PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$330 MILLION

TO THE

REPUBLIC OF INDIA

FOR

HARYANA POWER SYSTEM IMPROVEMENT PROJECT

JULY 13, 2009

Sustainable Development Department
India Country Management Unit
South Asia Region

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.
## CURRENCY EQUIVALENTS

Exchange Rate Effective June 2009  
(Average December – June, 2009)

<table>
<thead>
<tr>
<th>Currency Unit</th>
<th>Indian Rupees</th>
</tr>
</thead>
<tbody>
<tr>
<td>US $1</td>
<td>Rs 49.2</td>
</tr>
<tr>
<td>Rupees 1</td>
<td>0.0203 $</td>
</tr>
</tbody>
</table>

## FISCAL YEAR

July 1 – June 30

## ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&amp;G</td>
<td>Administrative and General Expenses</td>
</tr>
<tr>
<td>ABT</td>
<td>Availability Based Tariff</td>
</tr>
<tr>
<td>ACS</td>
<td>Average Cost of Supply</td>
</tr>
<tr>
<td>ADPCL</td>
<td>Allain Duhangan Power Company Ltd.</td>
</tr>
<tr>
<td>AG</td>
<td>Auditor General</td>
</tr>
<tr>
<td>AGM</td>
<td>Annual General Meeting</td>
</tr>
<tr>
<td>AMMS</td>
<td>Automatic Meter and Management System</td>
</tr>
<tr>
<td>AO</td>
<td>Audit Officer</td>
</tr>
<tr>
<td>APDRP</td>
<td>Accelerated Power Development and Reform Program</td>
</tr>
<tr>
<td>R-APDRP</td>
<td>Restructured-Accelerated Power Development and Reform Program</td>
</tr>
<tr>
<td>APL</td>
<td>Adaptable Program Loan</td>
</tr>
<tr>
<td>ARCS</td>
<td>World Bank’s Audit Reports Compliance System</td>
</tr>
<tr>
<td>ARR</td>
<td>Annual Revenue Requirement</td>
</tr>
<tr>
<td>ASCI</td>
<td>Administrative Staff College of India</td>
</tr>
<tr>
<td>AT&amp;C</td>
<td>Aggregate Technical and Commercial</td>
</tr>
<tr>
<td>ATE</td>
<td>Appellate Tribunal for Electricity</td>
</tr>
<tr>
<td>BBMB</td>
<td>Bhakra Beas Management Board</td>
</tr>
<tr>
<td>CAG</td>
<td>Comptroller &amp; Auditor General</td>
</tr>
<tr>
<td>CAO</td>
<td>Chief Audit Officer</td>
</tr>
<tr>
<td>CAS</td>
<td>Country Assistance Strategy</td>
</tr>
<tr>
<td>CCC</td>
<td>Customer Care Center</td>
</tr>
<tr>
<td>CEA</td>
<td>Central Electricity Authority</td>
</tr>
<tr>
<td>CER</td>
<td>Carbon Emission Reduction</td>
</tr>
<tr>
<td>CERC</td>
<td>Central Electricity Regulatory Commission</td>
</tr>
<tr>
<td>CDM</td>
<td>Clean Development Mechanism</td>
</tr>
<tr>
<td>CFL</td>
<td>Compact Fluorescent Lamp</td>
</tr>
<tr>
<td>CGFA</td>
<td>Corporate Governance and Financial Accountability</td>
</tr>
<tr>
<td>CGM</td>
<td>Chief General Manager</td>
</tr>
<tr>
<td>CGRF</td>
<td>Consumer Grievances Redressal Forum</td>
</tr>
<tr>
<td>CPR</td>
<td>Common Property Resources</td>
</tr>
<tr>
<td>CPSU</td>
<td>Central Public Sector Utility</td>
</tr>
<tr>
<td>CRB</td>
<td>Consolidated Revenue Balance</td>
</tr>
<tr>
<td>CSS</td>
<td>Central Sponsored Scheme</td>
</tr>
<tr>
<td>DHBVN</td>
<td>Dakshin Haryana Bijli Vitrans Limited</td>
</tr>
<tr>
<td>DIR</td>
<td>Detailed Investigation Report</td>
</tr>
<tr>
<td>DLHPPL</td>
<td>Dodson-Lindblom Hydropower Private Limited</td>
</tr>
<tr>
<td>DPE</td>
<td>Department of Public Enterprises</td>
</tr>
<tr>
<td>DPR</td>
<td>Detailed Project Report</td>
</tr>
<tr>
<td>IDA</td>
<td>International Development Association</td>
</tr>
<tr>
<td>IEG</td>
<td>Internal Evaluation Group</td>
</tr>
<tr>
<td>IEP</td>
<td>Integrated Energy Policy</td>
</tr>
<tr>
<td>IFB</td>
<td>Invitation for Bid</td>
</tr>
<tr>
<td>IFGI</td>
<td>Infrastructure for Growth Initiative</td>
</tr>
<tr>
<td>IHDC</td>
<td>Indian Hydropower Development Corporation</td>
</tr>
<tr>
<td>IP</td>
<td>Irrigation Pump</td>
</tr>
<tr>
<td>IPGCL</td>
<td>Indraprastha Power Generation Company Ltd.</td>
</tr>
<tr>
<td>IPP</td>
<td>Independent Power Producers</td>
</tr>
<tr>
<td>JICA</td>
<td>Japan Bank for International Cooperation</td>
</tr>
<tr>
<td>IUFR</td>
<td>Interim Unaudited Financial Report</td>
</tr>
<tr>
<td>KIW</td>
<td>Kreditanstalt für Wiederaufbau</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
</tr>
<tr>
<td>kWh</td>
<td>Kilowatt hour</td>
</tr>
<tr>
<td>LAN/WAN</td>
<td>Local Area Network / Wide Area Network</td>
</tr>
<tr>
<td>LT</td>
<td>Low Tension</td>
</tr>
<tr>
<td>LVDS</td>
<td>Low Voltage Distribution System</td>
</tr>
<tr>
<td>M &amp; E</td>
<td>Monitoring and Evaluation</td>
</tr>
<tr>
<td>MAT</td>
<td>Minimum Alternate Tax</td>
</tr>
<tr>
<td>MIS</td>
<td>Management Information System</td>
</tr>
<tr>
<td>MoEF</td>
<td>Ministry of Environment and Forests</td>
</tr>
<tr>
<td>MoP</td>
<td>Ministry of Power</td>
</tr>
<tr>
<td>MUs</td>
<td>Million Units</td>
</tr>
<tr>
<td>MVA</td>
<td>Mega-volt Ampere</td>
</tr>
<tr>
<td>MW</td>
<td>Mega-watt</td>
</tr>
<tr>
<td>NCR</td>
<td>National Capital Region</td>
</tr>
<tr>
<td>NCRPB</td>
<td>National Capital Region Planning Board</td>
</tr>
<tr>
<td>NEP</td>
<td>National Electricity Policy</td>
</tr>
<tr>
<td>NIFM</td>
<td>National Institute of Financial Management</td>
</tr>
<tr>
<td>NPTI</td>
<td>National Power Training Institute</td>
</tr>
<tr>
<td>NPV</td>
<td>Net Present Value</td>
</tr>
<tr>
<td>NRLDC</td>
<td>Northern Regional Load Dispatch Center</td>
</tr>
<tr>
<td>NTPR</td>
<td>National Tariff Policy</td>
</tr>
<tr>
<td>NTPC</td>
<td>National Thermal Power Corporation</td>
</tr>
<tr>
<td>O &amp; M</td>
<td>Operations and Maintenance</td>
</tr>
<tr>
<td>OED</td>
<td>Operations Evaluation Department</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>DSM</td>
<td>Demand-side Management</td>
</tr>
<tr>
<td>DT</td>
<td>Distribution Transformer</td>
</tr>
<tr>
<td>DVB</td>
<td>Delhi Vidyut Board</td>
</tr>
<tr>
<td>EA</td>
<td>Electricity Act</td>
</tr>
<tr>
<td>ED</td>
<td>Executive Director</td>
</tr>
<tr>
<td>EHV</td>
<td>Extra High Voltage</td>
</tr>
<tr>
<td>EIRR</td>
<td>Economic Internal Rate of Return</td>
</tr>
<tr>
<td>EMP</td>
<td>Environment Management Plan</td>
</tr>
<tr>
<td>ER&amp;R</td>
<td>Environment, Resettlement, and Rehabilitation</td>
</tr>
<tr>
<td>ERC</td>
<td>Electricity Regulatory Commission</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
</tr>
<tr>
<td>ESIU</td>
<td>Environment and Social Implementation Unit</td>
</tr>
<tr>
<td>ESMS</td>
<td>Environment and Social Monitoring Committee</td>
</tr>
<tr>
<td>ESPP</td>
<td>Environmental and Social Policy and Procedures</td>
</tr>
<tr>
<td>FA</td>
<td>Financial Advisor (Materials Management)</td>
</tr>
<tr>
<td>FIRR</td>
<td>Financial Internal Rate of Return</td>
</tr>
<tr>
<td>FM</td>
<td>Financial Management</td>
</tr>
<tr>
<td>FSA</td>
<td>Fuel Surcharge Assessment</td>
</tr>
<tr>
<td>GAAP</td>
<td>Governance and Accountability Action Plan</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse Gas Emission</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>GoH</td>
<td>Government of Haryana</td>
</tr>
<tr>
<td>GoI</td>
<td>Government of India</td>
</tr>
<tr>
<td>GSDDP</td>
<td>Gross State Domestic Product</td>
</tr>
<tr>
<td>HERC</td>
<td>Haryana Electricity Regulatory Commission</td>
</tr>
<tr>
<td>HESL</td>
<td>Haryana Ex-servicemen’s League</td>
</tr>
<tr>
<td>HPGC</td>
<td>Haryana Power Generation Corporation Limited</td>
</tr>
<tr>
<td>HPSIP</td>
<td>Haryana Power System Improvement Project</td>
</tr>
<tr>
<td>HPTI</td>
<td>Haryana Power Training Institute</td>
</tr>
<tr>
<td>HR</td>
<td>Human Resource</td>
</tr>
<tr>
<td>HSEB</td>
<td>Haryana State Electricity Board</td>
</tr>
<tr>
<td>HT</td>
<td>High Tension</td>
</tr>
<tr>
<td>HVDS</td>
<td>High Voltage Distribution System</td>
</tr>
<tr>
<td>HVPN</td>
<td>Haryana Vidyut Prasaran Nigam Limited</td>
</tr>
<tr>
<td>IA</td>
<td>Internal Audit</td>
</tr>
<tr>
<td>IBRD</td>
<td>International Bank for Reconstruction and Development</td>
</tr>
<tr>
<td>ICAI</td>
<td>Institute of Chartered Accountants of India</td>
</tr>
<tr>
<td>ICB</td>
<td>International Competitive Bidding</td>
</tr>
<tr>
<td>PIC</td>
<td>Public Information Center</td>
</tr>
<tr>
<td>PID</td>
<td>Project Information Document</td>
</tr>
<tr>
<td>PIE</td>
<td>Project Implementing Entity</td>
</tr>
<tr>
<td>PFC</td>
<td>Power Finance Corporation</td>
</tr>
<tr>
<td>PGCIL</td>
<td>Powergrid Corporation of India Limited</td>
</tr>
<tr>
<td>PGDCA</td>
<td>Post-graduate Diploma in Computer Applications</td>
</tr>
<tr>
<td>PERT</td>
<td>Program Evaluation and Review Technique</td>
</tr>
<tr>
<td>PJIE</td>
<td>Project Implementing Entity</td>
</tr>
<tr>
<td>PPD</td>
<td>Power Planet Development</td>
</tr>
<tr>
<td>PPR</td>
<td>Power Procurement Regulation</td>
</tr>
<tr>
<td>PSH</td>
<td>Power Sector Holding</td>
</tr>
<tr>
<td>PWD</td>
<td>Public Works Department</td>
</tr>
<tr>
<td>R &amp; M</td>
<td>Renovation and Modernization</td>
</tr>
<tr>
<td>RAP</td>
<td>Resettlement Action Plan</td>
</tr>
<tr>
<td>RBB</td>
<td>Reserve Bank of Bangladesh</td>
</tr>
<tr>
<td>REB</td>
<td>Reserve Bank of India</td>
</tr>
<tr>
<td>RCB</td>
<td>Reserve Bank of China</td>
</tr>
<tr>
<td>REC</td>
<td>Rural Electrification Corporation</td>
</tr>
<tr>
<td>RGI</td>
<td>Rural Green Initiative</td>
</tr>
<tr>
<td>RAP</td>
<td>Resettlement Action Plan</td>
</tr>
<tr>
<td>ROE</td>
<td>Return on Equity</td>
</tr>
<tr>
<td>ROSC</td>
<td>Reports on the Observance of Standards and Codes</td>
</tr>
<tr>
<td>S &amp; I</td>
<td>Supply and Installation</td>
</tr>
<tr>
<td>SBD</td>
<td>Standard Bidding Documents</td>
</tr>
<tr>
<td>SCD</td>
<td>Scheduled Caste/Scheduled Tribe</td>
</tr>
<tr>
<td>SCADA</td>
<td>Supervisory Control And Data Acquisition</td>
</tr>
<tr>
<td>SIB</td>
<td>Specific Investment Loan</td>
</tr>
<tr>
<td>SIP</td>
<td>Scheme Implementation Plan</td>
</tr>
<tr>
<td>SLDC</td>
<td>State Load Dispatch Center</td>
</tr>
<tr>
<td>SWOT</td>
<td>Strength, Weakness, Opportunity, Threat</td>
</tr>
<tr>
<td>T&amp;D</td>
<td>Transmission and Distribution</td>
</tr>
<tr>
<td>TA</td>
<td>Technical Assistance</td>
</tr>
<tr>
<td>ToR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>TPS</td>
<td>Thermal Power Station</td>
</tr>
<tr>
<td>TSA</td>
<td>Transmission System Availability</td>
</tr>
<tr>
<td>UI</td>
<td>Unscheduled Interchange</td>
</tr>
<tr>
<td>UMPP</td>
<td>Ultra-Mega Power Project</td>
</tr>
<tr>
<td>USD</td>
<td>United States Dollar</td>
</tr>
<tr>
<td>WTP</td>
<td>Willingness to Pay</td>
</tr>
</tbody>
</table>

Vice President: Isabel M. Guerrero  
Country Director: Roberto Zagha  
Sector Director: John Henry Stein  
Sector Manager: Salman Zaheer  
Task Team Leader: Ashish Khanna/Sudeshna Banerjee
INDIA
HARYANA POWER SYSTEM IMPROVEMENT PROJECT

CONTENTS

Page

I. STRATEGIC CONTEXT AND RATIONALE ................................................................. 1
   A. Country and sector issues ...................................................................................... 1
   B. Rationale for Bank involvement ............................................................................ 6
   C. Higher level objectives to which the project contributes ...................................... 9

II. PROJECT DESCRIPTION .......................................................................................... 9
   A. Lending instrument ............................................................................................... 9
   B. Project development objective and key indicators ................................................. 9
   C. Lessons learned and reflected in the project design .............................................. 11
   D. Alternatives considered and reasons for rejection .............................................. 12

III. IMPLEMENTATION ................................................................................................ 13
   A. Partnership arrangements ...................................................................................... 13
   B. Institutional and implementation arrangements ................................................... 13
   C. Monitoring and evaluation of outcomes/results ..................................................... 13
   D. Sustainability ......................................................................................................... 15
   E. Critical risks and possible controversial aspects ................................................... 15
   F. Loan/credit conditions and covenants .................................................................. 16

IV. APPRAISAL SUMMARY ....................................................................................... 17
   A. Economic and financial analyses ......................................................................... 17
   B. Technical ............................................................................................................... 19
   C. Fiduciary ............................................................................................................... 19
   D. Social .................................................................................................................... 21
   E. Environment ......................................................................................................... 21
   F. Safeguard policies ................................................................................................. 23
   G. Policy exceptions and readiness ......................................................................... 23
INDIA

HARYANA POWER SYSTEM IMPROVEMENT PROJECT

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

SASDE

Date: July 13, 2009  Team Leader: Ashish Khanna/Sudeshna Banerjee
Country Director: Roberto Zagha  Sectors: Energy (100%)
Sector Manager: Salman Zaheer  Themes: Other public sector governance
Project ID: P110051  Corporate governance
Environmental Assessment: Full Assessment
Lending Instrument: Specific Investment Loan
Sectors: Energy (100%)
Themes: Other public sector governance
Other human development
Corporate governance

Project Financing Data

For Loans/Credits/Others:
Total Project Cost (US$m.): 410
Cofinancing (US$m.): 80 (Rupee equivalent)
Total Bank Financing (US$m.): 330
Proposed Terms: IBRD flexible loan, with variable-spread terms and level repayments, has a final maturity of 30 years including a grace period of five years.

<table>
<thead>
<tr>
<th>Source</th>
<th>Local</th>
<th>Foreign</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BORROWER/RECIPIENT</td>
<td>80.0</td>
<td>0.0</td>
<td>80.0</td>
</tr>
<tr>
<td>International Bank for Reconstruction and Development</td>
<td>0.0</td>
<td>330.0</td>
<td>330.0</td>
</tr>
<tr>
<td>Total</td>
<td>80.0</td>
<td>330.0</td>
<td>410.0</td>
</tr>
</tbody>
</table>

Borrower:
India

Responsible Agencies:
Haryana Vidyut Prasaran Nigam Limited (HVPN),
Shakti Bhawan, Sector - 6, Panchkula 134 109, Haryana, India

Dakshin Haryana Bijli Vitran Nigam (DHBVN)
Vidyut Sadan, Vidyut Nagar, Hissar, Haryana, India – 125005.

Estimated disbursements (Bank FY/US$m)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>96.5</td>
<td>114</td>
<td>90</td>
<td>28.5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>96.5</td>
<td>210.5</td>
<td>300.5</td>
<td>329</td>
<td>330</td>
<td></td>
</tr>
</tbody>
</table>

Project implementation period: Start: August 10, 2009  End: July 31, 2014
Expected effectiveness date: August 10, 2009
**Expected closing date:** December 31, 2014

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the project depart from the CAS in content or other significant respects?</td>
<td>[ ] Yes [X] No</td>
</tr>
<tr>
<td><strong>Ref. PAD I.C.</strong></td>
<td></td>
</tr>
<tr>
<td>Does the project require any exceptions from Bank policies?</td>
<td>[ ] Yes [X] No</td>
</tr>
<tr>
<td><strong>Ref. PAD IV.G.</strong></td>
<td></td>
</tr>
<tr>
<td>Have these been approved by Bank management?</td>
<td>[ ] Yes [ ] No</td>
</tr>
<tr>
<td>Is approval for any policy exception sought from the Board?</td>
<td>[ ] Yes [X] No</td>
</tr>
<tr>
<td>Does the project include any critical risks rated “substantial” or “high”?</td>
<td>[X] Yes [ ] No</td>
</tr>
<tr>
<td><strong>Ref. PAD III.E.</strong></td>
<td></td>
</tr>
<tr>
<td>Does the project meet the Regional criteria for readiness for implementation?</td>
<td>[X] Yes [ ] No</td>
</tr>
<tr>
<td><strong>Ref. PAD IV.G.</strong></td>
<td></td>
</tr>
</tbody>
</table>

- **Project development objective** \[Ref. PAD II.C., Technical Annex 3\]
  - Improve the availability, efficiency and accountability of electricity supply in the state of Haryana through strengthening the transmission and distribution systems.

- **Global environment objective** \[N.A.\]

- **Project description** \[One-sentence summary of each component\] \[Ref. PAD II.D., Technical Annex 4\]
  - **Component I** \($312.5\) Million\) Priority investments in power transmission (predominantly substations, transmission lines and towers) to increase power transfer capability of the state transmission network and reduce overall system losses
  - **Component II** \($87.5\) Million\) Investments in three urban distribution centers, aimed at reducing distribution losses and improving customer service
  - **Component III** \($10\) Million\) Technical assistance including consultancy services and training to strengthen management systems and institutional capacity of transmission and distribution companies for internal transformation through process improvements, use of technology, and organizational changes

- **Which safeguard policies are triggered, if any?** \[Ref. PAD IV.F., Technical Annex 10\]
  - The project has been assigned Category ‘A’ due to the large area requirements of some of the infrastructure facilities particularly the 400 KV sub-stations and the potential to impact specified areas of the Aravallis, designated as eco-sensitive zone by Government of India.
  - Most individual project schemes reviewed so far have been found to have limited impacts.
  - The following safeguard policies are triggered by the project:
    - Environmental Assessment (OP/BP 4.01)
    - Natural Habitats (OP/BP 4.04)
    - Physical Cultural Resources (OP/BP 4.11)
    - Involuntary Resettlement (OP/BP 4.12)
    - Forests (OP/BP 4.36)

- **Significant, non-standard conditions, if any, for:** \[Ref. PAD III.F.\]
  - Board presentation:
    - None.

- **Loan/credit effectiveness:**
  - I. Subsidiary loan agreement between State of Haryana and the implementing agencies - HVPN, DHBVN to be signed.
Covenants applicable to project implementation:

- Standard Bank legal requirements.
- Implementing agencies (HVPN and DHBVN) shall furnish to the Bank, no later than six months after the end of each fiscal year, certified copies of its audited financial statements.
- During the period of Project implementation, implementing agencies (HVPN and DHBVN) shall maintain an adequate organizational structure, with functions, powers, staff and resources necessary and appropriate for its Respective Parts under the Project.
- For HVPN, Debt Service Coverage Ratio\(^1\) (DSCR) of 1 for FY 2012, and 1.1 for FY 2013 and FY 2014.

---

\(^1\) Debt Service Coverage Ratio is defined as (Profit after Tax + Interest and Finance charges for capital expenditure loans + Depreciation)/(Interest and Finance charges for capital expenditure loans + Repayment for capital expenditure loans)
I. STRATEGIC CONTEXT AND RATIONALE

A. Country and sector issues

India’s Power Sector

1. India recorded 9.1% GDP growth rate during FY2007-08. Even so, inadequate power supply remains a critical constraint to sustained and inclusive growth, scaled up private investment, and economic competitiveness. Over the past five years, while GDP growth has averaged about 8% per year, grid-based electricity supply has grown by only 4.9% per year, leaving consumers to reach for alternative sources, or to simply do without electricity. The cost of un-served energy is high, placing an inordinate burden on households and industries. The Economic Survey of 2006 estimated the annual cost to the economy from power sector inefficiencies to be about US$ 75 billion, or 7% of GDP.

2. The Government of India (GoI) recognizes the need to scale up infrastructure investments and services for the country to achieve the original targets of 9-10% annual growth targets set out in the 11th Five-Year Plan (2007-12) (The growth estimates have been lowered to around 6% due to the global economic slowdown). GoI has envisaged an ambitious investment program to meet the expanding demand for power. Over 80,000 MW of new generation capacity has been targeted for addition in the 11th Five Year Plan, with corresponding investments in transmission and distribution networks. Investment costs for this five-year program – covering generation, transmission, distribution, and rural electrification - are estimated at approximately $175 billion (11th Plan and Ministry of Power, 2005).

3. Improvements in electricity services face a particular challenge since electricity is a “concurrent” subject under the Indian Constitution, with distinct and overlapping roles for both central (federal) and state governments. The central government establishes the national legal framework and sets policies that provide overall guidance but may not necessarily be binding on states in areas within the latter’s jurisdiction. Central government-owned corporations play an important role in power generation and transmission, for the purposes of inter-state supply. State governments are responsible for electricity transmission and distribution within their territories. They may also engage in power generation, primarily to meet the state’s individual energy requirements, though many energy-rich states have their companies export surplus power.

4. The enactment of the landmark Electricity Act 2003 has been followed by a steady improvement in the country’s policy framework. This has actually built upon the establishment of autonomous electricity regulatory commissions at the center and in many states in the period after 1998. In recent years, important policies that have been announced include the National Electricity Policy (NEP) 2005, the National Tariff Policy (NTP) 2006, and the Integrated Energy Policy (IEP) 2007. The central government has also launched major initiatives to expand rural access (targeting access to all villages by

---

2 Latest projections of RBI
2012) and to attract private investment to meet the incremental power generation target of 80,000 MW.

5. The major challenge to realizing the benefits of these initiatives lies in their effective implementation, much of it concentrated at the state level. Compared to central sector entities, state entities have weaker governance structures and are more vulnerable to political interference. State entities are also financially constrained due to a combination of low managerial and organizational capacity, operational inefficiencies and below cost-recovery tariffs that have contributed to a spiraling low equilibrium cycle. The participation of the private sector is still marginal, particularly in transmission and distribution, but is expanding in electricity generation.

**Haryana’s Power Sector**

6. Haryana’s power sector is grappling with the twin challenges of serving a growing and commercially vibrant urban and industrial customer base while also managing the supply of scarce electricity to the state’s traditional economic communities in rural areas.

7. Haryana, with a population of 20 million, is a middle income state (GSDP $1,143 per capita in FY2008) with a traditionally agricultural economy. Over the past decade, a growing manufacturing and services sector has fuelled rapid real estate and infrastructure growth and a shift away from agriculture in the composition of the economy. The state is located in the northern part of India, with its southern towns now an integral part of the national capital region (NCR). Haryana, along with neighboring Punjab, contributed significantly to India’s green revolution of the 1960s and its food security. Hence agriculture continues to play an important role in the state’s identity and economic structure. It was the first state to achieve 100% electrification in 1971 and boasts well-developed telecommunications and transport infrastructure networks.

8. Haryana was among pioneer states in terms of initiating legal, structural, regulatory and institutional reforms in the power sector. In 1998-99, the Government of Haryana (GoH) unbundled the vertically-integrated Haryana State Electricity Board (HSEB) and corporatized the four successor companies - Haryana Power Generation Corporation Limited (HPGC) to undertake generation of electricity; Haryana Vidyut Prasaran Nigam Limited (HVPN) to undertake transmission; and Uttar Haryana Bijli Vitran Nigam Limited (UHBVN) and Dakshin Haryana Bijli Vitran Nigam Limited (DHBVN) with the exclusive mandate over electricity distribution and retail supply in the north and south of the state respectively. Further, the Haryana Electricity Regulatory Commission (HERC) was set up in 1998 as an autonomous entity.

9. The critical challenges facing Haryana’s power sector include shortages, below cost-recovery tariffs, and limited capacity of service providers and other key stakeholders. On the positive side, the state’s relatively strong fiscal position, has allowed it to partly mitigate the negative financial consequences of highly subsidized power
supply to farmers, the largest consumer group. The main challenges are summarized below:

- **Rising electricity demand and persistent shortages:** Haryana has seen power shortages grow in recent years, with peak-time deficits of 1200-1500 MW and off-peak deficits of 400-600 MW. This translates to 10-30% of the installed capacity of 4680 MW. These shortages have resulted in costly coping strategies adopted by consumers who could afford them (oil-based captive generation by industry, commercial entities, and wealthier households) and inordinate pressures on the power sector to supply scarce electricity in a manner sensitive to social, economic and political interests. Annual electricity demand growth forecast for the 2007-12 period ranges from 9 to 14%, with the possibility of the recent economic downturn dampening this demand growth.

- **Low cost recovery through tariffs:** With rising costs and deteriorating services, state authorities have found it difficult to raise tariffs. The bulk of the burden would fall on those without alternate means of power supply (farmers and poorer households). The state has opted instead to subsidize supply costs from the budget, but this has still left the utilities vulnerable to inadequate compensation. The cost of power supply in Haryana is higher than in other states because of its long distance from primary fuel sources, old and inefficient state power generation capacity, and difficulty in securing long-term supply from non-state owned power plants on competitive terms (due to the general power shortage in the country). Power purchase costs have been continually increasing and constitute more than 80% of the cost of supply. Although HERC has passed through the cost of additional power purchases to the tariff on two occasions – in 2006 and 2008 – in the form of Fuel Surcharge Adjustments (FSA), basic tariffs\(^3\) have not been revised since September 2001. The utilities do, however, file their annual revenue requirement (ARR) every year as part of codified regulatory procedure.

- **Political economy of power supply to agricultural consumers:** Farmers, constituting the largest and arguably most influential political group, consume almost 40% of power. With some exceptions, they have successfully resisted having their consumption metered and are charged a highly subsidized flat tariff of Rs 35, or $ 0.7 per horsepower of load per month. As mandated by the Electricity Act, the power utilities are compensated for subsidized supply to specified consumer groups, with compensation from the state budget and cross-subsidies. However, without adequate metering of supply to farmers (the largest subsidized group), HERC, GoH and the utilities have traditionally been unable to agree on estimates of agricultural consumption and consequently on the budget subsidy to be allocated to the utilities. That being said, GoH has a good record of paying the HERC-determined subsidy amount.

- **Incomplete sector and institutional reforms:** The sector was unbundled a decade ago, but empowering the four successor companies is still a work in process. While both the Companies Act under which they are registered and the policy framework provide adequate room for the companies to maintain their autonomy,

---

3 Average Tariff per unit in DHBVN increased from 6 cents/unit in FY 2006 to 7 cents/unit in FY 2008
weak management systems and limited commercialization of the still-significant rural economy have resulted in them continuing to depend on GoH for operating subsidies, investment support, and the appointment of senior management. The business processes and co-ordination mechanisms between energy planning, procurement and financial managers leave substantial scope for improvement. Within each of the utilities, there is an adverse age profile of employees (due to limited recruitment over the past 2 decades); inadequate skill base in the financial, human resource (HR) and regulatory areas; and limited management information systems (MIS) for accountability. Productivity improvement through better use of technology and internal process enhancements can pay significant dividends.

- **Evolving sector regulatory environment:** Haryana was one of the first states to set up an independent regulatory commission and initiate first generation reforms such as establishing commercial relations between generation, transmission and distribution entities, having the entities file for revenue requirement (tariffs) annually and on a cost-of-service basis, and having the state budget compensate the utilities for subsidized supply. However, in recent years, HERC’s disallowance of certain costs has been challenged by the utilities in the Appellate Tribunal for Electricity (ATE), with ATE ruling frequently in favor of the utilities. The “maturing” of the regulatory system offers an opportunity for the utilities to improve data quality and credibility of their tariff filings and for the regulator to build its capacity. This institutional strengthening would allow Haryana to advance on second generation regulatory reforms where it is currently lagging. These include the approval of multi-year tariffs (to provide the predictability needed for investment decisions), and market design and open access (to foster competition).

10. The above challenges have led to a worsening financial performance and higher dependence on subsidies. The budget subsidies for power supply (provided directly to distribution companies) have increased from $210 million in FY2003-04 to about $482 million in FY2007-08 (1.5% of GSDP and about 43% of sales). Further, the sector’s financial losses after subsidy continue to rise, amounting to $57 million and $101 million (after subsidy) respectively for DHBVN and UHBVN in FY2007-08, equivalent to 10% and 26.5% of company sales. Fiscally, the state is among the best placed in India to supply this volume of subsidy. Yet, its ability will be tested in the current global downturn.

**Haryana’s Sector Investment Program and Institutional Development Agenda**

11. In the past few years, GoH has revitalized its efforts to reform the power sector, launched a Rs 25524 crore ($5.1 billion) investment program, and is complementing it with a phased institutional development program. To reduce the generation deficit, GoH is implementing a well-designed program to leverage private investment and implementation capacity to augment generation, balancing the dominance of the public sector. More recently, it has turned its attention to strengthening the institutional and physical capacity of the state transmission and distribution utilities, which will ultimately remain responsible for improving electricity services within the state.
12. **Improving sector management, enhancing governance and building institutions:** To use the new generation capacity under construction and improve services, the state’s transmission and distribution companies will need to increase annual investments by almost five times their historical levels. GoH envisages continued state control of these sub-sectors⁴, but has recognized the need to strengthen their governance arrangements and implementation capacity to prepare them for an enhanced role. GoH has already undertaken initiatives to improve overall sector management through the following measures:

- **Enhancing the quality of MIS:** To improve estimates of agricultural power consumption, GoH is undertaking a $101 million investment program to not only segregate rural feeders into agricultural and non-agricultural feeders, but also meter these. This would facilitate credible estimates of agricultural power consumption, reduce contentious discussion on the level of subsidy requirement, and also provide a technical system for round-the-clock supply for non-farm use in rural areas. It would thereby contribute to improved opportunities for poverty alleviation in rural areas.

- **Improving regulatory effectiveness and enhancing consumer voice in decision-making:** GoH has been one of few Indian state governments to contract 5000 MW of new generating capacity in a transparent and competitive manner, without its award decisions being challenged in court. Institutional measures on compliance with the Right to Information Act (RTI) are in place, with designated information officers in corporate and field offices. Quarterly summary reports on compliance are prepared and presented to directors. Several regulations for enhancing consumer voice and service have been codified by HERC, such as a consumer grievance redressal forum, the appointment of an Ombudsman, and performance standards for consumer service.

- **Internal transformation through process improvements, use of technology and organizational changes:** HVPN has prepared an organizational restructuring plan based on manpower planning. The increase in manpower is under implementation while other aspects of organizational restructuring will be carried out based on comprehensive analysis. DHBVN is finalizing a similar plan and is carrying out the implementation of process re-engineering and IT applications through use of Enterprise Resource Planning (ERP) software across finance, HR, billing and automation of technical infrastructure.

13. **Investments to alleviate supply shortages and reduce dependence on high cost power purchase:** The generation expansion program aims to increase generation capacity from about 4680 MW in FY2008-9 to about 9300 MW over the next five years. The state has adopted several investment models to scale up its generation capacity, which till 2008 was dominated by the public sector⁵. Haryana is one of the few Indian states that has closed power purchase contracts through multiple options – state owned, joint ventures, and private sector through competitive tariff bidding processes. The state has

---

⁴ India’s first PPP in state transmission, using Ministry of Power guidelines, is being undertaken now in Haryana for a project totaling $ 100 million.

⁵ As of 2008, only 0.6% of Haryana’s generating capacity was in private hands.
successfully concluded, through a transparent, cost effective and non-litigious process, contracts for over 3500 MW of private generation capacity (involving investment of over $32 billion). This includes a 1320 MW plant located in Haryana, and long-term power purchase contracts for an additional 2189 MW awarded to different private sector players, with generation plants located outside the state. Moreover, Haryana is the first state in India to commission a competitively procured thermal unit (300 MW) in a record time period of 36 months.

14. In the transmission sector, Haryana is adding about 4100 MVA of transmission capacity to evacuate the new generating capacity, strengthen the intra-state transmission system, and bring down intra-state transmission losses from the present 5.7% to 2%. In the distribution sector, the state is focused on improving accountability, efficiency and service quality. Haryana is also undertaking various measures in the area of energy efficiency and demand side management (DSM).

B. Rationale for Bank involvement

15. As mentioned above, the major remaining obstacles to making India’s power sector responsive to the demands of consumers and a modernizing economy are at the state level, predominantly in electricity distribution and transmission. Using investment lending to alleviate the infrastructure deficit in a rapidly growing state that also has pockets of poverty, the Bank is well-placed to draw on its global and country-specific experience in institutional reform to support electricity improvements in Haryana. The project would also complement the Bank’s other power sector engagements in India which focus on power generation (hydro and coal plant rehabilitation), transmission, and demand-side energy efficiency.

16. **Focus at the state level - the choice of Haryana:** Haryana is demonstrating strong commitment to improving the quality and reliability of its electricity supply through a power sector revitalization program. As mentioned above, this commitment is underscored by the successful contracting of 5000 MW of largely privately-financed generation capacity, regular and timely payment of subsidies for agricultural power supply, and revitalization of the utility reform agenda, for which the state has sought a lending cum knowledge partnership with the Bank. This commitment, together with Haryana’s economic fundamentals, present the opportunity to serve a large unmet demand from industry, commercial establishments and urban households that have the ability and willingness to pay for good quality electricity services and puts the Bank in a good position to support a politically viable approach to improving electricity services in a sustainable and inclusive manner. Lessons from this engagement will be useful for other states in India.

17. Within the framework of this program, but under a separate operation\(^6\), the Bank (IBRD) and the Global Environment Facility (GEF) are financing the rehabilitation of

---

\(^6\) The World Bank is also planning to support the rehabilitation of two power plants in Haryana (Panipat unit 3 and 4) as part of its Coal Fired Generation Rehabilitation Project. The project was approved by the World Bank Board in June 2009.
one of Haryana’s older coal-fired power plants to improve its energy efficiency and reliability. It is an encouraging signal that Haryana sees value in re-engaging with the Bank. It was the first among several Indian states in which the Bank supported reform projects in the late 1990s and has actively sought a programmatic partnership to help improve sector performance.

18. **Focus on transmission and distribution:** Having managed a successful private partnership on new generation projects – which will double power generation/supply over the next few years - there is a need now for the state to scale up the organizational and physical capacity of its transmission and distribution network, and also to focus on improving service delivery mechanisms. Without this, there is a high risk of payment default to private generators, who will also have the option of selling their power to other states or directly to creditworthy buyers (under regulations for third-party access). Haryana sees the partnership with the Bank as a multi-phased engagement to improve the management and operations of the transmission and distribution companies, and improve regulatory effectiveness in the state. Some improvements have become visible even in the project preparation phase: In investment planning, technical design, and procurement, and in articulating company goals and capacity-building programs, through vision workshops and study tours facilitated by the Bank. Lessons from the proposed project, particularly in improving services in urban areas, could be scaled up in subsequent phases.

19. **Opportunity to re-engage in power sector reform at the state level:** The Bank’s first generation of state-level reform engagements took place between 1998 and 2004 in Orissa, Haryana, Andhra Pradesh, Uttar Pradesh and Rajasthan. They ended with mixed results. An important contribution of these state-level reform operations was to help national policymakers in framing the Electricity Act of 2003, which has since established the reform roadmap for the country. The proposed project will be the Bank’s first state-level investment operation within the broad purview of the new legislation, providing the Bank an opportunity to advance the implementation of the Electricity Act in a state keen on building on the achievements under the first Bank-funded project, which closed in 2000.

20. In line with the middle-income state agenda of the new CAS, the proposed project in Haryana will also focus on governance and institutional development of power transmission and distribution entities. Finally, the project contributes to the implementation of the broader South Asia Energy Strategy of the World Bank that identifies service/distribution improvement, clean energy and transmission/energy markets as the three pillars of engagement.

