of the bidding and evaluation process and possible action in case of collusion.

   c. Determine through consultation with the Public Procurement Regulatory Authority (PPRA) and other related agencies, whether sufficient grounds exist for initiating appropriate action against the 5 bidders involved in these collusive bids.

d. Develop, with the assistance of PPRA, procedures to debar companies that violate the new guidelines. Debarment regime to be in place by [September 30, 2008]

III. **Strengthen the Procurement Monitoring Cell:** PEPCO has established a procurement monitoring cell (PMC) that will take all steps necessary to ensure compliance with relevant procurement guidelines / regulations. To further strengthen this PMC, the services of an International Procurement Advisor to be appointed not later than December 31, 2008, who, in addition to strengthening the capacity of the PMC, will:

a. Participate in Bid Evaluation Meetings as an observer and to, i) assist in preparation of BERs , ii) submit independent reports to the Bank and PEPCO, iii) participate in the inspection of delivery of works and goods.

b. In addition, the DISCOS and the International Procurement advisor will develop and implement plans to build capacity of procurement staff in DISCOS and other power sector entities.

IV. PEPCO will prepare a strategy to communicate effectively and credibly and develop plans for disseminating:

a. A clear message to vendors in general and bidders in particular, that procurement under the old and flawed processes will no longer be allowed.

b. General information to the public, civil society and media

c. Applicable procurement procedures to DISCOs, ministries, departments.

d. Information regarding the role of the PMC

V. PEPCO will assist DISCOS and other power sector entities in:

a. Preparation of transparent, nonrestrictive bidding and evaluation processes.

b. Preparation of comprehensive procurement policies and guidelines through a consultant to work with the International Procurement Advisor over the next 12 to 18 month period

c. Maintain an oversight role and not interfere in the DISCOs procurement processes.

A detailed description of each of the DISCOs, the types of procurements that they are expected to carry out and their capacity to implement procurement plans is given below.

IESCO

12. The implementing arrangements of the Project in IESCO envisage two sets of organizations. The first is a Technical Team - Grid Station Construction (GSC) - formerly a part of NTDC but now fully incorporated in IESCO, to facilitate the construction and supervision of grid stations and secondary transmission lines. The ELR component will be supervised by the Project Director, Construction Operation. The GSC is headed by a Project Director in Islamabad. However, given the significant amount of work that has to be implemented during the Project, IESCO plans to engage a consultant to provide technical expertise to help the Project Director in performing the engineering services outlined above.

13. The other team is the Material Management Directorate that procures material for IESCO. This Team is headed by a Manager and has the experience and the training to prepare bidding documents, evaluate bids and administer contracts. However, the team has not procured any material under Bank financing and therefore lacks experience of procurement carried out under Bank Procurement Guidelines. The Terms of Reference of the consultant will also include providing services to the Material Management Directorate to help procure goods for the Project.

LESCO

14. The scope of work under the project includes the construction and installation of 132/11 kV grid station in the LESCO system, augmentation of Power Transformers at existing Grid Station, conversion of existing 66 kV grid station to 132 kV system, extension of transformer and line bays at existing grid station and the construction of new secondary lines. LESCO has experienced procurement staff as well as access to NTDC's expertise. They have also employed a consulting firm, which is helping them in the preparation of procurement documents. It is understood that these services will also be available to evaluate bids as when they are received.

MEPCO

15. The scope of work under the project includes installation of new 132/11 kV grid station, augmentation, extension and conversion existing grid stations, capacitor installation, construction of new secondary lines, and stringing of second circuit under STG. For ELR, the scope of work includes refurbishment of HT and LT feeders, installation of capacitor banks, augmentation/addition of distribution transformers and replacement of faulty energy meters. Procurement capacity at MEPCO is low and although the draft bidding documents sent for the Bank's review were reportedly prepared with help from NTDC, the nature of the observations that the Bank had reflects continuing difficulties in understanding of the bid process, its conduct and evaluation. During the various missions undertaken in the course of project preparation, the Bank expressed a concern regarding the low procurement capacity and recommended that MEPCO acquire specialist procurement skills, either through consulting firms or through individuals. During project appraisal, MEPCO have agreed to hire consultants to assist them with the bidding process.

HESCO

16. HESCO's procurement will consist of Power Transformers, 132kV Towers, 132 & 66kV Line conductors and Grid Station Materials under STG and for ELR, materials like ABC Conductors and Energy Meters. Procurement capacity at HESCO is also weak and needs to be augmented. Although there is a procurement department with a full time Director, there is no previous experience with Bank procurement procedures. The Bank recommended to HESCO, who have agreed, to acquire specialist procurement skills, either through consulting firms or through individuals.

NTDC

17. The scope of work of NTDC under this Project is the (i) construction of a 220 kV Grid Station at Kassowal under a Supply and Installation Contract and (ii) construction of two double circuits for In & Out arrangement of 220 kV Vehari - Yousafwala Transmission Line. NTDC, as a successor to the Transmission and Grid Department of WAPDA, has been responsible for the construction, operation, and maintenance of the HV Transmission Network and Transmission Lines and Grid Stations and thus has substantial experience in these fields. NTDC also has a full fledged design cell which provides consultancy and engineering services for construction of Transmission Lines and Grid stations up to 220 kV capacity. As such, NTDC has experienced staff both in design and supervision of construction to implement the Supply and Installation Contract and the Transmission Line Contract. Although the NTDC staff has sufficient experience in procurement under financing from Asian Development Bank and other donor agencies it lacks recent experience in Bank procurement procedures. NTDC plans to establish a Project Management Unit for implementing the Project. This unit will be headed by a Project Manager and will have staff in the Finance, Environmental and Procurement Departments to assist him.

PEPCO

18. PEPCO assists the government in corporate governance matters related to the power sector. Although the Technical Assistance component of the loan/credit is to be implemented by the Ministry of Water and Power (MOWP), a project implementation unit has yet to be set up in that ministry. Pending the completion of that action, PEPCO will provide the required support to the MOWP. PEPCO has the required manpower for implementing the initial procurement action. PEPCO also houses the Procurement Monitoring Cell that has been set up under the Procurement Action Plan. It will also be coordinating the activities of the International Procurement Advisor, as well as provide oversight to the development of the Procurement Manual. As such, there is adequate procurement capacity to implement the TA portion of the loan/credit in the interim period.

CORRECTIVE MEASURES AGREED

19. The corrective measures which have been agreed are:

- Hiring of specialized procurement staff at each of the DISCOs;
- Procurement training of existing and new staff on Bank's procedures; and
- Where qualified staff is not available in the short term, DISCOs with weak procurement capacity have acquired services of consultants to assist with the preparation of bidding documents and subsequent bid evaluations.
- In order to preclude fraud and corruption through collusive bidding, the DISCOs will:
    - Package goods in a manner that will attract foreign participation in ICBs
    - Hold, without exception, pre-bid meetings where prospective bidders will be made aware of the Bank's position on collusive bidding.
    - Confirm to the Bank through the minutes of the pre-bid meetings that prospective bidders have been made aware of the relevant clauses in the Bank's Guidelines as they relate to fraud and corruption.

20. The overall project risk for procurement is "High".

C. Procurement Plan

21. The executing agencies have developed procurement plans for project implementation which provide the basis for the procurement methods. These plans have been agreed between the executing agencies and the Project Team during appraisal. These will also be available in the project's database and on the Bank's external website. The Procurement Plans will be updated in agreement with the Project Team annually, or as required to reflect the actual project implementation needs and improvements in institutional capacity.

D. Frequency of Procurement Supervision

22. In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of the Implementing Agency has recommended six-monthly supervision missions to visit the field to carry out post review of procurement actions.

E. Details of the Procurement Arrangements Involving International Competition

1. Goods, Works, and Non Consulting Services

(a) List of contract packages to be procured following ICB:

1	2	3		4	5	6	7	8
Ref. No.	**Contract (Description)**	**Estimated Cost**		**Proc. Method**	**P-Q**	**Domestic Preference (yes/no)**	**Review by Bank (Prior / Post)**	**Actual/ Expected Bid-Opening Date**
		Pak Rupees in millions	**US Dollars in millions**					
	IESCO							
ICB-01	Power Transformers	228.0	3.80	ICB	No	Yes	Prior	28-Nov-07
ICB-02	Circuit Breakers, CTs, PTs, Insulators, lighting arrestors, connectors, tension and suspension strings and indoor and outdoor kits	91.8	1.53	ICB	No	Yes	Prior	18-Dec-07
ICB-03	Al. Pipes, Al. Conductors, earth wire assembly, earth mast, earthing platform, grounding conductors, beams, columns and structures	18.6	0.31	ICB	No	Yes	Prior	30-Jun-08
ICB-04	Control and Relay Panels, AC/DC Auxiliary panels, 132kv post insulators, 11kv post insulators and disc insulators	19.2	0.32	ICB	No	Yes	Prior	03-Mar-08
ICB-05	11KV Switchgear Incoming/ Outgoing, 25 KA Bus Coupler	4.80	0.80	ICB	No	Yes	Prior	09-Jun-08
ICB-06	Control Cables and Power Cables	19.2	0.32	ICB	No	Yes	Prior	18-Dec-07
ICB-07	132 KV T/Line Towers material	456.0	7.50	ICB	No	Yes	Prior	03-Mar-08
ICB-08	132 KV T/Line, Steel Tubular Poles	52.2	0.87	ICB	No	Yes	Prior	30-Jun-08
ICB-09	Hardware for T/line, Towers, and tubular poles, 132 kV T/line disc insulators and grounding sets	64.2	1.07	ICB	No	Yes	Prior	16-Aug-07
ICB-10	T/L Conductors & Earthwire	181.2	3.02	ICB	No	Yes	Prior	16-Aug-07
ICB-11	Distribution Transformers	114.0	1.90	ICB	No	Yes	Prior	15-Jul-08
ICB-12	Single and Three Phase Digital Meters	193.2	3.22	ICB	No	Yes	Prior	20-Mar-08
ICB-13	Distribution goods (HT/LT Structures & HT/LT Poles)	33.6	0.56	ICB	No	Yes	Prior	03-Mar-08
ICB-14	Conductors, Cables & GS Wire for ELR	144.0	2.40	ICB	No	Yes	Prior	30-Jun-08
ICB-15	Distribution goods (Spool, pin and disc insulators, and hardware material	56.4	0.94	ICB	No	Yes	Prior	20-Mar-08.
ICB-16	Distribution goods (HT/LT Capacitors)	12.6	0.21	ICB	No	Yes	Prior	20-Mar-08

1	2	3		4	5	6	7	8
Ref. No.	**Contract (Description)**	**Estimated Cost**		**Proc. Method**	**P-Q**	**Domestic Preference (yes/no)**	**Review by Bank (Prior / Post)**	**Actual/ Expected Bid-Opening Date**
		Pak Rupees in millions	**US Dollars in millions**					
ICB	4 No. 132 kV Grid stations (Gangal, MES, Adyala & Bahtar More)	404.0	6.70	ICB (S+I)	No	No	Prior	18-Aug-08
	LESCO							
ICB-631	Power Transformers	360.0	6.00	ICB	No	Yes	Prior	26-Oct-07
ICB-632	132 KV Poles and Towers	36.0	0.60	ICB	No	Yes	Prior	19-Dec-07
ICB-632-01	132kV Transmission Line conductors and earth wire	36.0	0.60	ICB	No	Yes	Prior	5-Dec-07
ICB-632-02	132 kV Transmission Line Hardware and disc insulators	24.0	0.40	ICB	No	Yes	Prior	30-Jun-08
ICB-715-11A	132kV Circuit Breakers, CTs, and voltage transformers	15.0	0.25	ICB	No	Yes	Prior	25-Dec-07
ICB-715-13	Grid Station Hardware, earthing material and telecommunication system	42.0	0.70	ICB	No	Yes	Prior	15-Jan-08
ICB-715-14A	11 kV Panels	24.0	0.40	ICB	No	Yes	Prior	10-Oct-07
	132 KV GIS Grid Station - Gulberg,	360.0	6.00	ICB (S+I)	No	No	Prior	16-Oct-08
	132 KV GIS Grid Station - Mominpura	360.0	6.00	ICB (S+I)	No	No	Prior	16-Oct-08
	132 KV GIS Grid Station - Saggian	360.0	6.00	ICB (S+I)	No	No	Prior	16-Oct-08
ICB-744	Power Transformers	300.0	5.00	ICB	No	Yes	Prior	18-Mar-09
ICB-745	132 KV Poles and Towers	60.0	1.00	ICB	No	Yes	Prior	18-Mar-09
ICB-745-01	132kV Transmission Line conductors and earth wire	36.0	0.60	ICB	No	Yes	Prior	21-Mar-09
ICB-745-02	Transmission Line Hardware and disc insulators	6.0	0.10	ICB	No	Yes	Prior	21-Mar-09
ICB-746	132kV Circuit Breakers, CTs, and voltage transformers disconnectors	60.0	1.00	ICB	No	Yes	Prior	23-Mar-09
ICB-748	Control and relay and AC/DC panels and gantries	18.0	0.30	ICB	No	Yes	Prior	25-Mar-09
ICB-749	Control cables and 11 Kv termination kits, station hardware and earthing material	19.2	0.32	ICB	No	Yes	Prior	10-Jun-08
ICB-750	11 kV Panels	60.0	1.00	ICB	No	Yes	Prior	22-May-08
	132 KV GIS Grid Station (one location)	360.0	6.0	ICB (S+I)	No	No	Prior	18-Aug-09
	132 KV GIS Grid Station (one location)	360.0	6.0	ICB (S+I)	No	No	Prior	18-Aug-09

1	2	3		4	5	6	7	8
Ref. No.	**Contract (Description)**	**Estimated Cost**		**Proc. Method**	**P-Q**	**Domestic Preference (yes/no)**	**Review by Bank (Prior / Post)**	**Actual/ Expected Bid-Opening Date**
		Pak Rupees in millions	**US Dollars in millions**					
	MEPCO							
ICB-01	Power Transformers	561.0	9.35	ICB	No	Yes	Prior	08-Sept-07
ICB-02	Grid station material (circuit breakers, CTs, PTs)	55.8	0.93	ICB	No	Yes	Prior	21-Jun-08
TBD	132 kV T/line Hardware	41.9	0.70	ICB	No	Yes	Prior	28-Jun-08
TBD	Grid station material (Cables and Conductors)	34.3	0.57	ICB	No	Yes	Prior	03-Jul-08
TBD	132 kV Towers material, conductor, insulator	438.8	7.31	ICB	No	Yes	Prior	07-Jul-08
ICB-07	Grid Station Material (switch gear panels)	95.46	1.59	ICB	No	Yes	Prior	10-Jul-08
ICB-08	Grid Station Material (C-Panels and R-Panels)	27.08	0.45	ICB	No	Yes	Prior	11-Jul-08
ICB-12	Distribution Transformers	211.6	3.53	ICB	No	Yes	Prior	15-May-08
ICB-13	ASCR/AA Conductors	202.0	3.37	ICB	No	Yes	Prior	10-Jan-08
ICB-15	Energy meters	260.0	4.33	ICB	No	Yes	Prior	16-May-08
	NTDC							
1	220 kV Grid Station At Kassowal	480.9	8.00	ICB (S+I)	No	No	Prior	08-July-08
2.	Transmission Line Material	600.0	10.00	ICB	No	Yes	Prior	22-July-08
3.	Construction of Transmission line	300.0	5.00	ICB	No	Yes	Prior	08-Sept-08
	HESCO							
ICB -05	132 kV Tower Material	149.6	2.49	ICB	No	Yes	Prior	29-May-08
ICB -04	132 & 66 kV T/Line Material- Post and Disc Insulators etc.	15.3	0.25	ICB	No	Yes	Prior	05-June-08
ICB -07	132 & 66 kV T/Line Material- Earth Wire Strands & ACSR Lynx Conductor	56.9	0.95	ICB	No	Yes	Prior	14-May-08
ICB -01	Power Transformers	212.5	3.54	ICB	No	Yes	Prior	26-Nov-07
ICB -02	132 & 66 kV Grid Station Material – Circuit Breakers etc.	116.5	1.94	ICB	No	Yes	Prior	10-July-08
ICB - 04A	132 & 66 kV Grid Station Material – Column Structures etc.	21.3	0.36	ICB	No	Yes	Prior	10-July-08
ICB -06	132 & 66 kV Grid Station Material – Switchgear & Bus Coupler	29.6	0.50	ICB	No	Yes	Prior	21-May-08
ICB -08	132 & 66 kV Grid Station Material – Control Cables & Power Cables	25.6	0.42	ICB	No	Yes	Prior	4-June-08

1	2	3		4	5	6	7	8
Ref. No.	**Contract (Description)**	**Estimated Cost**		**Proc. Method**	**P-Q**	**Domestic Preference (yes/no)**	**Review by Bank (Prior / Post)**	**Actual/ Expected Bid-Opening Date**
		Pak Rupees in millions	**US Dollars in millions**					
ICB -09	132 & 66 kV Grid Station Material – PLC System	173.2	2.89	ICB	No	Yes	Prior	4-Aug-08
ICB – ELR/01	ELR - ABC Cables and Allied Materials	862.2	14.37	ICB (S+I)	No	No	Prior	20-Aug -08
ICB – ELR/02	ELR-Energy Meters	143.4	2.39	ICB	No	Yes	Prior	20-Aug -08
ICB – ELR/03	ELR -Distribution Material	45.5	0.76	ICB	No	Yes	Prior	20-Aug -08

(b) The first ICB regardless of value and thereafter, contracts estimated to cost above $200,000 per contract and all direct contracting will be subject to prior review by the Bank.

2. Consulting Services

(a) The first Consultancy services contract, regardless of value and thereafter, Consultancy contracts estimated to cost above $200,000 per contract and all single source selection of consultants (firms) will be subject to prior review by the Bank.

(b) Short lists composed entirely of national consultants: Short lists of consultants for services estimated to cost less than $500,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Annex 9: Economic and Financial Analysis

PAKISTAN: Electricity Distribution and Transmission Improvement Project

A. Economic and Financial Analysis of the Project

Overview

All companies (the DISCOs and NTDC) carried out economic and financial analyses of their respective components. Standard methodologies for such analysis were adopted. A number of indicators – Rate of Return, Net Present Value, and Benefit/Cost ratio – were computed. This Annex describes the main results of these analyses.

The main benefit of the Project (in both economic and financial terms) is the increase in sales of electricity, due to enhanced transformation and transmission capacity, supply to new consumers, and increased consumption of existing consumers. The DISCOs and NTDC will also reduce losses – in 220 kV, STG and distribution networks – through investments and other administrative measures that are included in the Project. The companies can therefore be expected to meet a given level of consumer demand through lower power purchases. The financial benefits of the Project, therefore, also include savings in the DISCOs' power purchase costs. Economic benefits of the Project also include improvements in the quality of supply – e.g. reduction in breakdowns and outages, improved voltage profile, more optimal loading of grid stations and lines, etc. Wherever such improvements in supply can be quantified, they are included in the economic benefits.

Project costs include both capital and recurrent costs. Capital costs were updated to end-FY07 price levels. All capital costs were converted to economic values – e.g. by using import prices, subtracting taxes, duties and other transfer payments, etc. Recurrent costs include operation and maintenance costs of assets to be installed under the Project, as well as the cost of the additional electricity to be purchased by the entities.

Economic Analysis

The economic value of electricity was obtained by estimating the cost of incremental electricity supply through the grid. Specifically:

- NEPRA has prepared indicative benchmark tariffs, for various plant sizes (50, 250, 300 and 500 MW) and technologies (simple and combined cycle; based on gas, fuel oil, diesel, or multiple fuels; wind, etc). These tariffs represent an independent estimate of the cost of incremental generation for the system. Tariffs for 250 and 500 MW combined plant based on gas and fuel oil were used for this analysis. A few projects involving these fuels and technology have been proposed as new IPPs; indicative tariffs for such plants are taken as the cost of a 'marginal plant' for the system.

- The Use-of-System charge for NTDC (as determined by NEPRA) represents the cost of transmission service for the economy. While NEPRA's determination includes tariffs for both power purchase/sales as well as for network services, the power purchase/sale function is being separated – and will be handled by CPPA in future. The economic value of transmission services was therefore computed by subtracting costs (or revenues) for power purchase/sale from NTDC's overall revenues.

- Similarly, NEPRA has determined a Distribution Margin for each DISCO, which reflects NEPRA's assessment of the cost of distribution in that service area.[38] These Margins can be taken as a proxy for the economic value of distribution services.

[38] NEPRA observed that the DISCOs' investments in recent years were below the levels included in tariff petitions. It therefore did not allow the full investment program as a cost, and determined tariffs on the basis of investments

- The sum of these generation, transmission and distribution costs represents the economic value of electricity, and is used for the economic valuation of Project benefits.

The overall results of the analyses, including Rate of Return, Net Present Value, and Benefit-Cost ratio computations, are presented in Table 1 below.