21. The project is consistent with the vision of the state utilities to be the best in their respective domains. The performance will be measured by operational efficiency gains and service delivery improvements. National operational efficiency benchmarks on

---

7 Underscoring the political support for this project, the Haryana Chief Minister and a large delegation of the state’s business leaders visited World Bank Headquarters in Washington DC in 2007 to request support for improving infrastructure, including electricity services in the state.
indicators such as losses, collection efficiency, and quality of physical assets will be employed. Similarly, service delivery improvements will be judged by not only physical outcomes but also establishment of a robust and credible measurement system on service standards that are aligned with HERC’s standards of performance.

22. Over the coming decade, the sector is expected to emerge as a dynamic combination of private and public players operating across the supply chain. The regulator, overseeing the sector, will operate with a substantially enhanced capacity, enforcing market and competition enhancing measures and greater public participation in regulatory decision-making. By 2020, Haryana’s power companies aim to be setting national benchmarks in customer service and operational efficiency, along with sustaining financial viability and a transparent subsidy determination and delivery model targeted for specific consumer categories.

23. **Strong linkages to new Country Strategy for India:** The project and these higher level objectives are aligned to two pillars of the new Country Strategy for India, namely (i) achieving rapid growth; and (ii) increasing the effectiveness of service delivery by focusing on infrastructure investments and the “how” of implementation. This would be achieved by (i) enabling the state’s electricity transmission and urban distribution services – executed by HVPN and DHBVN respectively – to become more efficient and cost-effective through Bank support for high-quality project preparation, contracting and execution; (ii) strengthening the institutional capacity of these companies, not only in areas such as engineering and financial management but also in their environmental and corporate social responsibility and practices; and (iii) strengthening accountability mechanisms through the use of MIS, and better financial and HR management practices.

24. The proposed project is also aligned with GoI priorities. Infrastructure constraints have been identified as a major obstacle to achieving faster and inclusive growth in the economy. The proposed distribution component of the project is aligned with GoI’s recently launched Restructured Accelerated Power Development and Reform Program (R-APDRP)\(^8\), a Central Sponsored Scheme (CSS) targeted to improving performance of distribution utilities across India. The distribution schemes within the project are also focused on reducing technical and commercial losses and on improving services, which would make these investments eligible for R-APDRP incentives.

25. Subject to satisfactory progress in achieving the project’s development objectives, the Bank would be prepared to consider continuing its support for subsequent phases of GoH’s sector improvement program, for example in expanding distribution system improvements to other urban areas, improving rural services (including through alternate subsidy delivery mechanisms for agricultural supply), and further enhancements in regulatory effectiveness.

---

\(^8\) Elaborated in Annex 1
C. **Higher level objectives to which the project contributes**

26. The higher level development objective of the proposed project is to contribute to the state’s economic growth by alleviating power supply bottlenecks, ensuring provision of reliable supply, and meet consumer demand in an affordable and sustainable manner.

II. **PROJECT DESCRIPTION**

A. **Lending instrument**

27. The project is designed as a specific investment loan (SIL). The IBRD flexible loan, with variable-spread terms and level repayments, has a final maturity of 30 years including a grace period of five years.

B. **Project development objective and key indicators**

28. The development objective of the proposed project is to improve the availability, efficiency and accountability of electricity supply in the state of Haryana through strengthening the transmission and distribution systems. Key indicators to monitor progress towards achieving the development objective of the project are:

   (i) **Component I: Transmission system strengthening**
   - Total energy transmitted through the transmission system (million units)
   (ii) **Component II: Urban distribution system strengthening**
   - Reduction in Aggregate Technical and Commercial (AT&C) losses in selected urban areas (%)
   (iii) **Component III: Technical assistance and capacity building of transmission and distribution companies**
   - Development and implementation of an institutional strengthening action plan and corporate governance and financial accountability (CGFA) action plan.

29. This project is estimated to cost approximately $410 million, combining financing from IBRD, the implementing agencies, and the GoH.

**Component I: Transmission System Strengthening ($ 312.5 Million)**

30. Component I includes priority investments in 400 kV, 220 kV, 132 kV and 66 kV sub-stations together with transmission lines for system augmentation. The specific investments have been identified based on system load flow study carried out by HVPN which analyzes growth in load and future generation expansion over a defined time period. These priority investments will reduce overall system losses and increase the transfer capability of the state transmission network. All the substation and transmission lines packages will be implemented through integrated turnkey supply and installation (S & I) contracts involving large international/national suppliers and contractors. There are two broad categories of packages – one for sub-stations and the other for transmission lines and towers. Third-party quality control consultants will be engaged by the
borrowers by December 2009 to ensure efficient project execution and inspection, as per contract specifications.

31. A total of 14 packages for $312.5 million have been identified, of which $250 million is to be financed by the Bank.

Component II: Urban Distribution System Strengthening ($87.5 Million)

32. DHBVN has decided on a twin pillar strategy of improving operational efficiency and enhanced customer service. As part of rolling out this strategy, DHBVN has selected three towns (Charki Dadri, Faridabad, and Gurgaon) that satisfy certain pre-defined criteria (e.g. a manageable political economy and scope for revenue augmentation) in which to improve distribution infrastructure and management systems. This component will be implemented for each town through turnkey S&I contracts which will typically include the following sub-components: (i) conversion of feeder network to High Voltage Distribution System (HVDS) (to reduce technical and commercial losses); (ii) bifurcation of overloaded 11 kV feeders (to better distribute load across feeders and improve quality of supply); (iii) segregation of industrial feeders (to improve supply quality and accountability); (iv) building new 33 kV sub-station to respond to demand which has grown significantly over the years (only in Dadri Town); and (iv) setting up customer care centers (vi) Advanced Metering Infrastructure (AMI) across the utility for all the non-HT consumers having a connected load of 10 kW and above. These ‘pilot’ investments in the distribution system are expected to lead to an improvement in quality of supply and customer satisfaction, better energy accounting and system management, and a reduction in power theft and improvement in collection efficiency.

Component III: Technical Assistance and Capacity Building of transmission and distribution companies ($10 Million)

33. Substantial Technical Assistance (TA) is required for effective implementation of the proposed project and to support institutional development, capacity building and governance improvement. The program of technical assistance will focus on the broad theme of “Internal transformation through process improvements, use of technology and organizational changes”. Building on consulting activities (diagnostic studies and vision workshops) carried out during project preparation, consulting services and training programs under this component will be used to help HVPN and DHVBN realize their vision of becoming “the best Indian power company by 2014” in their respective domains.

34. To accomplish the 2014 vision, the companies have identified priority actions to strengthen and improve (i) project management; (ii) accountability systems (establishing a system of performance indicators across organizations; repeated consumer surveys in select project towns to measure improvements in service delivery); (iii) corporate governance and financial management practices and (iv) human resource development. TA activities the companies intend to implement under this sub-component include: (i) hiring expert consultants for capacity building in above mentioned areas; (ii) hiring third-
party quality control consultants for HVPN and DHBVN to supervise and monitor quality of investments; (iii) company-wide training programs on sustainability aspects\(^9\) of operations; and (iv) structured training programs on technical and managerial aspects (based on an annual training calendar of HVPN and DHBVN).

35. This collection of TA activities forms the basis for development of an institutional strengthening action plan which will be available for implementation by mid-term review of the project. The triggers for successful implementation will be laid out in the action plan as well. The implementation of this plan will take place in the final two years of the project.

Table 1: Project Components and Costs

<table>
<thead>
<tr>
<th>Project Components</th>
<th>Indicative Cost, US$ m, Bank financing</th>
<th>Indicative Cost, US$ m, Counterpart financing</th>
<th>Total financing US$ m</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Transmission Investments including substations and lines</td>
<td>250</td>
<td>62.5</td>
<td>312.5</td>
</tr>
<tr>
<td>II. Distribution Investments including HVDS, distribution substations and LT infrastructure</td>
<td>70</td>
<td>17.5</td>
<td>87.5</td>
</tr>
<tr>
<td>III. Technical Assistance and Capacity Building</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>330</td>
<td>80</td>
<td>410</td>
</tr>
</tbody>
</table>

36. In parallel, the Bank is also supporting the institution strengthening agenda through two major pieces of analytic work, funded by Ausaid Infrastructure for Growth Initiative (IFGI), aligned with the following pillars:

Enhancing the quality of MIS: This TA support aims to establish a M & E system and MIS to arrive at a robust measurement of agricultural consumption following the GoH investment program to segregate agricultural from non-agricultural rural feeders.

Improving regulatory effectiveness and enhancing consumer voice in decision making: This TA support aims at capacity building of HERC on issues related to tariffs, market structure, and competition. This consultancy will also focus on consumer advocacy topics and carry out a state wide sample consumer survey to provide a credible analysis on compliance with consumer service standards of HERC.

C. Lessons learned and reflected in the project design

37. The Bank’s previous support to the Haryana power sector – running from 1997 to 2000 under the Adaptable Program Loan (APL) rubric -- was rated “moderately unsatisfactory” by the Internal Evaluation Group (IEG). It was the first project in the APL series and was instrumental in facilitating legal, structural and regulatory reforms though the outcomes fell short of expectations in the areas of financial turnaround and progress with privatization. Uncertainty and volatility in the political environment, with

\(^9\) Training programs for company-wide incorporation of Environment and Social Policy and Procedures (ESPP)
the sudden announcement of national elections in late 1998 and the change in government in Haryana in the middle of implementation of APL1, weakened political appetite to undertake complex reforms, tariff revisions, and privatization of distribution entities. These had been specified as triggers to move forward with APL2 (Annex 1).

38. The experience from the Bank’s past engagement provides important lessons for the proposed project in understanding what is feasible and defining the scope within the political economy constraints in Haryana, as well as in India more generally. Some of the key lessons are (i) ownership and commitment of state governments is critical for successful implementation of the reforms; external agencies like the Bank can only facilitate the process by providing technical and financial assistance; (ii) the political economy of power sector reforms needs to be realistically integrated into an implementation strategy, recognizing that implementation of reforms is a long and gradual process and that flexibility is required to respond to changes in political economy as they dynamically evolve; (iii) expectations on the pace at which reforms can be implemented and outcomes realized should have a realistic time horizon, particularly with respect to sector financial turnaround and the phasing out of subsidies; (iv) upfront visible improvements in the quality of power supply and customer service are important for fostering a pro-reform constituency and building stakeholder consensus for reform; (v) improvements in corporate governance and institutional strengthening enhance the credibility of sector reforms and their sustainability; and (vi) incentives for strengthening financial management and performance accountability frameworks are essential.

D. Alternatives considered and reasons for rejection

39. Two alternatives were considered to support Haryana’s power sector and rejected: first, the option of an APL and, second, “wholesaling” through financial intermediaries like Power Finance Corporation (PFC) that had been established as nodal agencies for GoI’s centrally sponsored schemes.

40. The APL instrument is premised on a thorough understanding and upfront agreement between the Bank and the borrower on the framework for, and elements of, a long-term reform program. While there is acceptance and buy-in on the part of GoH for the overall objective of the reforms, it is difficult to lay out up-front the detailed sequence of actions required to achieve this objective. This is due to underlying socio-political uncertainties affecting the pace of reform, as is evident from the Bank’s experience with the previous APL in Haryana. Further, credible information on critical issues as required for designing an APL program, such as estimated agricultural power consumption, is not currently available and is expected only by 2010, when the rural feeder segregation program and development of the MIS framework are completed.

41. The option of “wholesaling”, whereby Bank funds would be channeled through a common pool of resources supporting R-APDRP in the distribution sector, managed by PFC, was also considered. At this stage, with the Bank re-engaging in a state power sector, a direct relationship between the Bank and state power utilities is considered essential for closer coordination on institution building, internal management and investment planning issues. In fact, the guidelines for R-APDRP allow the World Bank
(as well as other multi-lateral agencies) to directly partner with the states to support investments to strengthen power distribution in order to facilitate the outcomes envisaged under R-APDRP. World Bank financed investments in distribution system would also be eligible for incentives from GoI when the target AT&C loss levels of 15% are achieved.

III. IMPLEMENTATION

A. Partnership arrangements

42. The 11th plan state investment requirement of around $5.1 billion is proposed to be covered through several international donors, domestic financial institutions, and the private sector. Aside from the Bank investments in the sector, a $200 million loan from the Japan International Cooperation Agency (JICA) has been recently signed to finance transmission investment and a $100 million loan from KfW channeled through the Rural Electrification Corporation (REC) for implementing a HVDS for UHBVN. The Bank team is coordinating with the above financiers to ensure coherence of approach in the overall sector investment program.

B. Institutional and implementation arrangements

43. The loan of $330 million is to India. The project will be implemented entirely in the state of Haryana, by two state-owned but legally separate entities/companies — HVPN and DHBVN, referred to as the Project Implementation Entities or PIEs. The Bank loan will be passed on similar terms from GoI to GoH, and then on-lent from GoH to the PIEs, which will be required to repay the loan to the state. The state will provide the two PIEs with additional counterpart funding from its budgetary funds.

44. Contractually, there will be a Loan Agreement with India. There will be two Project Agreements – first, between the Bank, the state of Haryana, and HVPN; second, between the Bank, the state of Haryana, and DHBVN. Since GoH will be lending funds to the two PIEs, there would be a subsidiary agreement between the state and each PIE, requiring the two PIEs to repay the loan and to implement the project. Subsidiary loan agreements between GoH and HVPN and DHBVN respectively are a prior condition for loan effectiveness.

45. The two PIEs would be required to set up dedicated cells to implement the project. This does not imply that the project would be ring-fenced from the organization. Within the existing departmental structure (procurement, finance, etc), the PIEs will have designated individuals with clear responsibility for dealing with all issues related to the proposed World Bank loan. Both HVPN and DHBVN have created such a cell of dedicated professionals.

C. Monitoring and evaluation of outcomes/results
Given the sector-level implications of the proposed project, the monitoring and evaluation (M&E) mechanisms have been established at the project, entity and sector levels. At the project level, the M&E framework involves various measures such as:

- HVPN: Developing detailed scheme implementation plans (SIP)\(^\text{10}\) for each major transmission scheme, with a clearly defined rationale and milestones along with project monitoring tools like PERT charts
- DHBVN: Preparing detailed project reports (DPR) with baseline data for distribution investments in each town, detailing the technical and financial justification and the layout of existing and proposed distribution infrastructure, with clearly defined milestones
- HVPN and DHBVN: Monitoring of the physical implementation of assets by third-party quality control consultants with a focus on quality of inputs and adherence to the implementation schedule. There will be a set of key monitoring indicators aligned with technical, environmental, and social themes to track the quality of project implementation. In addition, there will be a few financial indicators to diagnose the financial health of the companies on a regular basis
- DHBVN: Undertaking a baseline consumer survey to evaluate the current status and identify gaps in service delivery from a consumer perspective. This baseline consumer survey will allow DHBVN to arrive at methodologies to estimate indicators such as SAIDI, SAIFI, and CAIDI.

The implementing utilities will provide the Bank with quarterly physical progress reports, audited financial statements (within six months of the end of each financial year), and other such information as the Bank may reasonably require. Since the nature of these contracts will be turnkey S & I, M&E is linked to project targets upon completion of milestones like delivery of material, erection and commissioning.

A robust group of monitoring indicators has been put in place to track the progress of the project – (i) information on results indicators (elaborated in Annex 3) (ii) information on monitoring indicators - additional data on project progress across various functional areas such as environment, social, technical as well as financial indicators that will be collected and tracked on a periodic basis (elaborated in Operations Manuals).

At the entity level, the Component III includes the development and implementation of an entity wise Management Information System (MIS) with clearly defined Key Performance Indicators (KPIs) at the corporate and field level.

In parallel to the project-supported M&E activities, the Bank is contributing to strengthening the sector monitoring capacity through two major analytic tasks:

- Establishing a robust MIS system based on sample data from the segregation of agricultural rural feeders to arrive at transparent and credible estimates of agricultural power consumption (funded by Ausaid IFGI);
- Strengthening regulatory capacity, with a special focus on improving reporting of compliance with consumer service levels (funded by Ausaid IFGI).

\(^\text{10}\) Best practice of PGCIL format has been used and customized for state level Transmission issues
D. Sustainability

51. There is strong ownership of the project by GoH and the project implementing agencies. This commitment has also been demonstrated through rapid project preparation. Among the project components, the major transmission component is sustainable due to the steady cash flow nature of the transmission business under the prevailing “cost plus” regulation. The project schemes are therefore financially and operationally self sustainable. At the entity level, the project will strengthen institutional capacity and physical infrastructure, which are critical building blocks for operational and financial sustainability. At the sector level, sector financial viability is feasible only in the medium and long-term.

52. Environmental and social sustainability is facilitated through the adoption of entity-specific environmental and social policy and procedures (ESPP) by the respective companies and by the setting up of robust three-tier organizational structures to manage the implementation of these. The boards of respective companies have adopted the ESPP as a policy. The ESPP will apply to the proposed transmission and distribution projects, irrespective of the funding source.

E. Critical risks and possible controversial aspects

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Description of risk</th>
<th>Rating of risk</th>
<th>Mitigation measures</th>
<th>Rating of residual risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. State- and Sector-Level Risks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macroeconomic framework</td>
<td>Fiscal Issues</td>
<td>High</td>
<td>The current level of budgeted subsidy for FY2007-08 is almost 43% of overall sector revenues and 1.5% of gross state domestic product (GSDP). While Haryana is among the best placed states in India to support this level of subsidy, this ability will be tested as the financial crisis unfolds.</td>
<td>Substantial</td>
</tr>
<tr>
<td></td>
<td>Raising tariffs to cost-recovery levels and sector financial viability</td>
<td>High</td>
<td>The Bank is providing analytic support to HERC on tariff related issues, and to DHBVN to adopt a multi-year business planning process, identifying key business drivers and strategies to bridge the revenue gap.</td>
<td>Substantial</td>
</tr>
<tr>
<td>II. Operation-specific Risks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HVPN and DHBVN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation capacity and sustainability</td>
<td>Low implementation capacity to undertake investment scale up targeted for sector.</td>
<td>High</td>
<td>Capacity building on project management through development of standardized design and bidding documents has already been achieved. Additional measures such as institutionalizing a project manager based approach for investments in HVPN, has been agreed.</td>
<td>Substantial</td>
</tr>
</tbody>
</table>

1 Financial justification of schemes in available in SIPs.
<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Description of risk</th>
<th>Rating(^a) of risk</th>
<th>Mitigation measures</th>
<th>Rating(^a) of residual risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainability of operational efficiency gains made during project duration</td>
<td>A company-wide “diagnostic”, followed by a vision workshop, helped develop a group of TA activities for each company which will form the Component III. This includes developing a system of entity wise Management Information System (MIS) with clearly defined Key Performance Indicators (KPIs) at the corporate and field level. These KPIs would eventually serve as performance targets for departments and individuals.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial management</td>
<td>Weak systems for budgeting, accounting, internal audit, External auditing and reporting leading to a weakened accountability environment</td>
<td>High</td>
<td>Mitigation measures include integrating IT initiatives, implementing an ERP system and strengthening corporate governance of companies. For Fund flows, the utilities intend to primarily use reimbursement route with an initial advance in the first year of implementation, with an option for using direct payments, and special letter of commitments in certain cases which would be agreed during implementation. Invoices in respect of works will be recommended/certified by independent third-party quality control consultants in respect of both the utilities. In cases where goods are being procured, adequate pre-delivery and post delivery technical inspections, as per agreed Quality Assurance plan will be carried out by the third-party quality control consultants. The CGFA action plan includes strengthening internal audit, effectiveness of board level audit committee, strengthening quality and time-lines of financial audits, capacity building of the finance department, improving cash forecasting abilities and institutionalization through financial management manuals.</td>
<td>Substantial</td>
</tr>
</tbody>
</table>

### Risk Identified from the DIR

| Inadequate project financial management and financial record keeping | High | The risk of delayed fund flows will be mitigated with incorporating an option of direct payment to vendors. Third-party quality control consultants are being appointed to supervise physical/technical progress of the projects, achievement of contractual milestones and to recommend payments to the contractors. HVPN and DHBVN operate under the Companies Act and have agreed to prepare audited accounts annually, in a timely manner. Audited project accounts will be available within the stipulated period of six months. | Substantial                  |

### III. Overall Risk (including Reputational Risks)

**F. Loan/credit conditions and covenants**

- Standard Bank legal requirements.

---

\(^a\) Substantial Risks exist on sector wide issues and parameters which are not controllable through Project design – like fiscal risk arising from an increase in power purchase cost due to fuel price increases or higher agricultural consumption. Regarding the two main project components, the larger transmission investment component and implementing entity HVPN present moderate risks compared to the significant risks of the smaller distribution component and the implementing entity DHBVN. On most project specific issues, including those identified by DIR, residual risks are largely moderate or low with the exception of institutional capacity (due to complexity of contracts).
• Implementing agencies (HVPN and DHBVN) shall furnish to the Bank, no later than six months after the end of each fiscal year, certified copies of its audited financial statements.

• During the period of Project implementation, HVPN and DHBVN shall maintain an adequate organizational structure, with functions, powers, staff and resources necessary and appropriate for its Respective Parts under the Project.

• For HVPN, Debt Service Coverage Ratio (DSCR) of 1 for FY 2012, and 1.1 for FY 2013 and FY2014.

IV. APPRAISAL SUMMARY

A. Economic and financial analyses

53. The project investments in the first two components, selected from a least-cost analysis based on a load flow study in case of transmission and a pre-defined revenue-maximization filter in case of distribution, will enhance the quantity and quality of service delivery. A project economic and financial analysis and entity-level financial evaluation have been performed to draw inferences on the sustainability of project investments. At the project level, the economic evaluation utilizes a cost-benefit methodology to derive net present value (NPV) and internal of return (IRR).

54. **Project economic and financial analysis:** The benefits of the transmission scheme primarily accrue from the additional energy generated from two sources: (i) Additional transmission of energy, once it has been evacuated from new generating plants. The additional energy is valued at a fixed cost of generation facilities at Rs 0.77/kwh as it assumes the generation facilities are already built and that transmission congestion points were preventing the additional power from reaching consumers; (ii) Reduction of transmission losses is valued at Rs 2.96/kwh, which is the opportunity cost of energy valued at the incremental cost of expanding supply through alternate thermal generation. The financial benefits of additional energy are valued at the wheeling charges of Rs 0.22/kwh.

55. The high Economic-IRR points to the economic value of energy in Haryana in an environment of persistent shortages and consequent high opportunity cost of capital. The Financial-IRR points to a tariff structure driven by cost of service provision that has been stagnant since 2001. The divergence reflects the market distortions in Haryana, where tariffs have maintained a status quo and economic value has been on a continual upward trend compared to the financial value.

56. The benefits in the distribution system investments are primarily catering to the extra load and energy savings through a reduction in AT&C losses and new distribution transformers to move the additional capacity. The economic value of the additional capacity is valued at Rs 0.77/kwh, which is the fixed cost of generation. The energy saved due to technical loss reduction is valued at the total cost of supply of incremental thermal generation at Rs 4.74/kwh and the commercial loss reduction is valued at half of...
the paying customers\textsuperscript{13}. The financial benefits to the distribution company as a result of units saved is valued at the average tariff of Rs. 3.3/kwh.

**Table 2: Baseline economic and financial analysis of transmission and distribution investments**

<table>
<thead>
<tr>
<th>Financial Cost (Million $)</th>
<th>Economic Cost (Million $)</th>
<th>F-NPV (Million $)</th>
<th>E-NPV (Million $)</th>
<th>FIRR (%)</th>
<th>EIRR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVPN</td>
<td>313.82</td>
<td>200.85</td>
<td>$78.89</td>
<td>$1,145.58</td>
<td>16.1%</td>
</tr>
<tr>
<td>DHBVN</td>
<td>66.37</td>
<td>45.31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dadri</td>
<td>5.73</td>
<td>3.91</td>
<td>$1.12</td>
<td>$4.84</td>
<td>17.1%</td>
</tr>
<tr>
<td>Gurgaon</td>
<td>25.25</td>
<td>17.24</td>
<td>$5.54</td>
<td>$25.56</td>
<td>18.1%</td>
</tr>
<tr>
<td>Faridabad</td>
<td>35.39</td>
<td>24.16</td>
<td>$15.2</td>
<td>$38.47</td>
<td>23.4%</td>
</tr>
<tr>
<td>Total</td>
<td>380.19</td>
<td>246.16</td>
<td>$22.65</td>
<td>$957.47</td>
<td>20.6%</td>
</tr>
</tbody>
</table>

57. **Entity level financial analysis:** The transmission business is regulated by HERC under a cost plus pricing regulation and 14\% rate of return\textsuperscript{14} on equity. In FY08, HVPN earned a net profit of Rs 1.43 billion ($ 29 million). The financial projections of HVPN during FY09-15 are based on prevailing regulatory principles. The key risk stems from regulatory uncertainty. For DHBVN, the financial viability of its business\textsuperscript{15} has significant short-term risks. The company is estimated to incur a loss of Rs 5.6 billion ($ 113.8 million) in FY09, and the performance is projected to deteriorate further in FY10 to a loss of Rs 11.9 billion ($ 241.8 million) due to increase in power purchase cost, the assumption of no tariff increase, an expected slow-down in sales to industry, and high working capital borrowings. Its financial performance is estimated to gradually improve from FY11 onward when additional power is available through new generation stations, implying reduced dependence on high cost short term power purchase. The financial gap (expenditure minus revenue from sale of power) is estimated to increase to 66\% in FY10 and thereafter projected to gradually decline to 29\% in FY15.

**Table 3: Financial projections for DHBVN**

<table>
<thead>
<tr>
<th>(Rs in billion)</th>
<th>FY 08 (Actual)</th>
<th>FY 09</th>
<th>FY 10</th>
<th>FY 11</th>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
<th>FY 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenue (without subsidy)</td>
<td>30.40</td>
<td>34.23</td>
<td>34.73</td>
<td>44.86</td>
<td>51.16</td>
<td>75.08</td>
<td>88.12</td>
<td>106.53</td>
</tr>
<tr>
<td>Total Expenditure</td>
<td>41.50</td>
<td>49.73</td>
<td>57.73</td>
<td>67.36</td>
<td>77.15</td>
<td>104.97</td>
<td>118.87</td>
<td>137.50</td>
</tr>
<tr>
<td>GAP</td>
<td>-11.11</td>
<td>-15.50</td>
<td>-23.00</td>
<td>-22.50</td>
<td>-25.99</td>
<td>-29.89</td>
<td>-30.74</td>
<td>-30.97</td>
</tr>
<tr>
<td>% of Gap to Total Revenue (w/o subsidy)</td>
<td>37%</td>
<td>45%</td>
<td>66%</td>
<td>50%</td>
<td>51%</td>
<td>40%</td>
<td>35%</td>
<td>29%</td>
</tr>
<tr>
<td>Projected Subsidy from GoH</td>
<td>8.29</td>
<td>9.89</td>
<td>11.08</td>
<td>18.93</td>
<td>21.39</td>
<td>23.47</td>
<td>24.22</td>
<td>24.92</td>
</tr>
<tr>
<td>Net Gap (Base Case)</td>
<td>-2.81</td>
<td>-5.61</td>
<td>-11.92</td>
<td>-3.56</td>
<td>-6.40</td>
<td>-6.42</td>
<td>-6.52</td>
<td>-6.06</td>
</tr>
<tr>
<td>Net Gap Scenario 1-7% tariff increase in FY11 &amp; FY14</td>
<td>-2.81</td>
<td>-5.61</td>
<td>-11.92</td>
<td>-0.18</td>
<td>-0.78</td>
<td>-0.88</td>
<td>6.57</td>
<td>9.39</td>
</tr>
</tbody>
</table>

\textsuperscript{13} This approach was employed in UP ICR Economic Analysis, 2005

\textsuperscript{14} As against 14\% rate of return allowed in the legal framework HERC has allowed only 8\% rate of return in FY08 and FY09.

\textsuperscript{15} The financial projections for FY10-15 have been made based on regulatory guidelines of HERC. However these projections are only indicative and the revenue, cost and subsidy will be determined as per the annual process of ARR filing and regulatory review by HERC.
### Table: Net Gap Scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>FY 08 (Actual)</th>
<th>FY 09</th>
<th>FY 10</th>
<th>FY 11</th>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
<th>FY 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSM &amp; energy efficiency measures</td>
<td>-2.81</td>
<td>-5.61</td>
<td>-11.31</td>
<td>-2.13</td>
<td>-2.72</td>
<td>-4.45</td>
<td>-4.46</td>
<td>-3.91</td>
</tr>
<tr>
<td>15% reduction in Investment</td>
<td>-2.81</td>
<td>-5.61</td>
<td>-11.89</td>
<td>-3.16</td>
<td>-3.99</td>
<td>-5.63</td>
<td>-5.64</td>
<td>-5.21</td>
</tr>
</tbody>
</table>

58. **Fiscal sustainability analysis:** The evolving economic slowdown could impact GoH’s ambitious investment plan and fiscal space for the power sector. With respect to the former, new state-owned generating facilities have already assured financing closure and are under implementation. As a risk mitigation tool, a GoH-level coordinating committee is reviewing the implementation schedule of new private sector generating capacity and currently does not envisage significant delays. In transmission, the Bank and JICA are the primary financiers; in distribution, the financiers are either government-owned financial institutions like PFC/REC or CSS like R-APDRP.

59. The projections prepared by GoH for the 13th Finance Commission confirm that fiscal space will be adequate and within the existing provisions of the fiscal statutes. Thus, while the full implications of the current economic downturn are still evolving, Haryana power sector seems to be better placed relatively when compared to neighboring states. Further, the project would help improve the power sector’s financial position and provide an economic growth stimulus, by supporting critical investments in transmission and distribution.

### B. Technical

60. **Transmission:** The team has verified that the technical scope of the project corresponds to the power generation capacity either under construction or already contracted, superimposed on expected demand projections in the state to arrive at a load flow study carried out by HVPN (with Bank support), for the five-year period from 2008 to 2012. The study also evaluated losses in the present system vis-à-vis losses after the addition of the planned transmission substations and lines. If the project investments are not implemented, the transmission network will not have adequate transfer capability to ensure reliable and effective power flows. If they are implemented as planned, it is anticipated that total transmission system losses will gradually decrease from 5.7% to 2.8% by the end of the 11th Plan. In addition, there will be convergence between supply and demand, with a slight imbalance, which could be removed by imports of energy.

61. **Distribution:** The team has reviewed the technical scope of the rehabilitation and modernization program for the distribution networks in Gurgaon, Faridabad and Dadri towns that are owned and operated by DHBVN. The planned project investments would lead to an improvement in quality of supply and customer satisfaction, better energy accounting and system management, a reduction in power theft, and improvement in collection efficiency.

### C. Fiduciary

Financial management
62. HVPN and DHBVN are in the process of implementing financial management (FM) arrangements which could be considered adequate to account for and report on the project resources and expenditures accurately. However, at the institutional level, these systems need capacity building. From a governance and financial accountability perspective, there are several areas that need further strengthening\(^{16}\). CGFA action plans for the two companies has been discussed and agreed upon.

63. In order to provide sufficient transition time for the institutionalization of accounting and financial standards across the companies, the approach has been to enhance FM controls (beyond the entity controls) on the transactions being funded by the Bank to derive appropriate fiduciary assurance. The companies will prepare separate financial statements that will help in distinguishing costs financed by the proposed loans. For Fund flows, the utilities intend to primarily use the reimbursement route with an initial advance in the first year of implementation. Advances could be sought for up to two quarters, and actual expenditure will be reported on a quarterly basis. In addition, the companies will also have options for using direct payments, and special letter of commitments in certain cases that would be agreed upon during the implementation.

64. Disbursements would be made by the Bank on the basis of quarterly Interim Unaudited Financial Reports (IUFRs)\(^ {17}\), which would forecast the expenditure for two quarters and report the actual expenditure for the past quarter as well as cumulative expenditure to date. In addition to entity-level audits, the two companies will also submit audited project financial statements that will report contractual progress and provide assurances on the usage of the proceeds under the project. Audits will be conducted by independent auditors (as acceptable to IBRD) that will conduct the audit as per terms of reference agreeable to the Bank.

**Procurement**

65. While the procurement approach agreed with the borrower/beneficiaries will ensure competition and transparency in Bank-financed procurement, weaknesses in capacity and practices will be addressed over time. Bank support for project preparation has exposed counterparts to modern practices in technical design and competitive bidding, and initiated the process of internal reform. HVPN procurement will be for goods, equipment and services related to the 400/220/132/66 KV transmission lines and to sub-stations of various capacities at different locations in Haryana. The procurement will be independently handled by HVPN for transmission related investments, and by DHBVN for distribution related investments.

66. The procurement of plants and equipment by HVPN is on a supply and installation (S&I) basis, broken into 14 packages on a “slice and package” concept. All

---

\(^{16}\) Audit committees are currently not independent. There are no independent directors in DHBVN. Position of Director Finance is vacant in HVPN and DHBVN. Risk management strategies are yet to be framed at an institutional level.

\(^{17}\) The suggested formats are presented in Operations Manuals and the companies will have the flexibility of furnishing reports earlier (say on a monthly basis) to seek early replenishments wherein they could also provide forecasts for a shorter period than six months.
procurement on S&I basis will follow ICB procedures using the Bank’s Standard Bidding Documents (SBD) - S&I, April 2008 and as agreed with the Bank. For all World Bank related procurement, the board of directors has complete powers of approval of procurement awards. Based on a procurement assessment and subsequent dialogue with companies, project counterpart teams have been staffed with skilled and adequate manpower that has undergone procurement training by World Bank staff as well as through external training institutes. The bidding documents for four contracts totaling $90 million are already under advance procurement. With this advance procurement underway in HVPN, retroactive financing of up to $66 million will be needed for the project (the bid award of first package has been completed).

**D. Social**

67. The project is expected to have limited social impacts. The combination of a sound ESPP framework and a three-tiered organizational structure being put in place for the implementation, supervision and monitoring of the Resettlement Action Plans (RAP) and Environmental Management Plans (EMP) of each utility provide a promising arrangement for effective handling of social issues as they arise. The Boards of both the companies have adopted the ESPP as a policy and proposed to implement it for all the transmission and distribution investments, irrespective of the source of funding.

68. The social impacts relating to construction of sub stations and transmission lines are limited to the acquisition of small quantities of land and minimal livelihood disturbances. Land will be acquired only for sub stations, and no land will be acquired for towers as they will be placed on small pieces of land. The progressive measure of entitlement packages is the benefit sharing with the affected population, besides compensation and assistance measures. Physical works will not commence on any portion of land before compensation and assistance measures to the affected population have been provided, in accordance with the policy framework. The environmental and social management systems have a judicious mix of internal and external monitoring mechanisms. The resettlement action plans (RAP), prepared for the 15 sub-stations under eight packages, present no significant adverse impacts on people and land. The proposed land for these sub-stations so far reviewed belongs to the government/panchayat with no encroachments. Community consultations have demonstrated local support for the proposed projects.

**E. Environment**

69. Environmental impact of the transmission and distribution investment components has been adequately considered during project preparation. Normally, transmission and distribution projects have few adverse environmental impacts due to the limited nature of works and the clearances from ground level. In Haryana however, there are a few sensitive environmental receptors that may be affected by the installation and operation of new transmission lines and distribution networks. Given the relatively large area requirements of some of the infrastructure – such as 400 KV substations, -- and the potential impact on specified areas of the Aravallis, designated as an eco-sensitive zone
by GoI, the project has been assigned Category A. Most individual project schemes reviewed so far have been found to have limited impact.

70. The ESPP documents identify the potential negative effects – land take, tree cutting, potential for pollution, reduction in groundwater recharge, potential safety hazards during construction and operation, etc., and describe the measures that need to be taken to avoid/reduce/mitigate these. Steps necessary to ensure mainstreaming of the environmental aspects into the overall project preparation and implementation cycle have also been adopted by companies. With the assistance of independent consultants (not involved in the detailed design of the transmission investment schemes), HVPN has prepared scheme-specific EMPs using the ESPP as a guiding document. Relevant portions of the EMPs, such as bills of quantities and specifications for Water harvesting structures, form a part of works contracts to be executed through external contractors.

71. The SIP also identifies environmental indicators – such as the number of trees cut, and water harvesting structures constructed, with quantitative targets to be monitored during the project cycle to ensure adequate attention to environmental management. The EMPs of the sub-stations and schemes under the packages G1 to G8 have been prepared and remaining packages will be prepared. The environmental activities such as tree cutting, and afforestation envisaged under EMPs have been included in the SBD but the individual cost of these activities is difficult to ascertain at the preparation stage in view of an integrated bid from the bidder for whole components under a scheme. It is therefore estimated that about 1.25% of the total project cost would be needed to implement EMPs and RAPs in HVPN.

72. A three-tiered organizational structure is being put in place for the implementation, supervision and monitoring of the EMPs by the utilities. Training and capacity building at various levels of the organization to familiarize those working on the project with environmental management aspects will be undertaken in-house using specialist consultants and suitable training agencies. As a first step, training modules being prepared under the EMP preparation exercise will be used as part of the induction training for engineers being recruited by HVPN and for staff to be deployed to the project implementation teams.
F. Safeguard policies

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

G. Policy exceptions and readiness

73. No policy exception is sought. Retroactive financing, up to 20% of overall loan amount, or $66 million, would be required.

* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas.
Annex 1: Country and Sector or Program Background

INDIA: Haryana Power System Improvement

I. CHALLENGES IN THE INDIAN POWER SECTOR

1. The world economy is forecast to contract by 1-2% for the first time since World War II, an unprecedented event that is affecting industrialized and developing countries alike (World Bank, 2009). India is no exception - the latest growth projections are lower than initial estimates. The projected 9% growth rate in the 11th Plan (2008-12) has been revised downwards to about 5-6%. The revised growth rate is relatively higher than what many countries are experiencing today. This is an achievement due to the insulated structure of the Indian economy, where growth is domestic demand driven and investments are financed by local savings. However, this growth performance is critically dependent on commensurate investments and institutional changes in the power sector.

2. The 11th plan envisaged a requirement of over 80000 MW of new generation capacity and a corresponding investment in transmission and distribution networks. The cost of meeting these challenges was estimated at approximately $160 billion or 30% of infrastructure investment needs. This covered enhancing generating capacity, transmission grid networks, distribution and rural electrification, and renovation and modernization of power plants (11th Plan and Ministry of Power, 2005).