Table 1 : Results of Economic Analysis (Base Case)			
	ERR	**NPV**	**B/C Ratio**
HESCO	45.08 %	9585.64	4.19
IESCO	21.70 %	3748.31	2.51
LESCO	36.94 %	10208.31	4.73
MEPCO	17.24 %	7286.21	3.53
NTDC	32.92 %	4135.54	2.68

Sensitivity Analyses

A number of sensitivity analysis calculations were performed, to confirm the robustness of the analyses under adverse conditions. These include (unanticipated) escalation in capital costs, delays in project completion, reduction in the benefits to be achieved by the Project, and combinations of all these eventualities. Specifically, the analysis was carried out for 10% and 20% increase in capital (and O&M) costs, delays of one and two years, 10 and 20% reduction in the benefits to be achieved from the Project, and combinations of such adverse developments. Table 2 provides the Economic Rate of Return (ERR) computations, under various assumptions:

Table 2 : Economic Rate of Return (ERR)					
	HESCO	**IESCO**	**LESCO**	**MEPCO**	**NTDC**
Base Case	45.1 %	21.7 %	36.9 %	17.2 %	32.9 %
Capital Cost increase by 10 %	42.5 %	19.0 %	31.7 %	15.5 %	29.6 %
Capital Cost increase by 20 %	35.8 %	16.7 %	27.7 %	13.9 %	27.4 %
Reduction in Benefits by 10 %	17.9 %	18.7 %	31.2 %	15.4 %	29.7 %
Reduction in Benefits by 20 %	15.1 %	15.8 %	26.0 %	13.3 %	26.6 %
Delay of 1 year	16.6 %	17.3 %	25.8 %	14.7 %	26.3 %
Delay of 2 years	14.1 %	14.5 %	20.6 %	12.8 %	22.3 %
All impacts (10 % cost increase, 10 % reduced benefits, 1 year delay)	24.4 %	13.4 %	20.3 %	11.8 %	22.1 %
All impacts (20 % cost increase, 20 % reduced benefits, 2 year delay)	14.3 %	8.7 %	13.3 %	6.8 %	16.0 %

The base case ROR is positive for all components of the Project and higher than the opportunity cost of capital/discount rate (12%). These results essentially confirm the urgency of the planned investments – in view of low levels of investment in recent years, all companies need to invest in rehabilitating and upgrading their networks, to cater for the growth in electricity consumption.

The ROR also exceeds the discount rate for all entities (except MEPCO and IESCO), under all iterations. For MEPCO the rate falls to 6.8% and for IESCO it falls to 9.8% under the most extreme assumption – 20% increase in capital costs, two years delay, and 20% reduction in project benefits. Under the less adverse case – 10% increase in costs, 10% reduction in benefits, and one year delay – the rates remain close to or above 12% for all entities.

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which it feels the entities can implement. If the DISCOs are able to implement larger programs, NEPRA would be willing to consider increasing the Distribution Margin. Therefore, the Distribution Margins determined by NEPRA may understate the full cost of providing distribution service, particularly for the proposed level of investments.

Financial Analysis

For the financial analysis, current tariffs (Use of System charge for NTDC) are used for valuing the additional sales of electricity and the reduction in power purchases. The results of these analyses are presented in Tables 3 and 4:

Table 3 : Results of Financial Analysis (Base Case)			
	IRR	**NPV**	**B/C Ratio**
HESCO	18.79 %	4976.00	2.81
IESCO	13.67 %	1747.00	3.21
LESCO	24.11 %	7284.50	3.42
MEPCO	26.42 %	16779.53	5.36
NTDC	27.77 %	3654.30	2.17

Sensitivity Analyses

Sensitivities conducted for the economic analysis were repeated for the financial analysis. Table 4 provides the (Financial) Rate of Return computations under those assumptions.

Table 4 : Internal Rate of Return (IRR)					
	HESCO	**IESCO**	**LESCO**	**MEPCO**	**NTDC**
Base Case	18.79 %	13.67 %	24.11 %	26.42 %	27.77 %
Capital Cost increase by 10 %	16.33 %	14.16 %	21.05 %	24.02 %	24.96 %
Capital Cost increase by 20 %	14.30 %	12.33 %	18.62 %	21.98 %	23.04 %
Reduction in Benefits by 10 %	16.09 %	11.44 %	11.39 %	23.78 %	25.14 %
Reduction in Benefits by 20 %	13.42 %	9.26 %	9.14 %	21.06 %	22.41 %
Delay of 1 year	15.18 %	11.30 %	18.22 %	21.65 %	22.79 %
Delay of 2 years	12.85 %	9.67 %	15.03 %	18.53 %	19.49 %
All impacts (10 % cost increase, 10 % reduced benefits, 1 year delay	11.54 %	8.16 %	14.17 %	18.04 %	18.82 %
All impacts (20 % cost increase, 20 % reduced benefits, 2 year delay	7.08 %	4.59 %	9.15 %	12.91 %	13.58 %

These results depict significant variations as compared to the economic analysis. The financial returns achieved by most companies are lower than the corresponding economic benefits. This is largely due to NEPRA's methodology for determining Distribution Margins, which (as explained above) does not cater for these entities' planned level of investments. For example, while NEPRA determined a Margin of Rs 0.62/kWh for IESCO for FY07, IESCO had requested for Rs 0.97/kWh. Similarly, LESCO's determined Margin for FY07 is Rs 0.41/kWh, while LESCO had requested Rs 0.48/kWh. NEPRA decided to allow a level of investment which is closer to the past trend, in determining the distribution charge. NEPRA recognizes that its determination is an interim measure, and it is willing to reconsider its determinations once the entities can implement larger investments. Therefore, once these DISCOs demonstrate an ability to implement higher levels of investment to NEPRA, and Distribution Margins are re-determined, the DISCOs will demonstrate more acceptable returns on their investments.

Economic analysis for individual companies

HESCO

The results of the analysis for HESCO are listed in Table 5 below:

Table 5: Economic Analysis results for HESCO			
	ERR	**NPV**	**B/C Ratio**
Base Case	45.1 %	9585.64	4.19
Capital Cost increase by 10 %	42.5 %	9258.06	4.01
Capital Cost increase by 20 %	35.8 %	8602.29	3.62
Reduction in Benefits by 10 %	17.9 %	4757.72	2.84
Reduction in Benefits by 20 %	15.1 %	3078.05	2.53
Delay of 1 year	16.6 %	4802.28	3.04
Delay of 2 years	14.1 %	3315.81	2.93
All impacts (10 % cost increase, 10 % reduced benefits, 1 year delay)	24.4 %	6490.20	3.75
All impacts (20 % cost increase, 20 % reduced benefits, 2 year delay)	14.3 %	2512.57	2.77

The benefits of the planned investments which have been quantified by HESCO include savings in power purchase costs (due to a reduction in transmission losses), reduction in load shedding, and sales of power to additional consumers. The ROR remains positive and above the threshold (12 %) for all iterations. The Net Present Value of the investments remains positive. The Benefit/Cost ratio is also high, in all cases.

The returns to be achieved by HESCO fluctuate sharply in cases of delays and reduction in benefits relative to the planned levels – the rate of return falls from over 45% in the base case to about 17% for 1 year delay, and 18% when benefits are reduced by 10 percent. Achieving the benefits that HESCO expects from the Project would thus require strict prioritization of investments, ensuring that losses are restricted to the planned levels, and avoiding delays in implementation.

IESCO

Summary results of the analysis carried out for the investments to be undertaken by IESCO under the Project are presented in Table 6 below.

Table 6 : Economic Analysis results for IESCO			
	ERR	**NPV**	**B/C Ratio**
Base Case	21.7 %	3748.31	2.51
Capital Cost increase by 10 %	19.0 %	3193.19	2.19
Capital Cost increase by 20 %	16.7 %	2638.08	1.92
Reduction in Benefits by 10 %	18.7 %	2818.36	2.15
Reduction in Benefits by 20 %	15.8 %	1888.42	1.80
Delay of 1 year	17.3 %	2842.51	2.38
Delay of 2 years	14.5 %	2019.05	2.26
All impacts (10 % cost increase, 10 % reduced benefits, 1 year delay)	13.4 %	1448.03	1.77
All impacts (20 % cost increase, 20 % reduced benefits, 2 year delay)	8.7 %	-605.21	1.17

IESCO's approach for this analysis is driven by its overall investment needs. Project benefits are therefore computed from the incremental electricity sales that it expects to achieve by implementing all components of its investment plan. Half of those benefits are attributed to this Project. This approach is reasonable when, as is the case for all investments by DISCOs, various components of the investment plan are complementary, and the anticipated benefits (additional sales) will be realized only after all components of the plan are implemented.

The results confirm that IESCO's project is robust, and yields significant benefits under all scenarios. The rate of return remains high and above the threshold under all iterations, except for the most extreme assumption regarding capital cost increase, delays and reduction in benefits. The Net Present Value is also positive under all iterations, except for the last case. The Benefit/Cost ratio also remains high, and its value is stable, across all iterations.

LESCO

Table 7 presents a summary of the analysis conducted for LESCO's investments:

Table 7 : Economic Analysis results for LESCO			
	ERR	**NPV**	**B/C Ratio**
Base Case	36.9 %	10208.31	4.73
Capital Cost increase by 10 %	31.7 %	9425.77	4.30
Capital Cost increase by 20 %	27.7 %	8643.22	3.94
Reduction in Benefits by 10 %	31.2 %	8404.93	4.26
Reduction in Benefits by 20 %	26.0 %	6601.55	3.79
Delay of 1 year	25.8 %	8452.80	4.56
Delay of 2 years	20.6 %	6856.87	4.40
All impacts (10 % cost increase, 10 % reduced benefits, 1 year delay)	20.3 %	6042.42	3.73
All impacts (20 % cost increase, 20 % reduced benefits, 2 year delay)	13.3 %	2355.30	2.93

LESCO has computed the benefits of the Project as (i) additional power sales, (ii) lower power purchase costs, (iii) reduction in the loading of transformers and grid stations (which also reduce losses), and (iv) benefits due to improved power supply, reductions in breakdowns and load shedding.

The results of the analysis are similar to those for IESCO, and the investments yield significant benefits under all scenarios. The rate of return remains high and above the threshold under all iterations. The Net Present Value is also positive. The Benefit/Cost ratio remains higher than unity, and its value is fairly stable across all iterations.

MEPCO

Table 8 presents a summary of the analysis conducted for MEPCO's investments:

Table 8: Economic Analysis results for MEPCO			
	ERR	**NPV**	**B/C Ratio**
Base Case	17.2 %	7286.21	3.53
Capital Cost increase by 10 %	15.5 %	6625.83	3.21
Capital Cost increase by 20 %	13.9 %	5965.44	2.94
Reduction in Benefits by 10 %	15.4 %	5974.72	3.20
Reduction in Benefits by 20 %	13.3 %	4517.47	2.84
Delay of 1 year	14.7 %	5928.04	3.40
Delay of 2 years	12.8 %	4693.33	3.28
All impacts (10 % cost increase, 10 % reduced benefits, 1 year delay)	11.8 %	4019.10	2.79
All impacts (20 % cost increase, 20 % reduced benefits, 2 year delay)	6.8 %	109.09	2.01

MEPCO has computed the benefits of the Project as: (i) increase in energy sales due to enhanced transmission and transformation capacity, and (ii) savings in power purchase costs, as a result of the reduction in losses, following these investments.

The results of the analysis presents a mixed picture – base case returns are high (and well above the threshold level); however, the returns are susceptible to capital cost increases, delays, and reductions in benefits. The ROR declines under all iterations. Under the most extreme case – involving a two year delay, a 20% increase in capital costs, and 20 % reduction in anticipated benefits – the rate falls to 6.8%. The NPV computations present a similar picture, and fall significantly in case of the most extreme assumptions. These results highlight the need for implementing the Project efficiently, with no delays. Focused management attention and strict monitoring (e.g. of procurement, delivery and construction schedules) would be required during implementation – to ensure that the planned level of benefits is achieved.

NTDC

The results of the analysis for NTDC are summarized in Table 9.

Table 9 : Economic Analysis results for NTDC

	ERR	NPV	B/C Ratio
Base Case	32.9 %	4135.54	2.68
Capital Cost increase by 10 %	29.6 %	3792.61	2.30
Capital Cost increase by 20 %	27.4 %	3614.22	2.14
Reduction in Benefits by 10 %	29.7 %	3407.15	2.30
Reduction in Benefits by 20 %	26.6 %	2792.68	2.04
Delay of 1 year	26.3 %	3417.07	2.27
Delay of 2 years	22.3 %	2867.48	2.01
All impacts (10 % cost increase, 10 % reduced benefits, 1 year delay)	22.1 %	2634.05	1.84
All impacts (20 % cost increase, 20 % reduced benefits, 2 year delay)	16.0 %	1461.98	1.35

The main benefit of the planned investments by NTDC is incremental sales to DISCOs – in this case MEPCO, as the grid station and transmission lines are in the MEPCO service area.

The results indicate that the Project is robust and yields substantial benefits. This is confirmed by all indices – the base case ROR is 32.6%. Furthermore, the ROR remains above threshold levels, the NPV is positive, and the Benefit/Cost ratio is greater than one, for all simulations.

B. Financial Analysis of the WAPDA System and Project Companies

B.1 Financial performance of the power sector

Background. The power sector in Pakistan is in a stage of transition from a vertically integrated sector controlled by WAPDA to an unbundled sector with nine distribution companies[39] (DISCOs), a transmission company – National Transmission and Dispatch Company (NTDC), four thermal generation companies, a hydro generation owned by WAPDA, and 16 IPPs. There is a single buyer of wholesale power – the Central Power Purchase Agency (CPPA) - which is housed in NTDC. Though WAPDA was unbundled in 1998, the successor companies were not given financial autonomy. Financial management

[39] 8 DISCOs – LESCO, FESCO, MEPCO, GEPCO, IESCO, HESCO, PESCO and QESCO – were formed by unbundling the distribution operations of WAPDA, whereas KESC already existed as a separate entity.

of the sector was handled by WAPDA by transferring cash from surplus companies to those with deficits. Until 2005 the power purchase price (PPP) was set by WAPDA on an "ability to pay" basis, i.e., DISCOs with better finances were charged higher PPP thereby using a differential bulk tariff to transfer cross-subsidy from one company to the other. However, since 2005 NEPRA determined PPP for different DISCOs has been established thereby eliminating this avenue of cross-subsidy. Since WAPDA continued to be responsible for managing the financial deficit of the sector it retained the cash receipts of the sector and used it to manage cash requirements across companies, thereby creating large cross obligations between companies in the form of receivables and payables. These cross-obligations – in the form of receivables in the books of cash surplus companies, and payables in the deficit companies – will need to be settled over the next few years. Since the Bank project will finance four of the eight DISCO's in the WAPDA system, this section focuses on the WAPDA system only.

Financial Autonomy to DISCOs. In the current year, financial autonomy is planned to be granted to the companies in a phased manner. While this will be advantageous to profitable companies, i.e., IESCO, FESCO, GEPCO and LESCO, it will be challenging for the four loss making companies. In particular security of power purchase payments is a concern in order to ensure timely payments to generators and to avoid penal surcharges for late payment. The GoP has put in place cash management support by requiring the companies to transfer all revenue collections to an escrow account. The first charge on the escrow will be for power purchase payments and an overdraft facility with GoP guarantee will be provided to provide sufficient advance intimation in case of substantial shortages.

Financial Performance. The WAPDA system has experienced a rapid increase in electricity demand – electricity sales have increased at a rate of 9.4% p.a. between FY04 and FY07. The WAPDA system's energy loss has reduced gradually in this period from 25.5% in FY04 to 23.2% in FY07. However, despite the reduction in energy loss, the system's financial performance has deteriorated rapidly from an operating cash surplus in FY04 to an increasing operating cash deficit from FY05 onwards. This deterioration is due to (i) rapidly increasing fuel prices and hence generation costs; (ii) no increase in retail tariff between 2003 and 2007. Financial deficits from operations have increased to reach a level of Rs.29.7 billion in FY07. The deficit has been financed primarily through non-payment of debt service dues to the Government of Pakistan, curtailing capital expenditure as well as system maintenance, and through commercial borrowings.

In February 2007 NEPRA – the national power regulator – has issued the tariff determination for each of the eight DISCOs in the WAPDA system, providing an overall increase of an estimated 27.5% in revenue per kWh from tariffs for all eight DISCOs taken together. However, the consumer tariffs notified by GoP are only about 6% higher on an average in revenue per kWh than the earlier tariffs. But with GoP committing to shoulder the differential between determined and notified tariffs as subsidy, it is expected that all the DISCOs would be in a much better financial position going forward. Timely payment of tariff subsidies would be critical towards this end. A summary analysis of the impact of NEPRA tariff determination is presented below:

Table 1A: Impact of NEPRA Tariff Determination of February 2007

	Average Sale Rate under Old Tariff	Average Sale Rate under New Tariff (Determined)	Increase in Average Sale Rate (Determined)	Average Sale Rate under New Tariff (Notified)	Increase in Average Sale Rate (Notified)	Sale of Power in FY07	Tariff Subsidy for FY07 (Last Four Months)	Projected Sale in FY08	Tariff Subsidy for FY08
	Rs./kWh	*Rs./kWh*	*%age*	*Rs./kWh*	*%age*	*MUs*	*mill Rs.*	*MUs*	*mill Rs.*
IESCO	4.26	4.69	10.0%	4.30	0.8%	7065	921	7728	3023
LESCO	4.33	4.94	14.1%	4.63	6.8%	13947	1462	15698	4938
MEPCO	3.95	4.85	22.6%	4.20	6.1%	10334	2243	11325	7376
HESCO	4.41	7.10	61.1%	4.75	7.6%	4843	3806	5295	12486
GEPCO	4.10	4.91	19.6%	4.31	5.1%	6110	1210	6879	4087
QESCO	3.14	5.20	65.8%	3.62	15.3%	3965	2093	4162	6589
PESCO	3.48	5.37	54.2%	3.67	5.5%	8459	4782	7810	13245
FESCO	3.78	4.53	20.0%	4.01	6.3%	8600	1479	8945	4615
WAPDA	**3.98**	**5.08**	**27.5%**	**4.23**	**6.1%**	**63324**	**17997**	**67842**	**57843**

It is seen that the tariff subsidy to be paid by GoP, calculated as the difference between revenues from determined and notified tariffs, is estimated at Rs.18 billion for the last four months of FY07, and Rs.58 billion for FY08.

Financial Projections for the Sector

The financial projections for the WAPDA system have been developed under three scenarios – base case, high case (representing a financially favorable turnout of key parameters) and low case (representing a financially unfavorable turnout of key parameters). The Base case projections are presented in Table 1, along with the sector's past financial performance. Impact on financial performance under the other two scenarios is discussed later in this section. Key assumptions for the projections are provided below:

1. ***Growth in Electricity Sales.*** Increase in sales results in greater GoP subsidy on account of tariff differential, and also early need for generation capacity augmentation. Therefore, increased sales lead to greater financial pressure on the sector. Therefore, higher sales have been assumed in the low case scenario and relatively lower growth in sales is assumed for the high case. For the year FY08, overall sales to consumers is projected to grow at 8% p.a. in the base case, and at 6% and 10% in the high and low cases respectively. In the following years, the rate of growth is assumed to be 7%, 5% and 9% in the three cases respectively.

2. ***Energy Losses.*** The reduction in energy losses at transmission and distribution levels is assumed as follows:

Scenario Name	Base Case	High Case	Low Case
Annual Reduction in Distribution Losses	0.5%	1.0%	0.0%
Annual Reduction in Transmission Losses	0.1%	0.2%	0.0%

3. ***Collection Efficiency.*** Collection efficiency of the sector (from consumers) is assumed to improve by 1% in the base case, 2% in high case and 0% in low case – in each case reaching a maximum of 95%. Tariff Differential Subsidy from Government of Pakistan is assumed to be paid in full and on time.

4. ***Fuel Price Escalation.*** In projecting the cost of power purchase, the fuel price escalation is assumed to be 5% p.a. in the base case, 3% p.a. in high case and 7% p.a. in the low case. In confirmation to the provisions of the new tariff order, changes in cost of power purchase have been assumed to be passed

through in tariff. However, the revision of tariffs to reflect higher pass-through is assumed to take place once every six months.

5. ***Generation***. Assumptions with regard to generation are:
   a. Thermal and Hydel Generation from existing public sector plants is assumed to remain at FY07 levels. All additional generation is assumed to come from IPPs and new power plants.
   b. Plant load factors for IPPs are assumed to improve from less than 60% in FY07 to about 80% in FY14.
   c. Schedules for CPP and EPP charges for existing and future IPPs have been calculated based on the schedules for some sample plants, adjusted for the date of plant commissioning.

6. ***Establishment and Maintenance expense.*** Escalated at projected inflation rate of 5% p.a.

7. ***Inflation and Foreign Exchange Rate.*** Domestic and International Inflation, and the Pakistan Rupee – US Dollar exchange rate have been projected as per the SASPR projections for project analysis.

8. ***Internal Resource Requirement for Investments.*** With the expansion of the sector, internal resource requirements of the sector are likely to increase. However, as a conservative estimate, the internal resource requirement is assumed to remain at the FY07 levels.

Conclusions from Financial Projections

The detailed projections in the base case are presented in Table 1, whereas the sector deficit under various scenarios is shown below.

Sector Operating Cash Deficit/Surplus

	FY08	FY09	FY10	FY11	FY12
Base Case	-8930	-11712	-7925	-8274	-7543
High Case	4761	3258	8434	2264	3056
Low Case	-23522	-29374	-32149	-30333	-33647

million Rs.