3. The Indian power sector is at a crossroad, with demand largely outstripping supply. The sectoral challenges can be summarized as the following:
   - **Low connectivity:** There is still low access to grid power supply with an electrification rate of 55% and almost 412 million people without electricity coverage (World Energy Outlook, 2007);
   - **Limited supply infrastructure:** With about 149000 MW of grid-connected generation capacity, the country is currently experiencing peak-time shortages of about 12% and an average energy shortage of about 11% (CEA, 2009);
   - **Sector and utility governance remains weak in most states:** Political involvement is pervasive in sector management, operation and regulation leading to low levels of metered sales of about 55-60%, even among reforming states like Andhra Pradesh and Karnataka;
   - **High coping costs of industry:** Erratic and insufficient power supply is cited as the biggest bottleneck to industrial growth and new investment. About 60% of Indian firms rely on captive or back-up generation (compared to 21% in China). Grid connected captive generation capacity is estimated to be 19800 MW (CEA, 2009);
   - **Government is still dominant service provider:** Only 11% of grid-based generation and 12% of distribution are handled by the private sector. Most states have unbundled and corporatized previously vertically-integrated power utilities, set up autonomous regulatory agencies, and in some cases even privatized

---

18 Various media reports - RBI growth forecast, IMF growth forecast, Morgan Stanley growth forecast
distribution (Orissa, Delhi). However, many new entities are not empowered to act autonomously or commercially;

- **The sector’s financial performance has improved but much more is needed:** Some states (Andhra Pradesh, West Bengal, Gujarat, Delhi, and Goa) have reduced system losses and introduced commercial principles and modern management practices. Others have relied more on tariff measures and growth in sales to profitable commercial customers;

- **Power sector accounts for about 50% of India’s carbon emissions.** Reducing the growth rate of power demand (through increased utility efficiency and end-use DSM) and improving supply (making coal-based generation more efficient, improving renewable and nuclear generation) and investing in efficient transmission networks are likely to have the greatest impact in reducing CO₂ emissions. About 33% of India’s total installed capacity constitutes of renewable sources, primarily hydro installations.

### Table 1: Power Supply Status 2008-9

<table>
<thead>
<tr>
<th>Region</th>
<th>Energy requirement (MU)</th>
<th>Deficit (%)</th>
<th>Peak demand (MW)</th>
<th>Deficit (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern</td>
<td>224218</td>
<td>-11%</td>
<td>33034</td>
<td>-11%</td>
</tr>
<tr>
<td>Western</td>
<td>254486</td>
<td>-16%</td>
<td>37240</td>
<td>-19%</td>
</tr>
<tr>
<td>Southern</td>
<td>204086</td>
<td>-8%</td>
<td>28340</td>
<td>-7%</td>
</tr>
<tr>
<td>Eastern</td>
<td>82127</td>
<td>-5%</td>
<td>12901</td>
<td>-9%</td>
</tr>
<tr>
<td>North-Eastern</td>
<td>9407</td>
<td>-14%</td>
<td>1820</td>
<td>-25%</td>
</tr>
<tr>
<td>All India</td>
<td>774324</td>
<td>-11%</td>
<td>109809</td>
<td>-12%</td>
</tr>
</tbody>
</table>

Source: CEA, 2009

4. Electricity is a concurrent subject in India’s constitution, under the purview of both central and state governments. The central government has the responsibility for setting the national legal and policy framework and central government owned companies also participate in inter-state electricity generation and transmission to facilitate inter-state power transfer. The state governments are mainly responsible for intra-state electricity generation and transmission, with exclusive responsibility for distribution and supply within the states.

5. India has made enormous strides in the past decade in laying out a policy framework for the power sector. The landmark Electricity Act of 2003 was aimed at fostering competition, private investment, and power for all. The act mandated creation of state regulatory commissions, multiple licensing in the distribution sector, strict measures to control theft of electricity and revenue recovery in cases of unauthorized use of electricity. The NEP of 2005 articulated the GoI’s vision, which envisaged a universal provision of power by 2012 in a country where 44% still do not have access and an increase in per capita consumption to 1000 kwh by 2012 from the current level of about 639 kwh19. In addition, the NEP aims at a financial turnaround of utilities responsible for service delivery. Following these policy changes, the Electricity Tariff Policy in 2006

---

19 World Energy Outlook, 2007
presented a vision of regulatory consistency and transparency in setting the tariffs and balancing the interests of consumers and utilities in tariff setting.

6. Complementing these overarching policy measures, GoI has set in motion a number of flagship funding initiatives to meet the main sector challenges. GoI adopted the APDRP in 2003 for the distribution utilities in 29 states, including Haryana. The main objectives of the program were to reduce AT&C losses, improve commercial viability of the sector, reduce outages and interruption, and enhance customer satisfaction. Following the first phase, restructured-APDRP was initiated in 2008 and focused on establishing base line data and accountability, in addition to the principles of APDRP. To ensure universal rural access, Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) was adopted in 2005. RGGVY has refined the approach to rural electrification by bringing electricity to the rural household level rather than the village level and providing, free of cost, connections to households below the poverty line. This scheme, which is funded by 90% grant and 10% loan, also recognizes the revenue sustainability of rural electrification through the development of franchises. Finally, there is a push towards enhancing peak demand capacity to facilitate the ultimate objective of ‘power for all’. GoI has planned a series of ultra-mega power projects (UMPP), each with a capacity of 4000 MW or above, by the end of 12th plan. At least twelve UMPPs have been identified for development so far and the bidding process has been completed for four projects. Reliance Power has been awarded two projects - Sasan (Madhya Pradesh) and Krishnapatnam (Andhra Pradesh) and Tata Power has been awarded one project in Mundra (Gujarat). The letter of intent for Tilaya (Jharkhand) UMPP has been issued to the successful bidder.

<table>
<thead>
<tr>
<th>Box 1: Restructured-Accelerated Power Development and Reform Program (R-APDRP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The salient features of the scheme are as follows:</td>
</tr>
<tr>
<td>(a) The focus of the programme shall be on establishment of base line data and fixation of accountability, and reduction of AT&amp;C losses through strengthening &amp; up-gradation of Sub-Transmission and Distribution network and adoption of Information Technology.</td>
</tr>
<tr>
<td>(b) Project area shall be towns and cities with populations of more than 30,000 (10,000 in case of special category states). Rural areas with heavy loads requiring feeder segregation may also be included in the project areas.</td>
</tr>
<tr>
<td>(c) Projects under the scheme shall be taken up in Two Parts. Part-A shall include the projects for establishment of baseline data and IT applications for energy accounting/auditing &amp; IT based consumer service centers. Part-B shall include regular distribution strengthening projects.</td>
</tr>
<tr>
<td>(d) Initially 100% funds for Part A and 25% funds for Part B projects shall be provided through loans from the Govt. of India. For special category States, GOI loan for Part B projects will be 90%. The balance funds for Part B projects shall be raised from financial institutions.</td>
</tr>
<tr>
<td>(e) The entire amount of loan and interest for Part-A projects shall be converted into grant once the establishment of the required Base-line data system is achieved and verified by an independent agency. Up-to 50% (90% for special category States) loan and interest of Part-B projects shall be converted into grant in five equal tranches on achieving the 15% AT&amp;C loss in the project area on a sustainable basis for a period of five years.</td>
</tr>
<tr>
<td>(f) If the utility fails to achieve or sustain the 15% AT&amp;C loss target in a particular year, that year’s tranche of conversion of loan to grant will be reduced in proportion to the shortfall in achieving the 15% AT&amp;C loss target from the starting AT&amp;C loss figure.</td>
</tr>
<tr>
<td>(g) An amount equivalent to 2% of the grant for Part-B projects is proposed as incentive of utility staff in project areas where AT&amp;C loss levels are brought below 15%.</td>
</tr>
<tr>
<td>(h) Participation of the Private Utilities in APDRP would be reviewed after a period of two years from the date of sanction of the Re-structured APDRP during XI Plan by CCEA.</td>
</tr>
<tr>
<td>(i) A Steering Committee under the Secretary (Power) shall sanction projects and monitor the implementation of the Scheme.</td>
</tr>
<tr>
<td>(j) PFC shall be the nodal agency to operationalize the program.</td>
</tr>
</tbody>
</table>

Source: Ministry of Power & 11th Plan
II. CURRENT STATUS OF HARYANA POWER SECTOR

7. Haryana is a traditionally agricultural and middle income state located in the northern part of India, with a population of 20 million. Haryana, along with neighboring Punjab, contributed significantly to establishing India’s food security during the green revolution in the 1960s. It was the first state to achieve 100% electrification in 1971 and boasts a well-developed telecommunications and transport infrastructure. Over the past decade, the sectoral composition of the economy has shifted from agriculture towards manufacturing and services sectors, fuelled by IT, real estate and infrastructure. Consequently, Haryana has experienced high growth in incomes, especially in the territories falling under the national capital region.

8. Based on the CEA estimates, electricity demand in Haryana was forecast to grow by 9% during the 11th Plan. Distribution companies have been projecting a more aggressive growth rate of 14%. The high growth forecasts are likely to be moderated downwards to between 5-6% in the current environment of an evolving global economic crisis. However, infrastructure spending, especially in lagging sectors such as electric power, remains critical to maintaining competitiveness and economic growth in the state.

9. Institutional structure: Haryana was among the pioneer states in India to initiate legal, structural, regulatory and institutional reforms in the power sector in late 1990s. In 1998-99, GoH unbundled the vertically integrated HSEB and corporatized the four successor companies - HPGC, to undertake generation of electricity, HVPN to undertake transmission, and UHBVN and DHBVN with the exclusive mandate over electricity distribution and retail supply in the north and south of the state respectively. HERC was set up in 1998, as a distinct regulatory entity. Haryana not only contributed to the formulation of the Electricity Act in 2003 through its experience with power sector reforms but has also taken necessary action to conform to GoI’s dynamic policy changes. For instance, it has specified the regulations for open access (to enhance competition), appointed an ombudsman (to address consumer grievances), and transferred the management of electricity trading from the generation company (‘single buyer’) to the two distribution companies (‘multi-buyer’).

---

20 The average nominal GSDP per capita (Rs, 2005/06, current prices) of middle-income states is Rs. 34,918 (US$ 710), compared to an all-India average of Rs. 25,460 (US$ 517).
Figure 1: Timeline of Reforms in Haryana Power Sector

10. **Power Generation and Availability**: Haryana has been a power deficit state for several years. With installed available capacity of 4680 MW, the power shortage ranges between 400-600 MW in off-peak hours and between 1200-1500 MW in peak hours resulting in a peak deficit of about 26-32%. While the growth rate and consequent energy demand is slowing down in light of the growing economic crisis, the shortages will continue in the short and medium term. Investing in infrastructure has become even more critical to generate demand and restrict the impact of the economic downturn.

11. Haryana’s power sector has come a long way since it was carved out as a new state in 1966. Between 1967 and 2008 the available power generation capacity for the state has increased 15-fold from 343 MW to 4680 MW (as of September 2008). However, over the years, there has been a decline in the share of state-owned generation capacity. The state-owned generation company HPGC, as of September 2008, accounted for 47% of the total available generation capacity, while another 20% of capacity was held in joint projects between Haryana and other states. In terms of power availability in 2007-08, HPGC provided only 39% of the total power available and joint projects 12%; 37% of power was purchased from central generating stations, and unscheduled interchange, and short term power accounted for a high 12% share to meet the growing deficit in the state.

12. HPGC has added 1027 MW of new generation capacity since 2000. There have also been substantial efforts to improve the operating efficiency of generating stations through renovation and modernization (R&M) of old thermal generating stations. Consequently, the average PLF has improved from 49.7% in FY2001 to 78% in FY2008, which compares well with a national average of 81%. While coal transit losses have been reduced and specific coal and oil consumption has declined over the years, the rising coal freight costs (most plants are located at significant distance from coal mines) have resulted in increasing the average cost of power generation.
Figure 2: Consumer Mix and Generation Profile of Haryana Power Sector

(a) Consumer Mix

(b) Generation Profile

Source: HPGC, UHBVN, DHBVN

13. **Transmission System:** Power transmission capacity has increased more than 1.5 times since HVPN began its operations as an independent company in 1998. The transmission system comprises transmission lines and substations ranging from 66 kV to 400kV. The growth in the transmission network during 2000-01 to 2005-06 has not been commensurate with the addition in generation capacity. HVPN launched an extensive transmission capacity addition program in 2006-07 to evacuate the generating capacity. About 5400 km of new transmission lines were added in FY07. The transmission losses in the state have been reduced from 7.17% in 2000-01 to 4.77% in FY07.

Figure 3: Growth in transmission system in Haryana

<table>
<thead>
<tr>
<th>Addition of transmission lines in various categories (in kms)</th>
<th>Transmission Losses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Graph" /></td>
<td><img src="image" alt="Graph" /></td>
</tr>
</tbody>
</table>

14. During FY06 and FY07 HVPN\(^21\) earned operating profits; however, after accounting for depreciation, interest and prior period adjustments, the company has been incurring overall losses. In FY2006, the overall loss was Rs 1099 million ($22.3 million)

---

\(^{21}\) HVPN was earlier entrusted with the bulk trading business that was transferred to HPGC from 2005-06 onwards. Financial data of HVPN before FY 2005-06 thus includes income and expenditure from the bulk trading and transmission business. Therefore, the financials of the company are strictly not comparable over the past five-year period because of this change in the business model of the company.
which declined to Rs 139 million ($2.8 million) in FY07. The transmission business is regulated as cost plus pricing regulation, which allows the utility to earn a return on equity. The financial losses were primarily due to the disallowance of certain expenditures by the regulator and the lack of a regulatory mechanism to match revenue and expenses at the end of the financial year. The financial performance of HVPN improved in FY08 and the company registered a net profit of Rs 1431 million ($29.0 million). This improvement has been due to a recovery of a part of the past expenses, which were disallowed in the earlier regulatory orders. In FY08 and FY09, 8% regulated return on equity (RoE) was provided by HERC in the tariff order. The actual RoE though has been less since HVPN’s actual expenses have been much more than the regulated expenses allowed by HERC. There have been disagreements between HVPN and HERC on several issues leading to lengthy review processes and, in many instances, petitions against regulatory orders.

15. **Distribution System** - The two power distribution companies in Haryana serve about four million consumers. Being a predominantly agrarian economy, the share of electricity consumption by agriculture consumers in Haryana is among the highest in any state in India. Estimating power consumption by agriculture consumers remains a vexing issue. Nearly two-thirds of tube-wells are unmetered and consumption is estimated based on debatable norms. While the installation of new tube-wells comes with meters, the older tube-wells remain un-metered due to opposition by farmers.

<table>
<thead>
<tr>
<th>Table 2: Consumer Characteristics (FY2006-7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of consumers (%)</td>
</tr>
<tr>
<td>Domestic</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>UHBVN</td>
</tr>
<tr>
<td>DHBVN</td>
</tr>
</tbody>
</table>

Note: The total will not add up to 100% as the ‘other category’ including lift irrigation, streetlights, railway traction etc captures the rest

<table>
<thead>
<tr>
<th>Table 3: Distribution Infrastructure – 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Districts under jurisdiction</td>
</tr>
<tr>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Area of jurisdiction (sq. km)</td>
</tr>
<tr>
<td>Towns</td>
</tr>
<tr>
<td>Villages</td>
</tr>
<tr>
<td>11 KV rural feeders</td>
</tr>
<tr>
<td>11 KV urban and mixed urban feeders</td>
</tr>
<tr>
<td>11 KV industrial and independent feeders</td>
</tr>
<tr>
<td>Installed capacity of 33 KV sub-stations</td>
</tr>
<tr>
<td>Distribution transformers installed (MVA)</td>
</tr>
<tr>
<td>Capacity of distribution transformers</td>
</tr>
<tr>
<td>Connections of all categories (lacs)</td>
</tr>
<tr>
<td>Total connected load (MW)</td>
</tr>
</tbody>
</table>
16. The operating efficiency of the distribution system has shown some improvements over the years; however, it continues to be a major challenge. AT&C losses – a combination of high technical losses, theft and low collection rate - while declining still remain high when compared to several other power utilities. In the absence of metering of consumption by a large proportion of agriculture consumers, AT&C are only utility ‘best estimates’ and in reality could be much higher. The distribution utilities have set a target of reducing AT&C losses to 16% by the end of the 11th plan (2011/2012). The distribution transformers damage rate has declined to 8% in 2008 from 33% in 1998, suggesting a relative improvement in quality of power supply.

<table>
<thead>
<tr>
<th>Year</th>
<th>UHBVN</th>
<th>DHBVN</th>
<th>Haryana</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-02</td>
<td>43</td>
<td>39</td>
<td>45</td>
</tr>
<tr>
<td>2002-03</td>
<td>39</td>
<td>38</td>
<td>41</td>
</tr>
<tr>
<td>2003-04</td>
<td>40</td>
<td>37</td>
<td>41</td>
</tr>
<tr>
<td>2004-05</td>
<td>42</td>
<td>47</td>
<td>42</td>
</tr>
<tr>
<td>2005-06</td>
<td>42</td>
<td>35</td>
<td>41</td>
</tr>
<tr>
<td>2006-07</td>
<td>37</td>
<td>32</td>
<td>38</td>
</tr>
<tr>
<td>2007-08</td>
<td>33</td>
<td>26</td>
<td>32</td>
</tr>
</tbody>
</table>

Source: UHBVN, DHBVN

III. SYSTEMIC ISSUES AND INSTITUTIONAL CHALLENGES

17. Regulatory effectiveness and outstanding issues: The HERC was established in 1998 as part of unbundling and commercialization reforms in the power sector. HERC is empowered by the Electricity Act of 2003 and other national legislations to implement the policy framework. HERC orders follow the conventional cost of service approach. The utilities annually submit tariff requests to HERC. However, the tariff orders based on the ARR requests take an inordinate amount of time, ranging from 145 days to 165 days in 2007-2008, to receive HERC response. HERC has alluded to long-term tariffs in its orders but has not issued any concept paper or held stakeholder discussions to move the agenda forward.

<table>
<thead>
<tr>
<th>Year</th>
<th>UHBVN</th>
<th>DHBVN</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-6</td>
<td>255 days</td>
<td>269 days</td>
</tr>
<tr>
<td>2006-7</td>
<td>241 days</td>
<td>252 days</td>
</tr>
<tr>
<td>2007-8</td>
<td>165 days</td>
<td>145 days</td>
</tr>
</tbody>
</table>

Discrepancies between expenditure items allowed by the HERC and the actual expenditures incurred by the distribution companies are contributing to sector losses. The rising accumulated losses are due to lower-than-estimated revenue, higher-than-approved expenditure, disallowance of certain expenditure by the regulator, and the lack of regulatory mechanisms for matching revenue and expenses. A comparison of ARR order and the actual financial performance of the distribution companies (discoms) for FY2007 shows that while average revenue for UHBVN was only 87% of that approved by the
regulator the total expenditure was higher by 6%, resulting in financial gap of Rs 3015 million ($61.2 million). The situation in DHBVN was less stark but it still accumulated a loss of Rs 1132 million ($23 million). It is particularly important to note that the interest expenditure of discoms has increased significantly due to working capital borrowing to meet the revenue expenditure, as a result of cash flow stresses. Table 6 below presents some of the areas where there is need to bring about consistency between the methodology and accounting by the regulator and the utilities.

Table 6: Approved Vs Actual for Key Expenditure Heads

<table>
<thead>
<tr>
<th>Description</th>
<th>DHBVN Actual</th>
<th>HERC Approval</th>
<th>UHBVN Actual</th>
<th>HERC Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue from sale of power</td>
<td>23486</td>
<td>25020</td>
<td>17540</td>
<td>20236</td>
</tr>
<tr>
<td>Purchase of Energy</td>
<td>25285</td>
<td>26559</td>
<td>25529</td>
<td>25605</td>
</tr>
<tr>
<td>Finance and Interest Cost</td>
<td>585</td>
<td>434</td>
<td>1208</td>
<td>447</td>
</tr>
<tr>
<td>Wages, Salaries and related costs</td>
<td>2305</td>
<td>1845</td>
<td>2834</td>
<td>2286</td>
</tr>
<tr>
<td>R &amp; M Expenses</td>
<td>487</td>
<td>272</td>
<td>927</td>
<td>286</td>
</tr>
<tr>
<td>A &amp; G Expenses</td>
<td>306</td>
<td>158</td>
<td>218</td>
<td>168</td>
</tr>
<tr>
<td>Depreciation</td>
<td>574</td>
<td>710</td>
<td>917</td>
<td>991</td>
</tr>
</tbody>
</table>

Source: UHBVN, DHBVN business plans, 2008

19. Additional issues where regulatory disallowances have impacted the financial position of the Discoms include:
   (i) **hours of supply to agriculture** - Distribution companies claim the number of hours of electricity supplied to agriculture consumers is higher than the 5.34 hours which is assumed by the Commission. In FY 07, Discoms registered 1000 MUs of additional sales to agriculture over and above what was allowed by the regulator
   (ii) **working capital requirement** - The Commission allows working capital requirement at 1/12 of ARR while the companies argue that in many other states it is allowed, based on lead and lag study
   (iii) **repair and maintenance (R&M) charges** – R&M charges are allowed at 2% of the cost while companies claim them at 3%
   (iv) **return on equity** – In 2006-7, the distribution utilities did not request any return on equity, but in 2008-9, they have requested 10%

20. Similarly, there is disagreement between HVPN and HERC on a few points:
   (i) **interest on PF Bonds** - In accordance with the Appellate Tribunal order, this component was allowed only from December 2006 onwards
   (ii) **depreciation on Bhakra Beas Management Board (BBMB) assets** - HVPN has ownership of the BBMB assets and asked for the allowance of depreciation on these assets. This matter is not been resolved.
   (iii) **inter-state transmission losses** - Since HVPN has little control on inter-state losses, these were allowed on an actual basis only from December 2006

---

22 Institutional framework allows for decision-making by Forum of Regulators and ATE.
(iv) **interest and finance charges** - the actual amount of interest and finance charges on capital expenditure is not allowed due to variations in the capital expenditure plan approved by the regulator and the actual expenditure.

(v) **return on equity** – In 2006-7, HVPN did not request any return on equity, but in 2008-9, requested 8% return. However, no return on equity was allowed.

21. **Cost recovery through tariffs:** The tariff model in Haryana is based on the cost of service model. Tariffs are determined by an independent regulator through an annual review process, and in consultation with the utilities, government and other stakeholders. HERC imposes a single-part tariff, based on the increasing block tariff principle. There is no fixed charge recovered from the consumers, which has adverse consequences from the utilities’ point of view. Consumers try to get a much higher load level sanctioned than necessary. In periods of low power availability, the distribution companies are not able to recover even the fixed cost of its operations.

22. The cost recovery through tariffs has been low. For UHBVN the average cost recovery through tariffs has declined from 65% in FY01 to 57% in FY07. For DHBVN, the cost recovery through tariffs has improved over the same period from 65% to 77%, primarily due to a favorable consumer mix. Tariffs have not been revised since September 2001 though utilities have filed the ARR filings consistently. In spite of the status quo nature of the tariffs, corrections have been made in 2006 and 2008 to incorporate FSA. The FSA corrections are imposed on all consumer categories except agriculture (GoH provides additional reimbursement in lieu of subsidies).

23. Tariffs remain significantly below cost, particularly for residential and agricultural consumers. While industrial and commercial consumers pay higher than cost recovery tariffs (estimated at Rs 3.97/kwh), domestic consumers come close only at very high levels of consumption. Metered agricultural consumers pay nominal tariffs irrespective of the levels of consumption, while the majority of agricultural consumers pay on assessed values that neither charge them for exact consumption nor impose prices close to the cost of supply. The low tariffs charged to agricultural consumers that constitute about 40% of the units billed result in the accumulation of explicit and implicit subsidies. In fact, revenues, including the state subsidy, cover only about 70% of the cost of supply and farmers pay only 10% of the total revenues. The high consumption in the agriculture category together with low assessed revenue per unit is one of the critical factors hurting the financial position of the distribution companies.
24. Consequently, the revenue subsidy from state government to the two discoms has increased three-fold, from $166 million in FY01 to about $549 million in FY2009. The growing subsidy bill is primarily on account of the low tariffs for agriculture and domestic consumers, which together account for 59% of total power sales in the state. The cross-subsidy available from HT-industries has been reduced in provision with the National Tariff Policy. The quantum of subsidy is increasing, and accounted for 1.5% of GSDP in FY08. While Haryana is one of the best placed states to provide adequate fiscal space, its ability to continue to provide the needed subsidy is expected to be constrained in the current economic crisis.

25. The reasons for the widening gap between revenue and the cost of supply to the distribution companies are (i) Increase in power purchase cost: The power purchase cost is a major component of total expenditure (about 80%). Until the new generation capacity of the state is commissioned, the state will continue to purchase short term power at a higher cost from the market. The power purchase cost will also increase due to an increase in the transmission tariff but tariff pass-through has not happened (ii) Increase in interest and depreciation charges – due to the proposed investment plans of the entities (iii) Status-quo in tariff revision- The tariff for the various consumer categories has not been increased since 2001, whereas the operating expenses of the companies have been increasing (iv) Treatment of agriculture consumption- There is deviation in the consumption figures estimated by the distribution companies and HERC and, consequently, there is a mismatch in the subsidies.

Source: UHBVN, DHBVN business plans, 2008
Figure 5: Power purchase cost and revenue from sale of power

<table>
<thead>
<tr>
<th>(a) Increase in power purchase cost (Rs/kwh)</th>
<th>(b) % age of cost of supply to revenue from sale of power (Rs/kwh)</th>
</tr>
</thead>
</table>

Source: HVPN, UHBVN, DHBVN business plans, 2008

26. In-spite of the subsidy being provided by the government, the distribution companies have recorded losses in recent years. During the period FY01-07, the losses of DHBVN have increased from Rs 748 million ($15.2 million) to Rs 1132 million ($23 million), and for UHBVN from Rs 232 million ($4.71 million) to Rs 3015 million ($61.28 million). The subsidy dependence of the distribution utilities is expected to peak in FY2010 and then decline as a ratio of subsidy to revenue. The decline in overall fiscal dependence would require adequate measures for improving cost recovery through tariffs, as well as operational and end-use efficiency improvements.

IV. GOVERNMENT OF HARYANA’S INVESTMENT PROGRAM

27. In the past few years, Haryana has revitalized its efforts to reform its power sector with an emphasis on improving the availability and quality of power supply for the state’s economic development. Towards this end, the Government has launched a Rs. 25,524 crore ($5.1 billion) investment program to address generation capacity shortages, install transmission and distribution infrastructure, and improve sector management. The critical component of this program is the generation expansion strategy that aims to ramp up generation capacity from about 4700 MW in 2008-9 to 9000 MW in 2011-12 utilizing private investment through a transparent and competitive process. As of 2008, only 0.6% of Haryana’s generating capacity was in private hands. The state has successfully concluded power purchase contracts with the private sector based on a competitive, tariff based bidding process for an additional 2200 MW of capacity that will significantly lift the private sector’s share in generation. Further, Haryana is the first state in India to commission a competitively procured thermal unit (300 MW) in a record period of 36 months.
Figure 6: Generation Expansion Strategy of GoH – 11th Five Year Plan

(a) Expected load growth and capacity addition

(b) Source of capacity addition

<table>
<thead>
<tr>
<th>Sources of installed capacity</th>
<th>2008</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Owned Projects</td>
<td>2187</td>
<td>2187</td>
</tr>
<tr>
<td>Central Sector Share</td>
<td>1555</td>
<td>1555</td>
</tr>
<tr>
<td>Shared Projects – BBMB &amp; IP</td>
<td>938</td>
<td>938</td>
</tr>
<tr>
<td>Hisar TPS (600X2) Mega Plant Status</td>
<td></td>
<td>1080</td>
</tr>
<tr>
<td>Jhajjar Case- II (660X2)</td>
<td></td>
<td>594</td>
</tr>
<tr>
<td>Aravali STPS, Jhajjar (500+3) (Haryana:Delhi - 50:50)</td>
<td></td>
<td>750</td>
</tr>
<tr>
<td>Progressive additional availability through PPA with IPPs/CPSU &amp; MOU signed</td>
<td></td>
<td>2189</td>
</tr>
<tr>
<td><strong>Total Capacity (MW)</strong></td>
<td><strong>4680</strong></td>
<td><strong>9293</strong></td>
</tr>
</tbody>
</table>

Source: HVPN

28. The state transmission and distribution infrastructure is inadequate and will not be able to match the new generation capacity coming on-line during the 11th Five-Year Plan. Specifically there are some areas in the state where transmission bottlenecks are posing serious constraints to meeting the electricity demand. HVPN is planning Rs. 76,430 million ($1.5 billion) worth of investments in new and existing transmission infrastructure during the 11th Plan - (i) strengthening of existing transmission network by augmentation of existing system to handle increased flow of power (ii) creation of additional transmission capacity to enable the company to handle power from additional 5000 MW of generation capacity by the end of 11th plan (iii) extension of the state load dispatch center (SLDC) (iv) priority initiatives to improve overall system efficiency. The state has devised an ambitious agenda for ramping up distribution infrastructure as well. The total investment envisaged for distribution amounts to about Rs 65.14 billion ($ 1.3 billion) comprising the following sub-components (i) new sub-stations and lines (ii) bifurcation and segregation of feeders and distribution transformers (iii) HVDS/LVDS technology and (iv) demand side management and other system improvement works.

Table 7: Capital Expenditure Planned by HVPN during 11th Plan (Rs million)

<table>
<thead>
<tr>
<th>Particulars</th>
<th>2007-08</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Sub-stations</td>
<td>3,160</td>
<td>7,720</td>
<td>12,300</td>
<td>27,400</td>
<td>9,450</td>
</tr>
<tr>
<td>Augmentations</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>State Load Dispatch Center</td>
<td>500</td>
<td>1,000</td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Works under HUDA/HSIDC township</td>
<td>1,250</td>
<td>750</td>
<td>800</td>
<td>3,300</td>
<td>5,800</td>
</tr>
<tr>
<td><strong>Total Expenditure</strong></td>
<td><strong>5,410</strong></td>
<td><strong>9,970</strong></td>
<td><strong>14,100</strong></td>
<td><strong>31,200</strong></td>
<td><strong>15,750</strong></td>
</tr>
</tbody>
</table>

V. GOVERNMENT OF HARYANA’S INSTITUTIONAL DEVELOPMENT PROGRAM

29. In the recent years, GoH has carried out a number of measures to enhance the performance of the power utilities and augment the credibility of the sector institutions
designed to contribute to better sector governance and service delivery outcomes. These measures can be grouped into three major categories, as presented below:

30. **Enhancing the quality of management information system:** To meet rural growth, the state is already in midst of the separation of rural feeders – those supplying power only for agriculture consumption from those supplying power to the rest of rural economy. The Rs 5 billion ($101 million) scheme to segregate about 1500 feeders would assist in more accurate measurement of agricultural consumption and provide avenues for 24-hour supply to rural areas. This initiative has a multiplier effect on the lives of the poor in rural Haryana by contributing to productivity growth, poverty alleviation and overall rural development.

<table>
<thead>
<tr>
<th>Utility</th>
<th>Total number of villages</th>
<th>Number of feeders</th>
<th>Total cost of the scheme (Rs Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be segregated</td>
<td>Work allocated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UHBVN</td>
<td>3348</td>
<td>879</td>
<td>542</td>
</tr>
<tr>
<td>DHBVN</td>
<td>3348</td>
<td>600</td>
<td>426</td>
</tr>
<tr>
<td>Total</td>
<td>6967</td>
<td>1431</td>
<td>1063</td>
</tr>
</tbody>
</table>

31. **Improving regulatory effectiveness and enhancing consumer voice in decision making:** The commitment of GoH is reflected through the extent of managerial autonomy and accountability provided to utilities in managing their operations, human resources and contracts. The utilities have carried out transparent, timely and non-litigious contracting of more than 5000 MW of new additional generating capacity through combination of state and private sector participation. Further, the autonomy level for procurement decisions by the boards of directors of power companies has been enhanced from $ 20000 to $ 20 million.

32. Both the distribution companies - UHBVN and DHBVN -- have set up consumer grievances redressal forums (CGRF) and file a quarterly report to the HERC. The Commission has also set up a Consumer Service Cell. Besides redressal of consumer grievances, it also ensures that the licensee provides adequate services to consumers regarding supply and consumption of electricity. The HERC has also strengthened the public hearing process on all regulatory matters through conduct of hearings in different parts of Haryana and widespread publicity of public hearing events.

33. HERC has designated (as per the Electricity Act of 2003) an ombudsman. The ombudsman has to submit a report to the HERC every six months, containing details of the nature of grievances; HERC has also issued the Standards of Performance regulations, notified in July 2004. These incorporate quality, continuity and reliability of service that a licensee will need to achieve and the rate of compensation in case the
licensee fails to meet them (Forum of Regulators, 2008)\textsuperscript{23}. RTI compliance is also in place with information officers designated at the corporate office as well as at all circle offices in districts. A quarterly report is prepared on compliance with all RTI complaints and circulated to all the directors of the company.

34. **Internal transformation through process improvements, use of technology and organizational changes:** The scale-up of investments is unprecedented and the utilities are streamlining their internal processes to realign themselves with dynamic business realities of being project and asset based institutions.

35. The CGFA assessment carried out as part of the project preparation reveals that the three companies have institutionalized certain cardinal principles, in areas of accounting, auditing, internal control, budgeting and reporting, that have laid the foundation for basic corporate governance and financial accountability. However, implementation of these accountability principles remains weak.

36. The delegation of powers establishes the internal control environment within the companies, formalizing authority limits within the organizations. All three companies have recently updated their delegation of powers (HVPN in 2005, UHBVN and DHBVN in 2006). Subsequent changes are embodied in circulars. A large number of government regulations and amendment circulars serve as FM guidelines for day to day activities and controls.

37. A diagnostic review of the as-is processes in HVPN\textsuperscript{24} reveals an organization buoyed by recent growth and performance, managing to improve coordination among its departments, and adopting superior maintenance practices. However, there are critical gaps in processes and HVPN has initiated capacity building activities on its own. One vital area of weakness has been staffing. There has been no recruitment since 1991 and HVPN has experienced severe shortages in specific cadre. A consultative process between functional departments, senior management, and GoH resulted in an organizational restructuring plan that aimed at realigning staffing needs with new business needs. This plan specifies the roles and responsibilities of staff with specifications of additional posts as required. This plan is currently under implementation. It is envisaged that 1857 net positions will be added to HVPN in the field and HQ offices involving a financial cost of Rs 214.6 million ($4.3 million).


\textsuperscript{24} Carried out by Mercados Consulting. Report available in project files.
### Table 9: Overall position of new posts in HVPN

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanctioned posts:</td>
<td>7768</td>
</tr>
<tr>
<td>Working position:</td>
<td>5043</td>
</tr>
<tr>
<td>Proposed:</td>
<td>9625</td>
</tr>
<tr>
<td>Posts to be created:</td>
<td>2820</td>
</tr>
<tr>
<td>Posts to be abolished</td>
<td>963</td>
</tr>
<tr>
<td><strong>Net Creation:</strong></td>
<td><strong>1857</strong></td>
</tr>
</tbody>
</table>

Source: HVPN Organizational Restructuring Plan

38. A general lack of IT skills across various functional departments in HVPN also came to light in the diagnostic review. HVPN has undertaken steps to become more IT enabled. A comprehensive IT implementation plan is underway, an external consultant has been appointed for preparing an IT plan, and a LAN/WAN network is under development. To strengthen its project planning and implementation capabilities, HVPN has recently procured the load flow software and adopted technical tools such as Supervisory Control and Data Acquisition (SCADA) and Primavera. Further, a new energy billing software has been ordered and a system is being developed to revitalize the focus on revenue generation activities.

39. HVPN has also experienced co-ordination issues with procurement function (absence of finance tie-ups). Some critical positions are not staffed, and excessive reliance remains on government funding. However, financial planning has improved in the past few years and there is no financing shortfall for projects. Focus on operation and maintenance (O&M) has been sharpened, leading to improvement in training facilities. There is a dedicated institute set up at Pinjore, and planned at Madanpur, and a draft training policy has been prepared. Further, to streamline the project procurement procedures, HVPN is ensuring that the construction of major projects is done by turnkey contractors and in-house work restricted to small jobs.

40. The implementation of organizational restructuring plans of UHBVN and DHBVN is currently under discussion. The discoms have also been working on capacity building and analytical activities, including strengthening of the project management wing, preparation of business plans and preparation of master plans for large cities – Gurgaon and Faridabad, till 2021 (including analysis of potential Public-Private Partnership (PPP) opportunities). DHBVN has made significant strides to become IT proficient, with initiatives like computerized customer care centre, implementation of ERP, implementation of web based Payroll and personnel management information system under e-Governance.

41. Haryana has recognized that suitable DSM measures include promoting and developing energy efficient technologies such as a CFL-CDM energy efficiency program, a motor efficiency program, amorphous core transformer program, solar power promotion program, consumer energy efficiency awareness program, and improving the efficiency of different end-uses through better housekeeping, correcting power leakages, system conversion losses, etc. In addition, one of the major energy efficiency initiatives is
introducing efficient pump sets. Haryana has a large number of agriculture consumers dependent upon electrical energy for irrigation purpose. There are nearly 450000 irrigation pump (IP) sets and the distribution utilities will be providing an HVDS connection to any existing farmer who opts to purchase an efficient motor/pump sets from the utility. The utility will provide a dedicated distribution transformer (DTR) and HT line, free of cost, to all such farmers subject to fulfillment of the efficient pumping equipment conditions fixed by the utility. The efficiency of existing IP sets is low with many of the assembled sets having efficiencies below 25%.

VI. WORLD BANK’s EXPERIENCE IN HARYANA POWER SECTOR

42. The World Bank’s presence in the Haryana power sector dates back to the late 1990s when the APL was initiated. This reform-oriented program aimed to bring about far-reaching changes in the institutional structure of the sector and contribute to effective service delivery to consumers. The project goals for APL1 (1997-2000) included the establishment of a new legal, regulatory, and institutional framework in the sector and alleviation of key bottlenecks in the power system to demonstrate the benefits of the sector reforms.

43. This first phase APL support to Haryana power sector was rated “moderately unsatisfactory” by the IEG. While the APL1 project was instrumental in facilitating legal, structural and regulatory reforms, the outcomes fell short on financial turnaround and privatization expectations underlying the project. Uncertainty and volatility in the political environment weakened the political appetite to undertake complex reforms, specifically tariff revisions and privatization of distribution entities which were specified as triggers to move forward with APL2.