It is seen that despite a significant improvement in financial performance owing to an increase in tariff from NEPRA determination of February 2007, the WAPDA system would continue to require support from GoP in addition to the tariff subsidy already committed in the base case as well as the low case. Even in the high case, despite the improvements in collection efficiency and reduction of losses, the WAPDA system is able to nearly break-even only if the tariff subsidies are paid in time. In addition, GoP would also have to arrange internal resource generation through equity contribution for augmenting capacity and access. However, the aggregate picture hides challenges faced by individual DISCOs. The following sections provide an entity level analysis of HESCO, IESCO, LESCO, MEPCO and NTDC which are proposed to be beneficiaries of the Bank project.

Table-1 : Financial Performance for FY04-FY07 and Projections for FY08-FY12 for WAPDA System

(All figures in million Rs.)

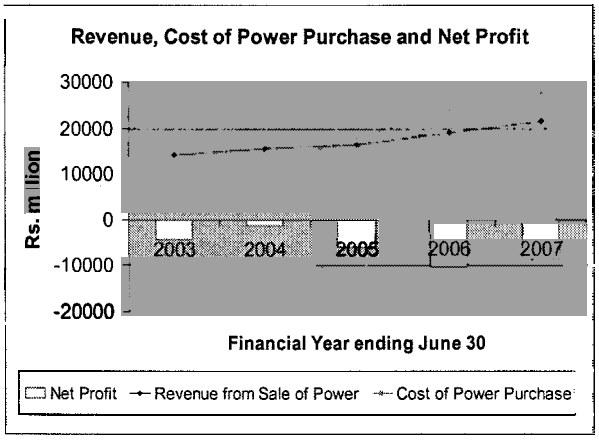
	Historical			Projections				
Financial year ending June 30	2004-05 (actuals)	2005-06 (actuals)	2006-07 (actuals)	2007-08 (proj.)	2008-09 (proj.)	2009-10 (proj.)	2010-11 (proj.)	2011-12 (proj.)
Energy Balance								
Electricity Generated and Imported (Gross) (MkWh)	73,521	82,225	87,837	94,883	101,692	108,938	116,648	124,854
Electricity Purchased by T&D system (MkWh)	71,662	80,320	85,869	92,781	99,440	106,525	114,065	122,088
Transmission loss (%)	7.1%	7.2%	7.1%	7.0%	6.9%	6.8%	6.7%	6.6%
Distribution loss (%)	17.6%	17.2%	16.7%	16.2%	15.7%	15.2%	14.7%	14.2%
Electricity sold to disco consumers (MkWh)	52,835	58,549	62,561	67,566	72,295	77,356	82,771	88,565
Overall system loss (including aux. cons)	24.8%	24.1%	23.2%	22.8%	22.2%	21.6%	21.0%	20.4%
Revenue and Collection								
Average revenue of discos (Rs/kWh) (Determined)	3.96	4.03	4.35	5.17	5.34	5.52	5.64	5.76
Average revenue of discos (Rs/kWh) (Notified)	3.96	4.03	4.06	4.31	4.49	4.66	4.79	4.91
Collection % of discos	94%	91%	88%	92%	92%	93%	93%	93%
Sector Cash deficit projection								
Cash Receipts								
Collection from Sale of Power	200,300	226,300	241,500	299,601	338,775	381,758	425,045	470,863
Collection from GoP subsidy	0	0	24,000	57,843	61,892	66,225	70,860	75,821
Non-operational income	9,200	19,200	12,300	12,915	13,561	14,239	14,951	15,698
Total Cash Receipts (excluding GST, ED, & W/Tax)	209,500	245,500	277,800	370,359	414,228	462,221	510,856	562,381
Cash Outflow to operations								
Power purchase payments to IPPs and New Capacity	106,000	135,700	154,800	221,119	263,241	302,741	349,603	398,168
EPP Charges				153,502	186,950	224,171	257,810	293,608
CPP Charges				67,617	76,291	78,570	91,793	104,560
Fuel Cost	51,700	63,400	84,300	86,829	89,434	92,117	92,117	92,117
Debt Service Liability - GoP	21,500	22,000	17,800	17,800	17,800	17,800	17,800	17,800
Debt Service Liability - Others	8,300	10,500	8,800	8,800	8,800	8,800	8,800	8,800
Establishment and Maintenance	26,900	31,600	36,500	38,508	40,433	42,455	44,577	46,806
Other payments	6,600	6,800	5,300	6,233	6,233	6,233	6,233	6,233
Total	221,000	270,000	307,500	379,289	425,941	470,145	519,130	569,925
Surplus/(deficit) from operations	-11,500	-24,500	-29,700	-8,930	-11,712	-7,925	-8,274	-7,543
Internal resources required for investments	12,674	23,900	36,000	36,000	36,000	36,000	36,000	36,000
Total Surplus/(deficit) of the sector	**-24,174**	**-48,400**	**-65,700**	**-44,930**	**-47,712**	**-43,925**	**-44,274**	**-43,543**
Sector Surplus / Deficit (including Subsidy)	**-24,174**	**-48,400**	**-89,700**	**-102,773**	**-109,605**	**-110,149**	**-115,135**	**-119,364**
Financing of Deficit								
Net GST / W.H.Tax	-2,300	400	400					
Bank Borrowing - Short Term	0	4,200	52,400					
WAPDA Bonds / SAKUK Bond	0	8,000	0					
GoP Subsidy	0	0	0					
Conversion of Debt Service into GoP Equity	21,500	22,000	0					
Development Financing	500	6,800	11,300					
Net Change in Cash Balance	**-4,474**	**-7,000**	**-1,600**					

B.2 Hyderabad Electricity Supply Company (HESCO)

A summary of historical financial statements of HESCO for the period 2002-03 to 2006-07, along with the financial projections for 2007-08 to 2013-14 is provided at Table 2.

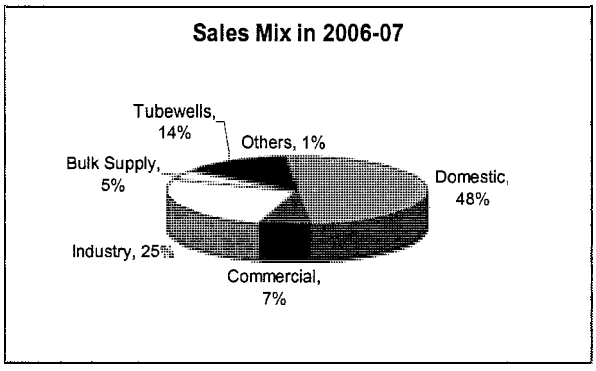
Historical Performance

Profitability. HESCO has made financial losses consistently since its inception and financial loss in FY07 was Rs.8.5 billion – nearly one-third of its revenue in the year, with accumulated losses of nearly Rs.40 billion. In the past, HESCO has been dependant on subsidy for survival. Its revenue was not adequate to cover cash operating expenditure in most years, and in FY07 it was even inadequate to cover its power purchase cost. HESCO's finances have deteriorated rapidly due to increase in its power purchase cost by 32%, 14% and 11% in FY05 FY06 and FY07 respectively. However in the future, higher tariffs as per the NEPRA determination of February 2007 are likely to ease the financial situation for the company, as discussed in detail in the section on financial projections.



Energy Losses. HESCO has high level of energy losses as well as poor collection efficiency – both of them structural problems contributing to poor financial performance. Energy losses have increased from 34.9% in FY03, to 36.9% in FY07 – an improvement from 39.2% in FY06. The increase in energy losses is due to higher technical as well as commercial losses. While higher technical losses are caused at least partially by a shift in sales mix from high tension to low tension consumers, the higher commercial losses mainly represent theft of power.

Sales Mix. The sales mix of HESCO is a key factor affecting its financial performance. HESCO's sales to the remunerative industry category have reduced from 33% of total sales in FY00 to 25% in FY07. The sales growth has been focused largely in the subsidized categories, particularly domestic which has increased from 43% of total sales in FY00 to 48% in FY07. Also, this change in sales mix from high tension to low tension consumers has contributed to higher technical losses from sale of power to a large number of dispersed consumers.



Collection Efficiency. The collection performance of HESCO is poor – in FY07 it collected 85% of bills. Gross receivables have been steadily climbing and were at 431 days of sales billing in FY07. Poor collections have led to large provisions for bad and doubtful debts cumulating to over Rs.8 billion over the last five years. This level of collection efficiency indicates serious problems in adequacy of existing commercial systems and their implementation.

Tariff Adequacy. Between FY03 and FY06, HESCO's cost of power purchase (per unit) has increased at a cumulative average growth rate (CAGR) of nearly 7.5% per annum. However, during the same period, the average revenue from tariffs has grown at a CAGR of only about 3% per annum. Given that cost of power purchase accounts for more than 75% of the total cost of supply, the rapid decline in financial health of the company is evident. However, with the February 2007 tariff determination by NEPRA, tariff adequacy is likely to improve substantially going forward.

Capital Structure. HESCO's net worth which was wiped out in FY01 and reinstated in FY02 by conversion of GoP debt into equity, as well as an infusion of Rs.8 billion in FY05, has once again been wiped out and now stands at negative Rs 11 billion in FY07. The company needs to address its key financial problems, i.e. high energy loss, poor collection efficiency, and inadequate tariff adjustments, in order to address this financial hemorrhage. Even though the NEPRA tariff determination of February 2007 provides adequate tariff adjustment, HESCO would need to curb energy losses and improve collection efficiency to ensure that going forward the company does not require additional subsidy (over and above the tariff subsidy already declared by GoP against NEPRA determination) to take care of its operational shortfalls, debt service requirements and investment requirements until then. A financial restructuring plan consisting of equity infusion and possibly restructuring of existing debt will then need to be worked out to introduce financial sustainability.

Impact of NEPRA Tariff Determination of February 2007

The NEPRA tariff determination of February 2007 for HESCO provides an estimated increase of 61% in "average determined tariff", against which the Government of Pakistan has provided an estimated increase of about 7.6% in the "average sales tariff" that the consumers have to pay. The difference between these two is to be paid by the government as revenue subsidy. The tariff determination also provides for an automatic pass-through of changes in power purchase price. However, actual DISCO performance in the future may vary from the assumptions used by NEPRA in its tariff determination, especially with regard to – rate of sales growth, sales mix, T&D loss reduction achieved, cost of borrowings and improvements in collection efficiency (which affects provisioning for bad and doubtful debts). The NEPRA determination has set a transmission and distribution loss target of 33.0% for FY07, against which, the actual achievement was during FY07 was 36.9 percent. Similarly, NEPRA has allowed a provision for bad debt of 2% of the annual billing, as against a provision of about 8% in FY07. Also, the pass-through of changes in power purchase price would be effective once in six months, leaving HESCO vulnerable to fluctuations in PPP in the interim. Unless HESCO quickly gears up to the challenge of efficiency improvements, it is likely that the improved tariff adequacy through the February 2007 NEPRA determinations may yet be insufficient to cover the DISCO's losses.

Table-2
Summary of Historical Financial Performance (FY03 to FY07) and Projections (FY08 to FY14) (Base Case)
for Hyderabad Electric Supply Company

		Historical					Projections						
	Unit	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Income Statement													
Total Revenue	Mill/Rs.	15176	16449	17109	20211	26476	37740	41241	45940	50486	55441	60849	66745
Power purchase expense	Mill/Rs.	12729	12490	18132	23804	27744	30424	32769	35313	38073	41068	44318	47847
Other operational expenditure (excl. depreciation)	Mill/Rs.	5268	3632	3400	4787	5584	6086	6565	7125	7665	8220	8793	9386
Total operational expenditure (excl. depreciation)	Mill/Rs.	17997	16122	21532	28591	33328	36510	39334	42438	45738	49288	53111	57233
Profit before interest, depreciation and tax	Mill/Rs.	-2821	327	-4423	-8381	-6852	1229	1907	3503	4748	6154	7738	9511
Interest	Mill/Rs.	647	698	637	642	599	1138	1396	1900	2301	2534	2602	2519
Depreciation	Mill/Rs.	682	757	902	994	1037	1189	1318	1438	1545	1633	1711	1784
Tax	Mill/Rs.	0	0	0	0	38	187	204	228	316	695	1199	1823
Net Profit	***Mill/Rs.***	***-4151***	***-1128***	***-5961***	***-10017***	***-8526***	***-1285***	***-1011***	***-63***	***587***	***1291***	***2227***	***3385***
Balance Sheet													
Net Fixed Assets	Mill/Rs.	10711	12104	14750	16494	16663	20183	22610	24666	26212	27141	27686	28042
Capital Work in Progress	Mill/Rs.	1910	2021	3431	2324	3186	4709	3746	3494	3091	2561	2256	2140
Other long term assets	Mill/Rs.	23	46	26	8	4	10	15	19	23	27	30	32
Long term assets	Mill/Rs.	12644	14172	18207	18825	19853	24902	26371	28179	29327	29728	29971	30214
Net Accounts Receivable	Mill/Rs.	956	540	631	1773	6754	8095	9461	10884	12324	13765	15188	16572
Receivables from Associated Companies and GoP	Mill/Rs.	2931	1881	6359	5147	6433	2666	2666	2666	2666	2666	2666	2666
Other current assets	Mill/Rs.	2721	3153	3564	6258	8112	8788	9618	10691	11721	12823	14011	15298
Current Assets	Mill/Rs.	6607	5575	10554	13178	21299	19549	21745	24241	26711	29254	31866	34536
Total Assets	***Mill/Rs.***	***19252***	***19747***	***28761***	***32004***	***41151***	***44451***	***48116***	***52420***	***56038***	***58982***	***61836***	***64751***
Networth	Mill/Rs.	6755	5628	7510	-2412	-10938	-12223	-13235	-13298	-12711	-11420	-9194	-5809
Long term debt	Mill/Rs.	4985	4924	5026	4479	4165	8508	10479	12890	14919	16050	15894	15173
Security Deposit	Mill/Rs.	410	458	511	621	688	771	859	952	1049	1150	1257	1369
Deferred credit	Mill/Rs.	2257	2560	3307	3981	4295	5675	5957	6239	6337	6420	6635	6830
Employee retirement benefit	Mill/Rs.	2583	2618	2723	2937	3207	3514	3862	4253	4694	5189	5746	6370
Long term liability	Mill/Rs.	16991	16188	19077	9605	1417	6245	7922	11036	14286	17389	20337	23933
Other current liabilities	Mill/Rs.	2130	2802	3214	4618	7011	6180	6656	7173	7734	8342	9002	9719
Payable to NTDC / CPPA for Supplies - Plan deficit	Mill/Rs.	0	673	4795	17410	32725	31854	30984	30113	29243	28372	27502	26631
Payable to Associated Companies	Mill/Rs.	131	83	1674	369	0	0	0	0	0	0	0	0
Current liabilities	Mill/Rs.	2261	3558	9683	22398	39736	38206	40194	41384	41752	41593	41499	40817
Total Liabilities	***Mill/Rs.***	***19252***	***19746***	***28760***	***32003***	***41153***	***44451***	***48116***	***52420***	***56038***	***58982***	***61836***	***64751***
Ratio Analysis													
Current Ratio (Current Assets / Current Liabilities)		2.57	1.40	1.04	0.58	0.44	0.51	0.54	0.58	0.64	0.70	0.75	0.83
verage Ratio (Total Liabilities / Tangible Networth)		1.85	2.51	2.83	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve
Debt Service Coverage Ratio		1.5	3.2	-ve	2.7	3.8	-ve	-ve	0.3	0.8	1.1	1.5	1.7
Self Financing Ratio		40%	88%	-ve	92%	100%	-ve	-ve	-ve	-ve	13%	86%	100%
Account Receivables (days of sales billing)		23	12	14	33	111	122	129	131	133	134	133	131
Gross Payables (days of power purchase exp.)		0	20	97	267	431	382	345	311	280	252	227	203
		14966	15623	16049	16863	18989	20797	23241	26724	30090	33825	37968	42562
Collection Efficiency		100%	97%	96%	85%	85%	86%	87%	88%	89%	90%	91%	92%
including arrears		74%	73%	71%	64%	60%	51%	50%	50%	49%	49%	50%	50%
Return on Equity (excluding internal accruals)		-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	2%	4%	8%	12%
Return on Capital		-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	8%	14%	19%	24%
Return on Net Fixed Assets		-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	2%	5%	8%	12%
Debt Networth Ratio		0.7	0.9	0.7	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve

Financial Projections for 2007-08 to 2013-14

Financial projections of HESCO have been prepared under three scenarios – base case, high case (representing a financially favorable turnout of key parameters) and low case (representing a financially unfavorable turnout of key parameters). The Base case projections are presented in Table 2, along with the company's past financial performance. Impact on financial performance under the other two scenarios is discussed later in this section. Key assumptions for the projections are provided below:

Power Purchase Price. Since HESCO purchases power from a single buyer it has no control on the price of power it gets from the CPPA. While the NEPRA determination provides for a pass-through of increase in PPP, there would be a delay of up to six months during which the burden of additional cost would have to be shouldered by HESCO. For the purpose of testing the impact of power purchase price on HESCO's finances, annual increase of 3% has been assumed in the base case, 0% in the high case and 5% in the low case.

Tariff Increase. The impact of NEPRA tariff determination of February 2007 and the new GoP consumer tariffs has been estimated based on HESCO's consumer mix across consumer categories and tariff slabs. The increase in determined tariff is estimated to be 61%, whereas the increase in consumer tariffs is estimated to be 7.6%. The average sales tariff and average determined tariff would vary under different scenarios mainly due to changes in power purchase price, as shown below:

Average Sales Tariff

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	4.47	4.62	4.90	5.10	5.30	5.50	5.70
High Case	4.47	4.50	4.54	4.57	4.61	4.64	4.68
Low Case	4.47	4.70	5.19	5.53	5.89	6.27	6.66

Rs./kWh

Average Determined Tariff

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	6.93	7.08	7.36	7.56	7.76	7.96	8.16
High Case	6.93	6.96	7.00	7.03	7.07	7.10	7.14
Low Case	6.93	7.16	7.65	7.99	8.36	8.73	9.12

Rs./kWh

Energy loss reduction trajectory. HESCO has high distribution losses (including secondary transmission losses) compared to some of the other distribution companies in Pakistan. As discussed earlier, NEPRA has fixed a rather stringent target for loss reduction for HESCO. Annual loss reduction of 1.5%, 2% and 0.5% have been assumed under the base case, high case and low case respectively, and resulting in the following loss reduction trajectories:

Distribution Losses

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	35.4%	33.9%	32.4%	30.9%	29.4%	27.9%	26.4%
High Case	34.9%	32.9%	30.9%	28.9%	26.9%	24.9%	22.9%
Low Case	36.4%	35.9%	35.4%	34.9%	34.4%	33.9%	33.4%

Sales growth. For FY08, a sales growth rate of 9%, 10.5%, and 7% has been assumed in the Base, High and Low cases. After FY08, sales growth rate of 7%, 9% and 5% has been assumed in the cases respectively.

Terms of new borrowing. New borrowings of HESCO would be from international sources (on-lent by GoP), with a moratorium period of 5 years, repayment of 10 years, and an interest rate of 12%

irrespective of the scenario. HESCO is expected to borrow only from international sources for its investment program.

Investment Program. A total investment of Rs.21 billion is expected to be carried out between FY08 and FY14.

Deficit Financing. Cash flow deficits are assumed to be financed by short term borrowings at an interest rate of 12.5% p.a.

Results of Scenario Analysis

Earnings before Interest, Tax and Depreciation

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	3193	3926	5623	6915	8347	9932	11675
High Case	4419	5937	7640	9545	11684	14084	16763
Low Case	2032	1855	3143	3594	4101	4671	5302

million Rs.

Net Profit

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	-1285	-1011	-63	587	1291	2227	3385
High Case	-6	985	1920	3098	4540	6195	8087
Low Case	-2553	-3482	-3465	-4268	-5026	-5760	-6524

million Rs.

GoP Subsidy

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	12991	13901	14874	15915	17029	18221	19496
High Case	13170	14355	15647	17055	18590	20264	22087
Low Case	12812	13453	14126	14832	15574	16352	17170

million Rs.

Deficit Financing

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	172	2382	1544	678	103	116	0
High Case	0	0	0	0	0	0	0
Low Case	1231	4754	5061	5660	6414	7165	8412

million Rs.