44. The experience from the Bank’s past engagement in Haryana as well as in other state reform projects in India provides vital lessons for the proposed project in understanding what is feasible and defining the scope within the political economy constraints in Haryana, as well as India in general. Some of the key lessons are (i) ownership and commitment of the governments are critical for successful implementation of the reforms. External agencies like the Bank can only facilitate the process by providing technical and financial assistance; (ii) the political economy of power sector reforms needs to be realistically integrated into the implementation strategy, recognizing that implementation of reforms is a long and gradual process and flexibility is required to respond to the changes in political economy as they dynamically evolve; (iii) expectation of the pace at which reforms can be implemented and outcomes realized should be realistic; particularly the expectations of sector financial turnaround and the phasing out of subsidies need to be moderated; (iv) upfront visible improvements in the quality of power supply and customer service are important for fostering pro-reform constituency and build stakeholder consensus for reforms; (v) improvements in corporate governance and institutional strengthening enhance credibility of sector reforms and their sustainability; and (vi) incentives to strengthen financial management and performance accountability frameworks are essential.
45. The IEG review outlined the following issues where Bank engagement experienced shortcomings in APL1. These shortcomings, where applicable, have been addressed with specific measures in HPSI.

Table 10: Lessons learned from Previous Haryana Project (APL1)

<table>
<thead>
<tr>
<th>Shortcomings in Haryana APL1 as per IEG Review</th>
<th>Relevance to HPSI</th>
<th>Risk Mitigation (if any)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the absence of real managerial autonomy, restoration of creditworthiness of utilities, commercial behavior, privatization of distribution, and other elements of the reform agenda, structural measures so far would have very limited effect.</td>
<td>High</td>
<td>Managerial autonomy is much higher as evident from execution of a generation strategy based on competitive bidding and the faster pace of project preparation of this project. In addition, to strengthen managerial autonomy, activities on strengthening corporate governance, accountability systems within companies and their broader institutional have been planned. HPSI also aims to contribute to internal transformation of the three implementing agencies through a focus on good technical designs, strengthening environment and social practices across companies and preparation of standard bidding documents. These components are expected to enhance operational efficiency and commercial practices within these organizations.</td>
</tr>
<tr>
<td>The conditionalities for proceeding from APL I to APL 2 — selecting a joint venture private investor, and effecting sale of equity to the investor within six months — were unrealistic.</td>
<td>Moderate</td>
<td>HPSI is not designed as an APL, but as a SIL. Further, the loan is not linked to any policy conditionality like privatization but linked to outcomes resulting from specific project components. This operation is Phase I of an expected multi-phase long term engagement, where satisfactory progress on Phase 1 PDO indicators (including investments and institution building issues) would determine the way forward for Phase II.</td>
</tr>
<tr>
<td>After a new government took office in Haryana in 1999, the reform program was not backed by a clear and strong political commitment nor promoted by reform &quot;champions&quot;;</td>
<td>High</td>
<td>National elections have been concluded in May 2009 and state elections are due in February 2010. Therefore, the appetite for complex reforms or any privatization, significant tariff and subsidy reforms is likely to be low until a new Government comes in place. Hence, HPSI is focused on laying the groundwork for alleviating shortages, improving the quality of supply and customer service through transmission projects and smaller distribution investments in selected towns. Moreover, the political sensitivity surrounding a transmission engagement is limited.</td>
</tr>
<tr>
<td>The absence of a clear political commitment to the policy framework makes resumption of the reform process difficult and costly. Hence sustainability is non-evaluable.</td>
<td>Limited</td>
<td>The policy framework in the country and state has already been well laid out. Structural unbundling has also been completed, including compliance to market structure envisaged under EA 2003. Thus, the project has a limited role on the energy policy framework in the state. Instead, the project concentrates on the effective implementation of policies through organizational transformation and operational efficiency improvements.</td>
</tr>
<tr>
<td>Shortcomings in Haryana APL1 as per IEG Review</td>
<td>Relevance to HPSI</td>
<td>Risk Mitigation (if any)</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Allocation of high-level staff resources was very uneven, and too few staff were appointed to the reform group;</td>
<td>Limited</td>
<td>The reform model was needed for unbundling and structural changes. With market structuring now completed, separate reform groups are not needed in this project. For effective implementation, a counterpart team from the implementing agencies has been created who will act as a nodal body on project preparation activities.</td>
</tr>
<tr>
<td>There is considerable risk of conflict between the state administration and state utilities and the Regulatory Commission, which may lead to deadlock;</td>
<td>High</td>
<td>There are many continuing issues of conflict between the utilities and HERC. Technical assistance is underway to shed light on contentious issues through accurate measurement of agriculture consumption and technical capacity building of all stakeholders.</td>
</tr>
<tr>
<td>Significant delay on part of GoH to sign amended legal agreements with the Bank resulted in suspension of disbursements for about eight months, which slowed the pace of procurement.</td>
<td>Limited</td>
<td>With project and legal agreements focusing on specific components of investments and not broad issues of state reforms, such an eventuality is not expected this time.</td>
</tr>
</tbody>
</table>
Annex 2: Major Related Projects Financed by the Bank and/or other Agencies

**INDIA:  Haryana Power System Improvement**

### WORLD BANK AIDED PROJECTS IN THE ENERGY SECTOR OVER LAST TEN YEARS

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Status</th>
<th>Board Approval</th>
<th>IP rating</th>
<th>DO rating</th>
<th>Sector Issues Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN: Rampur Hydropower Project</td>
<td>Supervision</td>
<td>13 September 2007</td>
<td>S</td>
<td>S</td>
<td>Address power shortages, Institutional Strengthening of SJVNL, Develop 412 MW hydropower project</td>
</tr>
<tr>
<td>IN: Power System Development Project – IV</td>
<td>Supervision</td>
<td>18 March 2008</td>
<td>S</td>
<td>S</td>
<td>Strengthen India’s electricity transmission system to increase reliable power exchange between regions and states.</td>
</tr>
<tr>
<td>IN: Power System Development Project – III</td>
<td>Supervision</td>
<td>19 Jan 2006</td>
<td>S</td>
<td>S</td>
<td>Improvement of outcome-orientation and institutional development of Powergrid</td>
</tr>
<tr>
<td>IN: Rajasthan Power Sector Restructuring Project</td>
<td>Closed</td>
<td>18 January 2001</td>
<td>MS</td>
<td>MS</td>
<td>Sector sustainability problems due to high losses. Independent regulation, sector reforms.</td>
</tr>
<tr>
<td>IN: Orissa Power Project</td>
<td>Closed</td>
<td>14 May 1996</td>
<td>U</td>
<td>U</td>
<td>Sector sustainability problems due to high losses. Independent regulation, sector reforms</td>
</tr>
<tr>
<td>IN: Haryana Power Sector Restructuring Project</td>
<td>Closed</td>
<td>15 January 1998</td>
<td>U</td>
<td>U</td>
<td>Sector sustainability problems due to high losses. Independent regulation, sector reforms</td>
</tr>
</tbody>
</table>

Ratings: HS= Highly satisfactory; S=Satisfactory; MS=Moderately Satisfactory; MU=Moderately Unsatisfactory; U=Unsatisfactory; HU=Highly Unsatisfactory; NA=Not Applicable; NR=Not Required

### INTERNATIONAL FINANCE CORPORATION AIDED PROJECTS IN THE ENERGY SECTOR OVER LAST TEN YEARS

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Type</th>
<th>Project Board Date</th>
<th>Company</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tata Mundra Project</td>
<td>Loan</td>
<td>8 April 2008</td>
<td>Coastal Gujarat Power Limited</td>
<td>To finance the first ultra mega project -- India’s first 800 MW unit supercritical technology thermal power plant, which is likely to be the most energy-efficient, coal-based thermal power plant in the country</td>
</tr>
<tr>
<td>AD Hydro Power Limited</td>
<td>Loan</td>
<td>31 Oct 2003</td>
<td>Allain Duhangan Power Company Ltd. (ADPCL) will be jointly owned by Rajasthan Spinning &amp; Weaving Mills Ltd., HEG Limited and Malana Power Company Ltd.</td>
<td>To help meet peak and energy shortages through construction of a 192MW run-of-the-river hydroelectric power plant in Himachal Pradesh</td>
</tr>
<tr>
<td>Tala Transmission Project</td>
<td>Loan</td>
<td>31 Jul 2003</td>
<td>A joint venture between Tata Power Company Ltd. and Power Grid Corporation of India Ltd. to establish the Tala Transmission project.</td>
<td>Promotion of the first public private joint transmission project in India; Expansion of inter-regional transmission capacity and evacuation of power from the 1.020 MW Tala Hydroelectric Project in Bhutan.</td>
</tr>
<tr>
<td>IHDC (Dodson-Lindblom Hydropower Private Ltd)</td>
<td>Loan</td>
<td>25 July 2005</td>
<td>Dodson-Lindblom Hydropower Private Limited (DLHPL) and Ascent Hydro Projects Limited (Ascent) merged into one company, Indian Hydropower Development Corporation (IHDC)</td>
<td>To develop Mini Hydro Power Plants in India</td>
</tr>
</tbody>
</table>
## ASIAN DEVELOPMENT BANK (ADB) AIDED PROJECTS IN THE ENERGY SECTOR OVER THE LAST TEN YEARS

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Type</th>
<th>Approval Date</th>
<th>Executing Agency</th>
<th>Sector Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uttaranchal Power Sector Project</td>
<td>Loan</td>
<td>2005</td>
<td>Uttaranchal Energy &amp; Irrigation Department</td>
<td>Expansion of the northern grid and increase the pace of economic development in less-developed regions in Uttaranchal state</td>
</tr>
<tr>
<td>Power Grid Transmission (Sector) Project</td>
<td>Loan</td>
<td>21 December 2004</td>
<td>Power Grid Corporation of India Ltd.</td>
<td>Strengthen India’s national transmission grid to improve system reliability, facilitate power transfers and reduce losses</td>
</tr>
<tr>
<td>Assam Power Sector Development Program (Project Loan)</td>
<td>Loan</td>
<td>10 December 2003</td>
<td>Assam State Electricity Board</td>
<td>Strengthening of transmission and distribution systems</td>
</tr>
<tr>
<td>Assam Power Sector Development Program</td>
<td>Loan</td>
<td>10 December 2003</td>
<td>Government of Assam</td>
<td>Improvement of financial viability of sector, and assistance in development of legal and regulatory framework for sector growth</td>
</tr>
<tr>
<td>State Power Reform Project</td>
<td>Loan</td>
<td>12 December 2002</td>
<td>Power Finance Corporation Ltd. (PFC)</td>
<td>Line of credit for power sector financing.</td>
</tr>
<tr>
<td>Madhya Pradesh Power SDP (Project Loan)</td>
<td>Loan</td>
<td>6 December 2001</td>
<td>Madhya Pradesh Electricity Board</td>
<td>Facilitate the restructuring of the power sector to improve sector efficiencies.</td>
</tr>
<tr>
<td>Madhya Pradesh Power Sector Development Program</td>
<td>Loan</td>
<td>6 December 2001</td>
<td>Government of Madhya Pradesh</td>
<td>Facilitate the restructuring of the power sector to improve sector efficiencies.</td>
</tr>
<tr>
<td>Hydropower Development</td>
<td>PPTA</td>
<td>6 May 2004</td>
<td>National Thermal Power Corporation</td>
<td>Strengthening the feasibility studies of two hydropower plants in Uttaranchal State.</td>
</tr>
<tr>
<td>Uttaranchal Power Sector Development Program</td>
<td>PPTA</td>
<td>23 August 2004</td>
<td>Energy &amp; Irrigation Dept., Govt. of Uttaranchal</td>
<td>Project preparation for expansion of transmission; small hydropower development; and institutional strengthening.</td>
</tr>
<tr>
<td>Assam Power Sector Development Project</td>
<td>PPTA</td>
<td>29 October 2002</td>
<td>Assam State Electricity Board</td>
<td>Facilitate the restructuring of the power sector to improve sector efficiencies.</td>
</tr>
<tr>
<td>Energy Efficiency Enhancement</td>
<td>PPTA</td>
<td>21 June 2002</td>
<td>Govt. of India</td>
<td>Study of the feasibility of developing an active market for energy efficiency.</td>
</tr>
<tr>
<td>Power Sector Development Program (Kerala)</td>
<td>PPTA</td>
<td>4 October 2001</td>
<td>Govt. of Kerala</td>
<td>Project preparation for improvement of sector performance, and policy and legislative reforms.</td>
</tr>
<tr>
<td>MFF - Madhya Pradesh Power Sector Investment Program</td>
<td>MFF/Loan</td>
<td>29 March 2007</td>
<td>Department of Economic Affairs, Madhya Pradesh Power Transmission Company Limited, Madhya Pradesh Poorv Kshetra Vidyut Vitaran Co Ltd.</td>
<td>Construction of transmission lines for power evacuation and strengthening of transmission systems, and sub-stations located in various locations across the state of Madhya Pradesh, enhancement of distribution efficiency. The distribution component will extend power to end connections and target technical and nontechnical system losses.</td>
</tr>
<tr>
<td>Project Name</td>
<td>Type</td>
<td>Approval Date</td>
<td>Executing Agency</td>
<td>Sector Issues</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>--------</td>
<td>--------------------</td>
<td>----------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Himachal Pradesh Clean Energy Development Investment Program</td>
<td>Loan</td>
<td>23 October 2008</td>
<td>Himachal Pradesh Power Corporation Limited</td>
<td>Procurement of all civil works, equipment, E&amp;M, and consultancy services are on track.</td>
</tr>
<tr>
<td>Uttarakhand Power Sector Project 2</td>
<td>Loan</td>
<td>February 25, 2009</td>
<td>Uttarakhand Energy &amp; Irrigation Department</td>
<td>Expansion of the northern grid and increase the pace of economic development in less-developed regions in Uttaranchal state</td>
</tr>
<tr>
<td>Uttarakhand Power Sector Project 3</td>
<td>Loan</td>
<td>January 8, 2009</td>
<td>Uttarakhand Energy &amp; Irrigation Department</td>
<td></td>
</tr>
<tr>
<td>National Power Grid Transmission (Sector) Project</td>
<td>Loan</td>
<td>28 March 2008</td>
<td>Power Grid Corporation of India Ltd.</td>
<td>Strengthen India’s national transmission grid to improve system reliability, facilitate power transfers and reduce losses</td>
</tr>
</tbody>
</table>
### Annex 3: Results Framework and Monitoring

**INDIA: Haryana Power System Improvement**

#### Results Framework

<table>
<thead>
<tr>
<th>PDO</th>
<th>Project Outcome Indicators</th>
<th>Use of Project Outcome Information</th>
</tr>
</thead>
</table>
| Effective transmission and distribution of new capacity to improve the availability, efficiency and accountability of service delivery in the state of Haryana. | (1) Component I: Total energy transmitted through the transmission system  
(2) Component II: Reduction in AT & C losses in selected project urban areas  
(3) Component III: Development and implementation of institutional strengthening action plan and corporate governance and financial accountability action plan | To measure achievement of PDOs and reframe investment plans accordingly |

<table>
<thead>
<tr>
<th>Intermediate Outcomes</th>
<th>Intermediate Outcome Indicators</th>
<th>Use of Intermediate Outcome Monitoring</th>
</tr>
</thead>
</table>
| Component I: Strengthen the efficiency of transmission system | (1) HVPN: Increase in transmission lines (circuit km)  
(2) HVPN: Increase in transformation capacity (MVA) | To track the progress of project implementation and to undertake corrective actions with respect to procurement, financial and project management, safeguard issues etc. |
| Component II: Improve distribution services and customer satisfaction in select urban areas of Haryana | (1) DHBVN: Reduction in AT & C losses in select urban centers (%)  
(2) DHBVN: Introduce system for managing and measuring customer service standards in select urban centers | To track the progress of project implementation and service delivery outcomes and to undertake corrective actions with respect to procurement, financial and project management, safeguard issues etc. |
| Component III: Enhance institutional capacity and corporate governance of the transmission and distribution entities. | (1) HVPN: Proportional reduction in weighted average of delays in project execution (months)  
(2) HVPN: Inter-unit reconciliation of accounts | To evaluate the effectiveness of internal process improvements to manage a substantial investment program designed to expand the quantity and quality of electricity service delivery in Haryana. |
## Arrangements for results monitoring

<table>
<thead>
<tr>
<th>Project Outcome Indicators</th>
<th>Baseline 2009</th>
<th>YR1 2010</th>
<th>YR2 2011</th>
<th>YR3 2012</th>
<th>YR4 2013</th>
<th>YR5 2014</th>
<th>Frequency and Reports</th>
<th>Data Collection Instruments</th>
<th>Responsibility for Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Total energy transmitted through the transmission system (Million Units)</td>
<td>26145</td>
<td>Dadri: 52.19 Gurgaon: 17.49 Faridabad: 23.86</td>
<td>46800</td>
<td>Annual report of SLDC</td>
<td>HVPN system operations data</td>
<td>HVPN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Reduction in AT &amp; C in selected project urban areas (%)</td>
<td>TAs approved by the board</td>
<td>Institutional strengthening action plan approved by board of directors</td>
<td>Implemented by companies</td>
<td>Annual reports by DHBVN based on financial year data</td>
<td>DHBVN system operations data</td>
<td>DHBVN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Development and implementation of (i) institutional strengthening action plan and (ii) corporate governance and financial accountability action plan.</td>
<td>CGFA action plan agreed</td>
<td></td>
<td></td>
<td>Annual progress report on capacity building action plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Intermediate Outcome Indicators

**Component I**

(1) Increase in transmission lines 400/220/132/66 KV (Circuit KMs)

| 8203 | Dadri: 52.19 Gurgaon: 17.49 Faridabad: 23.86 | 13500 | Annual reports by HVPN based on financial year data | Deputy Secretary/Projects & HVPN system operations data | HVPN |

| 9700 | Dadri: 26 Gurgaon: 13.39 Faridabad: 14.86 | 16000 | | | |

(2) Increase in transformation capacity 220/13, 220/66 & 220/33 (MVA)

| 13500 | Dadri: 26 Gurgaon: 13.39 Faridabad: 14.86 | 16000 | Annual reports by DHBVN based on financial year data | Deputy Secretary/Projects & HVPN system operations data | HVPN |

| 9700 | Dadri: 52.19 Gurgaon: 17.49 Faridabad: 23.86 | 13500 | Annual reports by HVPN based on financial year data | Deputy Secretary/Projects & HVPN system operations data | HVPN |

**Component II**

(1) Reduction in AT & C losses in select urban centers (%) 25

| Dadri: 52.19 Gurgaon: 17.49 Faridabad: 23.86 | Baseline consumer survey completed | Annual energy audit reports by DHBVN | DHBVN system operations data | DHBVN |

| Dadri: 26 Gurgaon: 13.39 Faridabad: 14.86 | Consumer service monitoring system implemented | | | |

---

25 The baseline AT & C losses will be reconfirmed after the baseline survey
<table>
<thead>
<tr>
<th>Project Outcome Indicators</th>
<th>Baseline 2009</th>
<th>YR1 2010</th>
<th>YR2 2011</th>
<th>YR3 2012</th>
<th>YR4 2013</th>
<th>YR5 2014</th>
<th>Frequency and Reports</th>
<th>Data Collection Instruments</th>
<th>Responsibility for Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component III</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) HVPN: Proportional reduction in weighted average of delays in project execution (Months)</td>
<td>7</td>
<td>Unreconciled</td>
<td>Yearly reconciled</td>
<td>4</td>
<td>Quarterly reconciled after two months of quarter</td>
<td>Annual progress report on capacity building action plan</td>
<td>Chief Engineer/MM &amp; Annual progress reports, HVPN operations data</td>
<td>HVPN</td>
<td></td>
</tr>
<tr>
<td>(2) HVPN: Inter-unit reconciliation of accounts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Annex 4: Detailed Project Description

INDIA: Haryana Power System Improvement

1. There are two project implementation entities – HVPN and DHBVN. This project is estimated to cost about USD 410 million with the following break-down of components and activities.

<table>
<thead>
<tr>
<th>Project Components</th>
<th>Indicative Cost, US$ m, Bank financing</th>
<th>Indicative Cost, US$ m, Counterpart financing</th>
<th>Total financing US$ m</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Transmission Investments including sub-stations and lines</td>
<td>250</td>
<td>62.5</td>
<td>312.5</td>
</tr>
<tr>
<td>II. Distribution Investments including HVDS, distribution sub-stations and LT infrastructure</td>
<td>70</td>
<td>17.5</td>
<td>87.5</td>
</tr>
<tr>
<td>III. Technical Assistance and Capacity Building</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>330</td>
<td>80</td>
<td>410</td>
</tr>
</tbody>
</table>

Component I: Transmission System Strengthening

2. Due to its geographical location and the limited availability of primary energy sources, Haryana, as well as many of the states in the Northern Region, have to rely mainly on bulk power supply from centrally-owned projects (situated towards Eastern India) transmitted over long extra high voltage (EHV) AC/DC transmission lines, and managed by the national transmission company, Powergrid. Haryana also has a power share in the Indraprastha Thermal Power Station located in Delhi. In order to meet its load demand, thermal power stations at Faridabad (3x55 MW), Panipat (4x110+2x210+2x250 MW) and Yamuna Nagar (2x300 MW) have been constructed. HVPN has so far managed the Haryana transmission network up to 220 kV and is gearing up to introduce the 400 kV voltage level, given the load growth, its geographical location, and the planned addition of the Jhajjar (3x500MW), the Hisar (2x600MW) and of the Jhajjar Case-2 (1320 MW) coal-fired power stations by the end of the 11th Plan Period.

3. Long-term power planning studies, on a regional and national basis, are being carried out by the Central Electricity Authority (CEA) to determine the optimal characteristics of the transmission development program, and the results are being implemented by Powergrid. At the state level, HVPN carried out a load flow study and short circuit analysis, with the assistance of a consulting firm, to analyze the HVPN power system over the period 2008-2012. The specific objectives of this exercise were to identify constraints to meet the power demand, and to evaluate losses in present system vis-à-vis losses after the addition of the planned transmission sub-stations and lines. Given the wide integration of the Haryana system in the Northern Region and its synchronous operation, the load flow study included the inter-connected 220 kV and 400 kV transmission networks of all the adjoining states (Punjab, Rajasthan, Uttar Pradesh, Uttarakhand, and Delhi) in the Northern Region. In addition, since the main emphasis was to determine the
expansion requirements for the Haryana transmission system, all the 66 kV and above transmission lines in Haryana have been considered.

4. The assumptions for carrying out the load flow studies were the following:

- The generators - Panipat, WYC (Yamunanagar), Faridabad Thermal plant, Hisar Thermal Power Station (TPS), YTPP and NTPC plant at Jhajjar, - directly feeding the HVPN network have been included as per actual data supplied by HPGC.
- All the new 400 kV sub-stations, planned to be commissioned by 2012 in the state by HVPN or Powergrid, have been considered.
- Conductors’ current carrying capacity is 66% and 90% of its rated capacity under continuous current operating and outage rating respectively (due to aging conductors, current carrying capacity is not rated) and the voltage variations are from –10 % to +5 %.
- Load growth factor is assumed to be unique to each district for a period of up to five years. The yearly estimated load demand and available generation (as per contractual agreements and plant availability), as well as the annual load growth per district in the Haryana region (as per CEA projections adjusted by HVPN observations) have been considered. To carry out the studies effectively, the Haryana region was divided into 20 regions on the basis of its districts. The results were analyzed zone wise, or by combinations of zones, as required.
- In terms of peak power supply conditions, a summer scenario and a winter scenario have been devised for each year to analyze the system capability. In the summer scenario, the transmission lines have minimal transfer capability (because of the summer heat) and availability of supply in the state is low. In the winter scenario, the lines have maximum transfer capability and availability of supply is at its peak.
- The transmission system, as of March 2008, has been considered as the base case. The load flow analysis was carried out for each year up to 2012 to compute critical loaded components in the system. New 400, 220, 132 and 66 kV sub-stations, along with the associated transmission lines, and the augmentation of the existing sub-stations and lines have been considered in a yearly phased manner to meet the load requirement up to year 2012.

5. The load flow study showed that:

- Until 2012, there will be no balance between available generation and projected demand. Consequently, many load/demand restrictions will have to be implemented.
- Upon completion of the generation projects mentioned above, and the planned transmission sub-stations and lines, the voltage profile at the new sub-stations, and line loadings are within the planning limit requirements.
- The sub-stations and the transmission lines proposed for World Bank financing are part of a set of sub-stations and transmissions lines required to strengthen the transmission network and meet expected demand. Their commissioning period falls within the period 2011-2012; if they are not implemented, the transmission network will not have adequate transfer capability to ensure reliable and effective power flows. Therefore, it is imperative that the projects funded by other agencies and those implemented by Powergrid be
completed in the anticipated timeframe to allow HVPN to take full advantage of the project benefits.

- If all the projects are implemented as planned, it is anticipated that total transmission system losses will gradually decrease from 5.7% to 2.8% by the end of the 11th Plan. In addition, there will be convergence between supply and demand, with a slight imbalance, that could be removed by imports of energy.
- In industrial areas such as Faridabad and Gurgaon, with a load growth as high as 20% per annum, the implementation of the new sub-stations and associated transmission lines will be critical in helping HVPN to meet demand.

6. The two sub-stations (2X315MVA) at Nuhiyawali and Nawada, which form the G1 package of Component I, form an integral part of the overall power development scheme involving another six 400kV sub-stations (4410 MVA). The remaining four sub-stations and associated transmission lines are being constructed by HVPN with financial assistance from other institutions, in particular PFC. Powergrid will also construct four sub-stations (totaling 2890 MVA) in the State during the 11th plan period, as part of the overall regional grid system augmentation and strengthening efforts.

7. The technical specifications of sub-station equipments have been prepared and checked based on time-tested bidding documents of Powergrid as they have been successful in the construction of 400 kV sub-stations and associated transmission lines. The specifications are commensurate with International Standards and Specifications. The bus-bar switching scheme of the 400kV system is a one and half breaker scheme, where breaker maintenance and bus maintenance are simultaneously possible without interruption of supply. Equipment specifications, including autotransformer, circuit breaker, and isolator, are similar to those used by Powergrid and approved by the World Bank.

8. The estimated completion of both sub-stations is targeted at 21 months from issuance of letter of award. Necessary land will be acquired by the state-owned utility HVPN after due compliance with environmental, social, rehabilitation and resettlement issues of the respective sub-stations.

9. Component I of $ 250 million of World Bank investments is proposed to fund creation of a prioritized investment plan comprising 400 kV, 220 kV, 132 kV, and 66 kV sub-stations along with investments for transmission system augmentation for key urban areas.

<table>
<thead>
<tr>
<th>Package</th>
<th>Description of works / Goods</th>
<th>Estimated Cost( US$ Million)</th>
<th>Method of procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>2 Nos. 400 kV sub-stations Nawada and Nuhiyawali</td>
<td>33.35</td>
<td>ICB</td>
</tr>
<tr>
<td>G2</td>
<td>2 Nos. 220 kV sub-stations Rangala Raipur (Firozpurizirka) &amp; Samain (Tohana)</td>
<td>14.81</td>
<td>ICB</td>
</tr>
<tr>
<td>G3</td>
<td>400 kV transmission line for feeding 400 kV sub-station Nuhiyawali</td>
<td>19.57</td>
<td>ICB</td>
</tr>
<tr>
<td>Package</td>
<td>Description of works / Goods</td>
<td>Estimated Cost (US$ Million)</td>
<td>Method of procurement</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>G4</td>
<td>5 Nos. 220 kV Transmission lines for feeding 220 kV substations A-5 Faridabad,Rangla Raipur (Firojpurzhirka), Samain &amp; Musudpur.</td>
<td>15.84</td>
<td>ICB</td>
</tr>
<tr>
<td>G5</td>
<td>4 Nos. 220 kV sub-stations Musudpur, A-5 Faridabad, Sangwan (Tohana) &amp; Raiwali (Panchkula)</td>
<td>28.69</td>
<td>ICB</td>
</tr>
<tr>
<td>G6</td>
<td>5 Nos. 220 kV transmission line for feeding 220 kV sub-station Raiwali, A-5 Faridabad &amp; Rangala Rajpur, Sagwan and 5 Nos.132 kV transmission line for feeding 132 kV sub-stations Kairu, Nangal Mohanpur, Palli &amp; Kabri.</td>
<td>19.41</td>
<td>ICB</td>
</tr>
<tr>
<td>G7</td>
<td>5 Nos. 132 kV sub-stations Sataundi, Kairu, Kabri, Nangal Mohanpur &amp; Palli.</td>
<td>9.82</td>
<td>ICB</td>
</tr>
<tr>
<td>G8</td>
<td>220 kV sub-stations A-4 Faridabad and . 66 kV sub-station Sector-5 Panchkula (GIS)</td>
<td>23.03</td>
<td>ICB</td>
</tr>
<tr>
<td>G9</td>
<td>5 Nos. 220 kV sub-stations Panchkula (new), Ganour, Rai, Pinjore, Gignow (Loharu)</td>
<td>36.59</td>
<td>ICB</td>
</tr>
<tr>
<td>G10</td>
<td>9 Nos. 220 kV transmission line for feeding 220 kV substations Panchkula (new), Ganour, Rai, Pinjore, Gignow.</td>
<td>20.50</td>
<td>ICB</td>
</tr>
<tr>
<td>G11</td>
<td>3 Nos. 220 kV sub-stations A-2 Faridabad (GIS) Jansui &amp; Ratia and 66kV Substation Sector-17 Gurgaon (GIS).</td>
<td>37.46</td>
<td>ICB</td>
</tr>
<tr>
<td>G12</td>
<td>7 Nos.220 kV transmission line for feeding 220 kV sub-station Jansui, Ratia, Adampur, Pahari &amp; Mohana S/Stns.</td>
<td>12.44</td>
<td>ICB</td>
</tr>
<tr>
<td>G13</td>
<td>4 Nos. 220 kV sub-stations Adampur, Pahari, kharkhoda &amp; Sector-48 Gurgaon.</td>
<td>30.42</td>
<td>ICB</td>
</tr>
<tr>
<td>G14</td>
<td>Extension of SCADA/EMS of HVPNL</td>
<td>10.58</td>
<td>ICB</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>312.50</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Component II: Urban Distribution System Strengthening**

10. Distribution losses in Haryana continue to be high in the range of 30% with losses in some urban areas being up to 60%. The main reasons for high technical losses are old, overused, obsolete distribution networks and low high-tension/low-tension (HT/LT) ratios. Direct tapping of power by consumers, bypassing techniques, and tampering of meters cause commercial losses.

11. The distribution companies have decided on a twin pillar strategy of loss reduction and operational efficiency for strengthening distribution assets and enhanced customer service levels with better quality of power supply. For this component, select urban towns have been identified on a pilot basis, based on predefined filters (political difficulty and scope for revenue augmentation). Of the two distribution companies in Haryana, DHBVN is the participating utility in this project.
12. Under the proposed loan, three towns of Gurgaon, Faridabad and Charkhi Dadri have been identified and DPRs have been prepared. It is envisaged that the project investments in these towns would provide models of growth that can be subsequently replicated in the whole state.

<table>
<thead>
<tr>
<th>Table 3: Selected towns for distribution investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of consumers</td>
</tr>
<tr>
<td>Dadri</td>
</tr>
<tr>
<td>Gurgaon</td>
</tr>
<tr>
<td>Faridabad</td>
</tr>
</tbody>
</table>

Source: DPRs of Dadri, Gurgaon, Faridabad

13. This component will be implemented for each town by means of a turnkey contract with the following sub-components, as described below. These pilot investments in the distribution system are expected to lead to a reduction in power theft, improvement in collection efficiency, quality of supply, customer satisfaction in line with HERC’s standards of performance, reduction in response time for attending customer problems, and utilization of IT for improvements in the existing system.

i) Construction of feeder networks to HVDS to the extent possible by placing smaller size distribution transformers (viz. 10kVA, 16kVA and 25kVA) close to the consumers, thus reducing the size of the LT network to the bare minimum,

ii) Bifurcation of overloaded 11 kV feeders in order to obviate the excessive voltage drop at the tail end,

iii) Segregation of industrial feeders,

iv) Setting up of customer care centers and AMI,

v) Establishment of a 33 kV Sub-station (only in Dadri Town)

14. HVDS: The existing distribution system is overloaded and is expected to increase further in the future. The revenue losses of discoms are mainly due to LT line loss, errors in meters, billing and failure of power supply due to breakdowns. In order to minimize LT line faults, reduce line losses, and voltage drop and failure of transformers, the three-phase high voltage line will be taken near to consumers and it will be stepped down to lower voltage by using smaller rating kVA transformers, depending on consumer requirement (three phase or one phase). HVDS component covers - erection of new HVDS lines, erection of 11 kV AB cables, erection of Armoured XLPE cables, installation of new 25 kVA, 16 kVA, 10kVA distribution transformers, relocation of single phase meters and of three phase meters will be realized.

15. Feeder bifurcation: The overloaded feeders cause voltage drops at the feeder tail. The feeders are expected to take up additional load in future. Therefore, these feeders will be bifurcated, wherever necessary, in order to restrict the load on the feeder to 150 ampere. Feeder bifurcation will help in maintaining voltage regulation within specified norms, especially at the feeder tail, eliminating low voltage supply to the consumers, and bringing about a reduction in the number of consumers affected by supply disruptions due to feeder level faults.
16.  **Industrial load segregation**: Industrial consumers have the largest revenue potential for discoms. Therefore, industrial load segregation from mixed load feeders provides electricity to industrial customers through dedicated feeders for continuity of supply. Dedicated industrial feeders will enhance monitoring, improve quality of supply to the industrial consumers, and create redundancy to accommodate additional industrial loads.

17.  **Setting up customer care centers and AMI**: Discoms plan to enhance customer care centers across the urban towns and a scheme to provide Advanced Metering Infrastructure (AMI) for all the non-HT consumers having a connected load of 10 kW and above. The setting up of customer care centers would bring about a change in customer service, awareness among the consumers, and a sense of service among the staff.

<table>
<thead>
<tr>
<th>Description of works / Goods</th>
<th>Estimated Cost( US$ Million)</th>
<th>Method of procurement ICB/NCB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply &amp; Installation of new HT lines for HVDS, System strengthening by Bifurcation of 11 KV feeders and creation of 33 KV sub-station and Segregation of industrial load from mixed load feeder in Dadri town (Bhiwani)</td>
<td>5.51</td>
<td>ICB</td>
</tr>
<tr>
<td>Supply &amp; Installation of new HT lines for HVDS, System strengthening by Bifurcation of 11 KV feeders in Gurgaon City</td>
<td>24.28</td>
<td>ICB</td>
</tr>
<tr>
<td>Supply &amp; Installation of new HT lines for HVDS, System strengthening by Bifurcation of 11 KV feeders in Faridabad City</td>
<td>34.03</td>
<td>ICB</td>
</tr>
<tr>
<td>Providing Advanced Metering Infrastructure (AMI) across the utility for all the non-HT consumers having a connected load of 10 kW and above</td>
<td>23.69</td>
<td>ICB</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>87.5</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Component III: Technical Assistance and Capacity Building of transmission and distribution companies**

18.  The ability to manage an expanded investment plan requires enormous changes in the way institutions function and how flexible they in reorienting themselves to new business challenges. Contributing to the institution building agenda of GoH, a comprehensive organizational transformation and capacity building plan has been put in place. An internal consultative process was initiated in the power utilities to identify areas of weaknesses and a time-bound action plan on improvement was prepared. This formal discussion process was supported by a World Bank consulting assignment that included an ‘as-is’ diagnostic of different processes within the organizations, benchmarking with best institutions with a similar profile, and finally culminating in vision workshops. These workshops, attended by middle and senior management of the three organizations, resulted in the development of capacity building action plans that will be funded under this component. The consultative and consensus-building process was critical in building a demand-driven and client-owned capacity building plans.

19.  The goal of this component is to introduce commercial practices and modern management methods and improve the enabling environment to ensure the Haryana power
utilities respond effectively to internal and external stakeholders and reach their vision of ‘best in class’ institutions. This component contributes to the pillar of engagement “Internal transformation through process improvements, use of technology and organizational changes”. The consulting activities and training programs embedded in this include (but are not limited to):

20. Third-party quality control consultants: The appointment of a quality assurance engineer for each company will involve hiring a third-party technical agency to monitor supervision of project implementation through quality assurance and inspection of project equipment. Physical implementation will be monitored over time with a focus on the quality of inputs and adherence to the implementation schedule. Use of consultant engineers will also enhance the capacity of the implementing agencies to manage large and complex investment projects and maintain transparency and accountability in project implementation.

21. Key performance indicators: This consultancy will develop a system of entity-wise MIS with clearly defined key performance indicators (KPIs) at corporate and field levels. These KPIs would serve as performance targets for departments. Over a two-year period, these would be integrated with the individual performance management system and performance incentive mechanism.

22. SIP and DPR: The SIPs for each major transmission scheme will have a clearly defined rationale and milestones along with project monitoring tools like PERT charts. The DPRs for distribution investments in each project town will include baseline data, the technical and financial justification, the layout of existing and proposed distribution infrastructure, and clearly defined milestones.

23. Project management: Strengthening the project management architecture will include developing standardized design and bidding documents, institutionalizing cost benefit analysis of projects and strengthening project and corporate planning departments. A number of priorities emerged from the vision workshop exercise in HVPN, including having a project manager appointed for every large project with increased decision making powers, a long-term planning horizon (15 years), proper tools and data for carrying out planning activity, and enhancing core project management skills.

24. Financial and revenue management: The financial accountability framework can be strengthened by addressing gaps in energy audits, internal audits and financial accounting, integrating IT initiatives, strengthening corporate governance through enhancing the effectiveness of audit committees; and developing a strategy for setting up separate cells for high value customers in distribution companies. The vision workshop of HVPN indicated a focus on a number of measures including strengthened Audit Committees, key positions created/filled (Director (Finance), Chief Audit Officer), documented internal processes and audit controls, the mandatory audit of all input and output data, mechanisms for timely action on audit findings, improved inter-department coordination, especially a project function for advanced financial planning and tie-ups and improved financial reporting systems/MIS.
25. **Human resource management:** Complementing the organizational restructuring efforts underway in the utilities (elaborated in Annex 1), the vision workshop pointed to a systemic approach to HR development. This implies a review of roles and responsibilities of staff at various levels in the organization and the organizational structure; and developing training needs assessment, training calendar and a skill development plan. Furthermore, the HR plan will identify technical and managerial centers for the provision of training and establish a training centre, including associated hardware and software, and align with existing best practice institutions. The HR capacity building will include a training needs analysis and training and skill development plan, including the development of Haryana Power Training Institute (HPTI).

26. The other items included in HR are developing policies on transfers and succession planning, increased autonomy for recruitment, an in-house grievance redressal system, improved communication processes, succession planning and job rotation, review of delegation of powers so as to have no more than two layers of approval, and the development of HR information system/database.

27. This component will also include a consultancy for mitigation of environmental and social policy for World Bank funded projects (a course to be developed by HPTI) and structured training programs on technical and managerial aspects (based on an annual training calendar of HVPN and DHBVN).

28. This collection of TA activities (listed in the table below) forms the basis for development of an institutional strengthening action plan which will be available for implementation by mid-term review of the project. The triggers for successful implementation will be laid out in the action plan as well. The implementation of this plan will take place in the final two years of the project.

### HVPN

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated Cost (US$ Million)</th>
<th>Method of procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy for Quality Control of Works.</td>
<td>0.81</td>
<td>ICB</td>
</tr>
<tr>
<td>Consultancy for capacity Building</td>
<td>0.20</td>
<td>NCB</td>
</tr>
<tr>
<td>Consultancy for process engineering and preparation of manuals relating to financial accounting, internal audit costing and budgeting</td>
<td>0.20</td>
<td>NCB</td>
</tr>
<tr>
<td>Outsourcing of External audit of World Bank funded projects</td>
<td>0.05</td>
<td>NCB</td>
</tr>
<tr>
<td>Outsourcing of Internal audit of World Bank funded projects</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Training Program on ESPP, technical and managerial issues</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1.36</strong></td>
<td></td>
</tr>
</tbody>
</table>
### DHBVN

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated Cost (US $ Million)</th>
<th>Method of procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy Services for Third Party Quality Assurance, Inspection &amp; Monitoring</td>
<td>1.59</td>
<td>QCBS</td>
</tr>
<tr>
<td>Third Party Consultancy Services for Institutional Capacity Building, Process Study, Organizational Restructuring, KPIs and Preparation of Manuals for Accounts &amp; Audit Wing</td>
<td>0.40</td>
<td>QCBS</td>
</tr>
<tr>
<td>Consultancy services for Institutional Capacity Building consisting of Business Process Re-engineering, Organizational Restructuring, Defining Key Performance Indicators, Identifying Training Needs of Employees &amp; MIS to monitor &amp; control KPIs (except Accounts &amp; Audit Wing) (except Accounts &amp; Audit Wing)</td>
<td>1.01</td>
<td>QCBS</td>
</tr>
<tr>
<td>Consultancy services organizing &amp; implementing Training Program for building capacities</td>
<td>0.40</td>
<td>QCBS</td>
</tr>
<tr>
<td>Consultancy services for Suggesting Long Term Capital Investment Plan</td>
<td>0.40</td>
<td>QCBS</td>
</tr>
<tr>
<td>Consultancy services for Validation of Existing Base Line Data and Customer Services in Dadri, Gurgaon &amp; Faridabad Towns , assess the improvements made after completion of scheme proposals, and development of MIS for regular validation</td>
<td>0.40</td>
<td>QCBS</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4.23</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

1. The loan would disburse 80% of scheme costs for component I and II on HVPN and DHBVN respectively; and 100% for component III on consultancies and training costs. At mid-term review of the project, need for any correction on overall financing requirements across these three components shall be assessed with appropriate remedial measures, including need for additional financing in line with World Bank guidelines for the same.

2. Approximately $6 million (of $10 million) of activities have been identified and EoIs issued for Component III. The remaining will be issued during the course of project implementation.

29. In parallel, the Bank is also supporting the institution strengthening agenda through two major pieces of analytic work, funded by Ausaid Infrastructure for Growth Initiative (IFGI), aligned with the following pillars:

30. **Enhancing the quality of MIS:** One of the major issues leading to anomalies in fiscal subsidy computation in the state is estimating unmetered agricultural consumption. The estimates of agricultural consumption of discoms and HERC vary by over 30%, leading to variations in the estimated subsidy requirement and existing transmission and distribution (T&D) losses. GoH has taken a bold measure to segregate the agricultural feeders (from other rural residential feeders) with investments of about $ 100 million (through external resources from REC). However, analytical support- to evaluate the data and to create an M & E framework utilizing MIS tools is required.

31. A consultancy effort is underway that includes the measurement of actual power consumption and related data corresponding to segregated feeders, establishing MIS for measurement and control of agricultural consumption, and developing guidelines and methodology for reporting on actual agricultural consumption to the regulator.
32. **Improving regulatory effectiveness and enhancing consumer voice in decision making:** HERC is the most important institution affecting the enabling environment of the service delivery institutions. Regulatory uncertainty has been voiced as a critical concern. A number of orders by HERC have been challenged by power companies in ATE in recent years, leading to an environment of mistrust. Haryana, which was a pioneer in setting up an independent regulatory commission and initiating first generation reforms such as tariff filings based on cost of service, is now lagging behind on second generation regulatory reforms related to multi-year tariffs, market design and open access.

33. A consultancy effort is underway to enable HERC to adequately implement the Electricity Act of 2003 and other national policies, address issues related to tariffs (the implementation of a multi-year tariff incorporating transmission pricing and benchmarking, etc.); push state power market development (intra-state availability based tariff and institutional arrangements required for further market development), and promote mechanisms to enhance consumer voice in regulatory decision-making.

34. The Ausaid IFGI funding of $785,000 supported numerous project preparation activities as well as the two major analytic studies mentioned above.

   (i) Diagnostic study, benchmarking with other transmission companies (PGCIL and AP Transco) and DMRC on project execution, culminating in the vision workshop of HVPN
   (ii) Diagnostic study, benchmarking with other distribution companies (West Bengal discom and Gujarat discom) culminating in the vision workshop of UHBVN
   (iii) Diagnostic study, benchmarking with other distribution companies (West Bengal discom and NDPL) culminating in the vision workshop of DHBVN
   (iv) Enhancing the M&E framework for agricultural consumption of power in Haryana
   (v) Capacity building of HERC
   (vi) Strengthening the technical and procurement capacity of HVPN
   (vii) Policy and regulatory support
   (viii) Workshops
## Annex 5: Project Costs

**INDIA: Haryana Power System Improvement**

<table>
<thead>
<tr>
<th>Project Cost By Component</th>
<th>Local US$ million</th>
<th>Foreign US$ million</th>
<th>Total US$ million</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Component I: Transmission System Strengthening</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Base Cost (Equipment + Installation)</td>
<td>23.2</td>
<td>195.0</td>
<td>218.2</td>
</tr>
<tr>
<td>Total Base Cost (Civil Works)</td>
<td>2.3</td>
<td>19.5</td>
<td>21.8</td>
</tr>
<tr>
<td>Land</td>
<td>15.6</td>
<td>0.0</td>
<td>15.6</td>
</tr>
<tr>
<td><strong>Total Baseline Cost</strong></td>
<td>41.1</td>
<td>214.5</td>
<td>255.6</td>
</tr>
<tr>
<td>Physical Contingency</td>
<td>1.4</td>
<td>5.5</td>
<td>6.9</td>
</tr>
<tr>
<td>Price Contingency</td>
<td>5.3</td>
<td>21.3</td>
<td>26.7</td>
</tr>
<tr>
<td>Engineering &amp; Administration</td>
<td>2.2</td>
<td>8.7</td>
<td>10.9</td>
</tr>
<tr>
<td><strong>Total Project Cost</strong></td>
<td>50.0</td>
<td>250.0</td>
<td>300.0</td>
</tr>
<tr>
<td>Interest During Construction</td>
<td>12.5</td>
<td></td>
<td>12.5</td>
</tr>
<tr>
<td><strong>Total Financing Required</strong></td>
<td>62.5</td>
<td>250.0</td>
<td>312.5</td>
</tr>
<tr>
<td><strong>Component II: Urban Distribution System Strengthening</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Base Cost (Equipment + Installation)</td>
<td>12.5</td>
<td>62.8</td>
<td>75.3</td>
</tr>
<tr>
<td>Total Base Cost (Civil Works)</td>
<td>0.5</td>
<td>2.1</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Total Baseline Cost</strong></td>
<td>13.0</td>
<td>64.9</td>
<td>77.9</td>
</tr>
<tr>
<td>Physical Contingency</td>
<td>0.5</td>
<td>2.1</td>
<td>2.6</td>
</tr>
<tr>
<td>Price Contingency</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Engineering &amp; Administration</td>
<td>0.5</td>
<td>3.0</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Total Project Cost</strong></td>
<td>14.0</td>
<td>70.0</td>
<td>84.0</td>
</tr>
<tr>
<td>Interest During Construction</td>
<td>3.5</td>
<td></td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Total Financing Required</strong></td>
<td>17.5</td>
<td>70.0</td>
<td>87.5</td>
</tr>
<tr>
<td><strong>Component III: Technical Assistance &amp; Capacity Building</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HVPN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultancy for Quality Control of Works</td>
<td>0.81</td>
<td></td>
<td>0.81</td>
</tr>
<tr>
<td>Consultancy for Capacity Building</td>
<td>0.20</td>
<td></td>
<td>0.20</td>
</tr>
<tr>
<td>Consultancy for process engineering and preparation of manuals relating to financial accounting, internal audit costing and budgeting</td>
<td></td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>Outsourcing of Internal audit of World Bank funded projects</td>
<td></td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Outsourcing of External audit of World Bank funded projects</td>
<td></td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Training Programme on ESPP, technical and managerial issues</td>
<td></td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>DHBVN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultancy Services for Third Party Quality Assurance, Inspection &amp; Monitoring</td>
<td></td>
<td>1.59</td>
<td>1.59</td>
</tr>
</tbody>
</table>
## Project Cost By Component

<table>
<thead>
<tr>
<th></th>
<th>Local</th>
<th>Foreign</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US$ million</td>
<td>US$ million</td>
<td>US$ million</td>
</tr>
<tr>
<td>Third Party Consultancy Services for Institutional Capacity Building, Process Study, Organizational Restructuring, KPIs and Preparation of Manuals for Accounts &amp; Audit Wing</td>
<td>0.40</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Consultancy services for Institutional Capacity Building consisting of Business Process Re-engineering, Organizational Restructuring, Defining Key Performance Indicators, Identifying Training Needs of Employees &amp; MIS to monitor &amp; control KPIs (except Accounts &amp; Audit Wing) (except Accounts &amp; Audit Wing)</td>
<td>1.01</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td>Consultancy services organizing &amp; implementing Training Program for building capacities</td>
<td>0.40</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Consultancy services for Suggesting Long Term Capital Investment Plan</td>
<td>0.40</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Consultancy services for Validation of Existing Base Line Data and Customer Services in Dadri, Gurgaon &amp; Faridabad Towns , assess the improvements made after completion of scheme proposals, and development of MIS for regular validation</td>
<td>0.40</td>
<td>0.40</td>
<td></td>
</tr>
<tr>
<td>Front End Fee</td>
<td>0.80</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>Follow up Activities</td>
<td>3.65</td>
<td>3.65</td>
<td></td>
</tr>
<tr>
<td><strong>Total Financing Required</strong></td>
<td><strong>10</strong></td>
<td><strong>10</strong></td>
<td><strong>10</strong></td>
</tr>
<tr>
<td><strong>Grand Total Financing Required</strong></td>
<td><strong>80.0</strong></td>
<td><strong>330.0</strong></td>
<td><strong>410.0</strong></td>
</tr>
</tbody>
</table>
Annex 6: Implementation Arrangements

INDIA: Haryana Power System Improvement

1. The loan of $330 million is to India. The project will be implemented entirely in the state of Haryana, by two state-owned but legally separate entities/companies — HVPN and DHBVN (referred to as the PIEs). The Bank loan will be passed on similar terms from GoI to GoH, and then on-lent from GoH to the PIEs, which will be required to repay the loan to the state. The state will provide the two PIEs with additional counterpart funding from its own budgetary fund.

2. Contractually, there will be a loan agreement with India. There will be two Project agreements – first, between the Bank, state of Haryana, and HVPN; second, between the Bank, state of Haryana, and DHBVN. Since GoH will be lending funds to the two PIEs, there would be a subsidiary agreement between the state and each PIE, requiring the two PIEs to repay the loan and to implement the project. Subsidiary loan agreement between GoH and HVPN and DHBVN respectively is a prior condition for loan effectiveness.

3. The two PIEs would be required to set up dedicated cells to implement the project. This does not imply that the project would be ring-fenced from the organization. Within the existing departmental structure (procurement, finance, etc), the PIEs will have designated individuals with clear responsibility for dealing with all issues related to the proposed World Bank loan. Both HVPN and DHBVN have created such a cell of dedicated professionals.

4. The project implementation will be guided by three sets of documents — Operations Manual (OM), SIP, and DPR. The OM is a comprehensive document comprising consolidated instructions on all aspects of the project including financial management and procurement; environment and social safeguard policies, reporting and feedback arrangements, implementation and disbursement schedules, a complaint handling mechanism to ensure proper accounting and auditing of the project. This will remain a dynamic document to be reviewed periodically during implementation. The SIP reflects the scheme specific arrangements for HVPN’s transmission schemes related to technical and financial justification; EMP and RAP; risks; and implementation plans. Similarly, the DPR follows the same structure as SIP in articulating the city specific (Dadri, Gurgaon, Faridabad respectively) arrangements of DHBVN’s schemes.
Annex 7: Financial Management and Disbursement Arrangements

INDIA: Haryana Power System Improvement

1. HVPN and DHBVN, the two entities under the project, have financial management systems that are considered adequate, to account for and report on the project resources and expenditure accurately. However, these systems need to be further strengthened, particularly in the distribution company as detailed later. There are significant financial management, accountability and corporate governance issues in the implementing entities that need to be addressed. CGFA Action Plans in HVPN and DHBVN have been agreed as a part of project preparation (Table 7). Actions have been initiated on some of the critical issues and the remaining will be carried out during project implementation.

Financial management strengths, weaknesses and mitigating arrangements

2. The strength of the project financial management is that budgeting, accounting and reporting systems are operational and will be used for accounting purposes and generating the required IBRD project-specific financial reports. While the employees of the erstwhile HSEB currently employed in the utilities have some knowledge/experience of disbursement procedures of the World Bank, they require capacity building in procurement, financial management and management of foreign exchange risks.

3. The Bank team conducted a high-level review of financial management, corporate governance and accountability arrangements of the transmission and distribution companies. These were examined in the context of a study conducted by World Bank on financial accountability arrangements at state-level power entities in 2006 and the systemic issues identified therein. The position is summarized below:

Major systemic issues identified in the study and how they are addressed by these companies are (i) majority of state-level power sector entities were still following the accounting policies stipulated in the 1985 Electricity Supply Annual Account Rules rather than generally accepted accounting principles in India, and were producing their audited annual accounts on average 22 months after the end of the financial year, as contrasted to the six month requirement stipulated in the Companies Act. HVPN and DHBVN having progressed to the accounting standards issued by ICAI however are still taking around 10-11 months in producing their audited annual accounts and getting them formally adopted by the annual general meeting. (ii) Internal audit was focused on reviews of transactions to verify compliance with internal financial rules, rather than on addressing the internal control environment in systems like transmission and distribution where significant leakages exist. Internal audit and its follow up in HVPN and DHBVN still remains an area of weakness, and the companies are now planning to build up their internal audit capacity. (iii) No entity included in

26 A note on “Corporate Governance and Financial Accountability (CGFA) arrangements” prepared by the Bank for the two companies is available in the project files.

the study had received an unqualified audit report in the preceding three years. The two entities have also received several qualifications in their audit report that are now being addressed. (iv) Audit committees were not effectively scrutinizing internal audit reports or otherwise serving any effective independent oversight function. Audit committees in these companies are not yet independent and there is considerable scope for improvement on this score. (v) There were qualitative issues in selection and appointment of the auditors. In these companies, the project audit will be conducted by auditors who are independent and acceptable to the Bank. The auditors would be acceptable to the Bank and the project audit TOR will be approved by the Bank.

4. The CGFA review has indicated that HVPN and DHBVN have institutionalized certain cardinal principles in areas of accounting, auditing, internal control, budgeting and reporting that have laid the foundation for basic CGFA framework in the organizations. However, in view of the sector and organizational requirements and the proposed investment plans, there is a need to further improve CGFA arrangements to support organizational objectives and future growth plans.

### Table 1: FM Risk rating

<table>
<thead>
<tr>
<th>Inherent Risks</th>
<th>Previous Risk Assessment</th>
<th>Risk Mitigating Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country level (India)</td>
<td>M</td>
<td>India country level rating relevant only to the extent of guarantee from GoI</td>
<td>M</td>
</tr>
<tr>
<td>Entity level (HVPN and DHBVN)</td>
<td>H</td>
<td>Action plan to improve corporate governance and financial accountability has been agreed with HVPN and DHBVN; Internal audit arrangements to be strengthened; Independent directors to be inducted in the Boards</td>
<td>S</td>
</tr>
<tr>
<td>Project level</td>
<td>H</td>
<td>Vacancies at the level of Director (Finance) exist at HVPN and DHBVN. Both the companies realize the importance of this position for ensuring overall accountability and for satisfactory implementation of project. Steps have been initiated to recruit Director (Finance) shortly. Several large &amp; bulky contracts/transactions are being proposed for each of the entities. A third-party engineering consultant will conduct the technical verification of contractual progress and milestones before payments are released. The companies are expecting quantum jump in capital expenditure as a result of this project which will require significant enhancement of staffing and capacity building. OM will contain detailed FM guidelines for the project.</td>
<td>S</td>
</tr>
</tbody>
</table>

**Overall Inherent Risk**

| Control Risks | S |

28 The auditors could also be selected using the WB guidelines for procuring consultancies and will have pre-agreed threshold and selection criteria to enable a robust and qualitative evaluation. Details are available in minutes of negotiation.
<table>
<thead>
<tr>
<th>Previous Risk Assessment</th>
<th>Risk Mitigating Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budgeting</td>
<td>WB financed transactions would need to be separately tracked. Institutional capacity will need to be enhanced to allow for better budgetary control and in-year monitoring. Companies are considering the preparation of (i) detailed budgeting manual to further facilitate/ strengthen budgetary control and (ii) quarterly rolling cash forecasts for better management of funds.</td>
<td>S</td>
</tr>
<tr>
<td>Accounting</td>
<td>Entity accounts are currently delayed due to reconciliation issues particularly in the distribution company, and delay in accounting (2007-08 accounts were formally adopted in February 2009). There is a need to bring this preparation timeline to around 6 months after the end of the financial year. A separate financial statement will be prepared by each company for the Bank funded project to provide for better identification of WB financed transactions. Separate General Ledger codes for WB financed contracts will be maintained to track these specific items.</td>
<td>S</td>
</tr>
<tr>
<td>Internal Controls</td>
<td>Operational controls including supply chain management (including receipt of stores, assets and inventory management systems) will need enhancement. Adequate internal controls (including internal audit) will be put in place for WB financed project. An independent supervision consultant with agreed TOR will be put in place to strengthen the internal controls.</td>
<td>S</td>
</tr>
<tr>
<td>Funds flow</td>
<td>Many layers for the funds to pass through to implementing entities. GOI has agreed to pass on funds to GOH on a timely basis to enable quick implementation. GOH has agreed to pass on the funds within a week of receipt to expedite project implementation. Counterpart funding will be made available wherever required.</td>
<td>S</td>
</tr>
<tr>
<td>Financial Reporting</td>
<td>Individual project financial statements as well as combined project financial statement of the entities will need to be prepared. The IUFRs (individual/ combined) will include (in addition to the financial statements in prescribed format) physical, contractual, and procurement progress with additional reconciliations with the books.</td>
<td>M</td>
</tr>
<tr>
<td>Auditing</td>
<td>Currently the auditors are appointed from Comptroller and Auditor General (C&amp;AG) panel. Independent and reputed auditors, acceptable to the Bank, with agreed terms of reference will be appointed for Bank financed projects. The companies have written to the C&amp;AG to appoint entity level auditors from the list of major auditors empanelled with C&amp;AG. This entity level auditor could also audit the WB financed project after obtaining a no-objection from WB.</td>
<td>S</td>
</tr>
</tbody>
</table>

5. The FM risk for this project is currently rated at substantial as there are significant financial management, accountability and corporate governance issues in the implementing entities that need to be addressed. An action plan in this respect has been agreed upon with HVPN and DHBVN.
Arrangements for oversight and accountability

6. HVPN and DHBVN will be responsible for the FM arrangements of the project handled by them. Both are registered government companies under the Companies Act, 1956 wholly owned by GoH. By virtue of being wholly-owned government companies, they have limited financial and operational autonomy with regard to procurement, investment, recruitment/compensation and other decision making. However, for projects funded by the World Bank, the Board of Directors has been granted full powers by GoH to approve capital expenditure. The companies are managed by a board of directors (board) comprising a chairman, managing director (officers of the Indian Administrative Service or IAS), government nominees and full-time functional directors. HVPN has two independent directors (a nominee of the State Bank of Patiala and a nominee of the CEA) on its Board while there are no independent directors on the board of DHBVN. On an average, board meetings are held monthly. Director (finance) post is vacant in HVPN and DHBVN and needs to be filled on an urgent basis to allow for stronger operational and financial management. Although agreeable to greater independence, the companies have no control over the appointment of independent directors and conversion into public limited companies. The companies may want to follow the example of Central public sector utilities (CPSUs) that constituted separate committees, in the absence of independent directors, to make this function more independent and accountable.

7. The implementation arrangements for the project, institutionalized at different levels of hierarchies of the two companies, are discussed in Annex 6. HVPN and DHBVN shall provide the fiduciary assurance to IBRD over proper and efficient use of loan proceeds. The mainstream FM systems of the companies, housed as a part of their general accounting and financial systems, will be used to generate financial and other progress reports of the project.

Project costs

8. The total Bank contribution in the project cost is estimated at US$ 330 million. This will be utilized by HVPN (US$250 million); DHBVN (US$70 million); and Technical Assistance to the transmission and distribution companies (US$10 million). All project costs and expenditure will be paid for and recorded in the books of the respective companies in accordance with their accounting policies and procedures. The Bank is proposing to finance around 18 contracts/packages under the first two components of the project of which HVPN will handle 14 and DHBVN four. These contracts would procure

---

29 Proposals above Rs.10 crores (procurement) and Rs.50 crores (investment) are required to be cleared by a committee of GoH. Limited autonomy granted recently in specific areas which meant that actions could be taken with approval of the Board and administrative department without referring them to HBPE or any other government agency was withdrawn subsequently. Staff restructuring plans for the distribution company are yet to be approved by the Government. Appointment lead time for staff and consultants are said to be 12 months because of layers of decision making.

30 Before the appointment of independent directors in Powergrid this role was being fulfilled by an Eminent Persons Committee. The members comprised of ex-CAG, ex-CMD NTPC, practicing CA and professor of premier MBA institute. Although not mandated by law, the committee is set up to provide non executive oversight/serve as a sounding board on critical issues.
sub-stations, transmission lines, distribution lines, integrated T&D networks for select
cities, and AMI across DHBVN. All these contracts are lumpsum supply and installation
contracts procured under World Bank guidelines. They will help in clear definition of
roles and responsibilities of the parties and enable mitigation of potential contractual
risks. Contractual milestones for payments will be designed in a manner that allows for
third-party verification and consequent release of requisite payments. The technical
assistance (Component III) will result in consultancy services and training aggregating
$10 million, provided under the procurement plan.

9. All contractual payments will be made after due verification of the bills in
accordance with the procedures laid down by the companies and their delegation of
powers. A third-party quality control consultant will be employed by each company to
verify the achievement of the contractual milestones to enable payment. Under the
project the companies will prepare separate financial statements, thus distinguishing costs
financed by the proposed loans.

10. The Component III will include consultancies for quality control of works and
capacity building. Capacity building in FM would consist of training in foreign exchange
management; procurement of consultancy services for preparation of FM manuals and
carrying out independent audit of projects.

Table 2: Project cost and funding

<table>
<thead>
<tr>
<th>Packages/ Contracts Particulars</th>
<th>Nos.</th>
<th>IBRD Share US$ million</th>
<th>Counterpart Share US$ million</th>
<th>Total Project Cost US$ million</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVPN –supply and installation contracts</td>
<td>14</td>
<td>250</td>
<td>62.5</td>
<td>312.5</td>
</tr>
<tr>
<td>DHBVN –supply and installation contracts</td>
<td>4</td>
<td>70</td>
<td>17.5</td>
<td>87.5</td>
</tr>
<tr>
<td>TA and capacity building consultancies</td>
<td>10*</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>330</td>
<td>80</td>
<td>410</td>
</tr>
</tbody>
</table>

* Approximately $6 million (of 10 million) of activities have been identified and the remaining will be
issued during the course of project implementation.

Funds Flow

11. Project funds will flow from the World Bank to GOI. In line with normal practices,
an appropriate budgetary line item will be established by Department of Economic
Affairs, Controller of Aid, Accounts and Audit (DEA-CAAA) for external funds, and
similarly appropriate arrangements will be made on the expenditure side for transfer of
these proceeds to GoH (by way of regular channel of ‘Additional Central Assistance’).
GoI will pass on these funds on terms and conditions (interest rates, repayment terms,
foreign exchange rate risk) which mirror the IBRD terms (that is, on a back-to-back
basis) on a timely basis to ensure quick and speedy implementation of the project. GoH
will transfer, within a week of receipt, these proceeds to the respective utilities (HVPN
and DHBVN) on terms which mirror the IBRD terms, including the interest rates,
repayment terms and the foreign exchange rate risk. GoH will also need to make suitable
budgetary provisions on receipt/expenditure side to receive/make transfer of these monies.

12. The funding options for the loan project are (i) direct payments by the Bank to the supplier/contractor/consultant in foreign currency and/or INR above a threshold limit, based on bills that are duly approved and authorized for payment and (ii) funds flowing through GoI to the project via the GoH. In the latter case, the project will open a separate bank account in a commercial bank to receive the initial advance (based on forecasts for the next six months) under the funding arrangements, followed by periodic replenishments based on IUFRs disclosing funds utilization during the quarter and expenditure forecasts for the two forthcoming quarters. For fund flows, the utilities intend to primarily use reimbursement route with an initial advance in the first year of implementation. Advances could be sought up to two quarters, and actual expenditure will be reported on a quarterly basis. In addition, the companies will also have options for using direct payments, and special letter of commitments in certain cases which would be agreed during the implementation. To facilitate funds transfer from GoH to the implementing entities, budget codes would be set up at the state level.

**Disbursement Arrangements**

13. Disbursements would be made by IBRD on the basis of quarterly IUFRs\(^31\), which would forecast the expenditure for two quarters and report the actual expenditure for the past quarter and cumulative expenditure till date. Supporting documentation of actual project expenditure, including bills/invoices, acknowledgement/proof of payment, completion reports, certificates and other papers, will be retained by the companies and made available to the Bank during project supervision missions. These documents will be subject to internal as well as annual project audit. IBRD project loan funds will flow against a guarantee from GoI.

14. A designated account (denominated in USD) will be established in the Reserve Bank of India (RBI) by GoI to receive the Bank funds and will be operated by the CAAA, DEA, Ministry of Finance.

15. As per present regulatory norms, counterpart funding of 20% of project cost is availed through state plan allocation in the state government’s budget. There is provision for release of equity weekly on pro-rata basis. For the World Bank project, the share of counterpart fund has been established at 20% in line with regulatory norms.

16. Retroactive financing up to an amount not exceeding 20% of the loan amount will be available under the project, for payments made within 12 months prior to the expected date of the legal agreement. To be eligible, the activities should be procured in line with the Bank guidelines on procurement.

\(^{31}\) The suggested formats are presented in the Operations Manuals and implementing entities will have the flexibility of furnishing reports earlier (say on a monthly basis) to seek early replenishments wherein they could also provide forecasts for a shorter period than six months.
**Budgetary control**

17. The transmission and distribution companies prepare annual profit and loss budgets on commercial principles, capital receipts and expenditure budgets and cash flow forecasts which are discussed and approved by the respective boards. There is a one-time mid-year revision of budget. Monthly/quarterly monitoring of actual expenditure against budget is carried out by the functional directors in an informal manner. Funds disbursement to divisions and expenditure commitments are based on the budget. **IBRD project budget:** separate annual project budget will be prepared based on project work-plans and suitably incorporated in the entity budget. The expenditure forecasts in the IUFRs will be based on the approved/revised project budget where appropriate. Project progress will be monitored against the budget/work plan in both physical and financial terms.

18. As part of strengthening/upgrading CGFA arrangements, the companies are considering the preparation of (i) detailed budgeting manual to further facilitate/strengthen budgetary control and (ii) quarterly rolling cash forecasts for better management of funds, as the companies are facing cash flow deficits and high borrowings and debt servicing burdens. The companies are also considering periodic reporting to the board of budget versus actual performance with variance analysis.

**Financial accounting, policies and procedures**

19. Finance teams are located in accounting units at headquarters (HQ) and in each division. Each company has multiple accounting units. Financial transactions are approved in accordance with formal delegation of powers. A FoxPro-based accounting system developed in-house in 2000 is being used by the entities with a common chart of accounts. Each accounting unit prepares monthly trial balances which are consolidated at company HQ. Both the transmission and distribution companies present half yearly results to its Board. The distribution company is facing delays of up to four months in closing its books due to large volume of consumers, large number of collection accounts, inadequate technology support, manual processing and capacity issues. Due to delayed monthly closing of books, audits and accounts adoption are delayed beyond the statutory period of six months from the end of the financial year (April to March).

20. The financial statements (balance sheet and profit and loss account) of HVPN and DHBVN are prepared in terms of the Electricity Act, 2003, and applicable accounting standards referred to in the Companies Act of 1956. This requires the preparation of annual financial statements is on full accrual principles applying accounting standards issued by the Institute of Chartered Accountants of India (ICAI). In the event of

---

32 Expression of interest for development of budgeting manual is under preparation in HVPN.
33 Accounting units: HVPN 39; DHBVN 43
34 Annual accounts of the distribution companies are being formally adopted after 9-11 months from year end.
35 As per the India - ROSC (A&A) dated December 2004 the Indian Accounting standards are modeled on International Financial Reporting Standards (IFRS) and except for some small revisions (required for customization to local circumstances and legal requirements) are largely in consonance.
inconsistencies the provisions of the Electricity Act prevail. Significant accounting policies and detailed notes to accounts are disclosed in the annual report of the companies and reviewed by the statutory auditors. Deviations from ICAI’s accounting standards are pointed out through audit observations.

21. **IBRD project accounting**: There will be separate expenditure codes in the general ledger and sub-ledgers for capturing IBRD project transactions. Project expenditure will be recorded by individual contract/package and activities to facilitate progress monitoring. The project accounting codes (and the budget codes) will be uniformly followed by all the accounting units implementing the project. The companies will structure the project accounts in such a way that project expenditure (both Bank and counterpart funded) are segregated from other expenditure. The project expenditure may be reflected in the consolidated entity trial balance or a separate trial balance may be prepared for the project. IUFRs will be based on and reconciled with the project trial balance. Undisbursed project funds will be reconciled with the project bank account statement. Payments under the project will be made on the basis of certification of works by the independent supervision consultant appointed for the purpose of verification of technical and financial progress of the project and achievement of milestones that would trigger payment.

**Finance manual**

22. Policies, procedures and controls in the companies are legacies of the erstwhile HSEB and embodied in departmental regulations/manuals and amendment circulars/orders. The regulations/manuals are old and amendment circulars are numerous. Thus there is a real risk of omission during decision making/audit. Also there is no formal listing of the regulations and circulars. In the absence of updated regulations/manuals covering internal controls, systems and procedures, the internal controls are rendered weak and the companies face difficulties in outsourcing reviews and audits to external agencies/individuals.

23. One of the items in the CGFA action plan is to update the various regulations/manuals and compile them into a comprehensive set of finance manuals and thereafter update the manuals at regular intervals. While compiling the finance manual, an assessment would be made of present and future requirements, industry best practices, computerized systems, management reporting needs, etc., to identify the gaps that need to be filled. The finance manuals will provide guidance for carrying out day-to-day financial management activities (also covering the proposed project activities), bring about uniformity and consistency in practices across divisions in the companies and form the basis for audits/reviews and improvements.

---

36 Work on compilation of lists of applicable regulations and circulars has been abandoned
37 Expression of interest for development of financial accounting and internal controls manuals is under preparation in HVPN and DHBVN
38 The manual will cover the accounting policies and accounting activities relevant to the companies such as billing and receivables, purchase and payables, fixed assets and depreciation, capital work-in-progress, funded projects, stores, payroll and other expenses, cash and bank, share capital, investments, deposits, loans and advances, periodical and annual closing and preparation of financial statements together with formats of documents and reports.
Financial reporting

24. HVPN and DHBVN report half-yearly financial results to the board. In addition, there are reports to the regulatory authority – HERC. The companies have agreed to enhance the board reporting by incorporating budget analysis and switch to quarterly reporting with effect from FY 2010-11 with comparison with budgets and variance analysis. There is monthly budget monitoring by functional directors. Project progress is also monitored by the board. The IBRD funded project progress reports will be reviewed and analyzed both in terms of physical and financial progress in the manner agreed and timely corrective actions will be initiated to ward off possible future disputes. The quarterly IUFR package will include physical and financial progress of the project by component, compared with the work-plan/budget.

25. During the currency of the loan project, quarterly IUFRs in the agreed format will be submitted giving details of funds received (IBRD and counterpart), project expenditure incurred till date, planned expenditure, and projected funds requirement in the next two quarters. This will also include physical, contractual and procurement progress on the World Bank financed project activities, and components. The IUFRs will be prepared from information generated by the financial systems of the companies, and will include the mainstream trial balances of the entities as annexes to facilitate reconciliation with the books of accounts. These would be submitted to project/entity management and IBRD. The annual project financial statements in the prescribed format would be audited and shared with the Bank as per agreement in this regard.

26. The companies recognize that there is scope for further improving financial reporting to management 39 in view of the organizations’ growth and changing requirements and the need to formalize a reporting system covering their entire operations to provide information needed for effective monitoring and control.

Depreciation and fixed assets

27. HVPN and DHBVN being power sector entities are required to follow the Electricity Act, 2003, which has an overriding effect in case of any inconsistency with the Companies Act, 1956. The companies have been providing depreciation in accordance with Electricity Act 40. The industry practice with regard to depreciation provision varies with some entities providing depreciation as per Companies Act which are higher. Higher depreciation cannot be recovered through tariff. As per the tariff policy notified by Ministry of Power (MoP), GoI, in January 2006 – “The Central Commission may notify the rates of depreciation in respect of generation and transmission assets, and the rates of depreciation so notified would be applicable for the purpose of tariffs as well as

39 Including for example quarterly financial statements, budget variance and analysis reports covering periodic operating results, treasury management, working capital management, project management, and cost analysis reports.

40 Depreciation is provided only on fixed assets in existence at the beginning of the year therefore, no depreciation is provided on additions during the year and full year’s depreciation is provided on retired assets during the year.
accounting.” Depreciation rates have been notified by the Central Electricity Regulatory Commission (CERC).

28. The auditors of DHBVN have pointed out that the remaining life of the fixed assets transferred to the distribution company by HVPN need to be reassessed in accordance with accounting standard 6 (depreciation accounting). The company’s notes to accounts point out that assets (and liabilities) classification are not proper in some cases in the absence of pertinent details from HVPN. These issues need to be resolved in consultation with HVPN and the auditors for which the target date for resolution suggested by HVPN is March 2011. Fixed assets record maintenance and verification are considered adequate by the respective statutory auditors of the companies. Fixed assets registers are maintained on automated excel spreadsheets designed by consultants in 1999.

Costing system

29. HVPN and DHBVN are subject to cost audit as required under the Companies Act, 1956. Cost records are being maintained by the companies and cost audits are being carried out. As part of strengthening corporate governance and financial accountability arrangements, the companies are considering formalizing the system further through a costing manual and integrating cost accounting with financial accounting for better monitoring and control of costs. At present cost records are prepared annually. The frequency should be increased to at least quarterly so that the information can be effectively used for improving efficiency and controlling costs.

Billing and tariff

30. HVPN wheels energy to the distribution companies and have transferred bulk sales and sale of energy from BBMB and Delhi Vidyut Board (DVB) to the distribution companies. The distribution companies sell energy to various categories of consumers including domestic, industrial and agricultural. Energy tariff is regulated by the state ERC. Organizational responsibility of billing and collections rests with commercial department which is part of Operations. In case of HVPN monthly energy billing is based on energy accounts of NRLDC and SLDC and wheeling charges are billed on the basis of energy meter readings. For distribution companies, billing is based on meter-readings which have been outsourced by DHBVN. Billing and collection activities of the

---

41 The companies are in the process of sharing cost audit reports with the Bank.
42 Expression of interest for development of costing manual is under preparation in HVPN and DHBVN
43 Cost audit report of DHBVN (FY 2006-07) recommended special review of working of almost all operating divisions for cost control and cost reduction. The report has pointed out that only five out of 25 circles have generated profits and that repairs & maintenance expenditure has increased from Rs.21 crores in 2004-05 to 49 crores in 2006-07, a 131% jump.
44 According to DHBVN billing of consumers is fully computerized except for temporary connections. Billing is outsourced to a service provider agency and done at circle level. The service provider agency HARTRON (a state government entity) uses its own stand-alone system to generate bills based on meter readings by Haryana Ex-servicemen’s League (HESL) who distributes the bills and also collects money from consumers. In some cases, meter reading, distribution of bills and collection are handled by sub-division staff. MRI/CMRI reading is mandatory in case of HT consumers. Electronic meters are being installed in place of electromechanical meters. Electronic meters have been installed on all connections having load between 10 KW to 35 KW. House indexing of all consumers is under way. Detailed consumer ledgers are currently maintained by the service provider agency by sub-division.
distribution company are carried out at the sub-divisions and subject to limited oversight by finance and accounts staff\textsuperscript{45}. Concerns have been raised over high technical losses and theft of power; there are significant concerns over the receivables - the consumer sub-ledgers are not reconciled with the main accounts; collection accounts are not reconciled and therefore the auditors have qualified these in the audited accounts; HERC has recommended special audit of cash and bank balances in view of large amounts blocked at sub-division level and audit of receivables, etc. These have prompted the distribution company to initiate actions such as appointing consultants (i) to strengthen energy audit, (ii) to audit the receivables and (iii) to audit cash and bank balances at sub-divisions. The audits are still on-going.