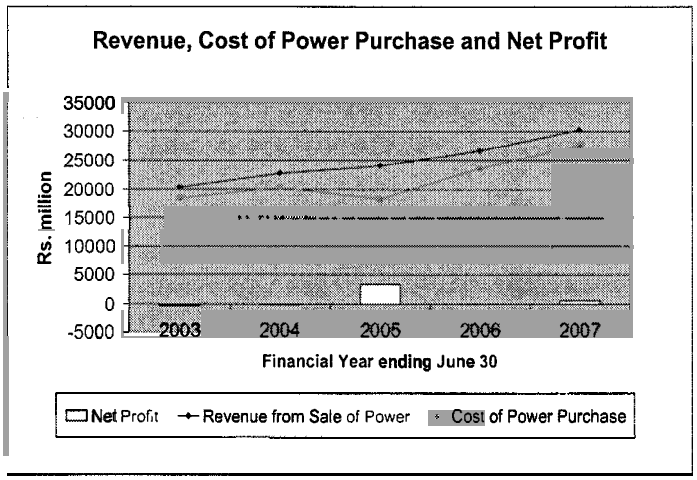
Conclusions. With the NEPRA tariff determination of February 2007, HESCO has a positive cash flow from operations in FY08 (before working capital adjustments and financial costs) even in the pessimistic scenario (low case), but the company would require deficit financing to meet the overall cash gap, unless it strives hard to achieve energy loss reduction. An explicit commitment from GoP on providing subsidy to cover the losses for the first eight months of FY07 would be critical in ensuring HESCO's healthy financial performance in the future. In the absence of such support, the resulting deficit during the year is financed through short term borrowings, leading to heavy interest burden on the company. Government of Pakistan has offered to subsidize consumer electricity tariffs starting from February 2007 and this would imply a payment of about Rs.104 billion in the least sales growth scenario (low case) and Rs.121 billion in the highest growth scenario (high case), over the 2008-14 period. The subsidy outgo would be even higher if the government decides not to pass on the impact of increase in power purchase cost to the consumers. HESCO's financial performance would critically depend on reducing energy losses and improving collection efficiency. In addition it needs to focus on prioritizing its investment program to reduce addition of debt. Load growth and changes in sales mix, especially in view of rural electrification program may strain HESCO's financials in the future and may have to be addressed through appropriate revision of tariff determination once such a stage is reached.

B.3 Islamabad Electricity Supply Company (IESCO)

A summary of historical financial statements of IESCO for the period 2002-03 to 2006-07, along with the financial projections for 2007-08 to 2013-14 is provided at Table 3.

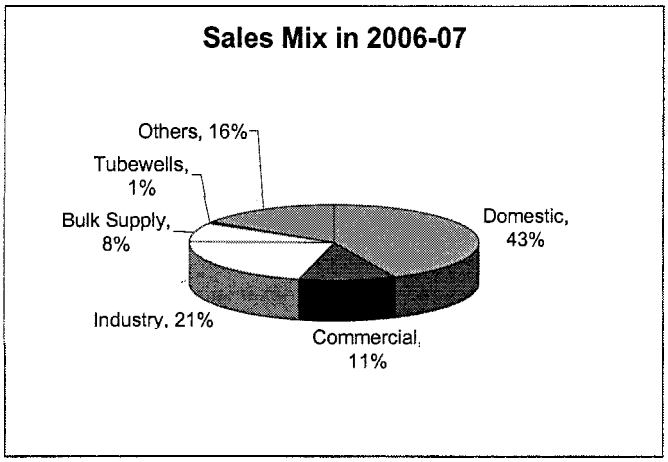
Historical Performance

Profitability. **IESCO's revenues have consistently been adequate to cover its cash operating** expenses, though full cost coverage has been very sensitive to the power purchase cost. IESCO reported financial losses from FY02 to FY04 – corresponding to the period when PPP was set by WAPDA on a "capacity to bear" level. In FY05, when the NEPRA notification reduced PPP from Rs. 3.49/kWh to Rs. 2.85/kWh, IESCO recorded its highest profit of Rs. 3.5 billion. Subsequently PPP increased to 3.27/kWh and IESCO suffered a minor loss of Rs.32 million in FY06. In FY07, IESCO has made a profit of Rs.512 million. The graph illustrates how the profitability has varied with power purchase cost.



Energy losses. IESCO's energy losses have been at a reasonable level of 11% of distribution input during FY03 and FY04, but have gone up with transfer of 132kV and 66kV secondary transmission assets to distribution (along with the associated losses), and stood at 13.7% during FY07. The slight increase in energy losses over the last couple of years (13% in FY05, 13.3% in FY06) may be indicative of increasing technical losses due to system overloading – thus the need to enhance investments.

Sales Mix. IESCO's sales mix consists of four major categories – domestic (43%), Industry (21%), Commercial (11%), and Railway traction (14%) – which constitute 90% of its load. Of these domestic and commercial have been increasing rapidly – both in absolute amount and as a proportion of total sales. While domestic has increased from 42% in FY01 to 43% in FY07, commercial sales have increased from 8% to 11% over the same period. Industrial sales have grown marginally and have dropped as a proportion of total from 23% to 21% over this period. Railway traction has remained largely stagnant.



Collection Efficiency. IESCO has healthy collection efficiency – in FY07 it collected almost 100% of its current year billing. Gross receivables for the company stood at 44 days as of June 30, 2007, which is broadly consistent with the billing cycle across consumer categories.

Tariff Adequacy. As with all other distribution companies IESCO's finances are very sensitive to PPP though it remains outside its control. Hence increases in PPP need to be passed through to its tariff on a regular basis. This has now been achieved through the NEPRA Tariff Determination of February

2007, which provides for a tariff increase of nearly 10%, though the impact on consumers is much lesser, with most of the increase being subsidized by GoP.

Capital Structure. The IESCO balance sheet has undergone significant restructuring in FY05 primarily through conversion of GoP debt to equity. In FY07 the IESCO capital structure is quite robust and appropriate for its nature of business. Debt to Networth ratio at 0.4 was comfortable (though merits further leveraging), whereas self financing ratio of 100% indicates that the company was able to finance its investments entirely from internal resources. Debt service coverage ratio at 9.8 indicates a large capacity to fund future investments from debt. The current capital structure is adequate for IESCO to meet its long term growth and supply targets.

Impact of NEPRA Tariff Determination of February 2007

The NEPRA tariff determination of February 2007 for IESCO provides an estimated increase of 10% in "average determined tariff", against which the Government of Pakistan has provided an estimated increase of less than 1% in the "average sales tariff" that the consumers have to pay. The difference between these two is to be paid by the government as revenue subsidy. The tariff determination also provides for an automatic pass-through of changes in power purchase price. NEPRA has set a target of 13.41% for the overall loss level (including transmission and distribution losses), which is only marginally lower than the actual loss level of 13.7% in FY07. NEPRA has acknowledged that there is little room for further reduction of losses. Detailed analysis of the impact of NEPRA determination has been carried through financial projections for the distribution company presented in the following section.

Table-3
Summary of Historical Financial Performance (FY03 to FY07) and Projections (FY08 to FY14) (Base Case)
for Islamabad Electric Supply Company

		Historical					Projections						
	Unit	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Income Statement													
Total Revenue	Mill/Rs.	20926	23367	24818	27698	32274	37398	42269	48855	55587	63262	72006	81970
Power purchase expense	Mill/Rs.	18545	20377	18326	23663	27611	31505	35775	40623	46174	52553	59814	68077
Other operational expenditure (excl. depreciation)	Mill/Rs.	1614	2120	2000	3018	2815	3666	4079	4520	5002	5533	6118	6764
Total operational expenditure (excl. depreciation)	Mill/Rs.	20160	22497	20326	26682	30426	35171	39854	45144	51177	58087	65932	74841
Profit before interest, depreciation and tax	Mill/Rs.	767	870	4492	1016	1848	2226	2415	3711	4411	5175	6074	7130
Interest	Mill/Rs.	560	463	397	357	311	404	435	469	468	465	448	425
Depreciation	Mill/Rs.	519	546	599	691	749	905	1016	1101	1183	1263	1343	1421
Tax	Mill/Rs.	0	0	0	0	276	321	337	749	966	1206	1499	1849
Net Profit	***Mill/Rs.***	***-312***	***-139***	***3496***	***-32***	***512***	***596***	***626***	***1392***	***1794***	***2240***	***2784***	***3434***
Balance Sheet													
Net Fixed Assets	Mill/Rs.	9498	9722	10603	12450	13123	16495	18501	19731	20785	21711	22534	23267
Capital Work in Progress	Mill/Rs.	673	981	1314	2081	3365	4277	3022	2332	2237	2189	2166	2154
Other long term assets	Mill/Rs.	8	8	7	12	13	14	15	16	16	17	18	18
Long term assets	Mill/Rs.	10179	10711	11923	14543	16501	20787	21538	22079	23038	23918	24718	25439
Net Accounts Receivable	Mill/Rs.	1856	2130	2787	3621	3676	4298	4624	4954	5331	5762	6253	6813
Receivables from Associated Companies and GoP	Mill/Rs.	25	251	1401	5727	7938	5298	5298	5298	5298	5298	5298	5298
Other current assets	Mill/Rs.	1680	2054	6913	4723	9991	10976	11845	12821	13820	14909	18231	22359
Current Assets	Mill/Rs.	3561	4435	11101	14071	21605	20572	21767	23074	24449	25969	29781	34470
Total Assets	***Mill/Rs.***	***13740***	***15146***	***23024***	***28615***	***38106***	***41359***	***43304***	***45153***	***47487***	***49886***	***54499***	***59909***
Networth	Mill/Rs.	38	-101	6438	6541	7053	7648	8275	9667	11461	13701	16485	19919
Long term debt	Mill/Rs.	4675	3203	2947	2401	2516	3371	3993	3844	3896	3719	3534	3249
Security Deposit	Mill/Rs.	598	680	813	1036	1174	1417	1675	1949	2238	2546	2871	3217
Deferred credit	Mill/Rs.	4369	4638	5068	5766	6583	7824	8048	8250	8430	8588	8723	8836
Employee retirement benefit	Mill/Rs.	1444	1841	1926	2731	2921	3227	3578	3981	4443	4970	5570	6254
Long term liability	Mill/Rs.	11125	10263	17191	18475	20246	23487	25569	27691	30468	33523	37183	41475
Other current liabilities	Mill/Rs.	2211	2518	3460	4917	8907	9166	9277	9249	9051	8639	9832	11191
Payable to NTDC / CPPA for Supplies - Plan deficit	Mill/Rs.	0	2297	2270	5082	8906	8652	8398	8144	7890	7636	7382	7128
Payable to Associated Companies	Mill/Rs.	404	69	103	141	47	53	61	69	78	89	101	115
Current liabilities	Mill/Rs.	2615	4884	5833	10140	17860	17872	17735	17461	17019	16364	17315	18433
Total Liabilities	***Mill/Rs.***	***13740***	***15147***	***23024***	***28615***	***38106***	***41359***	***43304***	***45152***	***47487***	***49886***	***54499***	***59909***
Ratio Analysis													
Current Ratio (Current Assets / Current Liabilities)		0.76	0.79	1.78	1.35	1.05	1.14	1.21	1.31	1.42	1.57	1.69	1.83
Leverage Ratio (Total Liabilities / Tangible Networth)		359.87	-150.92	2.58	3.37	4.40	4.41	4.23	3.67	3.14	2.64	2.31	2.01
Debt Service Coverage Ratio		1.1	1.5	-ve	4.1	9.8	5.8	1.5	2.5	2.9	3.3	6.7	7.1
Self Financing Ratio		30%	100%	-ve	100%	100%	100%	17%	80%	95%	100%	100%	100%
Account Receivables (days of sales billing)		33	34	42	49	44	47	45	41	39	37	35	33
Gross Payables (days of power purchase exp.)		0	41	45	78	118	100	86	73	62	53	45	38
		20761	22516	23477	25893	30242	32752	37495	43583	49738	56769	64798	73965
Collection Efficiency		102%	99%	97%	97%	100%	98%	99%	99%	99%	99%	99%	99%
Return on Networth		-ve	-ve	52%	-ve	7%	8%	8%	14%	16%	16%	17%	17%
Return on Capital		-ve	-ve	35%	-ve	5%	5%	5%	10%	12%	13%	14%	15%
Return on Net Fixed Assets		-ve	-ve	31%	-ve	4%	4%	3%	7%	9%	10%	12%	15%
Debt Networth Ratio		122.8	-ve	0.5	0.4	0.4	0.4	0.5	0.4	0.3	0.3	0.2	0.2

Financial Projections for 2007-08 to 2013-14

Financial projections of IESCO have been prepared under three scenarios – base case, high case (representing a financially favourable turnout of key parameters) and low case (representing a financially unfavourable turnout of key parameters). The Base case projections are presented in Table 3, along with the company's past financial performance. Impact on financial performance under the other two scenarios is discussed later in this section. Key assumptions for the projections are provided below:

Power Purchase Price. The power purchase price for IESCO for FY07 has been assumed to be Rs.3.49 per kWh, consistent with the NEPRA determination. This implies an increase of 6.7 % during the year. For the future years, annual increase in PPP for IESCO has been assumed to be 3 % in the base case, 0 % in the high case and 5 % in the low case.

Tariff Increase. The impact of NEPRA tariff determination of February 2007 and the new GoP consumer tariffs has been estimated based on IESCO's consumer mix across consumer categories and tariff slabs. The increase in determined tariff is estimated to be 10%, whereas the increase in consumer tariffs is estimated to be less than 1%. The average sales tariff and average determined tariff would vary under different scenarios mainly due to changes in power purchase price, as shown below:

Average Determined Tariff

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	4.65	4.76	4.98	5.13	5.29	5.45	5.62
High Case	4.65	4.72	4.83	4.86	4.88	4.91	4.93
Low Case	4.65	4.79	5.09	5.33	5.59	5.86	6.14

Rs./kWh

Average Sales Tariff

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	4.28	4.39	4.61	4.76	4.92	5.08	5.25
High Case	4.28	4.35	4.46	4.49	4.51	4.54	4.56
Low Case	4.28	4.42	4.72	4.96	5.21	5.49	5.77

Rs./kWh

Energy loss reduction trajectory. The overall Energy Loss level prescribed by NEPRA for IESCO for FY07 was 13.4%, which is broadly in agreement with the loss level actually observed in FY07 (13.7%). The NEPRA determination also recognizes the challenge in achieving any further reduction in energy loss. Under the three scenarios, incremental energy loss reduction of 0.2 %, 0.3 % and 0 % have been assumed for Base, High and Low case respectively, resulting in the following loss reduction trajectories:

Distribution Losses

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	13.5%	13.3%	13.1%	13.0%	13.0%	13.0%	13.0%
High Case	13.4%	13.1%	13.0%	13.0%	13.0%	13.0%	13.0%
Low Case	13.7%	13.7%	13.7%	13.7%	13.7%	13.7%	13.7%

Sales growth. Rate of growth of sales has been assumed to be 10.5%, 12% and 8% in the Base, High and Low cases respectively.

Terms of new borrowing. New borrowings of IESCO from domestic sources for investment financing are assumed to have a two year moratorium followed by repayment over seven years. The interest rate assumed is 13 percent. While the moratorium and repayment terms remain the same across

scenarios, the interest rate in the high scenario is 12% and that in the low scenario is 15 percent. Borrowings from International sources (on-lent by GoP) have a moratorium period of 5 years and repayment of 10 years, with an interest rate of 12% irrespective of the scenario.

Investment Program. A total investment of Rs.17 billion is expected to be carried out between FY08 and FY14.

Deficit Financing. Cash flow deficits are assumed to be financed by short term borrowings at an interest rate of 12.5% p.a. However, as in the past, and supported by the February 2007 NEPRA determination, IESCO is expected to be cash surplus in the future and would not require any deficit financing.

Results of Scenario Analysis

Earnings before Interest, Tax and Depreciation

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	2310	2510	3821	4536	5318	6237	7316
High Case	2421	3462	5120	6041	7115	8363	9813
Low Case	2114	1644	2487	2805	3183	3630	4159

million Rs.

Net Profit

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	596	626	1392	1794	2240	2784	3434
High Case	650	1214	2182	2701	3323	4076	4970
Low Case	422	-190	414	472	551	682	883

million Rs.

GoP Subsidy

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	2896	3200	3536	3907	4318	4771	5272
High Case	2935	3288	3682	4124	4619	5173	5794
Low Case	2830	3057	3301	3566	3851	4159	4492

million Rs.

Deficit Financing

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	0	0	0	0	0	0	0
High Case	0	0	0	0	0	0	0
Low Case	0	0	0	0	0	0	0

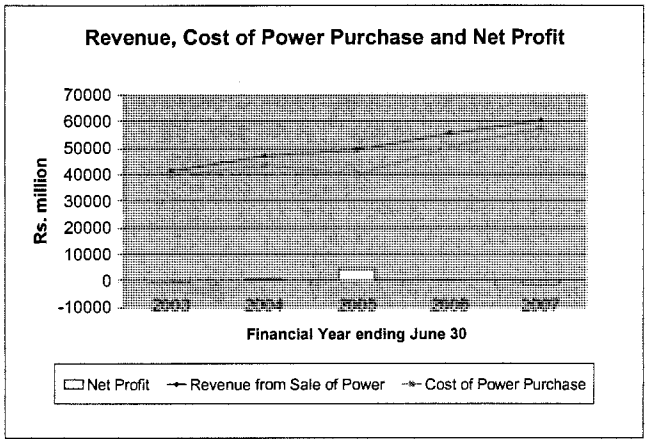
million Rs.

Conclusions. IESCO is expected to have positive net profits under all scenarios. However, it would be important that variations in cost of power purchase get reflected in Tariff revisions with the minimum possible time lag. With the new NEPRA tariffs, IESCO is not expected to need any deficit financing, though Government of Pakistan would be paying a tariff subsidy of Rs. 25 billion over the FY08 to FY14 period. Key financial parameters – the self financing ratio, debt-networth ratio and the DSCR of the company are seen to be comfortable across the years in the base case.

B.4 Lahore Electricity Supply Company (LESCO)

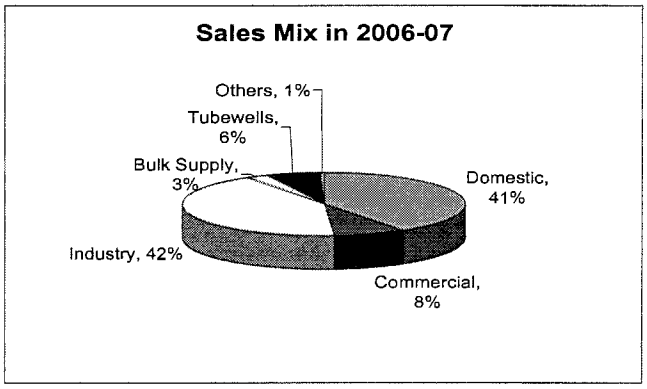
A summary of historical financial statements of LESCO for the period 2000-01 to 2006-07, along with the financial projections for 2007-08 to 2013-14 is provided at Table 4.

Historical Performance



Profitability. LESCO belongs to the group of financially stronger distribution companies which have lower energy losses. It has consistently been able to cover its cash operating expenses for the last five years. The company made positive net profits between FY04 and FY06. While it made highest profits of Rs. 4.4 billion during FY05, during FY06 the company's profits fell to a marginal Rs.98 million, mainly due to an 18% increase in power purchase price. LESCO ended with a loss of Rs. 1.2 billion in FY07 mainly because revised NEPRA tariffs were applicable only from the last four months of the year.

Energy Losses. LESCO's energy losses have reduced steadily from a level of 16% in FY01 to 12.8% in FY07, even after including the 132/66kV losses transferred to the company along with associated assets from NTDC in 2005.



Sales Mix. LESCO has a favorable load and sales mix – in FY07 industrial segment accounted for 42% of sale, domestic 41%, commercial 8%, tubewells 6%, and others (including bulk supply) about 4 percent. The sales mix has remained largely stagnant since FY01. The favorable mix helps in keeping aggregate energy loss low due to higher consumption at high voltage levels with lower technical and commercial losses.

Collection Efficiency. LESCO has a good collection efficiency – in FY07 it collected nearly 99% of its current year billing (90% of current year billing plus opening receivables for the year). As of June 30, 2007 LESCO's net receivables stood at 36 days of billing – which is healthy considering the one month payment cycle.

Tariff adequacy. In the past, LESCO's tariff has always been adequate to cover all cash operating expenses. However, owing to increase in power purchase price, the company's net profit was marginal (Rs. 98 million) in FY06 and a loss of Rs. 1.2 billion in FY07. The February 2007 NEPRA determinations are expected to provide the required tariff adequacy for the DISCO going forward.

Capital Structure. Due to balance sheet restructuring through conversion of GoP debt to equity, as well as due to the profits in FY04, FY05 and FY06, LESCO has a comfortable networth and capital structure. It has a debt to networth ratio of 0.4; a comfortable debt service coverage ratio of 2.0; and a self financing ratio of 25%, as of FY07.

Impact of NEPRA Tariff Determination of February 2007

The NEPRA tariff determination of February 2007 for LESCO provides an estimated increase of about 11.8% in "average determined tariff", against which the Government of Pakistan has provided an estimated increase of about 4.2% in the "average sales tariff" that the consumers have to pay. The difference between these two is to be paid by the government as revenue subsidy. The tariff determination also provides for an automatic pass-through of changes in power purchase price, though with a delay of up to six months. Despite lower energy loss level of 13.1% (inclusive of 132 kV losses) already achieved by LESCO in FY06, the NEPRA determination has provided the company with a target of 14.29% losses for FY07. Against this, the actual loss level achieved is 12.8 percent. The company therefore is placed comfortably on the energy loss reduction front, and its financial performance in the future would also benefit from the resulting higher revenues. The impact of NEPRA determination on the company's financial performance is brought out through financial projections presented in the next section.

Table-4
Summary of Historical Financial Performance (FY03 to FY07) and Projections (FY08 to FY14) (Base Case)
for Lahore Electric Supply Company

	Unit	Historical					Projections						
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Income Statement													
Total Revenue	Mill/Rs.	42667	48260	50703	57497	63811	73626	81821	90295	99636	109931	121280	133792
Power purchase expense	Mill/Rs.	39449	43677	40053	50369	57334	63043	69322	76225	83817	92166	101346	111442
Other operational expenditure (excl. depreciation)	Mill/Rs.	2704	2932	4883	5884	6422	6888	7356	7858	8398	8978	9602	10274
Total operational expenditure (excl. depreciation)	Mill/Rs.	42153	46609	44936	56253	63756	69932	76677	84084	92215	101144	110949	121716
Profit before interest, depreciation and tax	Mill/Rs.	515	1651	5767	1244	54	3695	5143	6212	7420	8787	10331	12076
Interest	Mill/Rs.	731	467	374	342	352	812	949	1163	1222	1204	1186	1142
Depreciation	Mill/Rs.	577	701	762	803	926	1257	1574	1857	2105	2357	2607	2855
Tax	Mill/Rs.	0	0	0	0	0	569	917	1117	1433	1829	2288	2828
Net Profit	***Mill/Rs.***	***-794***	***482***	***4631***	***98***	***-1224***	***1057***	***1703***	***2075***	***2661***	***3397***	***4250***	***5251***
Balance Sheet													
Net Fixed Assets	Mill/Rs.	11050	12685	13553	14946	16310	24071	31173	37071	41772	46306	50549	54494
Capital Work in Progress	Mill/Rs.	233	335	613	1308	1917	2367	2103	1884	1641	1750	1700	1700
Other long term assets	Mill/Rs.	36	37	33	44	45	46	47	48	48	49	49	49
Long term assets	Mill/Rs.	11319	13058	14199	16298	18272	26485	33323	39002	43461	48105	52298	56244
Net Accounts Receivable	Mill/Rs.	4518	4208	4969	5329	5870	6521	7246	8049	8938	9920	11007	12209
Receivables from Associated Companies and GoP	Mill/Rs.	68	94	7279	11031	8569	8449	8449	8449	8449	8449	8449	8449
Other current assets	Mill/Rs.	1837	3648	3585	6904	11807	13081	14199	15359	17161	19655	23611	28562
Current Assets	Mill/Rs.	6422	7950	15832	23264	26246	28050	29894	31857	34548	38024	43066	49220
Total Assets	***Mill/Rs.***	***17741***	***21007***	***30031***	***39562***	***44518***	***54535***	***63217***	***70859***	***78009***	***86128***	***95365***	***105464***
Networth	Mill/Rs.	-1388	-906	7567	7815	6590	7647	9350	11425	14085	17482	21732	26983
Long term debt	Mill/Rs.	3377	2983	2954	2368	2645	6856	9240	10330	10135	9940	9746	9116
Security Deposit	Mill/Rs.	1161	1476	1921	2297	2637	2918	3210	3514	3830	4159	4501	4856
Deferred credit	Mill/Rs.	4397	4898	7428	9498	11359	13587	15415	17155	18807	20373	21850	23240
Employee retirement benefit	Mill/Rs.	3046	3199	4756	6457	8262	10257	12450	14862	17512	20424	23622	27134
Long term liability	Mill/Rs.	10593	11651	24626	28434	31493	41264	49666	57286	64370	72378	81451	91329
Other current liabilities	Mill/Rs.	2160	2506	2198	2934	4855	3908	4297	4725	5196	5713	6282	6908
Payable to NTDC / CPPA for Supplies - Plan deficit	Mill/Rs.	0	2904	2878	8171	8148	9340	9230	8822	8413	8005	7596	7187
Payable to Associated Companies	Mill/Rs.	2455	3947	329	20	20	22	25	27	30	33	36	39
Current liabilities	Mill/Rs.	7148	9356	5405	11125	13024	13270	13552	13574	13638	13750	13914	14135
Total Liabilities	***Mill/Rs.***	***17741***	***21007***	***30031***	***39560***	***44517***	***54535***	***63217***	***70859***	***78009***	***86128***	***95365***	***105464***
Ratio Analysis													
Current Ratio (Current Assets / Current Liabilities)		0.90	0.81	2.71	2.04	1.97	2.08	2.17	2.31	2.50	2.73	2.96	3.28
Leverage Ratio (Total Liabilities / Tangible Networth)		-13.78	-24.18	2.97	4.06	5.75	6.13	5.76	5.20	4.54	3.93	3.39	2.91
Debt Service Coverage Ratio		2.0	7.3	-ve	3.5	2.0	3.4	3.9	3.8	4.3	5.0	5.9	5.3
Self Financing Ratio		100%	100%	-ve	100%	25%	52%	57%	75%	100%	100%	100%	100%
Account Receivables (days of sales billing)		40	33	37	35	36	37	36	37	37	37	37	37
Gross Payables (days of power purchase exp.)		0	24	26	59	52	54	49	42	37	32	27	24
Collection Efficiency		99%	101%	98%	99%	102%	99%	99%	99%	99%	99%	99%	99%
Return on Networth		-ve	-53%	58%	1%	-ve	14%	18%	18%	19%	19%	20%	19%
Return on Capital		-ve	23%	42%	1%	-ve	7%	9%	10%	11%	12%	14%	15%
Return on Net Fixed Assets		-ve	4%	32%	1%	-ve	4%	5%	6%	6%	7%	8%	10%
Debt Networth Ratio		-ve	-ve	0.4	0.3	0.4	0.9	1.0	0.9	0.7	0.6	0.4	0.3

Financial Projections for 2007-08 to 2013-14

Financial projections of LESCO have been prepared under three scenarios – base case, high case (representing a financially favorable turnout of key parameters) and low case (representing a financially unfavorable turnout of key parameters). The Base case projections are presented in Table 4, along with the company's past financial performance. Impact on financial performance under the other two scenarios is discussed later in this section. Key assumptions for the projections are provided below:

Power Purchase Price. The power purchase price for LESCO during FY07 was Rs.3.59 per kWh. The annual increase in PPP for LESCO has been assumed to be 3% in the base case, 0% in the high case and 5% in the low case.

Tariff Increase. The impact of NEPRA tariff determination of February 2007 and the new GoP consumer tariffs has been estimated based on LESCO's consumer mix across consumer categories and tariff slabs. The increase in determined tariff is estimated to be 11.8%, whereas the increase in consumer tariffs is estimated to be 4.2 percent. The average sales tariff and average determined tariff would vary under different scenarios mainly due to changes in power purchase price, as shown below:

Average Determined Tariff

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	4.77	4.95	5.11	5.27	5.43	5.60	5.77
High Case	4.73	4.75	4.78	4.80	4.82	4.85	4.87
Low Case	4.80	5.09	5.34	5.60	5.88	6.17	6.48

Rs./kWh

Average Sales Tariff

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	4.34	4.52	4.68	4.84	5.00	5.17	5.34
High Case	4.30	4.32	4.35	4.37	4.40	4.42	4.44
Low Case	4.37	4.66	4.91	5.18	5.45	5.75	6.06

Rs./kWh

Energy loss reduction trajectory. Against LESCO loss level of 13.1% in FY06, NEPRA has prescribed a loss level of 14.3% in FY07 and 13.6% in FY08. The actual loss level observed during FY07 has been 12.8 percent. Thus NEPRA determinations provide a cushion to LESCO in terms of loss reduction targets and would have a positive impact on the financial performance of the DISCO. With such low levels of losses already achieved, incremental reductions would prove to be increasingly difficult, especially in view of the increasing load on the physical infrastructure in the future. Under the three scenarios, loss reduction of 0.2%, 0.5% and 0% have been assumed for Base, High and Low case respectively, resulting in the following loss reduction trajectories:

Distribution Losses

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	12.5%	12.3%	12.1%	11.9%	11.7%	11.5%	11.3%
High Case	12.2%	11.7%	11.2%	10.7%	10.2%	10.0%	10.0%
Low Case	12.7%	12.7%	12.7%	12.7%	12.7%	12.7%	12.7%

Sales growth. Sales growth has been assumed to be 7%, 9% and 5% in the Base, High and Low cases respectively.

Terms of new borrowing. New borrowings of LESCO from domestic sources for investment financing are assumed to have a two year moratorium followed by repayment over seven years. The interest rate assumed is 13 percent. While the moratorium and repayment terms remain the same across

scenarios, the interest rate in the high scenario is 12% and that in the low scenario is 15 percent. Borrowings from International sources (on-lent by GoP) have a moratorium period of 5 years and repayment of 10 years, with an interest rate of 12% irrespective of the scenario. LESCO is expected to borrow in the ratio of 80:20 from international and domestic sources respectively.

Investment Program. LESCO has a very aggressive investment program going forward. A total investment of Rs.52 billion is expected to be carried out between FY08 and FY14.

Deficit Financing. Cash flow deficits are assumed to be financed by short term borrowings at an interest rate of 12.5% p.a. However, as in the past, and supported by the February 2007 NEPRA determination, LESCO is expected to be cash surplus in the future and would not require any deficit financing.

Results of Scenario Analysis

Earnings before Interest, Tax and Depreciation

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	3695	5143	6212	7420	8787	10331	12076
High Case	5324	6777	8428	10303	12427	14521	16652
Low Case	2576	3938	4547	5241	6031	6933	7963

million Rs.

Net Profit

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	1057	1703	2075	2661	3397	4250	5251
High Case	2194	2892	3740	4808	6037	7247	8496
Low Case	42	814	802	965	1246	1641	2179

million Rs.

GoP Subsidy

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	6385	6832	7311	7822	8370	8956	9583
High Case	6505	7090	7728	8424	9182	10008	10909
Low Case	6266	6579	6908	7254	7616	7997	8397

million Rs.

Deficit Financing

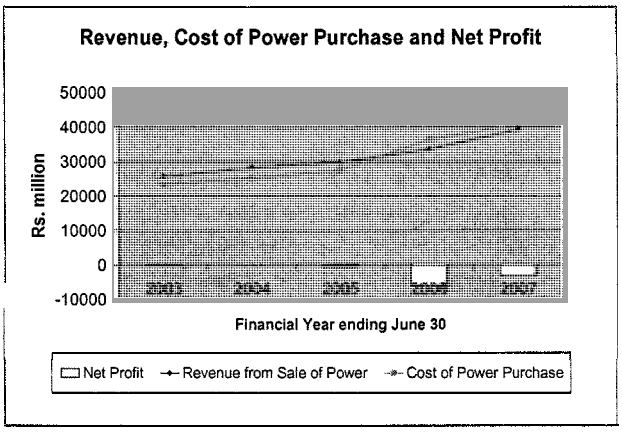
	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	0	0	0	0	0	0	0
High Case	0	0	0	0	0	0	0
Low Case	0	0	0	0	0	0	0

million Rs.

Conclusions. LESCO has a reasonable commercial and financial performance, and its finances are likely to remain robust in all scenarios. It is able to meet its cash operational costs in all scenarios. LESCO as well as other DISCOs should take up with NEPRA the issue of timely recovery of PPP increases through tariffs. Given its good operational and commercial performance, LESCO is not expected to require deficit financing in any of the scenarios. The self financing ratio and debt service coverage ratio are expected to be very comfortable in all scenarios, particularly as the internal accruals increase in the future. The main areas for the company to focus on are (i) continued investment and administrative actions to keep energy loss at low levels, focusing on the secondary transmission network; (ii) ensure prioritization and financial viability of investments including rural electrification; (iii) seek timely compensation for PPP increases from the regulator.

B.5 Multan Electric Power Company (MEPCO)

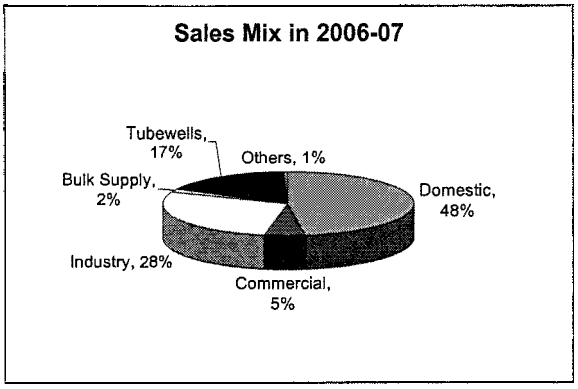
A summary of historical financial statements of MEPCO for the period 2002-03 to 2006-07, along with the financial projections for 2007-08 to 2013-14 is provided at Table 5.



FY05, but in FY06 and FY07, MEPCO was unable to cover its operating expenses also. The main reason for this sudden decline in performance is a sharp increase of 16% in power purchase price for MEPCO in FY06 and 7% in FY07. During these years, the company's revenues were not adequate to cover even the cost of power purchase. However in the future, higher tariffs as per the NEPRA determination of February 2007 are likely to ease the financial situation for the company, as discussed in detail in the section on financial projections.

Energy Losses. MEPCO's energy losses (including secondary transmission and distribution losses) during FY07 stood at 18.7%, a significant improvement over 20.5% during FY06. Over the last five years there has been no significant change in the energy loss levels. MEPCO would need to reduce energy losses further in order to improve its financial performance.

Sales Mix. MEPCO's sales mix in FY07 consisted of 48% to domestic, 28% to industry, 17% to tubewells, 5% to commercial, and 1% to others. In MEPCO, share of domestic and tube wells is slowly increasing, whereas that of industrial consumers is reducing. This is likely to strain MEPCO's financial performance as the subsidized categories are growing faster than the subsidizing categories.



Collection Efficiency. MEPCO's Collection efficiency has been good – in FY07 its collections

Tariff Adequacy. While in the past MEPCO's tariffs were not adequate for revenue to cover cash operating expenses – in particular due to increase in PPP in FY06, with the NEPRA tariff determination of February 2007, the tariff adequacy would improve substantially, as described later.

Capital Structure. MEPCO's networth was fully eroded in FY06 despite conversion of GoP debt of about Rs 4.5 billion into equity in FY05. In FY07, the company's networth stands at negative Rs 2.6 billion. For MEPCO to be able to operate commercially, Balance Sheet restructuring would be necessary, including conversion of GoP debt of about Rs. 3.6 billion into equity and GoP assistance for settlement of NTDC payables. Another important aspect is the compensation by GoP for losses incurred during the first eight months of FY07, during which the NEPRA determination of February 2007 was not applicable.

Impact of NEPRA Tariff Determination of February 2007

The NEPRA tariff determination of February 2007 for MEPCO provides an estimated increase of about 29.5% in "average determined tariff", against which the Government of Pakistan has provided an estimated increase of about 12% in the "average sales tariff" that the consumers have to pay. The difference between these two is to be paid by the government as revenue subsidy. The tariff determination also provides for an automatic pass-through of changes in power purchase price, though with a delay of upto six months. Actual DISCO performance in the future may vary from the assumptions used by NEPRA in its tariff determination, especially with regard to – rate of sales growth, sales mix, T&D loss reduction achieved, cost of borrowings and improvements in collection efficiency (which affects provisioning for bad and doubtful debts). The NEPRA determination has set a distribution loss target of 18.4% for FY07, as against a distribution loss level of 20.5% during FY06 and 18.7% actually achieved for FY07. Also, the pass-through of changes in power purchase price would be effective once in six months, leaving MEPCO vulnerable to fluctuations in PPP in the interim. The impact of NEPRA tariff determination on MEPCO's financial performance has been analyzed and the financial projections are presented in the following section.

Table-5
Summary of Historical Financial Performance (FY03 to FY07) and Projections (FY08 to FY14) (Base Case)
for Multan Electric Power Company

	Unit	Historical					Projections						
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Income Statement													
Total Revenue	Mill/Rs.	26584	29288	31202	35173	43366	52206	58222	63443	68634	74221	80353	86993
Power purchase expense	Mill/Rs.	23369	25245	27536	36554	40962	46381	49706	53273	57101	61208	66197	71592
Other operational expenditure (excl. depreciation)	Mill/Rs.	1866	2448	2475	3225	3672	3910	4256	4628	5028	5460	5928	6431
Total operational expenditure (excl. depreciation)	Mill/Rs.	25235	27693	30012	39779	44634	50291	53961	57900	62128	66669	72124	78023
Profit before interest, depreciation and tax	Mill/Rs.	1349	1595	1191	-4606	-1268	1915	4261	5543	6506	7552	8228	8970
Interest	Mill/Rs.	691	687	652	615	702	1129	1310	1675	1995	2317	2586	2742
Depreciation	Mill/Rs.	793	927	1054	1088	1258	1591	1803	2022	2241	2463	2685	2908
Tax	Mill/Rs.	0	0	0	0	85	256	402	646	794	970	1035	1162
Net Profit	***Mill/Rs.***	***-135***	***-19***	***-515***	***-6310***	***-3314***	***-1062***	***747***	***1200***	***1475***	***1802***	***1922***	***2158***
Balance Sheet													
Net Fixed Assets	Mill/Rs.	14601	17482	19997	22593	26443	30249	34308	38380	42203	45887	49373	52628
Capital Work in Progress	Mill/Rs.	1613	2033	2733	3512	4105	5396	5862	6094	6064	6147	6172	6163
Other long term assets	Mill/Rs.	5	9	13	16	17	21	24	27	30	32	34	36
Long term assets	Mill/Rs.	16219	19523	22743	26121	30565	35666	40194	44501	48297	52066	55579	58826
Net Accounts Receivable	Mill/Rs.	2486	2464	2697	3167	3823	4152	4523	4929	5369	5847	6367	6931
Receivables from Associated Companies and GoP	Mill/Rs.	24	395	2012	4153	3813	1767	1767	1767	1767	1767	1767	1767
Other current assets	Mill/Rs.	1555	2812	3462	3890	7047	7821	7948	8091	8369	9101	9878	10694
Current Assets	Mill/Rs.	4066	5671	8170	11210	14683	13740	14237	14786	15505	16715	18011	19391
Total Assets	***Mill/Rs.***	***20285***	***25194***	***30913***	***37331***	***45248***	***49405***	***54431***	***59287***	***63802***	***68780***	***73590***	***78218***
Networth	Mill/Rs.	403	385	4279	-1877	-2616	-3678	-2931	-1731	-256	1546	3468	5626
Long term debt	Mill/Rs.	5152	4643	4839	4143	5332	7998	11441	14196	16445	18576	20233	21336
Security Deposit	Mill/Rs.	848	990	1187	1486	1687	1956	2133	2321	2520	2731	2954	3192
Deferred credit	Mill/Rs.	6847	7852	9392	11890	15549	18389	19977	21477	22890	24215	25453	26603
Employee retirement benefit	Mill/Rs.	2212	2523	2764	3184	3543	3955	4408	4906	5453	6055	6715	7440
Long term liability	Mill/Rs.	15463	16392	22460	18825	23495	28620	35027	41168	47052	53123	58823	64197
Deficit financing	Mill/Rs.	0	0	0	0	0	0	0	0	339	967	1052	887
Other current liabilities	Mill/Rs.	2887	5181	6420	7867	9860	9442	10118	10844	11624	12460	13475	14574
Payable to NTDC / CPPA for Supplies - Plan deficit	Mill/Rs.	3	2043	2032	10635	11887	11356	10824	10292	9760	9229	8697	8165
Payable to Associated Companies	Mill/Rs.	1933	1578	2	2	6	7	8	8	9	10	10	11
Current liabilities	Mill/Rs.	4823	8802	8454	18505	21754	20805	20950	21145	21732	22665	23235	23637
Total Liabilities	***Mill/Rs.***	***20286***	***25194***	***30914***	***37329***	***45249***	***49425***	***55977***	***62313***	***68784***	***75788***	***82058***	***87834***
Ratio Analysis													
Current Ratio (Current Assets / Current Liabilities)		0.84	0.64	0.97	0.60	0.57	0.65	0.67	0.69	0.70	0.73	0.75	0.79
Leverage Ratio (Total Liabilities / Tangible Networth)		49.28	64.51	6.22	-ve	-ve	-ve	-ve	-ve	-ve	48.02	22.66	14.61
Debt Service Coverage Ratio		1.1	3.9	-ve	2.0	-ve	1.0	1.6	1.8	1.9	2.0	2.1	2.0
Self Financing Ratio		5%	100%	-ve	67%	-ve	-ve	29%	45%	59%	73%	84%	89%
Account Receivables (days of sales billing)		35	32	33	34	35	35	33	33	33	34	34	34
Gross Payables (days of power purchase exp.)		0	30	27	106	106	89	79	71	62	55	48	42
T&D Losses		17.5%	17.0%	20.3%	20.5%	18.7%	18.2%	17.4%	16.7%	15.9%	15.2%	15.2%	15.2%
Collection Efficiency		98%	100%	99%	99%	103%	99%	99%	99%	99%	99%	99%	99%
Return on Equity (excluding retained earnings)		-ve	-ve	-ve	-ve	-ve	-ve	7%	11%	14%	17%	18%	20%
Return on Capital		-ve	-ve	-ve	-ve	-ve	-ve	9%	10%	9%	9%	8%	8%
Return on Net Fixed Assets		-ve	-ve	-ve	-ve	-ve	-ve	2%	3%	3%	4%	4%	4%
Debt Networth Ratio		12.8	12.1	1.1	-ve	-ve	-ve	-ve	-ve	-ve	12.6	6.1	3.9

Financial Projections for 2007-08 to 2013-14

Financial projections of MEPCO have been prepared under three scenarios – base case, high case (representing a financially favorable turnout of key parameters) and low case (representing a financially unfavorable turnout of key parameters). The Base case projections are presented in Table 5, along with the company's past financial performance. Impact on financial performance under the other two scenarios is discussed later in this section. Key assumptions for the projections are provided below:

Power Purchase Price. As with the financial projections of other DISCOs, annual increase in PPP for MEPCO has been assumed to be 3% in the base case, 0% in the high case and 5% in the low case.