**Contract management**

31. Project management and execution have been identified as a weak area in several audit reports of CAG and other reviews. To mitigate this risk, the contract management process of the company, in respect of the World Bank financed project, will be bolstered by the third-party engineering consultants, for which the expressions of interest (EoI) are currently being invited. The terms of reference of this consultant will be agreed with the Bank, and will include the verification of milestones laid down in the contract, before payments can be made.

32. In order to be proactive and prudent and not get involved in contract disputes for the entity as a whole, it is advisable the company undertakes a review of contract implementation business processes with an overall objective to strengthen contracting, execution, monitoring and reporting procedures of the entities.

**Staffing – finance function**

33. The IBRD funded project’s financial arrangements would be largely handled by finance staff at HQ with assistance from the units/divisions. The contracts will be managed by CE Materials Management in HVPN and CE/P&D in DHBVN. The contracts will be managed by CE Materials Management and FM arrangements will be the responsibility of the FA&CAO in Materials Management supported by requisite SAO/AO. Additional resources can be added depending on the project requirements.

34. The current staff strength of HVPN is around 5043. HVPN restructured its staffing which was approved in June 2007. Post-restructuring sanctioned posts are 8576. Thus the vacancy is 41%. It was mentioned that in the past 10 years there has been no recruitment. HVPN has been granted approval to fill 2232 available vacancies in phase I and defer the proposal for filling up the remaining vacancies after all the vacancies in the first phase are filled up. Also, HVPN has been given the authority to outsource activities listed under

\textsuperscript{45} Accounting staff are based in divisions. They have limited jurisdiction over billing and collections as these are handled by Operations.
class IV46 based on needs. As per company estimates the lead time for filling vacancies is 12 months. The current strength of the Finance Department is 60 against 124 approved posts. Thus vacancies account for over 50% of the approved posts. The number of accounting units in HVPN is 39 (32 field accounting units and seven accounting units in HQ). Divisional Accountants are posted in each division (accounting unit) for pre-audit of bills, accounting and accounts compilation purposes. In HQ finance FA, CAO and SAO (A&R) are qualified CAs, SAO (Funds) is an MBA. The rest are from the state accounting services (SAS).

35. The current staff strength of DHBVN is around 9988. DHBVN has submitted an organizational restructuring proposal with a request for 19460 posts which is almost double the actual strength. The pre-restructuring sanctioned strength is 16266. Thus there is significant number of vacant posts that need to be filled. The current strength of Finance Departments is 102 against 154 previously sanctioned posts. The proposed posts are marginally more at 159. Thus there are 57 vacant posts that need to be filled. The number of accounting units in DHBVN is 48. Divisional Accountants are posted in each division (accounting unit) for pre-audit of all payments at division level, accounting and monthly accounts compilation. The sub-divisions are responsible for billing and collections. There are no accounting supervisors posted in the sub-divisions. Billing of all categories has been centralized and done at the circle level by the service provider agency. Qualifications of key staff (24) in finance and accounts include CA (1), MBA (3), PGDCA (2), BA/ B Com (7) M Com (4) SAS (4) and matriculate (3).

36. Finance and Accounts Department head is the director (finance). This position has been vacant for the past several months in HVPN and DHBVN47. Both these companies are planning significant growth in capital investments including the Bank funded project. These two entities are also expected to receive the entire project funds of $330 million including the TA component. The loan would require deft management of foreign exchange and the necessary skills are presently lacking in the companies. As is clear from the assessment there are capacity, control and governance issues in the entities. Thus the importance of director (finance) at this juncture cannot be over-emphasized. Both HVPN and DHBVN have initiated the search to fill the posts.

37. The Finance and Accounts Department is headed by financial advisor/chief general manager (FA/CGM) (in charge of Finance Wing) and chief accounts officer/ CGM (in charge of Accounts Wing). The accounting units are headed by divisional accountants. Finance executives have professional qualifications (CA/MBA) and others belong to State Accounting Services (SAS). As mentioned earlier current FM staff strength (as well as in other areas of operations) in the companies is significantly lower than the requirements. Large-scale recruitments are being planned48. The HR function requires strengthening in the companies by inducting HRM professional/s with suitable and relevant qualifications and experience in the function. The companies may also carry out

46 Cleaner, helper, guards, peon, chowkidar, safai karmachari, mali etc
47 The MD has taken charge of the function
48 There are plans for recruitment of 4000 staff by the power utilities in the next two years. Human Resource Management function in the three companies needs to be strengthened in view of vacancies and absence of trained HRM professionals
an HR survey within the organizations and develop suitable HR policies and procedures manual to provide a formal structure to HR management in the organizations. There are staff training institutes which are largely focused on training of technical staff. The planned diagnostic workshop and training needs analysis is expected to recommend an action plan for over-all strengthening of training and capacity building in the organizations.

**FM and other Information Systems**

38. Accounting is carried out at all accounting units of the companies using FoxPro-based custom software developed in-house in 2000. Trial balances are prepared by the accounting units and sent to respective HQs for the merging of the trial balances. There is a fox-pro based payroll package operating at unit level which is stand-alone. A separate automated Excel-based fixed assets register is being maintained at HQ by the companies. This package was developed in 1999 by consultants. Stock records are manual. The billing and collection systems of the distribution companies are being computerized.

39. The government has approved a new IT plan for HVPN. The strategy envisages use of IT in all operations in a networked environment for improved management control and decision making; establishing transparency; improved efficiency and cost-effectiveness; and resource optimization. Consultants were appointed for preparation of IT plan and implementation. Request for proposal for outsourcing software development and implementation (systems integrator) were planned for release in June 2008. The RFP was finally issued on January 23, 2009, and the appointment is likely to be by September 2009. Thus the lead time for appointment of the consultant is roughly nine months. The consultants would carry out functionality and performance audit of the application software. The project is expected to be completed in two years and cost approximately Rs 260 million (for hardware, software, networking and capital expenditure as well as training) and annual maintenance charge of Rs 50 million.

40. The IT plan also envisages implementation of geographical information system (GIS) for asset management. The software applications would include core applications (covering operations), support applications (including finance, accounts, HR, payroll, materials management etc), decision support systems etc. The various modules would be either ERP package modules or commercial over the shelf systems. HVPN will implement project monitoring software (PrimaVera) for effective supervision and reporting on project progress. The implementation contract has been awarded (March 2009).

41. There is no IT plan for DHBVN. However DHBVN has appointed consultants for implementation of enterprise resource planning system. The project is expected to be completed in three years and cost approximately Rs.66.5 million. The package to be implemented is SAP – finance (FI), controlling (CO), project systems, plant maintenance, material management and quality management. All financial transactions above sub

---

49 M/s iBilt Technologies Ltd  
division level will be handled in SAP. The requirement of DHBVN is to generate financial statements at each level — division, circle, zone and HQ. The financial transactions at sub-division level will be handled in sub-division automation system (CRM) and will be replicated in SAP through batch process. The finance modules include: general ledger, accounts receivable, accounts payable, asset management, expense accounting, bank accounting and payroll posting51. Computerization covers budgeting however costing is expected to be computerized at a later stage.

42. DHBVN’s billing of consumers is outsourced to a service provider agency and done at circle level. The service provider agency HARTRON (a state government entity) uses its own stand-alone system to generate bills and maintain detailed consumer ledgers by sub-division. Computerization of billing and collection is on-going52 at sub-division level at four divisions under Gurgaon and Hisar circles on pilot basis. The computerized systems are expected to gradually take over billing and collection functions from the service provider agency. Complete revenue records are proposed to be maintained at sub-division level.

Internal control and corporate governance

43. The delegation of powers establishes the internal control environment within the companies formalizing authority limits within the organizations. The companies have recently updated their delegation of powers (HVPN in 2005 and DHBVN in 2007). Subsequent changes are embodied in circulars. A large number of government regulations and amendment circulars (some very old, going back to the HSEB era) serve as FM guidelines for day to day activities and controls. The companies are considering compilation of these regulations into finance manuals with appropriate revisions where necessary. The overall internal control framework of the companies will need to be in line with its size and scale and complexity of operations and cover areas outside the FM ambit53 to be effective.

44. For the IBRD funded project, control over contracting and contract management in HVPN will be exercised by Materials Management Division headed by chief engineer, whereas it will be exercised by chief engineer / planning and design in DHBVN. Copies of the final approved contracts will be available with FA&CAO (MM) as well as FA & CAO (HQ). All bills pertaining to IBRD funded packages will be checked and recommended for approval by the third party supervision consultants for quantum and

51 Source work order
52 CRM module is being implemented by HCL
53 For internal control to be effective across the organization it should cover all transactions from its origin/ inception to closure and safeguard its resources. Standard guidelines, policies and procedures should be laid down and its compliance monitored. These standards embodied in ‘operations manuals’ will bring about uniformity in controls and practices across the organization and form the basis for audits and improvements. Manuals provide useful guidance in carrying out day to day operations and help in familiarizing new staff with the organization’s procedures and controls. Manuals therefore reduce/ eliminate ad-hoc practices and dependence on ‘persons’ and makes the activities more process/ standards based. FM manuals are considered as a part of an organization’s operations manual and cater to purely financial transactions leaving out of its ambit large chunks of activities that are performed outside the finance department. Procurement, contract execution and management, inventory, stores and fixed assets management, project/ works management and maintenance, sales and marketing are some areas of operations where updated standards and guidelines would enhance the overall internal control environment for the loan project.
value of work done based on field inspection, pre-delivery and post-delivery inspection of goods, measurement books/other prescribed documents and for compliance with contractual requirements. These will be in addition to departmental supervision and checks. Statutory and other contractual deductions will be properly incorporated in the bills and checked by the divisional accountant and after due verification, the bills will be finally approved in accordance with the DoP. For IBRD funded project there may be a separate Board Resolution specifying the powers for according technical and financial approval of project expenditure. For all IBRD funded project expenditure, the original bills with complete supporting documents will be kept in the safe custody of the FA&CAO (MM). The physical custody of the assets created by the working agencies will be under the custody and control of the concerned division head with proper records.

Corporate governance

45. The Department of Public Enterprises (DPE), GoI, has issued a code of corporate governance for CPSUs irrespective of whether or not they are listed on the stock exchange\(^54\). In view of the fact that there is a scope for improvement of corporate governance norms and practices in the utilities, the utilities are agreeable to follow adequate corporate governance norms and practices. In the following table, the key components of the model code of corporate governance (applicable to CPSUs\(^55\)) and the present status in HVPN and DHBVN is presented.

<table>
<thead>
<tr>
<th>Model code</th>
<th>Present status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of directors shall have an optimum combination of functional, nominee and independent directors. The number of functional directors (including CMD/MD) should not exceed 50% of the actual strength of the board.</td>
<td>HVPN: Chairman, MD, two functional directors; two government nominees (vacant); two part time directors (independent directors). Current strength six (maximum 12)</td>
</tr>
<tr>
<td>The number of nominee directors shall be restricted to a maximum of two.</td>
<td>Functional directors comprise less than 50% of the actual Board strength. No Government nominees on the Board at present. Independent directors are required at one-third of the Board strength.</td>
</tr>
<tr>
<td>In case of CPSEs listed in stock exchanges, the number of independent directors shall be at least 50% of board members. In case of CPSEs not listed in the stock exchanges at least one third of the board members shall be independent directors(^56).</td>
<td>DHBVN: Chairman, MD, two functional directors; two part time directors – MD HVPN (holding company) and MD HPGC (generation company). Current strength six (maximum nine)</td>
</tr>
<tr>
<td>Qualified and independent audit committee shall be</td>
<td>Functional directors exceed 50% of the actual Board strength. Government nominees are within limit prescribed. There are no independent directors.</td>
</tr>
</tbody>
</table>

\(^54\) The aim is to institutionalize good corporate governance practices that are broadly in conformity with SEBI guidelines (clause 49 of the Listing Agreement), in CPSUs as ultimately, these CPSUs would approach the financial markets for its requirements.

\(^55\) There are no equivalent guidelines issued for State PSUs in Haryana

\(^56\) Nominee directors appointed by an institution which has invested in or lent to the company shall be deemed to be independent directors
<table>
<thead>
<tr>
<th>Model code</th>
<th>Present status</th>
</tr>
</thead>
<tbody>
<tr>
<td>set up giving the terms of reference with minimum three directors as members; two thirds of the members shall be independent directors; the chairman of the audit committee shall be an independent director</td>
<td>independent directors. The chairman of the audit committee is not an independent director. Scope of the audit committee is fairly broad. Meetings are not regular.</td>
</tr>
<tr>
<td>DHBVN: Audit committee comprises Chairman, MD and MD holding company. Scope is limited and meetings are not regular.</td>
<td></td>
</tr>
<tr>
<td>Risk management strategies and their oversight shall be one of the main responsibilities of the board and management</td>
<td>HVPN &amp; DHBVN: There is no formal enterprise-wide assessment of risk and mitigation factors. However in case of both the companies the respective Business Plans provide indications of risks in the SWOT analysis. These and the planned diagnostic workshop outcomes can be further developed to provide a risk management framework for the companies.</td>
</tr>
<tr>
<td>The guidelines provide a list of minimum information that is required to be placed before the Board</td>
<td>HVPN &amp; DHBVN: Both the companies present half-yearly results to its Board. The frequency may be increased to quarterly reporting.</td>
</tr>
</tbody>
</table>

**Actions for improving corporate governance**

46. HVPN and DHBVN though appreciative of the level of independence of listed companies, conversion into public limited companies and appointment of independent directors are outside their control. Since the appointment of independent directors is already provided for in the respective Articles of Association the companies need to follow up in this regard with the relevant authorities. HVPN has two independent directors on its Board and in the audit committee. However there are no independent directors on the Boards of the distribution company. This aspect needs to be addressed by the utilities in consultation with the government in order to further strengthen governance. Audit committee: HVPN has drafted fresh business rules for its audit committee (dated April 2009) which has been adopted by the Board. The scope and powers are broad and in line with corporate governance guidelines. The frequency of meetings is also increased to four (minimum). Risk management: HVPN is proposing investment of around Rs.77 billion in the XI plan; DHBVN’s investment plans amount to Rs.34 billion. Moreover, the distribution company has negative net worth arising from accumulated losses; AT&C losses are high (for DHBVN the losses are as high as 32%); theft of power is cited as the major cause of loss of revenue; cost audit reports call for

---

57 Other prescribed norms for audit committee: All members of audit committee shall have knowledge of financial matters of company and at least one member shall have good knowledge of accounting and related financial management expertise. Audit committees shall meet at least four times in a year and not more than four months shall elapse between two meetings. Detailed and elaborate role has been prescribed for audit committees.

58 Regarding risk management norms, the board shall ensure the integration and alignment of the risk management system with the corporate and operational objectives and also that risk management is undertaken as a part of normal business practice and not as a separate task at set times. The company shall lay down procedures to inform board members about the risk assessment and minimization procedures and periodically review them. Disclosure on risks and concerns shall from part of Director’s report.

59 The list includes quarterly results for the company and its operating divisions or business segments. The guidelines also provide a list of items to be included in the report on corporate governance in the annual report of companies and obtain a certificate from either the auditors or practicing company secretary regarding compliance of conditions of corporate governance as stipulated in the guidelines.
cost reduction and cost control; audit reports point towards systemic issues and control weaknesses that have led to un-reconciled inter-unit accounts/ collection accounts/ receivables and a large number of audit qualifications. In this scenario the respective companies need to consider appropriate risk management strategies to identify major risks that are barriers to development/ success and corresponding action plans for mitigating the risks. Some indication of risks is already present in the business plan. These could be further studied and expanded by identifying other factors that could adversely affect operations, performance and reputation. The recent vision workshop has provided further direction for developing high level strategy for risk management including use of insurance for risk mitigation. Following on, the companies need to institute processes for regular risk assessment and monitoring to judge the effectiveness of risk mitigation measures. Internal audit and independent audit committee play important roles in assessing/ monitoring organizational risk management framework and its effectiveness. HVPN plans to set up a committee to prepare a detailed road map for risk management in the organization by September 2009.

**Internal audit (IA)**

47. In HVPN there is a separate internal audit department headed by a senior accounts officer (SAS with 30 years experience) reporting to FA in HQ. In addition, there is an AO a section officer a divisional accountant and five junior accountants/ assistants. There are 14 vacancies in the department. There is a three member audit committee set up in February 2001 to review internal audit reports and follow up on observations/ recommendations. There are internal audit checklists and departmental regulations and circulars to aid the conduct of audit. The statutory auditors had earlier reported that the internal audit system of the company is commensurate with its size and nature of its business with the caveat that the internal audit of the units located at various places in the state is carried out after year close which should be on concurrent basis. However, in their report for FY 2007-08 the statutory auditors have opined that the internal audit system needs to be further strengthened to make it commensurate with the size of the company and nature of its business. There is a back-log of internal audit which HVPN needs to address. HVPN should consider the statutory auditors’ suggestion regarding concurrent audit and right-size the IA department or sub-contract the work to (i) accommodate the increase in the frequency of audit (ii) adequately cover all units spread all across the state (iii) gear up for the growth in volume generated by the proposed investments in new projects and (iv) increase focus of audit more towards systems improvement and risk management. The scope of internal audit should cover, technical aspects, cost control, reconciliation of billing data with physical data etc. Presently the focus of internal audit is on financial transactions with few suggestions for systemic improvements. Systemic deficiencies, materiality/impact of audit observations and level of risk to the organization are not evident from the report. While the audit report does not contain follow up response from the management, there are indications that the internal audit is monitored by the audit committee. HVPN maintains a compilation of internal

---

60 According to HVPN during 2007-08, internal audit covered 16 divisions and issued a total of 140 paras/ observations. During 1999-2000 to 2006-07 total number of paras/ observations was 2539 against which the number of paras/ observations pending (as on May 2008) was 682.
audit observations (objection book) indicating open and settled items. Some of the observations pending settlement date back to 2000-01.

48. In DHBVN there is a separate internal audit department headed by a CGM, audit, (an MBA with 10 years’ experience) reporting to MD in the absence of director (finance). The department has 60 working staff (including the CGM, audit) against proposed posts of 179 (66% vacancy). There is a three-member audit committee but internal audit reports are not placed before the audit committee. The department’s main focus is revenue audit which is perpetual and regular with 25 revenue audit parties involved61. There are internal audit checklists and departmental regulations and circulars to aid the conduct of audit62. Many of these are old and some may not be fully relevant. However, the manual of sales instructions which is the main document for revenue audit was last updated in June 2005. A revenue audit manual has been drafted (2008). The statutory auditors have reported in 2005-06 and 2006-07 reports that the internal audit system of the company is commensurate with its size and nature of its business63. According to DHBVN internal audit is conducted on rotational basis and all accounting units (48) are being covered annually; serious irregularities are brought to the notice of management and routine matters are settled at the level of CGM Audit; follow up action on the internal audit report is ensured by CGM Audit. However it was agreed that there is a need to strengthen the internal audit function within the organization in terms of staffing (vacancies need to be filled), backlog of audit caused by capacity constraint and that response to audit observations was tardy. There needs to be an updated internal audit manual as well. While the revenue audit section has recently been drafted (yet to be approved by the Board) other parts need to be prepared taking into account the enlarged scope of internal audit and focus on risk management and systems improvement. Recent actions taken by DHBVN also include appointment of six CA firms to supplement the work of the internal audit department and bring internal audit up to date.

49. Going forward the utilities need to strengthen the internal audit function and enhance its effectiveness: Enhance capacity: adequate staffing (both in terms of number and skills/ experience) to be commensurate with the volume, scope and objectives; outsource to experienced CA firms where practicable to supplement internal capacity and cover backlog in audit; CE level official should head the department. Independence: Enhance independence of the function through direct reporting to the MD (in line with standards laid down by the Institute of Internal Auditors); audit committee intervention could be made more frequent and effective particularly in the area of compliance. Internal audit manual: Update/ prepare internal audit manual with structure, roles and responsibilities, objectives (enterprise wide, systems improvements, risk management) and guidelines for actual conduct of the audit, formats of periodic inspection reports and

61 All sub-divisions are covered under revenue audit annually. In case of HT and LT consumers the audit is 100% and sample audit (30%) in case of other category of consumers. Revenue audit party is headed by a Revenue Accountant and deficiencies are brought to the notice of AGM Operations. Major errors/ fraud are reported to CGM Audit.

62 Departmental financial rules, Punjab financial rules and budget rules (applicable to the state government and may not be fully relevant for DHBVN); Manual of instructions (1953) issued by Punjab PWD – Electricity Branch; Procurement manual

63 CAG audit report (commercial) for the year ended March 31 2007 mentions that internal audit reports were not placed before the Board for consideration.
action taken reports and relevant standards and industry best practices to enhance the quality of audit. **Effectiveness reviews:** It is a good practice to carry out effectiveness reviews at suitable intervals and prior to decisions for change, which would involve seeking opinions on the effectiveness of the function from senior management/stakeholders, matching them with expectations/standards and reviewing the work (plans/working papers/reports).

50. In respect of the World Bank financed project, an internal audit terms of reference has been agreed (detailed in the OM) which will instituted in the first year of the project. The internal audit could be conducted either by a new firm of chartered accountants or by an existing firm of chartered accountants who are currently undertaking internal audit of the two companies, and are acceptable to the world bank.

**External Audit**

51. Under Section 619(2) of the Companies Act, 1956, the Comptroller and Auditor General (CAG) recommends appointment of statutory auditors of Government owned companies. The auditor is usually selected for a period of four years. CAG also conducts a supplementary/test audit under section 619(3)(b) of the Companies Act, 1956. In addition CAG carries out proprietary audit of the entities and the reports are laid before the state legislature and automatically referred to COPU for review of pending audit observations and their final resolution.

52. In HVPN statutory audit commences prior to the close of the financial year. The Board approved annual financial statements of HVPN are made available to the auditors for audit in June. The annual statutory audit is completed by July and after review by the audit committee and the Board the annual financial statements and the auditors’ report are submitted to Auditor General, Haryana (AG) for balance sheet audit in August. After completion of audit by AG, the audited financial statements along with AG comments and statutory auditors’ report are placed before the annual general meeting of HVPN for adoption before September 30. However due to delays in the finalization of subsidiary companies’ accounts, there are substantial delays in the preparation and finalization of the consolidated accounts of HVPN. Statutory audit is conducted in accordance with auditing standards generally accepted in India. Audit observations have repeatedly pointed out the need for confirmation of party balances and reconciliation of inter unit

---

64 The process of determining internal audit effectiveness basically gets to the bottom of the following basic questions......what is internal audit there to do?...is it properly equipped to do it?...is it doing what it is there to do?...is there anything that would be better done differently? Through a combination of interviews and reviewing reports, audit files and internal audit processes, the effectiveness review helps in determining the expectation gap and the efforts required to strengthen/realign the function.

65 The audited consolidated accounts of HVPN (holding and two subsidiary companies) for FY 2006-07 was available in March 2008 - after 12 months from year end
accounts. There are a few Committee on Public Undertakings (CoPU) paras pertaining to FY 2005-06 and 2006-07. HVPN has provided replies against the pending CoPU paras.

53. In DHBVN the statutory audit commences towards July end after the close of the financial year. The audit is completed by end August and after scrutiny by the audit committee, the audited financial statements and auditors’ report are adopted by the Board in October. Thereafter the annual financial statements and the auditors’ report are submitted to AG (Haryana) for supplementary audit of the financial statements under section 619(3) of the Companies Act. After completion of the audit by AG, the audited financial statements along with AG comments and statutory auditors’ report are placed before the annual general meeting of DHBVN for adoption in February which is roughly 11 months after close of the financial year. This delay is caused by the time taken for accounting and reconciliation of consumer accounts and other procedural delays. A delay in finalization of DHBVN accounts also leads to a delay in the consolidated accounts of HVPN. Implementation of ERP may facilitate early closing of accounts and consolidation. There are several observations in the auditors’ report and some of them are repeat observations as well as a large number of CAG comments. Confirmation of party balances; reconciliation of collection bank accounts and inter-unit balances reconciliation are critical issues. Inter-unit accounts reconciliation; DHBVN plans to freeze the difference in inter-unit account balances as on September 30 2007 (cut-off date) and carry out regular reconciliation of post cut-off transactions for which proper procedures will be developed. The backlog pertaining to pre cut-off period will be cleared in a planned and time-bound manner with the help of consultants where appropriate. The action plan for clearing backlog will be shared with the Bank. Clearance of un-reconciled balances for the project divisions will be taken up on priority basis. Inter unit account reconciliation is important as there are 48 accounting units and there is scope for errors/ leakages. In response to directive of HERC, DHBVN has appointed CA firms to carry out independent audit of receivables. The report of the auditors is not yet ready. There is also the requirement of audit of cash and bank balances in sub-divisions as part of better working capital management.

54. Specifically for the proposed IBRD financed project, separate annual audit of the project and its components will be carried out by the entities. The project audit will be carried out by an independent and reputed firm of chartered accountants acceptable to the Bank under agreed terms of reference. This firm of chartered accountant will be selected

---

66 Balance of sundry debtors including subsidiary companies, pension charges recoverable from PSEB and Union Territory of Chandigarh, loans and advances, sundry creditors are subject to confirmation; advance to suppliers and contractors are under reconciliation and subject to confirmation; inter unit accounts are subject to reconciliation.
67 These deal with extra expenditure on purchase of power from private producer (Rs.55.89 lakhs); loss due to short recovery of water charges from staff residing in housing colony (Rs.14.16 lakhs); excess payment of interest (Rs.16.41 crores) due to non insertion of the usual put/ call option clause in the bonds issued during 1999-2000 in the face of falling bank interest rates
68 According to DHBVN there has been some improvement in the time taken for year-end books closing and audit of 2007-08 accounts. The statutory audit was completed by September 2008 and taken up by CAG for supplementary audit. However, AG audit and other procedural matters delayed the final adoption of the accounts which took place in February 2009.
69 These are listed in the CGFA report Attachment II and Attachment III
70 The auditor could be the C&AG recommended statutory auditor, which will depend upon the credentials and experience of the audit firm selected and concurrence of the Bank.
on a competitive basis, and could be hired on a joint basis for both HVPN and DHBVN. This aspect will be detailed in the operations manual which will contain the format of the project financial statement and the recommended ToR for the project auditor and the format of the audit report. The project auditors will be selected using the Bank’s guidelines for procuring consultancies and will use pre-agreed threshold limits and selection criteria, that would enable a robust and qualitative evaluation of the proposals. The project audit reports and audited project financial statements (containing component-wise details of progress and funding sources) will be submitted by the entities by September 30 each year, or six months after the end of the financial year, along with the entity audit report. The following annual audit reports will be tracked by the Bank’s Audit Reports Compliance System (ARCS):

<table>
<thead>
<tr>
<th>Agency</th>
<th>Audit Report</th>
<th>Audited by</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVPN, DHBVN</td>
<td>Annual entity audit reports as required under the Companies Act</td>
<td>Statutory Auditors appointed by CAG</td>
<td>30th September</td>
</tr>
<tr>
<td>HVPN, DHBVN and combined</td>
<td>Project audit reports including audit of Bank account created for the project</td>
<td>An independent firm of Chartered Accountants</td>
<td>30th September</td>
</tr>
<tr>
<td>GOI</td>
<td>Audit Report of the Special Account held at RBI</td>
<td>CAG</td>
<td>30th September</td>
</tr>
</tbody>
</table>

### Impact of Procurement arrangements

55. The contracts being funded under the project for each of the implementing entities are laid out in the procurement section. For allowing good contract management during implementation, there will be a need for close interaction between the procurement/engineering staff and the finance staff.

### Action Plans

56. Proposed action plans for (i) ensuring adequate FM arrangements for the project and (ii) improvements in corporate governance and financial accountability of the entity:

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Area of Action</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fill vacancies in Director (Finance) posts Fill posts in project FM at HQ and Units/ Divisions and train in Bank procedures</td>
<td>HVPN – Selection of Director Finance will be made by July 31, 2009 and the person will be in place by October 31, 2009 DHBVN - Selection of Director Finance will be made by October 31, 2009 and the person will be in place by December 31, 2009</td>
</tr>
<tr>
<td>Sl No</td>
<td>Area of Action</td>
<td>Timeframe</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2</td>
<td>Appoint Third-party quality control consultants with Bank approved TOR to check and authorize project expenditure, ensure proper procedures and monitor milestone achievements in terms of the project requirements</td>
<td>Issue EOI by negotiation and appointment within 4 months of negotiation.</td>
</tr>
</tbody>
</table>
| 3     | Agree on independent and reputed CA firm to conduct project audit  
Finalize TOR for  
• Project internal audit  
• Project annual audit  
• Finalize formats for IFR (including annexes like trial balances extracts) and annual project financial statement | TORs finalized for internal audit and external audit and laid out in operations manual. Approach on selecting a project auditors for HVPN and DHBVN has been agreed |
| 4     | Develop project FM procedures in operations manual:  
• DoP  
• Special account operation  
• Project funds receipt and payments  
• Expenditure authorization  
• Quarterly reporting to Bank  
• Annual reporting to bank | Finalized in the operations manual.                                                                |
| 6     | Commence work on strengthening internal audit function:  
• Enlarge audit committee scope  
• Fill vacancies; CGM/ CE level HoD reporting to MD | New business procedures for HVPN adopted by the Board. Agreement reached on hiring CGM, HR.          |

### Table 6: Disbursement Categories

<table>
<thead>
<tr>
<th>Disbursement Category</th>
<th>Amount in US$ m</th>
<th>Disbursement%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVPN - Goods and Works for Transmission level Investments (substations and lines)</td>
<td>250</td>
<td>80% of the gross expenditure</td>
</tr>
<tr>
<td>DHBVN – Goods and Works for Distribution level Investments (HVDS, distribution substations and LT infrastructure)</td>
<td>70</td>
<td>80% of the gross expenditure</td>
</tr>
<tr>
<td>Consultancies for providing technical assistance and capacity building for HVPN and DHBVN</td>
<td>10</td>
<td>100% of the gross expenditure</td>
</tr>
<tr>
<td>TOTAL</td>
<td>330</td>
<td></td>
</tr>
</tbody>
</table>
Table 7: Preliminary CGFA Action Plan

<table>
<thead>
<tr>
<th>Area of Action</th>
<th>HVPN</th>
<th>DHBVN</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal audit strengthening</strong></td>
<td>Complete internal audit backlog with the help of external CA firms</td>
<td>Internal audit for FY 2008-09 in progress. Audit at par by March 2010</td>
<td></td>
</tr>
<tr>
<td>IA department to report to MD</td>
<td>Due to absence of Director finance, IAD head currently reports to MD. After D(F) is hired, the structure of IAD head reporting to MD will be put in place</td>
<td>Due to absence of Director finance, IAD head currently reports to MD. After D(F) is there, the structure of IAD head reporting to MD will be put in place</td>
<td></td>
</tr>
<tr>
<td>CE level executive to head department</td>
<td>After internal audit manual is drafted, the IAD will be restructured</td>
<td></td>
<td>CGM audit reporting to MD</td>
</tr>
<tr>
<td>Restructure department and address vacancies</td>
<td>By December 2009</td>
<td>By March 2010</td>
<td></td>
</tr>
<tr>
<td>Develop internal audit manual for a comprehensive organization wide coverage (technical/operational/financial) with focus on risk management and systems improvement</td>
<td>To outsource by December 2009 and complete by June 2010</td>
<td>Revenue audit manual prepared i-house and expenditure audit manual under compilation. Further upgrade through outsourcing. Complete by March 2010.</td>
<td></td>
</tr>
<tr>
<td><strong>Audit Committee – increase effectiveness and independence</strong></td>
<td>New audit committee business rules (April 1 2009) adopted by the Board, and will be fully operational by September 2009. Audit Committee will be headed by a financial expert New code adopted (meetings to be at least quarterly). Next meeting to be held in June 2009.</td>
<td>Broader scope to cover internal audit – to implement by August 2009.</td>
<td>On adoption of code quarterly meetings to commence from October 2009.</td>
</tr>
<tr>
<td>Area of Action</td>
<td>HVPN</td>
<td>DHBVN</td>
<td>Remarks</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Invite independent professional to attend audit</td>
<td>Two independent directors already in place. Audit Committee will be</td>
<td>Suitable steps for enhancing independence (invite</td>
<td></td>
</tr>
<tr>
<td>committee meetings in lieu of independent</td>
<td>headed by a financial expert who is independent – by December 2009.</td>
<td>independent professionals/ independent directors) by</td>
<td></td>
</tr>
<tr>
<td>directors</td>
<td></td>
<td>August 2009</td>
<td></td>
</tr>
<tr>
<td><strong>Repeat observations in audit report</strong></td>
<td>Complete inter-unit reconciliations by September 2009 for FY 2008-09</td>
<td>Audit of receivables – Sirsa circle – September 09;</td>
<td></td>
</tr>
<tr>
<td>Ensure that repeat audit observations are</td>
<td>(Audit observations will not include this comment)</td>
<td>Narnaul and Gurgaon circles - March 2010; Three</td>
<td></td>
</tr>
<tr>
<td>effectively resolved</td>
<td></td>
<td>remaining circles – March 2011</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inter-company reconciliation will be completed in FY 2010-11 accounts</td>
<td>Complete inter unit reconciliation of three IBRD</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>project divisions up to March 2009 - December 2009</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strengthening capacity of internal audit function by December 2010</td>
<td>Complete inter unit reconciliation of other 39</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>divisions up to March 2009 - December 2009</td>
<td>Resolve other repeat audit observations – significant resolution of audit observations to be visible in 2008-09 audit report.</td>
</tr>
<tr>
<td><strong>Finalize accounts and audit as required under</strong></td>
<td>Annual accounts adopted by AGM by September each year. (However</td>
<td>Adoption of accounts for FY 2008-09 – December 2009</td>
<td>Significant delays (10-11 months) in audits and adoption of annual audited accounts by the AGM</td>
</tr>
<tr>
<td><strong>law</strong></td>
<td>adoption of consolidated accounts – HVPN and subsidiaries DHBVN and</td>
<td>Adoption of accounts for FY 2009-10 – September 2010</td>
<td></td>
</tr>
<tr>
<td>Complete annual audit of accounts (statutory and</td>
<td>UHBVN are considerably delayed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAG) and adoption by shareholders in Annual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Meeting (AGM) within six months from the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>close of the financial year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Capacity building</strong></td>
<td>Selection of Director Finance will be made by July 31, 2009 and the</td>
<td>Selection of Director Finance will be made by October</td>
<td></td>
</tr>
<tr>
<td>Director (Finance) post to be filled;</td>
<td>person will be in</td>
<td>31, 2009 and</td>
<td></td>
</tr>
<tr>
<td>Area of Action</td>
<td>HVPN</td>
<td>DHBVN</td>
<td>Remarks</td>
</tr>
<tr>
<td>----------------</td>
<td>------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>Fill vacancies in FM staffing (executive and support staff), train to build capacity</td>
<td>By October 31, 2009</td>
<td>the person will be in place by December 31, 2009</td>
<td></td>
</tr>
<tr>
<td>Strengthen human resource management by inducting professionals in the function</td>
<td>By March 2010</td>
<td>By March 2010</td>
<td></td>
</tr>
<tr>
<td>Post of CGM HR sanctioned placement expected by December 2009</td>
<td>Post of CGM HR sanctioned placement expected by December 2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>In-year reporting to management</strong></td>
<td>Add budget performance analysis to existing half-yearly reports through 2009-10; Introduce quarterly reports with budget analysis from 2010-11</td>
<td>Add budget performance analysis to existing half-yearly reports through 2009-10. Introduce quarterly reports with budget performance analysis from 2010-11</td>
<td></td>
</tr>
<tr>
<td>Report quarterly operating results to BoD with review of budget performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cash forecasting</strong></td>
<td>Introduced. To be refined during 2009-10</td>
<td>Introduced. To be refined during 2009-10</td>
<td></td>
</tr>
<tr>
<td>Introduce rolling cash forecasts for managing funds in a formal manner.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Actions within the control of the utilities (medium term)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop risk management system in line with the corporate governance guidelines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Enterprise Resource Planning</strong></td>
<td>Issued request for proposal for appointment of systems integrator in January 09.</td>
<td>ERP under implementation in one division; ERP in Finance and Accounts in</td>
<td></td>
</tr>
<tr>
<td>Complete implementation of ERP/financial management systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area of Action</td>
<td>HVPN</td>
<td>DHBVN</td>
<td>Remarks</td>
</tr>
<tr>
<td>---------------</td>
<td>------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Appoint systems integrator for proposed computerization by December 2009; Implement computerized systems starting 2010-11</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HQ to be introduced during FY 2009-10 and rolled out in divisions during 2010-11.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>First phase of CRM implementation completed in 13 sub-divisions; Remaining sub divisions to be covered after evaluation of results.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other reporting for MIS</strong></td>
<td><strong>Combine with ERP implementation</strong></td>
<td><strong>Combined with ERP implementation</strong></td>
<td></td>
</tr>
<tr>
<td>Review organization wide reporting requirements and develop suitable forms and instructions for their preparation and distribution.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduce project monitoring systems (physical and financial)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial management Manuals</strong></td>
<td><strong>All manuals to be finalized by December 2010; Request for expression of interest for hiring consultants under preparation to be released by May 2009</strong></td>
<td><strong>EOI published in June 2009. Request for proposals to be floated in August 2009 and finalize manuals by December 2010</strong></td>
<td><strong>The utilities may outsource this activity to reputed consultants with proven track record</strong></td>
</tr>
<tr>
<td>Develop first draft of the following manuals: (a) Budgeting (b) Costing (c) Financial accounting, reporting and internal controls</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Actions beyond the control of utilities but critical from management and corporate governance perspective**
<table>
<thead>
<tr>
<th>Area of Action</th>
<th>HVPN</th>
<th>DHBVN</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Directors</strong></td>
<td>Induct adequate number of independent directors or invite independent professionals for impartial and objective contributions in decision making</td>
<td>Make reference to GoH to induct sufficient number of independent directors. (Two are in place)</td>
<td>GoH to consider - proposal to invite independent professional on audit committee likely to be finalized by August 2009</td>
</tr>
<tr>
<td><strong>Conversion into Public Limited Company</strong></td>
<td>Convert into a public limited company to pave the way for greater autonomy and accountability</td>
<td>Develop a road map in consultation with GoH for gradual conversion/autonomy</td>
<td>Develop a road map in consultation with GoH for gradual conversion/autonomy</td>
</tr>
</tbody>
</table>
Annex 8: Procurement Arrangements

INDIA: Haryana Power System Improvement

1. The project will support strengthening of transmission and distribution system in the state of Haryana. The procurement accordingly will be for goods, equipments and services related to the 400/220KV transmission lines and sub-stations of various capacities at various locations within Haryana. The procurement will be independently handled by HVPN for transmission-related scope and DHBVN for distribution-related scope. 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 and revised in October 2006; and “Guidelines: Selection and Employment of Consultants by World Bank Borrowers” dated May 2004 and revised in October 2006, and the provisions stipulated in the Legal Agreement. The general description of various items under different expenditure category is described below. For each contract to be financed by the loan, the different procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the borrower and the Bank project team and indicated 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.