Tariff Increase. The impact of NEPRA tariff determination of February 2007 and the new GoP consumer tariffs has been estimated based on MEPCO's consumer mix across consumer categories and tariff slabs. The increase in determined tariff is estimated to be 29.5%, whereas the increase in consumer tariffs is estimated to be 12.2 percent. The average sales tariff and average determined tariff would vary under different scenarios mainly due to changes in power purchase price, as shown below:

Average Determined Tariff

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	4.99	5.30	5.50	5.67	5.84	6.02	6.21
High Case	4.99	5.26	5.28	5.30	5.32	5.35	5.38
Low Case	4.99	5.34	5.67	5.95	6.25	6.56	6.89

Rs./kWh

Average Sales Tariff

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	4.35	4.66	4.86	5.03	5.19	5.38	5.56
High Case	4.35	4.61	4.64	4.66	4.68	4.71	4.73
Low Case	4.35	4.70	5.02	5.31	5.60	5.92	6.25

Rs./kWh

Energy loss reduction trajectory. Against MEPCO loss level of 20.5% in FY06, NEPRA has prescribed a loss level of 18.4% in FY07, whereas the actual loss level achieved during the year has been 18.7 percent. This would have a bearing on MEPCO's financial performance. Under the three scenarios, loss reduction of 0.75%, 1% and 0% have been assumed for Base, High and Low case respectively, resulting in the following loss reduction trajectories:

Distribution Losses

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	18.2%	17.4%	16.7%	15.9%	15.2%	15.2%	15.2%
High Case	18.2%	17.2%	16.2%	15.2%	14.2%	14.2%	14.2%
Low Case	18.2%	18.2%	18.2%	18.2%	18.2%	18.2%	18.2%

Sales growth. The rate of growth of sales has been assumed as 5%, 7% and 4% in Base Case, High Case and Low Case respectively.

Terms of new borrowing. New borrowings of MEPCO from domestic sources for investment financing are assumed to have a two year moratorium followed by repayment over seven years. The interest rate assumed is 13 percent. While the moratorium and repayment terms remain the same across scenarios, the interest rate in the high scenario is 12% and that in the low scenario is 15 percent. Borrowings from International sources (on-lent by GoP) have a moratorium period of 5 years and repayment of 10 years, with an interest rate of 12% irrespective of the scenario.

Investment Program. A total investment of Rs.44 billion is expected to be carried out between FY08 and FY14.

Deficit Financing. Cash flow deficits are assumed to be financed by short term borrowings at an interest rate of 12.5% p.a.

Results of Scenario Analysis

Earnings before Interest, Tax and Depreciation

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	2024	4384	5678	6652	7711	8401	9157
High Case	2119	5801	7062	8452	9982	10996	12101
Low Case	1977	3206	4220	4619	5066	5570	6138

million Rs.

Net Profit

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	-1062	786	1320	1711	2208	2507	2887
High Case	-971	1730	2293	3018	3884	4421	5028
Low Case	-1106	-313	57	-134	-272	-360	-364

million Rs.

GoP Subsidy

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	6463	6786	7125	7481	7855	8248	8661
High Case	6586	7047	7540	8068	8633	9237	9883
Low Case	6401	6657	6923	7200	7488	7788	8099

million Rs.

Deficit Financing

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	0	0	0	0	0	0	0
High Case	0	0	0	0	0	0	0
Low Case	0	0	0	0	0	0	0

million Rs.

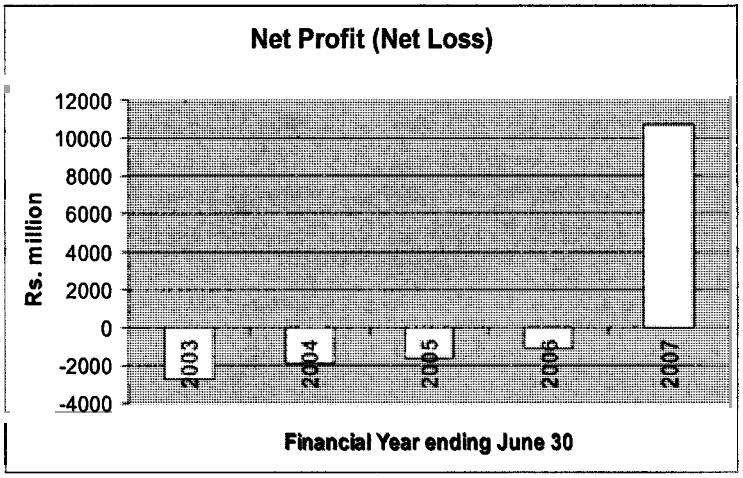
Conclusions. With the NEPRA tariff determination of February 2007, MEPCO is able to cover its cash operational costs (including interest and loan repayment obligations) in all cases from FY10 onwards, and in the high case from FY08 itself. However, this assumes that increase in cost of power purchase is adjusted in tariff every six months. It also assumes that GoP pays the tariff differential subsidy in time. MEPCO has been funding its past losses by withholding payments to NTDC, which had accumulated to Rs. 12 billion as of June 30, 2007. MEPCO cannot continue to withhold further payments to NTDC and would be compelled to take short term borrowings for bridging the gap, leading to higher interest burden. While aggressive efforts at improving efficiency and reducing losses would be necessary, these may not be sufficient to ensure tariff adequacy. It is important to note that these calculations already take into account Government of Pakistan's explicit subsidy against the difference between determined and notified tariffs, amounting to Rs.53 billion during the period between FY08 and FY14 in the base case. The subsidy outgo would be even higher if the government decides not to pass on the impact of increase in power purchase cost to the consumers. MEPCO's interest burden can be reduced significantly if the Government of Pakistan provides subsidies to cover losses for the first eight months of FY07 during which the new NEPRA determination is not applicable. MEPCO's financial performance would also critically depend on reducing energy losses and prioritizing its investment program to reduce addition of debt. In addition, debt restructuring may be necessary for MAPCO to be able to operate commercially.

B.6 National Transmission and Dispatch Company (NTDC)

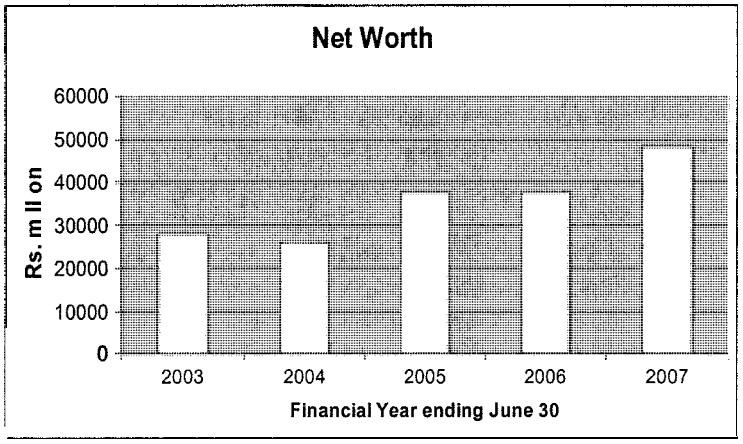
A summary of historical financial statements of NTDC for the period FY03 to FY07, along with the financial projections up to FY14 is provided at Table 6. NTDC's historic accounts aggregate the financial results of (i) the single buyer business of power purchase and resale carried out by the CPPA; and (ii) transmission business of wheeling of electricity. The financial projections however delve only into the latter as NTDC is slated to become only a transmission and dispatch company, with separation of the single buyer function.

Historical Performance

Profitability. NTDC reported a cumulative loss of Rs. 7.4 billion between FY03 and FY06 attributable to the single buyer business. In FY05, the revenues from sale of power were inadequate to cover the cost of power purchase. In FY06, despite increased revenues from greater pass through of generation costs in the DISCO PPP as well as due to notification of a separate and enhanced transmission tariff, NTDC reported a loss of Rs.1.12 billion, mainly because of a provision of Rs.10.4 billion towards bad and doubtful debts. However, in FY07 the company has shown a healthy profit of Rs. 10.7 billion. Going forward the transmission and single buyer business are proposed to be segregated with NTDC focusing only on transmission wheeling business – from the present year onwards accounts of both businesses are being distinctly maintained, though timelines for full segregation are not known yet.



Capital Structure. Despite continued losses between FY02 to FY06, totaling to Rs.14.8 billion, NTDC's networth was restored by substantial equity infusions through conversion of GoP debt – Rs.28 billion in FY02 and Rs. 14 billion in FY05. In FY07 debt to networth ratio was 0.5 – and with rationalization of wholesale prices in the year, debt service coverage ratio was comfortable at 1.1 and self financing ratio 36 percent.



Financial Projections for 2007-08 to 2013-14

Financial projections of NTDC have been prepared under three scenarios – base case, high case (representing a financially favorable turnout of key parameters) and low case (representing a financially unfavorable turnout of key parameters). The projections have been made only for the transmission operations – the accounts for which are being segregated from the single buyer business of CPPA. The transmission business revenue is dependant on the Use of System Charge (UoSC) decided by NEPRA and the DISCO's monthly average peak demand. The Base case projections are presented in Table 6, along with the company's past financial performance. Impact on financial performance under the other two scenarios is discussed later in this section. Key assumptions for the projections are provided below:

Use of system charge (UoSC) Increase (Rs./MW/month). The following tariff assumptions have been made in the three scenarios. It is important to note that the projection scenarios aim to demonstrate the impacts of various tariff trajectories only. Actual tariff increase requirement will follow due process as set out in Pakistan.

Use of System Charges

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	103.2	106.2	109.4	112.7	116.1	119.6	123.2
High Case	104.2	108.3	112.7	117.2	121.8	126.7	131.8
Low Case	102.2	104.2	106.3	108.4	110.6	112.8	115.0

Rs./MW/month

DISCO's monthly average peak demand (MW). The following assumptions have been used in the three scenarios

Monthly Average Peak Demand

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	15249	16316	17458	18680	19988	21387	22884
High Case	15531	16773	18115	19564	21130	22820	24646
Low Case	14966	15864	16816	17825	18894	20028	21230

MW

Terms of new borrowing. Under all scenarios, new borrowings of NTDC for investment financing are assumed to have a two year moratorium followed by a repayment over seven years. The interest rate in the base case is assumed to be 13%, whereas in the high case and low case it is assumed as 12% and 15% respectively.

Collection Efficiency. Collection of transmission charges from DISCOs is assumed to be 99.5 % in the base case, 100% in the high case and 99% in the low case.

Investment Program. A total investment of about Rs.44 billion is expected to be carried out by NTDC between FY08 and FY14. This is a conservative estimate consistent with the past trends in Investment, and NTDC's planned Investment is comparatively higher.

Deficit Financing. Cash flow deficits are assumed to be financed by short term borrowings at an interest rate of 12.5% p.a. However, it is observed from the projections that NTDC would not require deficit financing under any scenario.

Results of Scenario Analysis

Earnings before Interest, Tax and Depreciation

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	17251	19081	21089	23296	25725	28398	31342
High Case	17762	20035	22579	25430	28630	32221	36253
Low Case	16746	18160	19678	21314	23078	24983	27038

million Rs.

Net Profit

	2007-08	2008-09	2009-10	2010-2011	2011-12	2012-13	2013-14
Base Case	8019	9417	10672	12035	13506	15139	16960
High Case	8351	10037	11640	13422	15394	17624	20152
Low Case	7683	8810	9747	10738	11778	12911	14155

million Rs.

It is seen from the projections that NTDC is able to meet all its operating cash requirements and does not require deficit financing under any scenario.

Conclusions. NTDC's transmission business has robust financials in all scenarios. The key issues going forward are (i) segregation of the single buyer business of CPPA; (ii) financial autonomy of NTDC where it is allowed to retain its revenues. The NEPRA transmission tariff gives NTDC financial strength to carry out necessary investments and to function commercially. The focus areas for NTDC are ensuring high availability of existing transmission network and ensuring new investments are carried out on a timely and economically viable basis.

Table-6
Summary of Historical Financial Performance (FY03 to FY07) and Projections (FY08 to FY14) (Base Case)
for National Transmission and Despatch Company

		Historical					Projections						
	Unit	2,003	2,004	2,005	2,006	2,007	2,008	2,009	2010	2011	2012	2013	2014
Income Statement													
Total Revenue	Mill/Rs.	174048	185543	199773	260566	305540	19119	21058	23195	25549	28143	31001	34150
Power purchase expense	Mill/Rs.	171065	168894	191960	244409	287580	0	0	0	0	0	0	0
Other operational expenditure (excl. depreciation)	Mill/Rs.	1186	13104	4448	12217	2062	1868	1977	2106	2253	2419	2603	2808
Total operational expenditure (excl. depreciation)	Mill/Rs.	172251	181998	196409	256626	289642	1868	1977	2106	2253	2419	2603	2808
Profit before interest, depreciation and tax	Mill/Rs.	1797	3545	3364	3939	15898	17251	19081	21089	23296	25725	28398	31342
Interest	Mill/Rs.	2318	2981	2638	2491	2577	1888	1220	1003	849	770	701	632
Depreciation	Mill/Rs.	2225	2440	2365	2574	2580	3026	3373	3668	3932	4176	4406	4619
Tax	Mill/Rs.	0	0	0	0	0	4318	5071	5747	6480	7272	8152	9132
Net Profit	***Mill/Rs.***	***-2746***	***-1876***	***-1639***	***-1126***	***10741***	***8019***	***9417***	***10672***	***12035***	***13506***	***15139***	***16960***
Balance Sheet													
Net Fixed Assets	Mill/Rs.	42941	43063	41026	45423	42987	53069	59403	63669	66652	68764	70263	71080
Capital Work in Progress	Mill/Rs.	17717	10602	17715	13292	16712	12875	9472	7713	6720	6116	5740	5301
Other long term assets	Mill/Rs.	27	32	37	46	43	41	39	37	36	35	34	33
Long term assets	Mill/Rs.	60685	53697	58779	58761	59742	65985	68914	71420	73408	74915	76037	76414
Net Accounts Receivable	Mill/Rs.	27290	42083	64188	130571	176913	94	151	190	221	250	278	308
Net Receivable from Associated Companies	Mill/Rs.	5042	11301	18089	27527	31983	0	0	0	0	0	0	0
Other current assets	Mill/Rs.	5529	5480	7860	7521	9593	9248	13650	19749	28923	40229	53553	69442
Current Assets	Mill/Rs.	37861	58864	90137	165619	218489	9342	13801	19940	29144	40479	53831	69750
Total Assets	***Mill/Rs.***	***98546***	***112560***	***148916***	***224380***	***278231***	***75327***	***82716***	***91359***	***102552***	***115394***	***129869***	***146164***
Networth	Mill/Rs.	27984	26108	37638	37478	48220	56238	65656	76328	88362	101868	117007	133967
Long term debt	Mill/Rs.	26991	26097	23470	22657	23592	13282	11253	9225	8383	7719	7055	6391
Employee retirement benefit	Mill/Rs.	3556	3655	5016	5637	5807	5807	5807	5807	5807	5807	5807	5807
Long term liability	Mill/Rs.	58530	55860	66124	65772	77618	75327	82715	91359	102552	115394	129869	146164
Deficit financing	Mill/Rs.	0	0	0	0	0	0	0	0	0	0	0	0
Other current liabilities	Mill/Rs.	40016	56701	82792	158608	200613	0	0	0	0	0	0	0
Current liabilities	Mill/Rs.	40016	56701	82792	158608	200613	0	0	0	0	0	0	0
Total Liabilities	***Mill/Rs.***	***98546***	***112561***	***148916***	***224380***	***278231***	***75327***	***82715***	***91359***	***102552***	***115394***	***129869***	***146164***
Ratio Analysis													
Debt Service Coverage Ratio		1.7	negative	0.2	0.8	1.4	1.8	3.9	4.6	8.9	11.4	13.3	15.4
Self Financing Ratio		100%	negative	negative	negative	36%	100%	100%	100%	100%	100%	100%	100%
Return on Networth		negative	negative	negative	negative	22%	14%	14%	14%	14%	13%	13%	13%
Return on Capital		negative	negative	negative	negative	15%	12%	12%	12%	12%	12%	12%	12%
Return on Net Fixed Assets		negative	negative	negative	negative	25%	15%	16%	17%	18%	20%	22%	24%
Debt Networth Ratio		1.0	1.0	0.6	0.6	0.5	0.2	0.2	0.1	0.1	0.1	0.1	0.0
Collection efficiency													
for the year		94%	92%	83%	71%	85%	100%	100%	100%	100%	100%	100%	100%
including arrears		86%	80%	69%	55%	57%	100%	99%	99%	99%	99%	99%	99%

Annex 10: Safeguard Policy Issues

PAKISTAN: Electricity Distribution and Transmission Improvement Project

A. Social Assessment

An ESA along with Resettlement Plans/Abbreviated Resettlement plan have been completed by all the entities namely (IESCO, MEPCO, LESCO, HESCO, and NTDC). HESCO has prepared an addendum by also covering the ELR and STG augmentation components, which were missed out in the original ESA study. The ESAs completed cover the first year of Bank funding while ESAs and mitigation measures for subsequent years, will be completed and cleared by Bank prior to initiation of project interventions.

Land Acquisition and other damages: In IESCO project about 16 acres (6.48 hectares) of land would be acquired for 4 grid stations, while 2145 acres (868.42 hectares) of land would be used as temporary Right of Way along the transmission line routes during construction. There would be another 80 acres (32.39 hectares) of temporary land take for access routes (to access the transmission line corridors). Land would also be required for setting up the towers. This land however, would not be acquired except where there would be loss of access to the land (for productive use) by the owners. There would also be damage to crops in 666 acres (269.63 hectares) of land during construction of transmission lines. The total number of affectees would be 453.

MEPCO would acquire 20 acres (8.10 hectares) of land for the grid station belonging to 4 persons, 2040 acres (825.91 hectares) of land for temporary ROW and another about 80 acres (32.39 hectares) for accessing the transmission line routes during construction phase. Crop damage would be on 1339 acres (542.11 hectares) impacting 669 persons.

LESCO would require 127.5 kanals[40] (6.45 hectares) of land for the grid stations, of which 41.65 kanals (2.11 hectares) to be acquired from 22 private owners, 20.7 kanals (1.04 hectares) owned by the Government, and 65.15 kanals (3.30 hectares) provided by State Life Society and Defense Housing Authority). Crop compensation would be provided for 24 kanals (1.21 hectares) of land affecting 18 persons. There would also be loss of trees (fruit and non fruit bearing), and temporary loss of business for 3 vulnerable encroachers/squatters.

HESCO will acquire 16 acres (6.48 hectares) of land for 4 grid stations. 792. 56 acres (320.87 hectares) of land will be impacted by the Transmission Lines with 430 affectees losing crops. These will be compensated at replacement cost/market value.

NTDC acquired all the land required for the grid stations in 1978. There will be some temporary land take for the transmission lines that will damage trees/crops on 500 acres of land (202.43 hectares) impacting 488 persons. They will be compensated at market prices. There will also be some minor damages to assets including katcha houses (mud huts), cattlesheds, tube wells, etc. These will be compensated at replacement cost at market prices.

For land acquisition, the Projects would follow either (i) the Land Acquisition Act (LAA) (1894) with amendments (however, its Section 17.4 -- emergency/urgency clause would not be used in the absence of an emergency/urgency situation); or (ii) the principle of Willing Buyer-Willing Seller using mutually agreed-upon market rates. The seller will have the option of refusing to sell.

[40] Kanal is a local measure of land. One acre is equal to 8 kanals.

The Banks Social Safeguards including the following:

- Involuntary Resettlement (OP 4.12)
- Cultural Property (OP 4.11)
- Indigenous Peoples (OP 4.10)
- Projects in Disputed Areas (OP 7.60)

In addition, there are **disclosure** requirements, as all social documents emanating from Bank funded projects have to be disclosed in the Bank's Info Shop and translated and disclosed at project's sites/websites for easy access to all stakeholders

According to the ESA Reports for IESCO, Involuntary Resettlement (OP 4.12), and Projects in Disputed areas (7.60) are triggered, while for MEPCO, LESCO, HESCO and NTDC OP 4.12 is triggered. Disclosure requirements apply to all project components.

According to the ESA's there are no Indigenous People located in any of the project sites and thus this safeguard is not triggered. However, should any Indigenous People be identified during implementation, the Project will ensure that an Indigenous Peoples Development Plan is developed, in keeping with OP 4.10, cleared by the Bank and implemented.

No Cultural Property has been identified by the ESA Reports. Should any cultural property get identified during project implementation, the Project will ensure that the cultural property is protected from damage, and the relevant government department is informed and the property handed over to them.

Involuntary Resettlements (OP 4.12) is triggered by all the entities. In IESCO, MEPCO, HESCO and NTDC's cases, land acquisition, damage to crops/some infrastructure and trees apply and mitigation measures, including preparation of RP, have been undertaken, while LESCO does not require a RP as the number of affectees is less than 200 and thus an Abbreviated Resettlement Plan (ARP) has been developed as a mitigation measure.

RPs. In keeping with the Bank Policies, a Resettlement Plan has been developed by IESCO and MEPCO, HESCO and NTDC to mitigate potential negative impacts. As explained above, LESCO has developed an Abbreviated Resettlement Plan (ARP).

The RPs and the ARP include, among others,:

- an entitlement framework with compensation for land, crops, and trees livelihood, and assets/infrastructure/utilities;
- an institutional and implementation framework;
- a grievance redressal system;
- a training/capacity building plan for social issues and social safeguards;
- an awareness campaign; and
- a monitoring and documentation framework.

The entitlement framework provides for the following types of losses: loss of agriculture land; loss of residential commercial and industrial land; structure (all types) located on the affected land; loss of common resources and facilities; loss of standing crops and trees; loss of public infrastructure; and loss or damage to religious/cultural sites. For compensation of land, a title would be required while for

compensation of other assets, infrastructure and livelihood, absence of title would not be a bar to receiving such compensations

The institutional and implementation arrangements for IESCO and MEPCO include an Environmental and Social Cell to address environmental and social issues that may arise over the life of the project. Environmental and Social Inspectors (ESI) will be located at the sites to ensure implementation of the RP. All the project entities will have a Tehsildar (Land Officer) and a Patwari (Land Revenue Clerk) appointed at the project sites to address land compensation issues. LESCO has also set up an Environment and Social Cell headed by the Deputy Manager (T&G) along with a qualified team of environmental and socioeconomic experts as members. NTDC has established an Environmental and Social Cell staffed with two professional staff that will be trained in environmental and social issues. In addition, an environmental and a social consultant will be recruited, as required, for the first year to support and provide guidance to the staff of the ESC to implement the mitigation measures. HESCO has established an Environmental and Social Cell. This however, will not be a part of the proposed Project but will provide advisory services to the Project and other HESCO departments. Initially it will be staffed with one each of environmental and social staff (with relevant experience and qualification), which will be increased in future (if required).The RP/ARP will be a part of the contract documents and contractors will ensure that their activities do not put the Project out of compliance with the social safeguards.

Grievance Redressal Mechanism (GRM): The main functions of the GRM is to provide a mechanism to the Project Affected Persons (PAPs) on problems arising out of project interventions, to record their grievance, provide solutions to the grievances and report to the aggrieved parties. The Complaint Register will be maintained in the office of the ESI for IESCO MEPCO and HESCO while for LESCO the XEN (Construction), to register complaints. This will provide information on the dates, types of com plaints, persons responsible to take actions, and target dates for implementation of mitigation measures. Consultations will be held by ESI with contractor's site manager, the GSC, ESMs and PD. Once remedial action is decided implementation responsibility and schedule will be determined which will be shared with the complainant and also entered in the complaint register along with the complainant's view on the remedial action. To address unresolved grievances, setting up of a Grievance Redressal Committee (GRC) is envisaged, to be headed by the PD with ESI and ESC social expert as members along with a non project community member who is acceptable to all parties for IESCO, MEPCO and HESCO. In the case of LESCO, the GRM will comprise the Project Engineer/Project Director as the head supported by the socio-economist from the Social Cell, a representative of the Supervision Consultant and a non- project person representing the community. In the case of NTDC, the complaint register will be the office of the PD/RE while the Grievance Redressal Committee will compose of the PD/XED as the Chairman with the ESA coordinator, a representative of the Contractor, Local government/Line department and local community member (acceptable to all groups) as members. Timelines for responding to the complainant with roles and responsibilities are also laid out.

Monitoring: Monitoring includes compliance monitoring and effect monitoring. The monitoring indicators will include among others, the following:

- Total number of PAPs
- Number/area/type of affected assets
- Amount of land required
- Total number of transmission lines in cultivated areas
- Number of transmission lines with and /without access available for cultivator/owner of land under tower
- Amount of land acquired and compensated and amount not compensated
- Amount of compensation paid for land, crops, trees, other assets and livelihood
- Amount of compensation disbursed (by PAPs/assets etc)

- Number of grievances recorded and resolved
- Total number of non compliance recorded by ESI (derived from compliance monitoring register)
- Action taken on non compliances
- Number of non compliances recorded by external monitoring and actions taken
- Number of social training sessions held and topics covered.

Besides, internal monitoring the project will provide for external monitoring at periodic intervals. This will be to validate the internal monitoring of the project.

Disclosure: All social documents will be disclosed at Project/sub-project offices and in the Info shop of the Bank along with the websites of the sub-projects. This will ensure that all local communities are aware of the Project's activities and the entitlements of the affectees as laid out in the entitlement matrix.

Awareness Campaign: All the DISCOs and NTDC will undertake an awareness campaign prior to, and during project implementation, to inform all affectees and stakeholders about the project; their entitlements; the rights and responsibilities of all players in project implementation; the grievance redressal system and who to contact, what complaints are covered by the project, mechanism to be followed to redress grievances etc.

Social Training: All the entities (IESCO, MEPCO, LESCO, HESCO and NTDC) have a training plan laid out along with costs and an implementation mechanism for capacity building of staff in social issues. Among others, the training program will focus on the basic concepts of social assessment, social safeguards of the project, consultation process, implementation of the grievance redressal mechanism, and monitoring of the RP/ARP, etc.

Environmental and Social Guidelines (ESG): To ensure attention to social development and social safeguards issues, the project has prepared Environmental and Social Guidelines to help prepare ESAs and mitigation measures that will be required by future Bank funding over the life of the Project/sub-projects.

B. Environmental Assessment

Five companies -- four power distribution companies (IESCO, LESCO, MEPCO, and HESCO), and the national power transmission and dispatch company (NTDC) -- are participating in the project. The major physical works planned under the project include construction of new grid stations and transmission lines, and converting, augmenting, and extending existing grid stations. The activities will include interventions both in high-tension (HT) and low-tension (LT) grids.

The extent, magnitude and nature of proposed works to be undertaken by the five companies trigger Bank's safeguard policy on Environmental Assessment (OP 4.01). Projects in Disputed Areas safeguard policy (OP 7.60) is also triggered for IESCO, due to the fact that part of IESCO interventions are in Azad Kashmir. Description of each of the Bank's environmental safeguard policies triggered, given below, covers the key environmental issues common to all five companies. Environmental issues and their management, pertinent to any single company, are noted separately.

Environmental Assessment (OP 4.01): As of September 2007, all the companies have submitted their ESA reports to the Bank for the first year of project investments HESCO has prepared an addendum to cover the ELR and STG augmentation components which were not covered in the original study report and plans to submit it to the Bank by first week of October 07. These ESAs identify the potential environmental issues and their management through a comprehensive environmental management plan.

For the subsequent years of project investments, the companies have presented environmental & social guidelines (ESG), based upon which they will prepare and submit to the Bank an environmental management plan for the physical works proposed in those years.

Each company has held comprehensive stakeholder consultations as part of their ESA study. These consultations were conducted with the institutional as well as the grassroots stakeholders. During the consultations, the stakeholders were apprised of the proposed project activities and their views, concerns, and recommendations were obtained for incorporation into the project design in order to enhance the environmental and social performance of the project. Both women and men participated in these consultations and each ESA report presents a list of the participants of these consultation sessions.

Key Environmental Issues

The proposed interventions by majority of the companies are environmentally benign with most of the environmental impacts confined to the construction phase and are temporary in nature. Appropriate control and housekeeping measures – recommended in the respective EMPs of the ESA studies – would address and manage these issues adequately. The proposed environmental and social monitoring would ensure compliance to and effectiveness of these control measures.

Each ESA report presents a complete analysis of the project alternatives in terms of siting of grid stations and locating transmission line routes, environmental and socially acceptable technical options and opting PBC free insulating oils for transformers and capacitors. In case of IESCO, where a section of the Murree-Minhasa transmission line has to pass through a thick forest, efforts have been made to minimize the environmental damage by keeping the route along the existing line and within the same corridor. Any other route considered as alternative to the selected one would have resulted in cutting of more trees and therefore environmentally unacceptable. Only other available option to avoid passing through the forest was not to undertake the project, again unacceptable considering the energy requirements of the benefiting area. In case of LESCO, first year project interventions are confined mainly within the city of Lahore and its suburbs. Apart from a section of transmission line passing through a thickly populated and congested Saggian area length of remaining transmission lines connecting with other grid stations is insignificant. The company has proposed an adequate traffic management plan to avoid traffic disruption during the construction of transmission line in Saggian area and also commits to arrange the proposed works with minimal disruption to power supply for the area. One of the grid stations located at Gulberg in Lahore houses a nursery for ornamental plants. This nursery is owned by one of the departments (Parks and Horticultural Authority, PHA) working for the city district government Lahore and by locating grid station at this location part of the nursery will be moved with the consent of PHA to the other side of the same piece of land. This arrangement has resulted in maintaining the integrity of the aesthetics of the area. For other DISCOs the routing of transmission line and siting of grid stations is mainly though agricultural land/abandoned lands with minimal environmental consequences.

The key environmental impacts of the construction phase of the proposed project as identified in these ESA reports included soil erosion and degradation, water contamination and damage to natural vegetation. Soil erosion is potentially expected out of the grid station and transmission line construction activities. For example, erection of towers particularly at slopes can cause and accelerate soil erosion if done without adopting adequate protection measures. Inadequate waste disposal practices at the construction camps and project sites are potential source of soil and water contamination making these temporarily unfit for intended uses. Waste disposal may include domestic waste from the labor camps and/or from the machinery/equipment in use during the construction. Good house-keeping practices, as proposed in the EMP will protect the soil and water contamination from such spill-overs. A limited number of trees are also to be removed mainly to construct transmission lines and also to construct new grid stations in almost all the DISCOs. The activity may involve a complete uprooting of trees or periodic

trimming. In either case, ESAs suggest remedial measures including compensatory plantation at adequate locations including within grid stations. DISCOs have also been advised in the ESA studies not to use any chemicals for the pruning of trees/removal of natural vegetation and only to use mechanical methods for the purpose. Each company is to follow and practice WAPDA's safety protocols during the construction and operation stages of the project to ensure occupational health and safety aspects. WAPDA's directorate of safety originally developed these protocols, which have been adopted by each of the participating company and are fully functional in compliance. All the companies have updated their ESA reports by adding sections on health & safety based on WAPDA's Health, Safety & Environment (HSE) protocols.

The key environmental impacts of the operation phase of the proposed project as identified in these ESA reports included contamination of soil and water, and damage to natural vegetation and wildlife. Soil and water can be contaminated as a result of inappropriate waste disposal at the grid stations. The major types of wastes that would be generated during the project operation included domestic solid waste, sewage, repair and maintenance waste, waste oils and chemicals. Soil and water can also be contaminated as a result of leakage or spillage of transformer oil at the grid stations. The natural vegetation and wildlife can be adversely impacted during the transmission line patrolling and maintenance activities (particularly along the forested segment of the Murree - Minhasa transmission line). Appropriate sewage collection and disposal systems as proposed in the ESA studies will ensure that soil and water are not contaminated by the sewage from the grid stations. Similarly, sound solid waste collection and disposal mechanisms as included in the ESAs will forestall any soil or water contamination caused by inappropriate waste disposal. To prevent/minimize the impacts on the natural flora and fauna, the IESCO's ESA study proposes the transmission line maintenance activities to be carried out in consultation and coordination with the relevant Forest and/or Wildlife departments.

The potential ill-effects of electromagnetic field (emf) though not envisaged for the project but have been managed by adopting standard design and engineering practices and avoiding routes of transmission lines passing through residential areas to the extent possible.

The project is also supporting the use of PCB-free insulating oils in the transformers. None of the companies is currently buying transformers with PCB based oils however companies like IESCO have used PCB based oils in the past and used oils in such transformers is replenished with the same type of oil. ESA prepared for IESCO outlines program for developing a deletion plan with adequate costing for the purpose.

Environmental Management Plan (EMP)

Each company has proposed a comprehensive environmental management plan (EMP) in their ESA reports in order to provide an implementation mechanism for the suggested mitigation measures. These EMPs provide the organization structure for the proposed environmental management during the project, and defines the roles and responsibilities of various project players. These EMPs include mitigation plan, monitoring plan, the communication and documentation requirements, grievance redressal mechanism, change management, and training needs, in the context of the environmental and social management of the project. All the companies have recruited at least one environment specialist to oversee the contractors' compliance with the proposed EMP during the project implementation. Similarly each ESA outlines a detailed training program for the project staff which will help in raising the awareness and equip the relevant project staff in the implementation of EMP. Further, each company has estimated the budgetary requirements to implement the EMPs and have promised to set aside these amounts for its effective implementation. Bank will ensure through its legal agreement that each company makes EMP part of its bidding document for the contractor.

Project in Disputed Areas (OP 7.60): IESCO's geographical area extends to parts of Azad Kashmir, which is a disputed territory between Pakistan and India. By supporting the proposed Project, the Bank does not intend to prejudice the final determination of the parties' claim on the Disputed Areas that benefit from the Project.

Environmental and Social Guidelines (ESG): To ensure attention to environmental aspects and safeguards issues, the companies have prepared Environmental and Social Guidelines to help prepare ESAs and environmental management plans that will be required by future Bank funding over the life of the Project/sub-projects.

Annex 11: Governance and Risk Assessment

PAKISTAN: Electricity Distribution and Transmission Improvement Project

1. The Government has been cognizant of the need to address governance issues in the power sector, and has taken actions – starting in the late 1990s – to improve sector governance. The Government's recognition of the problem reflects a variety of factors, such as:

- Transparency International ratings, which place Pakistan in the bottom 15% of countries (with a ranking of 142 out of 163 countries, in the 2007 Global Corruption Report – GCR) in terms of corruption;
- background surveys conducted for the GCR, which indicate that in the last year up to 50% of respondents had been requested for a bribe from an electricity provider; and
- general perceptions among the public at large about corruption in the utilities.

2. In 1998, the Government adopted a series of steps to address allegations and perceptions of corruption and mismanagement in WAPDA. A new management team was appointed in WAPDA, and was accorded full authority to address these issues. This team was complemented by large scale induction of personnel from the army, at all levels of the utility.

3. Among others, the management team focused intensively on the problem of electricity theft – where the general impression was that it was happening only with active participation and connivance of utility officials. A country wide campaign to detect illegal electricity connections was launched, quick actions were taken to remove such connections, and expedited procedures were enforced to re-connect consumers who were willing to acknowledge past errors and pay the required penalties and re-connection charges. The team also adopted strong measures to improve commercial discipline – particularly for prompt payment of bills, reducing the time lag between payment of bills by consumers and the receipt of funds by the utilities, and recovering past dues and arrears. Partly as a result of such commercial discipline, revenues of the power utilities showed a significant increase in the early part of this decade, and managements have continued to focus on this area over time. Consequently, the majority of DISCOs had achieved 100% collection rates by about 2002-3 and are sustaining this performance over time.

4. Nevertheless, governance issues continue to be a major challenge for the Government and for the utilities. One area that was not addressed under the 1998 program concerns corporate governance, particularly managerial authority and accountability; roles and responsibilities of the BoDs (as required under the Companies' Ordinance 1984 and other legislation), and potential conflicts of interest in exercising ownership and managerial functions. Specifically, the shares of the utility companies now separated from WAPDA are issued in the name of President of Pakistan. Through a proxy issued by the President, the Government's ownership function is exercised by the Chairman of PEPCO. PEPCO was established as a management company in 1998, and entrusted with the task of managing the corporate restructuring of WAPDA. However, till mid-2007, the Chairman of WAPDA was also appointed as Chairman, PEPCO. Therefore, the ownership function for all of the successor companies was being exercised by one of their competitors. Recognizing the potential conflict of interest that this could entail, the Government has separated the chairmanships of WAPDA and PEPCO, which took effect September 2007. WAPDA now focuses only on the development and operation of multi-purpose (water resource and hydropower) facilities.

5. Other challenges that have to be addressed include practices and procedures (notably in procurement) which may impede open and transparent procurement; high levels of technical and non-technical losses – including theft of electricity; and weaknesses in human resource and other management systems.

6. Indicators of collusion were found in contracts for distribution transformers. In two bids which were issued under Bank procurement procedures, indicators of collusion were identified by IESCO and MEPCO, which subsequently informed the Bank of these developments. In one contract, five bidders submitted identical bid prices, while in another contract five out of six bidders submitted identical prices. A Bank review of past bidding practices showed that the market appeared to have been divided among bidders. This arrangement has, according to WAPDA, PEPCO and the DISCOs, been facilitated by bidders' application of the rates in the WAPDA handbook/manual, or in formal and informal instructions issued by WAPDA from time to time. As part of this practice, WAPDA subsequently would negotiate with the lowest responsive bidders, which would often be a multiple, and allocate among them shares of the contract based on the Authority's estimate of the bidders' production capacity.

7. Another governance concern is power theft which is not widespread in Pakistan, but rather restricted geographically. For instance, power theft is a serious concern to HESCO's operation, which faces large losses, although not to the other three DISCOs covered under the Project. In FY07, HESCO's total technical and commercial losses amounted to 36.9% of electricity delivered, with commercial losses largely attributable to power theft. While no breakdown of the causes of commercial losses is available, they are attributed to a combination of factors: (i) theft by consumers bypassing meters; (ii) consumers stealing directly from distribution lines; (iii) bribery of meter readers; and (iv) inadequate bill collection and/or refusal to pay bills.

8. The Government, PEPCO, and the DISCOs/NTDC have expressed a strong desire to address these governance issues, and a number of actions have been initiated. These include:

- Preparation and submission to the Bank of a Procurement Action Plan, which aims to:
  - overcome the impediments to open competition among bidders (local and international) which have arisen due to restrictions on imports of engineering goods;
  - enhance scrutiny of the bidding processes through, *inter alia*, independent monitoring of bid preparation, issuance and evaluation;
  - develop a sanctions regime to penalize and deter activities that conflict with existing laws, rules, and regulations (such as the PPRA, the Competition Ordinance); and
  - undertake a communication campaign to publicize and enforce the Government's and the executing agencies' resolve to combat fraud and corruption as well as other non-competitive behavior.
- Preparation by HESCO of a pilot program (for one geographic area) to reduce losses – involving investments, administrative and managerial actions – which will be extended to other areas, based on successes achieved under the pilot scheme. The program involves replacing bare conductor by insulated/bundled conductor, installing meters on distribution transformers, replacing defective meters, etc. Administrative actions identified by HESCO include working with local authorities to expedite the prosecution of electricity theft – by establishing special courts; complementing law enforcement efforts by creating a special (police) force for detecting and prosecuting electricity theft; and involving communities and civil society in efforts to combat such theft.
- Identification of training programs – to be funded from the TA component of the Project – for BoDs, management teams in the utility companies, and relevant parts of the Government, to enhance corporate governance skills. Such training programs have been developed and are conducted by, inter alia, the Pakistan Institute of Corporate Governance, in collaboration with IFC.

9. The key governance challenges and risks– at the macro, entity and project levels – are summarized, along with agreed and anticipated mitigation measures, in the attached matrix.

Threats	Detailed definition of Risks	Mitigations proposed	Residual Risks
Macro level			
Restrictions on imports Risk Rating: Moderate	• Procurement of engineering goods by public sector entities is limited to local bidders only – through SRO 827(1) of 2001. • Absence of foreign bidders promotes non-competitive behavior, including formation of cartels and price fixing.	• Under the PAP, MWP, PEPCO and DISCOs/NTDC will work with Ministry of Commerce to rescind restrictions on foreign bidders, particularly for IFI funded projects	Delay in amending SRO 827(1), and/or ineffective implementation of PAP, could lead to continued non-competitive behavior by local bidders/cartels.
Weak Sector Governance Risk Rating: Moderate	• Perceived lack of empowerment of BODs, to oversee company performance within the mandate of Companies' Ordinance, 1984 • No formal definition of roles, responsibilities and authority of BODs, or its adoption • Lack professional Board experience among some Board Members	• PEPCO, jointly with MWP, other Ministries and entities, to develop and implement proposals for strengthening BOD oversight of companies • Training programs to be implemented for BODs, senior management, MWP, PEPCO and other stakeholders	
Entity level			
Weak Procurement Capacity Risk Rating: High	• DISCO procurement staff not familiar with Bank procurement. • Bidding process is delayed – due to multiple revisions in bidding documents, evaluation reports, etc. • Weak confidentiality of bidding process – information about bid prices, winning bidder, etc. is leaked • Costs are higher due to delays	• All DISCOs have hired procurement consultants, to manage procurement process • Under PAP, GOP/PEPCO will hire an International Procurement Advisor (IPA), to monitor compliance with Bank Procurement Guidelines • DISCOs commit to maintain adequate procurement capacity, in-house or consultants, for duration of Project. • Bank staff and IPA to provide hands on training to DISCO staff	DISCOs may not maintain adequate capacity for duration of the Project. Supervision missions to review/confirm availability of qualified staff/consultants
Debarment Regime not implemented Risk Rating: High	• PPRA Rules 2004 require procuring agency to "specify a mechanism and manner to permanently or temporarily bar" contracts for corrupt or fraudulent practices. Mechanism not yet implemented in DISCOs. Contractors (suppliers?) blacklisted for poor performance, but not for fraud and corruption. • Lack of effective debarment regime provides little incentive to companies engaging in corruption to change, and may deter other – more responsive firms – from bidding	• Under PAP, a consultant will be hired to develop a debarment regime – selection process is well advanced.	Cartels may continue to operate if implementation of debarment regime is weak. Effective follow up with PPRA, Competition Commission, etc. will be essential for achieving desired outcomes.