Procurement of works and S&I of plants and equipment

2. The procurement of plants and equipment by HVPN is on supply and installation (S&I) basis, broken into 14 packages using “slice and package” concept. There are no separate civil works envisaged under the project by HVPN. All the related civil works will be included in the scope of the sub-stations. The tower foundations will be provided by the transmission line supply and installation contractors. The procurement plan worked out by DHBVN also envisages procurement on S&I basis, with civil works included in the scope of the contractor. All procurement will follow ICB procedure using the Bank’s SBD – Procurement of Plant Design, Supply and Installation, April 2008 and as agreed with the Bank.

Procurement of goods

3. Separate procurement of goods and equipment is not envisaged for this power system improvement project.

Other procurement procedures

4. National Competitive Bidding: Based on the existing plan, the project does not envisage any contract estimated to cost $5000,000 equivalent per contract or below to be procured on the basis of National Competitive Bidding procedures as per paragraph 3.3
and 3.4 of the Procurement Guidelines. The additional conditions as below will apply if NCB is proposed for procurement of goods and works in the future plan:

- Only the model bidding documents for NCB agreed with the GoI task force (and as amended from time to time) shall be used for bidding.
- Invitations to bid shall be advertised in at least one widely circulated national daily newspaper, at least 30 days prior to the deadline for the submission of bids.
- No special preference will be accorded to any bidder either for price or for other terms and conditions when competing with foreign bidders, state-owned enterprises, small-scale enterprises or enterprises from any given state.
- Except with prior concurrence with the Bank, there will be no negotiations of price with bidders, even with the lowest evaluated bidder.
- Extension of bid validity shall not be allowed without prior concurrence with the Bank (a) for the first request for extension if it is longer than four weeks; and (b) for all subsequent requests for extension irrespective of the period (such concurrence will be considered only in cases of force majeure and circumstances beyond the control of the purchaser or employer).
- Re-bidding: the system of rejecting bids outside a pre-determined margin or ‘bracket’ of prices shall not be used.
- The two-or-three envelope system will not be used.
- Rate contracts entered into with DGS&D are not acceptable as substitute for NCB procedures. Such contracts will be acceptable for any procurement under shopping procedure.

5. **Direct Contracting:** Although not envisaged at this early stage, considering various system requirements, compatibility, etc., a few cases of direct contracting may be needed. Goods that meet the requirements set forth in paragraph 3.6 of the procurement guidelines may be procured on the basis of direct contracting in accordance with provisions of paragraph 3.6 and 3.7 of the procurement guidelines.

6. **Selection of Consultants:** HVPN envisages procuring services of consultant for quality control of works and capacity building activities while DHBVN envisages engaging consultant for audits, monitoring and towards capacity building. Any specific consultancy assignment not covered above will be identified during implementation. 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. The Bank’s Standard Request for Proposal Document will be used as a base for all procurement of consultancy services to be procured under the project.

**Assessment of the agency’s capacity to implement procurement**

7. Procurement activities will be carried out by HVPN and DHBVN. An assessment of the capacity of the Implementing Agencies to implement procurement actions for the
project has been carried out by the procurement specialist /consultant of the Bank during preparation of the project.

8. Both implementing agencies are registered under Companies Act of India and are legally and financially autonomous being run by boards of directors. GoH has confirmed full powers to the boards of directors of HVPN and DHBVN.

9. The two implementing agencies are fully functional corporate bodies mandated to handle procurement independently. They are already procuring plants, goods and equipments for its own use through a dedicated procurement unit in accordance with their respective procurement policy and existing delegation of powers. They have in house project planning, technical design and estimation and contract management capability. The erstwhile HSEB had handled a Bank-financed project earlier. Though not much of the old project experience is retained now, however our assessment shows the implementing agencies will be able to align to Bank-funded procurement processes easily, given ongoing projects. These projects also include externally funded projects. Since these agencies have large and skilled manpower base, creating adequately staffed procurement cell is on target and already established for HVPN.

10. Two implementing agencies have developed bidding documents for inviting tenders on open tender basis, follow two envelop system for own procurement. The concept of post qualification exists in the bidding process. Technical specifications are generally prepared in-house except in special cases where technical know-how is not readily available; it is done through consultants. It has well laid out pre-qualification conditions. The following gaps are noticed:

- It is Bank requirement that bid security/performance, if required as per bidding conditions, must be taken from all participating bidders. However HPVN/DHBVN allows Bid Security/performance security exemption to selected group of bidders
- Practice of price negotiation and counter offers are followed by both the implementing agencies as part of procurement procedure. Bank procedure allows price negotiation only on exception basis
- Absence of disclosure and fully functional web site
- Absence of complaint handling system
- The documents are issued after checking qualification and other credentials of bidders who requests for purchase of bidding documents. Bank procedure requires such checking/verification should be done as part of evaluation of bids
- Two/three envelope bidding is followed. This violates NCB conditions agreed specifically with GoI task force and the Bank
- Late tenders are not returned but kept in safe custody till decision of the case. After decision the envelope is opened and bid security returned. Bank procedure requires that late bids should be returned unopened immediately
11. The gaps had been discussed as a part of the project preparation to improve the procurement process in general and specific requirement like requirements of disclosure and fully functional web site, developments of complaint handling system essential for bank funded procurement. The utility had handled World Bank procurement in 1998 during the previous Bank engagement. During discussions and assessment it was observed that the present staff was not familiar with World Bank procurement as the old staff had been rotated and there had been many changes in the Bank’s procedure as well, including new guidelines with F&C. HVPN has set up an independent cell in the office of the chief engineer/MM, HVPN, to deal exclusively with procurement for the World Bank funded project. This cell is now fully staffed with five persons. HVPN is also providing training to its staff in Bank procurement at ASCI/NIFM. HVPN has already imparted training to two officers at NIFM from Jan 12-23, 2009. Earlier, a one-day training workshop was conducted by the Bank at HVPN's training center in June 2008. A training workshop had also been organized in January 2009. Thus the capacity of HVPN is generally adequate at the time of appraisal. As a result capacity building measures listed above and support provided by the Bank, the bid award of the first package has been completed. HVPN is now able to finalize and turn around bidding documents for other packages quickly.

12. DHBVN has also created a World Bank cell at its Gurgaon office with support being provided from its HQ at Hisar. The cell at Gurgaon reports to general manager and chief general manager/planning and design who will report to director (project). DHBVN agreed to impart training to two of its staff in Bank Procurement at ASCI in July 2009. The other staff will be sent for similar training at Faridabad subsequently.

13. The issue/risk concerning the procurement component for implementation of the project has been identified and listed below including the corrective measures which has been agreed.

<table>
<thead>
<tr>
<th>Table 1: Procurement risks and mitigation measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risks</strong></td>
</tr>
<tr>
<td>Non familiarization of the IAs staff in bank funded.</td>
</tr>
<tr>
<td>Absence of disclosure mechanism</td>
</tr>
<tr>
<td>Absence of fully functional web site</td>
</tr>
<tr>
<td>Absence of complaint handling system</td>
</tr>
<tr>
<td>Absence of full delegation to DHBVN Board for procurement decisions</td>
</tr>
</tbody>
</table>

The overall project risk for procurement is: Substantial

Procurement plan
14. HVPN and DHBVN have developed a detailed procurement plan for procurement for their scope of the project giving estimated value, method of procurement and the year of procurement, etc. This plan is under review and commented by the Bank. The plan agreed between the borrower and the project team on will be in IRIS and will also be available in the project’s database and in the Bank’s external website. The procurement plan 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.

**Advance procurement**

15. Retroactive financing up to an amount of $66 million will be available under the project, for financing expenditures incurred after March 31, 2009, and before the loan signing to procure eligible activities procured under agreed guidelines.

**Frequency of procurement review missions**

16. Based on draft procurement plan, all the contracts under the project will be subject to prior review by the bank. In addition to the prior review to be carried out from Bank offices, visits to the field to carry out review of procurement actions will be undertaken along with supervision missions.
Attachment 1

Details of the Procurement Arrangement involving international competition

Works and "Supply and Install" contracts

List of contract Packages which will be procured following ICB. All S&I contracts will be procured using ICB procedure as detailed in the Procurement Plan and will be subject to prior review by the Bank. There will not be any pre qualification process.

HVPN

1. Goods, Works, and Non Consulting Services

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

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Contract (Description)</th>
<th>Estimated Cost (US$ Million)</th>
<th>Procurement Method</th>
<th>Domestic Preference (yes/no)</th>
<th>Review by Bank (Prior / Post)</th>
<th>Expected/Actual Bid-Opening Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>2 Nos. 400 kV sub-stations Nawada and Nuhiyawali</td>
<td>33.35</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>February 2009</td>
</tr>
<tr>
<td>G2</td>
<td>2 Nos. 220 kV sub-stations Rangala Raipur (Firozpurizirka) &amp; Samain (Tohana)</td>
<td>14.81</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>June 2009</td>
</tr>
<tr>
<td>G3</td>
<td>400 kV transmission line for feeding 400 kV sub-station Nuhiyawali</td>
<td>19.57</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>June 2009</td>
</tr>
<tr>
<td>G4</td>
<td>5 Nos. 220 kV Transmission lines for feeding 220 kV sub-stations A-5 Faridabad, Rangala Raipur (Firojpurzhirka), Samain &amp; Musudpur.</td>
<td>15.84</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>July 2009</td>
</tr>
<tr>
<td>G5</td>
<td>4 Nos. 220 kV sub-stations</td>
<td>28.69</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>July 2009</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Contract (Description)</td>
<td>Estimated Cost (US$ Million)</td>
<td>Procurement Method</td>
<td>Domestic Preference (yes/no)</td>
<td>Review by Bank (Prior / Post)</td>
<td>Expected/Actual Bid-Opening Date</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>--------------------</td>
<td>------------------------------</td>
<td>-------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>G6</td>
<td>Musudpur, A-5 Faridabad, Sangwan (Tohana) &amp; Raiwali (Panchkula)</td>
<td>19.41</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>July 2008</td>
</tr>
<tr>
<td>G7</td>
<td>5 Nos. 220 kV transmission line for feeding 220 kV substation Raiwali, A-5 Faridabad &amp; Rangala Rajpur, Sagwan and 5 Nos. 132 kV transmission line for feeding 132 kV substations Kairu, Nangal Mohanpur, Palli &amp; Kabri.</td>
<td>9.82</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>July 2009</td>
</tr>
<tr>
<td>G8</td>
<td>220 kV substations A-4 Faridabad and 66 kV substation Sector-5 Panchkula (GIS)</td>
<td>23.03</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>August 2009</td>
</tr>
<tr>
<td>G9</td>
<td>5 Nos. 220 kV substations Panchkula (new), Ganour, Rai, Pinjore, Gignow (Loharu)</td>
<td>36.59</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>September 2009</td>
</tr>
<tr>
<td>G10</td>
<td>9 Nos. 220 kV transmission line for feeding 220 kV substations Panchkula</td>
<td>20.50</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>September 2009</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Contract (Description)</td>
<td>Estimated Cost( US$ Million)</td>
<td>Procurement Method</td>
<td>Domestic Preference (yes/no)</td>
<td>Review by Bank (Prior / Post)</td>
<td>Expected/Actual Bid-Opening Date</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------</td>
<td>-----------------------------</td>
<td>-------------------</td>
<td>-------------------------------</td>
<td>-----------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>G11</td>
<td>(new), Ganour, Rai, Pinjore, Gignow.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G13</td>
<td>7 Nos.220 kV transmission line for feeding 220 kV sub-station Jansui, Ratia, Adampur, Pahari &amp; Mohana S/Stns.</td>
<td>12.44</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>December 2009</td>
</tr>
<tr>
<td>G14</td>
<td>4 Nos. 220 kV sub-stations Adampur, Pahari, kharkhoda &amp; Sector-48 Gurgaon.</td>
<td>30.42</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>Feb 2010</td>
</tr>
<tr>
<td>G15</td>
<td>Extension of SCADA/EMS of HVPNL</td>
<td>10.58</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>October 2009</td>
</tr>
</tbody>
</table>

**DHBVN**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Contract (Description)</th>
<th>Estimated Cost(US$ Million)</th>
<th>Procurement Method</th>
<th>Domestic Preference (yes/no)</th>
<th>Review by Bank (Prior / Post)</th>
<th>Expected/Actual Bid-Opening Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>Supply &amp; Installation of new HT lines for HVDS, System strengthening by Bifurcation of</td>
<td>5.51</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>August 2009</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Contract (Description)</td>
<td>Estimated Cost (US$ Million)</td>
<td>Procurement Method</td>
<td>Domestic Preference (yes/no)</td>
<td>Review by Bank (Prior / Post)</td>
<td>Expected/Acctual Bid-Opening Date</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------</td>
<td>-------------------------------</td>
<td>--------------------</td>
<td>-------------------------------</td>
<td>-------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>G2</td>
<td>11 KV feeders and creation of 33 KV substation and Segregation of industrial load from mixed load feeder in Dadri town (Bhiwani)</td>
<td>24.28</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>September 2009</td>
</tr>
<tr>
<td>G3</td>
<td>Supply &amp; Installation of new HT lines for HVDS, System strengthening by Bifurcation of 11 KV feeders in Gurgaon City</td>
<td>34.03</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>October 2009</td>
</tr>
<tr>
<td>G4</td>
<td>Procurement of advanced metering infrastructure</td>
<td>23.69</td>
<td>ICB</td>
<td>No</td>
<td>Prior</td>
<td>October 2009</td>
</tr>
</tbody>
</table>

(b) ICB contracts estimated to cost above US$ 500,000 per contract and all direct contracting will be subject to prior review by the Bank.
Attachment II

2. Consulting Services

(a) List of consulting assignments with short-list of international firms.

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated Cost (US$ Million)</th>
<th>Method of procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy for Quality Control of Works</td>
<td>0.81</td>
<td>ICB</td>
</tr>
<tr>
<td>Consultancy for capacity Building</td>
<td>0.20</td>
<td>NCB</td>
</tr>
<tr>
<td>Consultancy for process engineering and preparation of manuals relating to financial accounting, internal audit costing and budgeting</td>
<td>0.20</td>
<td>NCB</td>
</tr>
<tr>
<td>Outsourcing of External audit of World Bank funded projects</td>
<td>0.05</td>
<td>NCB</td>
</tr>
<tr>
<td>Outsourcing of Internal audit of World Bank funded projects</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Training Program on ESPP, technical and managerial issues</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1.36</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated Cost (US $ Million)</th>
<th>Method of procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultancy Services for Third Party Quality Assurance, Inspection &amp; Monitoring</td>
<td>1.59</td>
<td>QCBS</td>
</tr>
<tr>
<td>Third Party Consultancy Services for Institutional Capacity Building, Process Study, Organizational Restructuring, KPIs and Preparation of Manuals for Accounts &amp; Audit Wing</td>
<td>0.40</td>
<td>QCBS</td>
</tr>
<tr>
<td>Consultancy services for Institutional Capacity Building consisting of Business Process Re-engineering, Organizational Restructuring, Defining Key Performance Indicators, Identifying Training Needs of Employees &amp; MIS to monitor &amp; control KPIs (except Accounts &amp; Audit Wing) (except Accounts &amp; Audit Wing)</td>
<td>1.01</td>
<td>QCBS</td>
</tr>
<tr>
<td>Consultancy services organizing &amp; implementing Training Program for building capacities</td>
<td>0.40</td>
<td>QCBS</td>
</tr>
<tr>
<td>Consultancy services for Suggesting Long Term Capital Investment Plan</td>
<td>0.40</td>
<td>QCBS</td>
</tr>
<tr>
<td>Consultancy services for Validation of Existing Base Line Data and Customer Services in Dadri, Gurgaon &amp; Faridabad Towns, assess the improvements made after completion of scheme proposals, and development of MIS for regular validation</td>
<td>0.40</td>
<td>QCBS</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4.23</strong></td>
<td></td>
</tr>
</tbody>
</table>

(b) Consultancy services estimated to cost above US$200,000 per contract and all single source selection of consultants (firms) for assignments will be subject to prior review by the Bank.

(c) Short lists composed entirely of national consultants: Short lists of consultants for services estimated to cost less than US$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

INDIA: Haryana Power System Improvement

1. The project economic and financial analysis is carried out at two levels. First, at the project level to assess whether the expected economic benefits and financial revenues meet the economic and financial cost of investments. The economic analysis is based on cost-benefit methodology to derive net present value and rate of return. Second, entity level financial analysis assesses the financial robustness of the implementing agencies to support and sustain the capital and maintenance investments. In addition, an overall fiscal sustainability analysis presents the impact of the project on state finances.

2. Ideally, for transmission investments of HVPN, the analysis should be performed for each scheme assuming its unique technical parameters, financing, and implementation arrangements. While the costs are explicitly determined for each scheme the benefits cannot be attributed explicitly as there are other related investments in the project areas. Therefore, the economic and financial assessment is undertaken for transmission investment (Component I) as a whole.

3. For distribution investments of DHBVN (Component II) the analysis is carried out for investments in each of the three urban centers (Dadri, Gurgaon, Faridabad), as the specific investment requirements and implementation arrangements are unique to each urban center, though the overall objective and scope is similar. DHBVN has prepared a detailed project report (DPR) for each urban center which is aligned with the requirements of APDRP. In addition to presenting the project description and technical scope, the DPR also includes a financial viability analysis which is utilized to carry out the detailed appraisal of distribution schemes for each urban center presented in this Annex.

4. The economic and financial fundamentals are robust implying project will contribute to overall welfare and be beneficial to the consumer in the state. The economic net present value of the project is estimated to be about $1 billion with an EIRR of 80%. Both the project components are individually economically viable and the overall feasibility stems from the healthy EIRR of 83% estimated for the Component I that constitutes bulk of the overall project cost.

Table 1: Economic and Financial Valuation

<table>
<thead>
<tr>
<th></th>
<th>Financial Cost (Million $)</th>
<th>Economic Cost (Million $)</th>
<th>F-NPV (Million $)</th>
<th>E-NPV (Million $)</th>
<th>FIRR (%)</th>
<th>EIRR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVPN</td>
<td>313.82</td>
<td>200.85</td>
<td>$78.89</td>
<td>$1,145.58</td>
<td>16.1%</td>
<td>83%</td>
</tr>
<tr>
<td>DHBVN</td>
<td>66.37</td>
<td>45.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dadri</td>
<td>5.73</td>
<td>3.91</td>
<td>$1.12</td>
<td>$4.84</td>
<td>17.1%</td>
<td>45%</td>
</tr>
<tr>
<td>Gurgaon</td>
<td>25.25</td>
<td>17.24</td>
<td>$5.54</td>
<td>$25.56</td>
<td>18.1%</td>
<td>59%</td>
</tr>
<tr>
<td>Faridabad</td>
<td>35.39</td>
<td>24.16</td>
<td>$15.2</td>
<td>$38.47</td>
<td>23.4%</td>
<td>61%</td>
</tr>
<tr>
<td>Total</td>
<td>380.19</td>
<td>246.16</td>
<td>$22.65</td>
<td>$957.47</td>
<td>20.6%</td>
<td>80%</td>
</tr>
</tbody>
</table>
I. Project Economic and Financial Analysis:

Component I: Transmission

5. HVPN carried out a load flow study to analyze their power system over the period 2008-2012, to identify constraints to meet the power demand, and to evaluate losses before and after the planned addition of transmission sub-stations and lines. Based on the congestion points identified in this study, a number schemes constituting installation of new sub-stations and transmission lines emerged for World Bank financing.

6. The economic benefits of the transmission scheme primarily accrue from the additional energy generated from two sources – transmission of energy after it has been evacuated from new generating plants and reduction of transmission losses. The total capacity addition is estimated to be 4100 MVA. Assuming an available capacity utilization of 70%, a load factor of 67%, and power factor of 95%, this figure falls to 2870 MVA. The additional energy that will flow through the system is about 16,000 MUs.

7. **Economic analysis:** For the economic cost calculation, taxes and duties, price contingencies, and interest during construction are excluded while costs associated with environmental and social safeguard mechanisms are added to the total project cost of Rs 15 billion ($314 million). The final economic cost is estimated at Rs 9.8 billion ($201 million).

8. In the economic benefit computation, the economic value attached to additional energy flowing into the system by transmission of new generation is valued at a fixed cost of generation facilities at Rs 0.77/kwh as it assumes the generation facilities are already built and the transmission congestion points were preventing the additional power from reaching the consumers.

9. The opportunity cost of energy saved through reduction of transmission losses can be valued using two estimates (1) Rs. 5.5/kwh - the cost of unscheduled power interchanges (UI) based on availability based tariff (ABT) incurred by consumers for alternate sources of power supply. ABT, introduced in July 2002, is an institutional mechanism to incentivize power generators and distributors to match (scheduled) supply and demand and thus enable system stability. In the ABT framework, if a generating station supplies less power to the grid than what is scheduled to be generated, it has to pay for the supply shortage at a rate of the system condition, the rate which is referred to as “unscheduled interchange (UI).” The maximum commercial opportunity for generating stations is set at Rs 10 per kWh at a frequency of 49.0 Hz or below. The average frequency in the northern region (which includes Haryana) was 49.36 Hz in 2007/8. The expected UI rate associated with this frequency can be computed at Rs 5.5/kWh. (2) Rs. 2.96/kwh - the incremental cost of expanding supply through alternate thermal generation by recent independent power producers (IPPs). The GoH has long-term signed power
purchase agreements with three independent power producers – CLP Power India Pvt Ltd, Adani Power, and PTC. The agreed price of the three varies between Rs 2.86/kwh to Rs 2.99/kwh with a weighted average price of Rs 2.96/kwh. In the baseline analysis, the economic valuation rests on lower bound estimates of incremental cost of alternate thermal generation.

Table 2: Additional capacity from HVPN investments

<table>
<thead>
<tr>
<th>Capacity (MVA)</th>
<th>Power (Gwh)</th>
<th>Economic valuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional capacity</td>
<td>2870</td>
<td></td>
</tr>
<tr>
<td>(i) Evacuation of new energy</td>
<td>2857</td>
<td>15930 Fixed cost of new generation – Rs. 0.77/kwh</td>
</tr>
<tr>
<td>(ii) Reduction in transmission losses</td>
<td>13</td>
<td>72 Alternate thermal generation – Rs. 2.9/kwh UI Charges – Rs. 5.5/kwh</td>
</tr>
</tbody>
</table>

10. The project will also bring about greenhouse gas emission (GHG) reductions through loss reduction initiatives and substitution of captive generation since the diesel generators that emit GHG into the environment can be converted into carbon credits. In the case of HVPN, the additional energy when converted to tones of carbon using a CEA computed emission factor of 0.8571 can be monetized assuming a $10 per carbon emission reduction (CER) credit. The additional energy released to the system as a result of loss reduction initiatives can contribute to $0.6 million annually to HVPN’s revenue stream. A sensitivity analysis considering varying prices of carbon (from $5 to $15/CER) barely made any impact on the EIRR since the carbon savings is a relatively small portion of the total benefit stream.

11. In the baseline scenario, the EIRR is 83% and E-NPV is estimated at $1.145 billion over the 25 years of asset life suggesting the transmission investments would ensure significant welfare improvements and enhance service delivery in Haryana. The E-NPV without carbon savings from transmission loss reduction minimally declines to $1.143 billion. The analysis is based on “excess demand” scenario as the available power would be immediately consumed by existing consumers and therefore valued at the marginal cost of generation. In a situation of “no excess demand”, the power purchase cost would be reduced since the need for new generation would have been alleviated.

71 www.cea.nic.in
12. A scenario analysis is performed to test the sensitivity to different variables affecting EIRR. Generally, the project investments will yield robust returns. Cost overruns and decline in benefits are the two critical drivers. The EIRR falls to about 16% when the cost rises by more than 6 times its original cost. If the benefits fall to 20% of the original value, the EIRR is reported as 20%. The EIRR is robust to implementation delays - a 1 year delay reduces the EIRR to 51%. A combination of factors such as cost increase by 400%, delay in implementation by a year, and a reduced valuation of additional capacity at Rs. 0.5/kwh results in the EIRR of 23%. The anticipated increase in the fixed cost of generation from 2011 onwards will raise the benefit stream further. For instance, a 50% increase in cost combined with a six month implementation delay and increase in economic value of additional capacity results in a robust EIRR of 57%.

Table 4: Economic Scenario Analysis

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Cost Overrun (%)</th>
<th>Benefit reduction (%)</th>
<th>Economic value of additional capacity (Rs/kwh)</th>
<th>Implementation delay</th>
<th>EIRR (%)</th>
<th>E-NPV (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>100%</td>
<td>100%</td>
<td>0.77</td>
<td>0</td>
<td>83%</td>
<td>1146</td>
</tr>
<tr>
<td>Scenario 1</td>
<td>200%</td>
<td>200%</td>
<td>1</td>
<td>0</td>
<td>100%</td>
<td>3066</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>150%</td>
<td>100%</td>
<td>1</td>
<td>0.5</td>
<td>57%</td>
<td>1301</td>
</tr>
<tr>
<td>Scenario 3</td>
<td>300%</td>
<td>80%</td>
<td>0.5</td>
<td>0.5</td>
<td>23%</td>
<td>437</td>
</tr>
<tr>
<td>Scenario 4</td>
<td>100%</td>
<td>60%</td>
<td>0.77</td>
<td>1</td>
<td>37%</td>
<td>486</td>
</tr>
<tr>
<td>Scenario 5</td>
<td>200%</td>
<td>40%</td>
<td>0.77</td>
<td>1</td>
<td>15%</td>
<td>87</td>
</tr>
<tr>
<td>Scenario 6</td>
<td>400%</td>
<td>100%</td>
<td>0.5</td>
<td>1</td>
<td>23%</td>
<td>720</td>
</tr>
</tbody>
</table>

13. Financial analysis: In financial terms, the value of energy is calculated assuming a wheeling charge of Rs. 0.216/kwh. If there was no excess demand, then financial benefits would also have included a reduction in power purchase cost due to lower
transmission losses. Haryana is a power deficit state and will continue to remain so in the foreseeable future. Therefore, a “no excess demand” scenario is not anticipated.

Table 5: Financial net benefit stream

<table>
<thead>
<tr>
<th>Year</th>
<th>INFLOW</th>
<th>OUTFLOW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revenue (Yearly Transmission Charges)</td>
<td>Capital Cost</td>
</tr>
<tr>
<td>2010</td>
<td>-</td>
<td>125.00</td>
</tr>
<tr>
<td>2011</td>
<td>14.05</td>
<td>125.00</td>
</tr>
<tr>
<td>2012</td>
<td>42.15</td>
<td>62.50</td>
</tr>
<tr>
<td>2013</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2014</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2015</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2016</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2017</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2018</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2019</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2020</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2021</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2022</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2023</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2024</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2025</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2026</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2027</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2028</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2029</td>
<td>70.25</td>
<td>9.38</td>
</tr>
<tr>
<td>2030</td>
<td>70.25</td>
<td>0.38</td>
</tr>
<tr>
<td>2031</td>
<td>70.25</td>
<td>0.38</td>
</tr>
<tr>
<td>2032</td>
<td>70.25</td>
<td>0.38</td>
</tr>
<tr>
<td>2033</td>
<td>70.25</td>
<td>0.38</td>
</tr>
</tbody>
</table>

FIRR 17.85%
NPV $86.49

14. For financial appraisal of the transmission investments, the Financial Internal Rate of Return (F-IRR) is computed benchmarked against the opportunity cost of capital. The opportunity cost of capital is taken as 12%, as specified in the official memorandum of the India Country Director on the Exchange Rates and Price Contingencies for Project Analysis, dated February 01, 2005. The F-IRR for the project is calculated to be about 17% and an NPV of $86 million. A scenario analysis was performed to estimate the impact of cost escalations, implementation delays and changes in revenue. A cost overrun affects the F-IRR more adversely than a time over run. In case of a 20% cost escalation the F-IRR falls to 13.5% but a delay of six months causes the F-IRR to fall to 14.9%. In the worst case scenario, wherein implementation delay of six months, cost escalation of 20% and decrease of revenue by 10% is coincident, the F-IRR falls to 10.3%. This is a highly improbable scenario.
Table 6: Financial Scenario Analysis

<table>
<thead>
<tr>
<th>Description</th>
<th>Scenario</th>
<th>Cost Escalation</th>
<th>Delay (Months)</th>
<th>Decrease in Revenue</th>
<th>FIRR (%)</th>
<th>NPV ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Case</td>
<td>A</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
<td>17.1%</td>
<td>$85.49</td>
</tr>
<tr>
<td>Cost Escalation by 20%</td>
<td>B</td>
<td>20%</td>
<td>0</td>
<td>0%</td>
<td>13.5%</td>
<td>$28.85</td>
</tr>
<tr>
<td>Delay of 6 Months</td>
<td>C</td>
<td>0%</td>
<td>6</td>
<td>0%</td>
<td>14.9%</td>
<td>$53.59</td>
</tr>
<tr>
<td>Revenue decrease by 10%</td>
<td>D</td>
<td>0%</td>
<td>0</td>
<td>10%</td>
<td>14.9%</td>
<td>$48.67</td>
</tr>
<tr>
<td>Cost Escalation by 10%, Delay of 6 months</td>
<td>E</td>
<td>10%</td>
<td>6</td>
<td>0%</td>
<td>13.3%</td>
<td>$25.65</td>
</tr>
<tr>
<td>Cost Escalation by 20%, Delay of 6 months</td>
<td>F</td>
<td>20%</td>
<td>6</td>
<td>0%</td>
<td>11.9%</td>
<td>($2.28)</td>
</tr>
<tr>
<td>Delay of 6 months &amp; Revenue lower by 10%</td>
<td>G</td>
<td>0%</td>
<td>6</td>
<td>10%</td>
<td>13.1%</td>
<td>$20.29</td>
</tr>
<tr>
<td>Cost Escalation by 10%, Delay of 3 months, and Revenue lower by 10%</td>
<td>H</td>
<td>10%</td>
<td>3</td>
<td>10%</td>
<td>12.5%</td>
<td>$9.91</td>
</tr>
<tr>
<td>Cost Escalation by 20%, Delay of 6 months, and Revenue lower by 10%</td>
<td>I</td>
<td>20%</td>
<td>6</td>
<td>10%</td>
<td>10.3%</td>
<td>($33.55)</td>
</tr>
</tbody>
</table>

Component II - Distribution

15. The distribution project investment in Dadri, Gurgaon, and Faridabad will allow Haryana to meet its projected demand in a cost effective manner as the focus will be on reduction in aggregate technical and commercial (AT & C) losses and to move additional capacity through the installation of new distribution transformers. The investment include the provision of high voltage distribution system (HVDS) on a turnkey basis for the urban feeders with development and construction of feeder network to HVDS to the extent possible by placing smaller size distribution transformers (viz. 10KVA, 16kVA and 25kVA) close to the consumers, thus reducing the size of the LT network to the bare minimum. This will eliminate ‘hooking’ of power resulting in lower technical and commercial losses and more new consumers connecting to the system as the extent of power theft will be curbed.

16. The benefits are primarily catering to the extra load and energy savings through reduction in AT&C losses. The AT&C loss reduction will result in energy saved and voltage improvement and theft reduction which will in turn lead to substitution of captive generation of energy to grid supply.

17. In Dadri, the losses are expected to decline from the estimated 53% to a loss level target of 26%. The loss levels reduction targets will be achieved after the implementation of HVDS, bifurcation of feeders, correct loading and reduction in breakdown. In Gurgaon and Faridabad, the losses are estimated to decrease from 17.49% to 13.39% and from 23.86% to 14.86% respectively.

Table 7: Distribution Investments

<table>
<thead>
<tr>
<th></th>
<th>Additional Capacity (MVA)</th>
<th>Technical loss reduction (%)</th>
<th>Commercial loss reduction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dadri</td>
<td>9455</td>
<td>7.93</td>
<td>18</td>
</tr>
<tr>
<td>Gurgaon</td>
<td>166749</td>
<td>1.0</td>
<td>3.1</td>
</tr>
<tr>
<td>Faridabad</td>
<td>166375</td>
<td>2.1</td>
<td>7.2</td>
</tr>
</tbody>
</table>
18. The total project cost (including interest during construction and environmental and social management costs) in the three project towns is estimated at $73 million including erection of a new HT line for HVDS, bifurcation of overloaded 11 KV city feeder and third-party project monitoring consultants. The economic cost emerges from the total project cost by deducting taxes and duties, price contingencies, and interest during construction while costs associated with environmental and social safeguard mechanisms are added. The final economic cost is $50 million.

19. **Net economic benefits:** The economic value of the additional capacity is valued at Rs 0.77/kwh which is the fixed cost of generation. The generating facilities will remain idle if the distribution systems do not come on-line in time to distribute the power to consumers and earn revenues for the utility to pay the independent power producers and state generators.

20. The technical loss reduction is valued at cost of supply of incremental thermal generation. Inability to control technical losses poses an additional cost to the utilities as they have to resort to alternate thermal generation from IPPs to meet the gap. A cost of supply value of Rs 4.74/kwh is arrived at by adding the cost of incremental thermal generation (Rs. 2.96/kwh), transmission cost (Rs 0.25/kwh), distribution cost (Rs 0.32/kwh) and T&D losses (Rs 1.22/kwh). This is the opportunity cost to the economy of losing energy through technical losses. The commercial loss reduction is more difficult to value. While it is understood that there are beneficiaries of illegal connection, their willingness to pay (WTP) is unclear. From all accounts, it is below the WTP of paying customers, above zero, and below the tariffs. For purposes of this analysis, the commercial loss reduction is valued at half of the paying customers.

21. As in transmission, the carbon savings are estimated for technical loss reduction initiatives for distribution schemes as well. The implementation of HVDS Schemes reduces the technical line losses in the distribution system, thereby improving the energy efficiency of the last mile linkage in the distribution system i.e. from the 33/11KV sub-station to the consumer service point. This translates into lower generation capacity required to meet end-use demand thereby reducing the consumption of fossil fuel and ensuring GHG emissions at the generating station end. Converting the energy savings associated with carbon credits employing an emissions factor of 0.85 and a price of R. 10 per unit of CER, about $43740, $95548, and $204724 of benefits are generated by the scheme for the three DHBVN towns. The carbon benefits are added to the benefit stream to arrive at the total benefits. A sensitivity analysis considering varying prices of carbon (from $5 to $15/CER) barely made any impact on the EIRR since the carbon savings is a relatively small portion of the total benefit stream.

22. The baseline EIRR for Dadri, Gurgaon, and Faridabad are estimated at 35%, 59%, 61% respectively and ENPV is $3, $26, and $38 million respectively suggesting the project investments will be beneficial to the residents in improving the quantity and quality of power supply. The EIRR without the carbon benefits reduces to 34%, 59%, and 59% in the three towns, thus quantifying the additionality of carbon savings from loss.

---

72 This approach was employed by Peter Meier in UP ICR Economic Analysis, 2005
reduction investments. The asset life of distribution infrastructure is assumed to be 15 years. The scenario analysis assuming different values of cost overruns, technical and commercial losses, economic valuation of additional capacity, and implementation delay provides a robustness check on the EIRR. Implementation delay, cost overruns, and reduction in technical and commercial losses are important drivers. For instance, scenario 2 that combines these eventualities reduces the EIRR to -6%, 11%, and 14% respectively. The valuation of additional capacity in estimated at the lower bound value of Rs 0.77/kwh which is the fixed cost of generation in 2008. This value is forecast to increase to Rs 1/kwh when the new generating facilities come on-line in 2011 which will raise the benefit stream and EIRR. A one year implementation delay results in an EIRR of 25%, 33%, and 37% respectively for the three towns. In addition, EIRR is sensitive to technical and commercial loss reduction targets. For instance, in Dadri, if technical losses and commercial losses are 1% and 2% respectively which are 40% of the original target, then the EIRR is 21% and 19% respectively.