Project Level			
Collusion Risk Rating: Substantial	• Strong indicators of collusive practices were found by DISCOs (and Bank was informed) under two bids for distribution transformers. All five bidders under both contracts submitted identical prices • There is also a high probability of a cartel operating in the market for other distribution equipment • Bid prices are higher than under competitive procurement	• Under PAP, multiple steps to prevent cartel formation and operation – SRO 827(1) amendment, debarment regime, launching a communication plan – will be implemented. • IPA – for independent monitoring • Active collaboration with Competition Commission, to deal with collusive bidding practices • Pre-bid meetings, to inform potential bidders of penalties and prohibitions in case of collusion • Cancellation of bids under which evidence of collusion was found • New Standard Operating Procedures (SOP) to be prepared by PEPCO, for adoption by all entities	
Lack of transparency in Contract Awards Risk Rating: Moderate	• Contract awards may be subject to external influence – from potential bidders or other interested parties • Bidders/suppliers may – as regular practice, on demand, etc – have to provide facilitation payments, to secure contract awards, to receive payments for goods delivered • Higher contract prices, and • Significant risk of delays, due to complaints, representations, and other legal steps, by aggrieved bidders	• Independent consultants – hired by all DISCOs – to evaluate bids • IPA, to provide independent oversight • New SOPs to include provisions to avoid discretionary decision making, at evaluation and contract award stage	• Evaluation committees continue to be pressured or influenced by bidders, other stakeholders, etc
Post Bid Negotiations Risk Rating: Moderate	• Post bid negotiations have been the norm in WAPDA – partly responding to formation of cartels and uniform price offers by bidders. • Strength of cartel and absence of foreign competition means bidders continue to offer higher than market prices	• PAP confirms that instructions have been issued to all DISCOs and NTDC, to discontinue such practices • Procurement training by the Bank, to raise awareness about prohibition	
Substandard or delayed delivery, weak monitoring of assets Risk Rating: Moderate	• Some DISCOs have experienced delayed or sub-standard delivery, and have blacklisted companies • Risk of misappropriation and theft of assets. High price of copper and other materials increases risk of theft. Internal Audit by one DISCO identified theft of assets as a threat, and is conducting an audit or inventories. • Delays in project implementation • Higher costs	• Procurement consultants (hired and retained by all DISCOs) provide material inspection service also • IPA – to independently monitor completion of selected contracts • Strong monitoring (weekly record and verification of inventories), security steps – to be implemented by all DISCOs	

Annex 12: Project Preparation and Supervision

PAKISTAN: Electricity Distribution and Transmission Improvement Project

	Planned	Actual
PCN review	09/01/2005	09/01/2005
Initial PID to PIC	09/12/2005	10/03/2005
Initial ISDS to PIC	09/12/2005	09/21/2005
Appraisal	August 2007	08/27/2007
Negotiations	April 2008	04/26-28/2008
Board/RVP approval	May 2008	
Planned date of effectiveness	August 2008	
Planned date of mid-term review	October 2009	
Planned closing date	June 2012	

Key institutions responsible for preparation of the project:

Hyderabad Electric Supply Company (HESCO)
Islamabad Electric Supply Company Limited (IESCO)
Multan Electric Power Company (MEPCO)
Lahore Electric Supply Company (LESCO)
National Transmission and Dispatch Company (NTDC)
Pakistan Electric Power Company (PEPCO)

Responsible Agency:
Ministry of Water and Power, Government of Pakistan

Bank staff and consultants who worked on the project included:

Name	Title	Unit
Rashid Aziz	Team Leader/Senior Energy Specialist	SASDE
Vladislav Vucetic	Team Leader/Lead Energy Specialist	MNSSD
Javaid Afzal	Environmental Specialist	SASDN
Zia Aljalaly	Sr. Social Development Specialist	SASDS
Mikul Bhatia	Research Analyst	SASDE
Anwar Ali Bhatti	Financial Analyst	SACPK
Faiza Arshad Chaudary	Research Analyst	SASDE
Paramjit Singh Dhingra	Sr. Power Engineer	SASDE
Minerva Espinosa-Apurada	Program Assistant	SASDE
Julie M. Fraser	Sr. Financial Analyst	SASDE
Waqar Haider	Sr. Energy Specialist	AFTEG
Hasan Masood Mirza	Consultant (Procurement)	SARPS
Khizra Pervez	Program Assistant	SASDE
Kazim Saeed	Consultant (Energy Economist)	SASDE
Hasan Saqib	Sr. Financial Management Specialist	SARFM
Martin Serrano	Counsel	LEGES
Chau-Ching Shen	Senior Finance Officer	LOAFC
Rajesh Sinha	Sr. Financial Analyst	SASDE

Bank funds expended to date on project preparation:

1. Bank resources: $332,775
2. Trust funds: $0
3. Total: $332,775

Estimated Approval and Supervision costs:

Remaining costs to approval:

Estimated annual supervision cost: $150,000

Annex 13: Documents in the Project File

PAKISTAN: Electricity Distribution and Transmission Improvement Project

Project Description Documents

Environmental and Social Assessment reports

Procurement Assessments

Financial Management Assessments

Sector Statistics

Letter of Sector Policy

Annex 14: Statement of Loans and Credits

PAKISTAN: Electricity Distribution and Transmission Improvement Project

			Original Amount in US$ Millions						Difference between expected and actual disbursements	
Project ID	FY	Purpose	IBRD	IDA	SF	GEF	Cancel.	Undisb.	Orig.	Frm. Rev'd
P089378	2008	Balochistan SSIP	0.00	25.00	0.00	0.00	0.00	25.13	0.00	0.00
P084302	2008	Sindh Water Sector Improvement Project	0.00	150.20	0.00	0.00	0.00	160.68	-3.56	0.00
P090501	2007	Land Records Mgmt & Information Systems	0.00	45.65	0.00	0.00	0.00	48.53	0.94	0.00
P094086	2006	Balochistan Education Support Project	0.00	22.00	0.00	0.00	0.00	21.29	-0.65	0.00
P097402	2006	Second Partnership for Polio Eradication	0.00	46.70	0.00	0.00	0.00	0.32	-22.36	-5.25
P083929	2006	Punjab Municipal Services Improvement	50.00	0.00	0.00	0.00	0.00	43.38	18.58	0.38
P099110	2006	Pakistan Earthquake ERC	0.00	400.00	0.00	0.00	0.00	27.08	-18.01	0.00
P076872	2006	PIFRA II	0.00	84.00	0.00	0.00	0.00	59.22	14.57	0.00
P077306	2005	Tax Administration Reform Project	24.40	78.50	0.00	0.00	0.00	92.82	59.36	0.00
P088994	2005	Taunsa Barrage Emergency Rehab. & Modern	123.00	0.00	0.00	0.00	0.00	31.45	33.36	0.00
P078997	2004	Sindh On-Farm Water Management Project	0.00	61.14	0.00	0.00	0.00	10.46	8.99	0.00
P082621	2004	NWFP Community Infrastructure II (CIP2)	0.00	37.10	0.00	0.00	0.00	14.70	-8.56	0.00
P082977	2004	Second Poverty Alleviation Fund Project	0.00	238.00	0.00	0.00	0.00	111.83	-226.50	11.18
P083370	2004	PK Public Sect Capacity Building Project	0.00	55.00	0.00	0.00	0.00	24.25	16.70	0.00
P010556	2004	HIGHWAYS REHAB	50.00	150.00	0.00	0.00	0.00	185.34	-12.03	30.70
P077288	2003	National Education Assessment System	0.00	3.63	0.00	0.00	0.00	2.38	1.53	0.00
P074856	2003	HIV/AIDS Prevention Project	0.00	37.11	0.00	0.00	0.00	12.97	6.83	6.78
P074797	2003	PK Banking Sector Technical Assistance	0.00	26.50	0.00	0.00	0.00	6.61	1.27	0.00
P071454	2003	AJK Community Infrastructure & Services	0.00	20.00	0.00	0.00	0.00	34.58	-3.62	21.38
		Total:	247.40	1,480.53	0.00	0.00	0.00	913.02	133.16	65.17

PAKISTAN
STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars

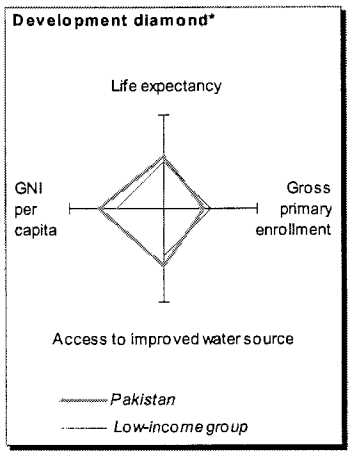
		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
2005	ABAMCO FUND	0.00	3.46	0.00	0.00	0.00	3.46	0.00	0.00
1995	AES Lal Pir	12.42	9.50	0.00	0.00	12.42	9.50	0.00	0.00
1996	AES Pak Gen	9.20	9.50	0.00	5.37	9.20	9.50	0.00	5.37
1995	Abamco Mgmt	0.00	0.29	0.00	0.00	0.00	0.29	0.00	0.00
1991	BRRIM	0.00	0.23	0.00	0.00	0.00	0.23	0.00	0.00
1993	Crescent Bahuman	0.00	0.31	0.00	0.00	0.00	0.31	0.00	0.00
1997	Crescent Bahuman	0.00	0.20	0.00	0.00	0.00	0.20	0.00	0.00
2001	Crescent Bahuman	2.72	0.00	2.50	1.50	2.72	0.00	2.40	1.50
2006	Dewan Petroleum	15.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00

2004	Dewan SME	0.00	0.98	0.00	0.00	0.00	0.00	0.00	0.00
2003	Dewan Salman	25.00	0.00	5.00	0.00	25.00	0.00	4.00	0.00
1991	Engro Chemical	0.00	1.95	0.00	0.00	0.00	1.95	0.00	0.00
2006	Engro Chemical	0.00	0.64	0.00	0.00	0.00	0.64	0.00	0.00
2001	Eni Pakistan	12.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00
1990	FIIB	0.00	0.27	0.00	0.00	0.00	0.27	0.00	0.00
1992	FIIB	0.00	0.40	0.00	0.00	0.00	0.40	0.00	0.00
2004	First UDL	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GTFP Metropolita	2.54	0.00	0.00	0.00	2.08	0.00	0.00	0.00
1996	Gul Ahmed	8.10	4.10	0.00	5.22	8.10	4.10	0.00	5.22
2006	Habib Bank Li...	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00
2003	KCT	6.46	0.00	1.50	0.00	6.46	0.00	1.50	0.00
1995	Kohinoor	6.25	6.30	0.00	2.03	6.25	6.30	0.00	2.03
2002	Micro Bank	0.00	2.43	0.00	0.00	0.00	2.43	0.00	0.00
2004	NBFI Credit	6.50	0.00	0.00	0.00	6.50	0.00	0.00	0.00
	Orix Finance	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	Orix Leasing	17.00	0.00	0.00	0.00	17.00	0.00	0.00	0.00
2005	PICT	6.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
2006	PICT	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1983	PPL	0.00	1.33	0.00	0.00	0.00	1.33	0.00	0.00
2002	PPL	0.00	5.63	0.00	0.00	0.00	5.63	0.00	0.00
1965	Packages	0.00	0.05	0.00	0.00	0.00	0.05	0.00	0.00
1987	Packages	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00
1991	Packages	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00
1994	Packages	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
1995	Packages	0.00	0.26	0.00	0.00	0.00	0.26	0.00	0.00
2005	Packages	25.00	5.43	0.00	0.00	0.00	1.47	0.00	0.00
2006	Paktel 2005	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2001	Sarah Textiles	1.12	0.00	0.00	0.00	1.12	0.00	0.00	0.00
2004	TRG Pakistan	0.00	4.16	0.00	0.00	0.00	4.16	0.00	0.00
2007	TRG Pakistan	0.00	2.50	0.00	0.00	0.00	2.50	0.00	0.00
2006	Tameer Bank	0.00	1.01	0.00	0.00	0.00	1.01	0.00	0.00
1996	Uch Power	29.60	0.00	0.00	0.00	19.68	0.00	0.00	0.00
	Total portfolio:	239.91	72.98	59.00	14.12	134.53	56.04	7.90	14.12

		Approvals Pending Commitment			
FY Approval	Company	Loan	Equity	Quasi	Partic.
2004	CSIBL	0.04	0.00	0.00	0.00
2006	IHFL II	0.01	0.00	0.00	0.00
2004	Dewan SME	0.00	0.00	0.00	0.00
2006	JSPE Fund	0.00	0.02	0.00	0.00
2006	Habib Bank	0.00	0.05	0.00	0.00
2006	Paktel 2005	0.00	0.00	0.00	0.03
2006	Orix SME OLP	0.02	0.00	0.00	0.00
2006	Tameer Bank	0.00	0.00	0.00	0.00
2006	Dewan Petroleum	0.00	0.00	0.00	0.03
	Total pending commitment:	0.07	0.07	0.00	0.06

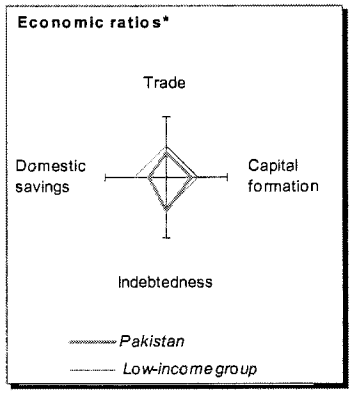
Annex 15: Country at a Glance

POVERTY and SOCIAL	Pakistan	South Asia	Low-income
2006			
Population, mid-year *(millions)*	159.0	1,470	2,353
GNI per capita *(Atlas method, US$)*	800	684	580
GNI *(Atlas method, US$ billions)*	126.7	1,005	1,364
Average annual growth, 2000-06			
Population *(%)*	2.4	1.7	1.9
Labor force *(%)*	3.8	2.1	2.3
Most recent estimate (latest year available, 2000-06)			
Poverty *(% of population below national poverty line)*	..	..	..
Urban population *(% of total population)*	35	29	31
Life expectancy at birth *(years)*	65	63	59
Infant mortality *(per 1,000 live births)*	79	66	80
Child malnutrition *(% of children under 5)*	38	45	39
Access to an improved water source *(% of population)*	91	84	75
Literacy *(% of population age 15+)*	47	60	62
Gross primary enrollment *(% of school-age population)*	87	110	104
Male	99	116	110
Female	75	105	99



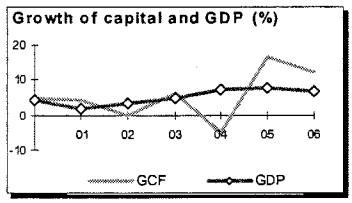
KEY ECONOMIC RATIOS and LONG-TERM TRENDS	1986	1996	2005	2006
GDP *(US$ billions)*	38.1	76.2	109.5	126.8
Gross capital formation/GDP	18.5	18.9	19.1	21.7
Exports of goods and services/GDP	10.3	14.0	15.7	15.3
Gross domestic savings/GDP	6.7	12.0	15.2	13.7
Gross national savings/GDP	16.5	15.2	25.6	23.6
Current account balance/GDP	-2.0	-6.0	-1.0	-4.3
Interest payments/GDP	1.5	1.6	0.7	0.7
Total debt/GDP	39.3	39.1	30.8	28.4
Total debt service/exports	25.0	28.3	10.9	8.8
Present value of debt/GDP	..	..	25.8	..
Present value of debt/exports	..	..	125.9	..

	1986-96	1996-06	2005	2006	2006-10
(average annual growth)					
GDP	5.0	4.2	7.7	6.9	6.6
GDP per capita	2.3	1.8	5.1	4.7	4.5
Exports of goods and services	8.0	8.2	9.6	9.9	4.1

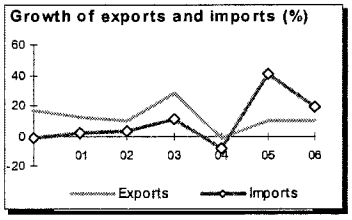


STRUCTURE of the ECONOMY

	1986	1996	2005	2006
(% of GDP)				
Agriculture	27.6	24.7	21.5	19.4
Industry	23.4	23.5	27.1	27.2
Manufacturing	16.3	15.2	18.6	19.5
Services	49.0	52.2	51.4	53.4
Household final consumption expenditure	77.3	74.4	76.9	75.5
General gov't final consumption expenditure	10.7	10.5	7.8	10.9
Imports of goods and services	16.9	17.8	19.6	23.3



	1986-96	1996-06	2005	2006
(average annual growth)				
Agriculture	4.3	2.4	6.5	1.6
Industry	5.8	5.5	12.1	5.0
Manufacturing	5.2	7.1	15.5	10.0
Services	5.1	4.8	8.5	9.6
Household final consumption expenditure	4.7	3.7	12.1	3.3
General gov't final consumption expenditure	3.0	4.5	1.7	48.3
Gross capital formation	4.3	2.2	16.7	12.1
Imports of goods and services	4.3	3.1	40.5	18.7

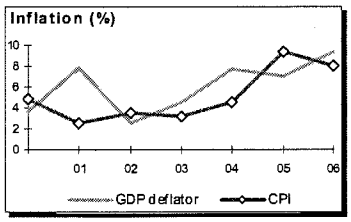


Note: 2006 data are preliminary estimates. Group data are for 2005.

*The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

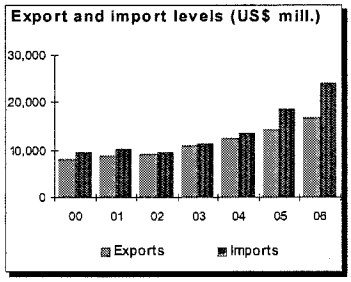
PRICES and GOVERNMENT FINANCE

	1986	1996	2005	2006
Domestic prices				
(% change)				
Consumer prices	..	10.8	9.3	7.9
Implicit GDP deflator	3.8	8.7	7.0	9.3
Government finance				
(% of GDP, includes current grants)				
Current revenue	14.6	15.0	13.7	14.2
Current budget balance	-0.8	-2.4	-0.8	-0.6
Overall surplus/deficit	-6.8	-6.0	-3.1	-3.7



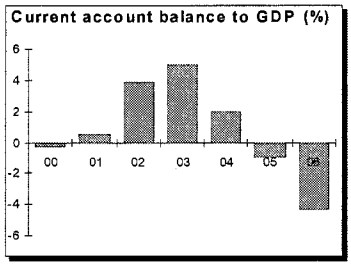
TRADE

	1986	1996	2005	2006
(US$ millions)				
Total exports (fob)	2,945	8,311	14,401	16,764
Cotton	513	507	111	124
Rice	342	504	933	1,011
Manufactures	2,055	4,989	8,268	9,881
Total imports (cif)	6,002	12,015	18,753	23,967
Food	..	1,519	706	783
Fuel and energy	1,039	2,010	4,534	..
Capital goods	..	..	..	..
Export price index *(2000=100)*	..	119	124	128
Import price index *(2000=100)*	..	113	131	142
Terms of trade *(2000=100)*	..	106	94	90



BALANCE of PAYMENTS

	1986	1996	2005	2006
(US$ millions)				
Exports of goods and services	3,796	9,977	17,801	20,345
Imports of goods and services	7,230	15,227	25,608	33,232
Resource balance	-3,434	-5,250	-7,807	-12,887
Net income	-640	-1,953	-2,386	-2,676
Net current transfers	3,302	2,610	9,125	10,105
Current account balance	-772	-4,593	-1,068	-5,458
Financing items (net)	1,200	4,163	458	6,588
Changes in net reserves	-428	431	610	-1,130
Memo:				
Reserves including gold *(US$ millions)*	1,638	2,839	10,722	12,053
Conversion rate *(DEC, local/US$)*	16.1	33.5	59.4	59.9



EXTERNAL DEBT and RESOURCE FLOWS

	1986	1996	2005	2006
(US$ millions)				
Total debt outstanding and disbursed	14,954	29,829	33,675	36,079
IBRD	605	3,007	2,238	2,151
IDA	1,560	3,480	6,865	7,777
Total debt service	1,626	3,287	2,443	2,269
IBRD	88	436	404	383
IDA	26	63	167	152
Composition of net resource flows				
Official grants	315	200	911	0
Official creditors	398	1,115	590	834
Private creditors	55	556	933	852
Foreign direct investment (net inflows)	106	922	2,183	3,500
Portfolio equity (net inflows)	3	285	451	0
World Bank program				
Commitments	756	558	1,550	1,498
Disbursements	249	651	845	975
Principal repayments	50	265	427	387
Net flows	199	386	419	588
Interest payments	63	234	145	148
Net transfers	136	152	274	440