Table 8: Economic analysis of Dadri, Gurgaon, Faridabad

<table>
<thead>
<tr>
<th>Dadri</th>
<th>Cost Overrun (%)</th>
<th>Technical Losses (%)</th>
<th>Commercial Losses (%)</th>
<th>Economic valuation of additional capacity (Rs/kwh)</th>
<th>Economic valuation of technical losses (Rs/kwh)</th>
<th>Economic valuation of commercial losses (Rs/kwh)</th>
<th>Implementation delay (Years)</th>
<th>EIRR (%)</th>
<th>E-NPV (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>0.77</td>
<td>4.74</td>
<td>2.37</td>
<td>0</td>
<td>44%</td>
<td>$5.19</td>
</tr>
<tr>
<td>Scenario1</td>
<td>125%</td>
<td>75%</td>
<td>75%</td>
<td>0.77</td>
<td>4.74</td>
<td>2.37</td>
<td>1</td>
<td>10%</td>
<td>$5.38</td>
</tr>
<tr>
<td>Scenario2</td>
<td>150%</td>
<td>50%</td>
<td>50%</td>
<td>0.77</td>
<td>4.74</td>
<td>2.37</td>
<td>0.5</td>
<td>-4%</td>
<td>$2.88</td>
</tr>
<tr>
<td>Scenario3</td>
<td>100%</td>
<td>100%</td>
<td>50%</td>
<td>1.55</td>
<td>4.74</td>
<td>2.37</td>
<td>1</td>
<td>20%</td>
<td>$1.50</td>
</tr>
<tr>
<td>Scenario4</td>
<td>150%</td>
<td>80%</td>
<td>90%</td>
<td>1.55</td>
<td>4.74</td>
<td>2.37</td>
<td>0.5</td>
<td>13%</td>
<td>$0.74</td>
</tr>
<tr>
<td>Scenario5</td>
<td>125%</td>
<td>90%</td>
<td>50%</td>
<td>1.55</td>
<td>4.74</td>
<td>2.37</td>
<td>0.5</td>
<td>13%</td>
<td>$0.14</td>
</tr>
<tr>
<td>Gurgaon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>0.77</td>
<td>4.74</td>
<td>2.37</td>
<td>0</td>
<td>58%</td>
<td>$27.63</td>
</tr>
<tr>
<td>Scenario1</td>
<td>125%</td>
<td>75%</td>
<td>75%</td>
<td>0.77</td>
<td>4.74</td>
<td>2.37</td>
<td>1</td>
<td>16%</td>
<td>$3.90</td>
</tr>
<tr>
<td>Scenario2</td>
<td>150%</td>
<td>50%</td>
<td>50%</td>
<td>0.77</td>
<td>4.74</td>
<td>2.37</td>
<td>0.5</td>
<td>11%</td>
<td>$1.25</td>
</tr>
<tr>
<td>Scenario3</td>
<td>100%</td>
<td>100%</td>
<td>50%</td>
<td>1.55</td>
<td>4.74</td>
<td>2.37</td>
<td>1.5</td>
<td>28%</td>
<td>$4.47</td>
</tr>
<tr>
<td>Scenario4</td>
<td>150%</td>
<td>90%</td>
<td>90%</td>
<td>1.55</td>
<td>4.74</td>
<td>2.37</td>
<td>1</td>
<td>19%</td>
<td>$8.29</td>
</tr>
<tr>
<td>Scenario5</td>
<td>125%</td>
<td>90%</td>
<td>50%</td>
<td>1.55</td>
<td>4.74</td>
<td>2.37</td>
<td>0.5</td>
<td>21%</td>
<td>$11.42</td>
</tr>
<tr>
<td>Faridabad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>0.77</td>
<td>4.74</td>
<td>2.37</td>
<td>0</td>
<td>59%</td>
<td>$41.56</td>
</tr>
<tr>
<td>Scenario1</td>
<td>125%</td>
<td>75%</td>
<td>75%</td>
<td>0.77</td>
<td>4.74</td>
<td>2.37</td>
<td>1</td>
<td>22%</td>
<td>$12.61</td>
</tr>
<tr>
<td>Scenario2</td>
<td>150%</td>
<td>50%</td>
<td>50%</td>
<td>0.77</td>
<td>4.74</td>
<td>2.37</td>
<td>0.5</td>
<td>14%</td>
<td>$2.49</td>
</tr>
<tr>
<td>Scenario3</td>
<td>100%</td>
<td>100%</td>
<td>50%</td>
<td>1.55</td>
<td>4.74</td>
<td>2.37</td>
<td>1.5</td>
<td>34%</td>
<td>$26.66</td>
</tr>
<tr>
<td>Scenario4</td>
<td>150%</td>
<td>90%</td>
<td>90%</td>
<td>1.55</td>
<td>4.74</td>
<td>2.37</td>
<td>1</td>
<td>25%</td>
<td>$22.52</td>
</tr>
<tr>
<td>Scenario5</td>
<td>125%</td>
<td>90%</td>
<td>50%</td>
<td>1.55</td>
<td>4.74</td>
<td>2.37</td>
<td>0.5</td>
<td>33%</td>
<td>$29.11</td>
</tr>
</tbody>
</table>

23. **Net financial benefits**: The baseline F-IRR for Dadri, Gurgaon and Faridabad is estimated at 17.1%, 18.1%, 23.4% respectively with an F-NPV of $1.12, $5.54, $15.2 million. The opportunity cost of capital is taken as 12%, as specified in the official memorandum of the India Country Director on the Exchange Rates and Price Contingencies for Project Analysis, dated February 01, 2005. The asset life of distribution infrastructure is assumed to be 15 years. The value of incremental energy due to addition in distribution capacity is assumed at Rs. 0.315 and the value of additional energy due to reduction of losses is assumed at Rs.3.3 which is the average realization from sales to domestic, commercial and LT circle in DHBVN in FY 08.

24. Implementation delay, cost overruns, and reduction in losses are important factors that impact the F-IRR. Therefore a scenario analysis was undertaken to estimate the impact of cost escalations, implementation delays, and shortfall in the loss reduction target on the F-IRR. The scenarios were considered individually and in the eventuality that the scenarios happen simultaneously. In the case of Faridabad, the F-IRR is above
the opportunity cost of capital even in scenario I (delay of three months, cost escalation of 10% and loss reduction is 15% less than the target value) but falls to 10.6% respectively in case of scenario J.

25. The F-IRRs for the investments in Dadri and Gurgaon are particularly sensitive to the reduction of losses. It falls to 12.7% and 13.1% respectively if the loss reduction is 15% less than the target value (Scenario D). In addition, F-IRR is sensitive to cost escalations. For instance, the F-IRR falls to 12.2%, 13.1%, and 17.5 % for Dadri, Gurgaon and Faridabad respectively in Scenario B when the project cost is increases by 20%.

Table 9: Financial analysis of Dadri, Gurgaon, Faridabad

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost Escalation</th>
<th>Delay (Months)</th>
<th>Loss Reduction</th>
<th>Dadri</th>
<th>Gurgaon</th>
<th>Faridabad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Case</td>
<td>A 0%</td>
<td>0 0%</td>
<td></td>
<td>17.1%</td>
<td>$1.12</td>
<td>18.1%</td>
</tr>
<tr>
<td>Cost Escalation by 20%</td>
<td>B 20%</td>
<td>0 0%</td>
<td>12.2%</td>
<td>13.1%</td>
<td>$1.13</td>
<td>17.9%</td>
</tr>
<tr>
<td>Delay of 6 Months</td>
<td>C 0%</td>
<td>6 0%</td>
<td>14.7%</td>
<td>15.4%</td>
<td>$3.37</td>
<td>19.2%</td>
</tr>
<tr>
<td>Reduction in Losses falls short by 15%</td>
<td>D 0%</td>
<td>6 15%</td>
<td>12.7%</td>
<td>12.0%</td>
<td>$0.02</td>
<td>18.1%</td>
</tr>
<tr>
<td>Cost Escalation by 10%, Delay of 0 months</td>
<td>E 10%</td>
<td>6 0%</td>
<td>12.4%</td>
<td>13.0%</td>
<td>$1.05</td>
<td>18.1%</td>
</tr>
<tr>
<td>Cost Escalation by 20%, Delay of 3 months</td>
<td>F 20%</td>
<td>3 0%</td>
<td>11.2%</td>
<td>11.1%</td>
<td>($1.04)</td>
<td>14.4%</td>
</tr>
<tr>
<td>Cost Escalation by 10%, Reduction in Losses falls short by 15%</td>
<td>G 10%</td>
<td>0 15%</td>
<td>10.3%</td>
<td>9.0%</td>
<td>($3.01)</td>
<td>12.8%</td>
</tr>
<tr>
<td>Delay of 6 months, and Reduction in Losses falls short by 15%</td>
<td>H 0%</td>
<td>6 15%</td>
<td>10.9%</td>
<td>11.5%</td>
<td>($0.44)</td>
<td>14.9%</td>
</tr>
<tr>
<td>Delay of 3 months, Cost escalation by 10% and Reduction in Losses falls short by 15%</td>
<td>I 10%</td>
<td>3 15%</td>
<td>9.5%</td>
<td>10.0%</td>
<td>($1.90)</td>
<td>13.9%</td>
</tr>
<tr>
<td>Delay of 6 months, Cost escalation by 20% and Reduction in Losses falls short by 15%</td>
<td>J 20%</td>
<td>6 15%</td>
<td>7.0%</td>
<td>7.5%</td>
<td>($4.85)</td>
<td>10.6%</td>
</tr>
</tbody>
</table>

26. As evident from the project analysis, the economic and financial returns are divergent. The economic returns point to the high economic value of the energy in Haryana in an environment of persistent shortages and consequent high opportunity cost of capital. The financial returns point to a tariff structure driven by cost of service provision which has been stagnant since 2001. The divergence reflects the market distortions in Haryana where tariffs have maintained a status-quo and economic value has been on a continual upward trend compared to the financial value.

II. Entity Level Analysis

A. HVPN

27. HVPN is responsible for wheeling electricity in Haryana from state owned generation stations as well as electricity purchased from outside the state. It is also a joint owner of two generating stations (BBMB and Indraprastha Power Generation Company
Ltd or IPGCL) inherited at the time of sector restructuring in 1998. Until FY06 HVPN was responsible for the power trading, after which it was transferred to HPGCL and subsequently in June 2008 has been transferred to the two distribution companies. The financial performance of HVPN in the past is therefore a reflection of its trading role.

28. The transmission business is regulated by HERC, an independent regulatory authority. The legal and regulatory framework supports cost plus pricing regulation with 14% return on equity. HVPN is required to submit its annual revenue requirement (ARR) for the proceeding year presenting details of investment, costs, operating parameters and revenue from all sources. The transmission tariff is determined by HERC annually based on the review of ARR and stakeholder consultations. The financial performance of HVPN is therefore critically dependent on the regulatory process, quality of information required for regulatory review, and ability of HVPN to meet key performance targets (and costs) specified in the tariff order by the regulator.

29. During FY06 and FY07 HVPN earned operating profit, however after accounting for depreciation, interest and prior period adjustments the company incurred loss. In FY06, the overall loss was Rs 1099 million ($22.3 million) which declined to Rs 139 million ($ 2.82 million) in FY07. The financial loss was primarily due to disallowance of certain expenditures by the regulator and lack of regulatory mechanism to true-up revenue and expenses at the end of the financial year. The financial performance of HVPN improved in FY08 and the company registered net profit of Rs 1431 million ($29.08 million). This improvement has been on account of recovery of a part of the past expenses which were disallowed in the earlier regulatory orders (more details provided below). Till FY07 HVPN did not file for a return on equity in the Annual Revenue Requirement (ARR). In FY08 and FY09, 8% regulated return on equity was provided by HERC in the tariff order. The actual return on equity though has been less as HVPN’s actual expenses have been much more than the regulated expenses allowed by HERC. There has been dissonance between HVPN and HERC on several issues leading to lengthy review process and in many instances petition against regulatory orders. Some of the contentious issues are: interest on provident fund bonds not allowed to be recovered by HERC, depreciation on generation assets (BBMB) owned by HVPN not allowed by HERC, and lack of truing up of intra-state transmission losses, capital cost and actual amount of interest and finance charges.

30. Key issues that have adversely affected the financial performance of HVPN are summarized below.

- **Interest on provident fund and pension bonds:** In 1998, as a part of financial restructuring and sector unbundling bonds to meet employee liabilities were transferred to HVPN. The interest on these bonds was not allowed by HERC to be recovered in the bulk supply tariff of HVPN. This was subsequently allowed in

---

73 HVPN was earlier entrusted with bulk trading business that was transferred to HPGCL from 2005-06 onwards, financial data of HVPN before FY 2005-06 includes income and expenditure from bulk trading business and transmission business. Therefore, the financials of the company are strictly not comparable over the past five-year period because of the change in business model of the company.
December 2006 through an order by the appellate tribunal\(^\text{74}\) amounting to compensation is Rs 3600 million ($73.1 million) to be recovered in 36 monthly installments (over the period FY09-11). The working capital borrowings of HVPN have been growing to address the cash flow resulting in high levels of interest payment as compared to that allowed in regulatory orders.

- **High levels of receivables for sale of power to discoms in the past**: HVPN continues to carry large amount of receivables due from sale of power to the discom (upto FY06). DHBVN paid most of its due payments in FY08, while Rs 2382 million is outstanding from UHBVN. In addition HVPN has Rs 1116 million outstanding payment from HPGCL for sale of power from IPGCL and BBMB (owned by HVPN). High receivables have been adversely affecting the liquidity position of the company.

- **Growing working capital requirement**: HERC allows two months of working capital cost in the tariff determination. As against this, HVPN has been raising large amount of short term loans to meet cash flow requirements. The working capital borrowing of HVPN was Rs 4520 million in FY08 as against Rs 1000 million allowed by HERC. Accordingly interest expenditure of Rs.70 million was allowed in tariff determination where as the total working capital interest paid by HVPN during the year was Rs. 430 million.

**Financial Projections for FY 2009-15**

31. The financial projections for HVPN during FY09-FY15 are based on prevailing regulatory principles. Key revenue and cost assumptions are listed below.

32. **Revenue assumptions**: The total revenues for HVPN will include revenues from,
- transmission business estimated based on the methodology adopted in the HERC tariff order for FY08,
- Generation business on account of sale of power from BBMB and IPGCL generating stations owned by HVPN. Generation from IPGCL plant is likely to be discontinued from FY11 after the planned decommissioning of the plant. Sale price of power from these plants is assumed to increase by 3% annually based on the average increase in cost as per the PPA with HPGCL.
- SLDC Business which is assumed to grow at around 4 % per annum,
- Revenues from other sources i.e. “non tariff income” which is primarily interest income from contingency reserve and other miscellaneous receipts and is assumed to increase by 10% per annum.
- Return on equity of 14% as per the Electricity Act 2003, is assumed for transmission business and 10% for SLDC.

33. **Cost Assumptions**: Various components of operating and financing costs are estimated as under:

---

\(^{74}\) HVPN in 2005 appealed against the HERC tariff orders to the Electricity Tribunal
• Cost of power generation from BBMB and IPGCL power stations is estimated to increase on account of 4% rise in Renovation and Modernization (R&M) expenditure, 2% increase in employee cost, administrative and general costs per annum.
• Intra-state transmission losses are assumed to be reduced from 2.6% in FY08 to steadily reach 2% in FY12, and be maintained thereafter.
• Employee cost for transmission and SLDC business includes the impact of the Sixth pay commission. In addition 3% per annum increase in basic pay per employee is assumed.
• Repairs and Maintenance (R&M) expenditure of 0.45% of gross fixed assets as per HERC order.
• Based on HERC order general and administrative expenses are estimated to increase at 5% per annum.
• Investment Program: During FY09-FY15, about 10,380 MWs of additional capacity is expected to be available to Haryana. HVPN therefore plans to invest Rs 80 billion during FY09-FY15 (of this Rs 71 billion is for the XI Plan period) to expand and strengthen the transformation capacity. The year wise investment as proposed by HVPN is presented in Table 9. Projects worth Rs. 6800 million ($151 million) and Rs. 11250 million ($250 million) are expected to be financed by JICA and World Bank, respectively. The remaining investments are expected to be funded in the ratio of 40:60 by NCRPB and PFC/REC. For new loans from various financial institutions like PFC, REC, NCRPB, JICA have been considered at the prevailing interest rates.

Table 10: Investment and Financing plan of HVPN

<table>
<thead>
<tr>
<th>(Rs in Million)</th>
<th>FY 09</th>
<th>FY 10</th>
<th>FY 11</th>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
<th>FY 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Financed by World Bank</td>
<td>918</td>
<td>3,321</td>
<td>4,598</td>
<td>2,413</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Project Financed by JICA</td>
<td>296</td>
<td>3,959</td>
<td>2,163</td>
<td>152</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Projects Financed by PFC/REC</td>
<td>4,126</td>
<td>7,356</td>
<td>2,798</td>
<td>7,747</td>
<td>1,457</td>
<td>1,057</td>
<td>1,110</td>
</tr>
<tr>
<td>Projects Financed by NCRPB</td>
<td>1,610</td>
<td>6,106</td>
<td>7,599</td>
<td>7,126</td>
<td>963</td>
<td>679</td>
<td>742</td>
</tr>
<tr>
<td>Equity</td>
<td>1,353</td>
<td>2,852</td>
<td>5,227</td>
<td>1,864</td>
<td>330</td>
<td>383</td>
<td>399</td>
</tr>
<tr>
<td>Total</td>
<td>8,704</td>
<td>22,730</td>
<td>22,365</td>
<td>19,301</td>
<td>2,738</td>
<td>2,119</td>
<td>2,221</td>
</tr>
</tbody>
</table>

34. Based on the assumptions stated above the financial projections for HVPN are shown in Table 11.
Table 11: Financial Projections for HVPN

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue from Supply / sale of power</td>
<td>2,029</td>
<td>2,249</td>
<td>2,057</td>
<td>2,086</td>
<td>1,378</td>
<td>1,394</td>
<td>1,410</td>
<td>1,426</td>
<td>1,443</td>
</tr>
<tr>
<td>Revenue from Wheeling of Power</td>
<td>3,597</td>
<td>6,440</td>
<td>5,454</td>
<td>10,655</td>
<td>9,114</td>
<td>12,612</td>
<td>14,716</td>
<td>16,034</td>
<td>16,118</td>
</tr>
<tr>
<td>Revenue from SLDC fees &amp; charges</td>
<td>-</td>
<td>-</td>
<td>78</td>
<td>119</td>
<td>123</td>
<td>128</td>
<td>134</td>
<td>139</td>
<td>146</td>
</tr>
<tr>
<td>Other Income</td>
<td>329</td>
<td>432</td>
<td>1,255</td>
<td>829</td>
<td>423</td>
<td>423</td>
<td>423</td>
<td>423</td>
<td>423</td>
</tr>
<tr>
<td>Total Revenue</td>
<td>5,954</td>
<td>9,122</td>
<td>8,843</td>
<td>13,689</td>
<td>11,038</td>
<td>14,557</td>
<td>16,683</td>
<td>18,023</td>
<td>18,130</td>
</tr>
<tr>
<td>Generation of Power</td>
<td>1,839</td>
<td>2,026</td>
<td>1,768</td>
<td>1,812</td>
<td>1,054</td>
<td>1,085</td>
<td>1,116</td>
<td>1,148</td>
<td>1,181</td>
</tr>
<tr>
<td>Purchase of Power</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Repair and Maintenance</td>
<td>91</td>
<td>98</td>
<td>130</td>
<td>150</td>
<td>296</td>
<td>394</td>
<td>456</td>
<td>475</td>
<td>486</td>
</tr>
<tr>
<td>Employees Cost</td>
<td>2,061</td>
<td>2,466</td>
<td>3,293</td>
<td>3,471</td>
<td>3,731</td>
<td>3,842</td>
<td>4,215</td>
<td>4,414</td>
<td>4,610</td>
</tr>
<tr>
<td>Administration and General Expenses</td>
<td>73</td>
<td>74</td>
<td>94</td>
<td>95</td>
<td>114</td>
<td>125</td>
<td>138</td>
<td>151</td>
<td>167</td>
</tr>
<tr>
<td>Other Expenses</td>
<td>2</td>
<td>363</td>
<td>134</td>
<td>107</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
</tr>
<tr>
<td>Total Expenses</td>
<td>4,067</td>
<td>5,027</td>
<td>5,419</td>
<td>5,634</td>
<td>5,329</td>
<td>5,579</td>
<td>5,735</td>
<td>5,990</td>
<td>6,248</td>
</tr>
<tr>
<td>PBDIT</td>
<td>1,887</td>
<td>4,095</td>
<td>3,424</td>
<td>8,055</td>
<td>5,709</td>
<td>9,787</td>
<td>10,948</td>
<td>12,033</td>
<td>11,883</td>
</tr>
<tr>
<td>Depreciation</td>
<td>493</td>
<td>537</td>
<td>522</td>
<td>755</td>
<td>1,174</td>
<td>1,692</td>
<td>2,102</td>
<td>2,311</td>
<td>2,386</td>
</tr>
<tr>
<td>Interest and finance charges</td>
<td>1,838</td>
<td>1,978</td>
<td>2,011</td>
<td>2,781</td>
<td>3,333</td>
<td>5,195</td>
<td>6,566</td>
<td>7,491</td>
<td>7,381</td>
</tr>
<tr>
<td>Tax</td>
<td>5</td>
<td>186</td>
<td>115</td>
<td>569</td>
<td>153</td>
<td>254</td>
<td>276</td>
<td>272</td>
<td>259</td>
</tr>
<tr>
<td>PAT</td>
<td>(139)</td>
<td>1,431</td>
<td>777</td>
<td>2,850</td>
<td>1,050</td>
<td>1,873</td>
<td>2,004</td>
<td>1,960</td>
<td>1,856</td>
</tr>
</tbody>
</table>

Sources of Funds

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical 2006-07</td>
<td>8,038</td>
<td>8,765</td>
<td>10,118</td>
<td>13,000</td>
</tr>
<tr>
<td>Historical 2007-08</td>
<td>10,118</td>
<td>10,090</td>
<td>20,420</td>
<td>21,202</td>
</tr>
<tr>
<td>Capital Reserve</td>
<td>18,226</td>
<td>20,090</td>
<td>20,420</td>
<td>21,202</td>
</tr>
<tr>
<td>Loan</td>
<td>18,226</td>
<td>20,090</td>
<td>20,420</td>
<td>21,202</td>
</tr>
<tr>
<td>Current Liabilities &amp; Provisions</td>
<td>18,226</td>
<td>20,090</td>
<td>20,420</td>
<td>21,202</td>
</tr>
</tbody>
</table>

Application of Funds

<table>
<thead>
<tr>
<th></th>
<th>Net Block</th>
<th>Capital Work In Progress</th>
<th>Investments</th>
<th>Current Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical 2006-07</td>
<td>14,130</td>
<td>16,137</td>
<td>13,331</td>
<td>7,777</td>
</tr>
<tr>
<td>Historical 2007-08</td>
<td>21,624</td>
<td>21,090</td>
<td>13,313</td>
<td>6,484</td>
</tr>
<tr>
<td>Capital Work In Progress</td>
<td>54,620</td>
<td>57,555</td>
<td>13,218</td>
<td>4,108</td>
</tr>
<tr>
<td>Investments</td>
<td>84,684</td>
<td>86,348</td>
<td>12,998</td>
<td>4,010</td>
</tr>
<tr>
<td>Current Assets</td>
<td>86,162</td>
<td>86,162</td>
<td>12,778</td>
<td>5,479</td>
</tr>
</tbody>
</table>

35. **Risks and sensitivity analysis** – As HVPN operates in a regulated sector its main business risk would be regulatory uncertainty and lack of predictability. While the regulator is mandated to encourage efficient costs, it is the responsibility of the utility to strengthen its capacity to demonstrate delivery of transmission service at efficient costs. In the past there have been several issues of disagreement between the regulator and HERC. Going forward it is critical that there is clarity, consistency and predictability in the regulatory regime. The ongoing TA support to HERC (funded by Ausaid IFGI) will provide good practice knowledge and strengthen the regulatory capacity. In parallel, institutional development support to HVPN will include advice on integrating “regulatory affairs” as a core function and strengthening regulatory capacity. A dedicated team responsible for “regulatory interface” will be set up with defined role, responsibility and accountability.

36. HVPN needs to proactively manage the risk of growing working capital borrowings to meet its cash-flow requirements. In this regard two important areas to focus are (i) coordinated “planning-financing-implementation” of investment projects to ensure adequate project financing and minimal cost-time overrun, and (ii) close monitoring of receivables. On the revenue front, the present peak demand based tariff structure poses a risk in case the demand is lower than anticipated due to an economic slowdown. A 5% reduction in peak demand is estimated to reduce the profits from Rs 28.5 billion in FY10 to Rs 23.2 billion.
B. DHBVN

37. DHBVN serves about 2 million consumers. Being a predominantly agrarian economy the share of electricity sales to agriculture consumers in Haryana is amongst the highest in any state in India. In FY08, 29% of the total electricity is estimated to be sold to agriculture consumers by DHBVN. Residential consumers account for second highest share of the total sales i.e. 20%, while the share of industries (large industries receiving power at HT level) has declined over the years to reach 28%. Meeting electricity demand at affordable rates and improving operational efficiency are the two main challenges for DHBVN. Over the years with rapid growth in the number of consumers and a connected load the distribution system has become overloaded and inadequate to provide quality supply.

38. The financial performance of DHBVN has deteriorated over the years. Following the decision of the state government in June 2008 to move from a single buyer model to a multi-buyer model, the distribution companies are now directly responsible for power procurement. This has resulted in increased challenge of managing cash flow for timely payment for power purchase, in an environment where cost recovery through tariffs has not been commensurate with the rising cost of power purchase and supply. DHBVN incurred a Rs 2814 million ($57.19 million) loss in FY08, which is estimated to increase to Rs 5613 million ($114.08) in FY09. Lower than expected revenue realization due to reduced sale to industries (initial signs of economic slowdown are beginning to emerge), higher sales to agriculture (there is lack of credible system of estimating sales to agriculture), increase in employee cost following pay commission revision during the year and interest on short term loans not recognized by the regulator are the main reasons for the high losses in FY09.

39. The main factors for the deteriorating financial performance of DHBVN are (i) inadequate tariff rationalization for cost recovery; tariffs have not been increased since 2001, though since 2007 increases in power purchase cost are being recovered through FSA; (ii) high cost of power procurement, specifically due to purchase of high cost short term power to partly meet power shortages – power purchase cost has increased steeply from Rs 2.04/kWh in FY05 to Rs 2.94/kWh in FY09, (iii) growing short term borrowing to meet cash flow requirements (iv) dis-allowance of certain expenditures by the regulator, uncovered financial gap in the regulatory order and lack of regulatory mechanism to true-up revenue and expenses at the end of the financial year.

40. DHBVN has been making concerted efforts to improve operational efficiency – collection efficiency has improved from 87% in FY05 to 97% in FY08, and aggregate technical and commercial losses have declined from 36.8% in FY05 to 25.5% in FY08. However these efficiency gains are not sufficient to offset the cost-revenue gap in the absence of tariff rationalization. In FY08, the average revenue was Rs 2.97/kWh as against the average cost of power supply of Rs 4.33/kWh. After receipt of subsidy of Rs

---

75 In FY09 the regulatory tariff order left a revenue gap of Rs 896 million for DHBVN which was directed by the commission to be covered through additional efficiency improvement and institutional loans as required.
8292 million from the government towards power supply to agriculture, the average revenue assessment was Rs 4.23/kWh still leaving a cost recovery gap. The prevailing tariffs remain significantly below cost particularly for agricultural and residential consumers, being driven primarily by socio-political considerations. The large industrial and commercial consumers pay higher than cost of supply and cross subsidize other categories.

Figure 1: Per unit Revenue and Cost of Supply

Financial Projections for FY 2009-15

41. The financial projections for HVPN during FY09-FY15 are based on regulatory principles and guidelines adopted by HERC. Key revenue and cost assumptions are listed below.

42. **Revenue Assumptions**

- Demand Projections – For electricity sales projection, the past growth in number of consumers, connected load and sales in various consumer categories is analyzed to arrive at compounded average growth rate for projection up-to FY2015. These sales projections are reflective of restricted demand given the prevailing energy shortages in the state.
- Power available for sale – Projection for power availability is based on capacity addition/ procurement plan of state owned generating company, and power purchase agreement with private developers. The sales projections are arrived at after accounting for planned transmission and distribution loss reduction. DHBVN has set a target of reducing AT&C losses to 15% by FY15.
- For revenue projections, under the base case scenario, average revenue assessment per unit for FY08 is assumed.
Table 12: Projection of Energy Available for Sale

<table>
<thead>
<tr>
<th>Particulars</th>
<th>FY 09</th>
<th>FY10</th>
<th>FY 11</th>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
<th>FY 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy Procured from out of state sources (MU)</td>
<td>14353</td>
<td>15508</td>
<td>15823</td>
<td>19689</td>
<td>29875</td>
<td>33051</td>
<td>42580</td>
</tr>
<tr>
<td>Inter state transmission loss %</td>
<td>3.85%</td>
<td>3.85%</td>
<td>3.85%</td>
<td>3.85%</td>
<td>3.85%</td>
<td>3.85%</td>
<td>3.85%</td>
</tr>
<tr>
<td>Net Energy available from out of state sources (MU)</td>
<td>13800</td>
<td>14911</td>
<td>15214</td>
<td>18931</td>
<td>28725</td>
<td>31779</td>
<td>40941</td>
</tr>
<tr>
<td>Add energy generated within the State (MU)</td>
<td>14263</td>
<td>15757</td>
<td>23075</td>
<td>23116</td>
<td>27539</td>
<td>31922</td>
<td>32744</td>
</tr>
<tr>
<td>Net Energy available for use in Haryana (MU)</td>
<td>28063</td>
<td>30668</td>
<td>38289</td>
<td>42047</td>
<td>56264</td>
<td>63701</td>
<td>73685</td>
</tr>
<tr>
<td>Intra - state transmission loss (%)</td>
<td>2.10%</td>
<td>2.10%</td>
<td>2.10%</td>
<td>2.10%</td>
<td>2.10%</td>
<td>2.10%</td>
<td>2.10%</td>
</tr>
<tr>
<td>Energy available for sale to two distribution licensee (MU)</td>
<td>27474</td>
<td>30024</td>
<td>37485</td>
<td>41164</td>
<td>55082</td>
<td>62363</td>
<td>72138</td>
</tr>
<tr>
<td>Energy available for sale to DHBVN (MU)</td>
<td>13737</td>
<td>15012</td>
<td>18743</td>
<td>20582</td>
<td>27541</td>
<td>31182</td>
<td>36069</td>
</tr>
<tr>
<td>Energy sales of DHBVN after distribution losses (MU)</td>
<td>10303</td>
<td>11259</td>
<td>14432</td>
<td>16260</td>
<td>22308</td>
<td>25881</td>
<td>30659</td>
</tr>
<tr>
<td>Restricted demand projections ( MU)</td>
<td>10326</td>
<td>12005</td>
<td>13388</td>
<td>15137</td>
<td>17167</td>
<td>19529</td>
<td>22285</td>
</tr>
<tr>
<td>Additional energy available to bridge the shortages (MU)</td>
<td></td>
<td>1044</td>
<td>1123</td>
<td>5141</td>
<td>6352</td>
<td>8373</td>
<td></td>
</tr>
</tbody>
</table>

43. Cost Assumptions

- Power purchase cost- This is estimated based on projected mix of power available from various sources and the power purchase cost estimates as per the PPAs signed so far. It is estimated that with the commissioning of new power generation capacity during the period FY11-FY15 the reliance on purchase of expensive short term will be reduced.
- Employee Cost - The projections account for impact of Sixth Pay Commission, increase in number of employees as per the restructuring plan of the company, and 3% per annum increase in the basic salary.
- Administrative and general expenses are estimated based on the historical trend, and R&M expenses as projected as a percentage of the gross fixed assets.
- Investment plan and financing: DHBVN plans to invest Rs.35,017 million ($711million) during the period FY09-FY15. Of this 80% of the capital expenditure is assumed to be financed by the long term loans from REC/other Indian financial institutions, the World Bank and under GoI’s APDRP program. GoH as in the past will continue to provide 20% financing as equity under the annual budget plan.

44. Projections indicate that DHBVN has substantial financial risk. The financial performance is likely to deteriorate further in FY10, due to increase in power procurement cost, no tariff increase, and expected slow-down in electricity demand from
industrial and commercial consumers due to broader economic slowdown. Financial performance is estimated to gradually improve from FY11 once additional power is available through new generation stations, and consequently reduced dependence on high cost short term power purchase. Financial gap (expenditure minus revenue from sale of power) is estimated to increase to 66% in FY10 and thereafter projected to decline to 29% in FY15.

45. To bridge the financial gap, a combination of measures and policy decisions will be required by the government and utilities including (i) tariff rationalization (ii) ability of the government to finance subsidy through the budget (iii) policy for power supply to agriculture, measurement and monitoring and (iv) improvement in operational efficiency and demand side management, specifically for subsided consumer categories. These measures will be facilitated through dialogue and technical assistance to the government, utility and the regulator during the project implementation period.

46. Power supply to agriculture and subsidies - Estimating power consumption by agriculture consumers remains a vexing issue as nearly two-thirds of consumption at tube wells is un-metered and estimated based on controversial consumption norms. Further, the lack of uniform approach for estimating sales to agriculture between discoms and the regulator is a key risk. The regulator’s estimates for sales to agriculture in FY07 was about 14% lower than the actual sales reported by the utilities, and therefore for these additional units the discoms have not received additional subsidy and have to bear the financial implications. Financial projection assumes the methodology adopted by the regulator to estimate subsidy for power supply to agriculture consumers. Accordingly the subsidy is estimated to increase from Rs 11 billion in FY10 (this is already budgeted by the state government) to Rs 25 billion in FY15. However, in the coming years economic slow-down may constrain affordability of such high quantum of subsidy to the power sector. Assuming a cap of 1.6% of GSDP (of which DHBVN has 40% share) as subsidy for the power sector, the projections present a need for tariff rationalization to cover the financial losses of DHBVN.

Table 13: Financial Projections - Business As Usual Case

<table>
<thead>
<tr>
<th>(Rs in billion)</th>
<th>FY 08</th>
<th>FY 09</th>
<th>FY 10</th>
<th>FY 11</th>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
<th>FY 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenue (without subsidy)</td>
<td>30.40</td>
<td>34.23</td>
<td>34.73</td>
<td>44.86</td>
<td>51.16</td>
<td>75.08</td>
<td>88.12</td>
<td>106.53</td>
</tr>
<tr>
<td>Total Expenditure</td>
<td>41.50</td>
<td>49.73</td>
<td>57.73</td>
<td>67.36</td>
<td>77.15</td>
<td>104.97</td>
<td>118.87</td>
<td>137.50</td>
</tr>
<tr>
<td>GAP (Revenue-Expenditure)</td>
<td>-11.11</td>
<td>-15.50</td>
<td>-23.00</td>
<td>-22.50</td>
<td>-25.99</td>
<td>-29.89</td>
<td>-30.74</td>
<td>-30.97</td>
</tr>
<tr>
<td>% of Gap to Total Revenue (without subsidy)</td>
<td>37%</td>
<td>45%</td>
<td>66%</td>
<td>50%</td>
<td>51%</td>
<td>40%</td>
<td>35%</td>
<td>29%</td>
</tr>
<tr>
<td>Case 1&lt;sup&gt;70&lt;/sup&gt;</td>
<td>8.29</td>
<td>9.89</td>
<td>11.08</td>
<td>12.97</td>
<td>14.40</td>
<td>15.98</td>
<td>17.74</td>
<td>19.69</td>
</tr>
</tbody>
</table>

<sup>70</sup> Case 1- If we assume that the government will cap the subsidy to 1.6% of GSDP and DHBVN receives around 40% of the subsidy received
<table>
<thead>
<tr>
<th>(Rs in billion)</th>
<th>FY 08</th>
<th>FY 09</th>
<th>FY 10</th>
<th>FY 11</th>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
<th>FY 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Gap to Total Revenue (with subsidy)</td>
<td>7%</td>
<td>13%</td>
<td>26%</td>
<td>16%</td>
<td>18%</td>
<td>15%</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td><strong>Case 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net Gap</td>
<td>-2.81</td>
<td>-5.61</td>
<td>-11.92</td>
<td>-3.56</td>
<td>-4.60</td>
<td>-6.42</td>
<td>-6.52</td>
<td>-6.06</td>
</tr>
<tr>
<td>% of Gap to Total Revenue (with subsidy)</td>
<td>7%</td>
<td>13%</td>
<td>26%</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
<td>6%</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Figure 2: DHBVN – Estimated Financial Gap and Subsidies**

47. **Sensitivity analysis:** Projections under following three policy scenarios is carried out to assess the financial impact for the DHBVN.

- Average 7% tariff increase in FY11 and FY14.
- Improved end-use energy efficiency and DSM measures in agriculture sector, resulting in reduction in sales to agriculture by 5% in FY10, 8% in FY11 and 10% upto FY 15.
- Reduction in investment plan by 15%

**Table 14: DHBVN Financial Projections under three policy scenarios**

<table>
<thead>
<tr>
<th>Expenditure-Revenue Gap as proportion of revenue (before subsidy) (%)</th>
<th>FY 09</th>
<th>FY 10</th>
<th>FY 11</th>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
<th>FY 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business as Usual</td>
<td>45%</td>
<td>66%</td>
<td>50%</td>
<td>51%</td>
<td>40%</td>
<td>35%</td>
<td>29%</td>
</tr>
<tr>
<td>S1 - 7% tariff increase in FY11 &amp; FY14</td>
<td>45%</td>
<td>66%</td>
<td>40%</td>
<td>41%</td>
<td>30%</td>
<td>17%</td>
<td>13%</td>
</tr>
<tr>
<td>S2- DSM and energy efficiency measures</td>
<td>45%</td>
<td>63%</td>
<td>46%</td>
<td>46%</td>
<td>36%</td>
<td>32%</td>
<td>27%</td>
</tr>
<tr>
<td>S3- 15% reduction in Investment plan</td>
<td>45%</td>
<td>66%</td>
<td>49%</td>
<td>50%</td>
<td>39%</td>
<td>34%</td>
<td>28%</td>
</tr>
</tbody>
</table>

---

77 Case 2- If we calculated the subsidy according to the approach followed by HERC.
Table 15: Financial losses after receipt of subsidy for agriculture consumers (as per HERC regulation)

<table>
<thead>
<tr>
<th>Financial losses</th>
<th>FY 09</th>
<th>FY 10</th>
<th>FY 11</th>
<th>FY 12</th>
<th>FY 13</th>
<th>FY 14</th>
<th>FY 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidy from GoH</td>
<td>9.89</td>
<td>11.08</td>
<td>18.93</td>
<td>21.39</td>
<td>23.47</td>
<td>24.22</td>
<td>24.92</td>
</tr>
<tr>
<td>Net Gap ( Base Case)</td>
<td>-5.61</td>
<td>-11.92</td>
<td>-3.56</td>
<td>-4.60</td>
<td>-6.42</td>
<td>-6.52</td>
<td>-6.06</td>
</tr>
<tr>
<td>Net Gap S1</td>
<td>-5.61</td>
<td>-11.92</td>
<td>-0.18</td>
<td>-0.78</td>
<td>-0.88</td>
<td>6.57</td>
<td>9.39</td>
</tr>
<tr>
<td>Net Gap S2</td>
<td>-5.61</td>
<td>-11.31</td>
<td>-2.13</td>
<td>-2.72</td>
<td>-4.45</td>
<td>-4.46</td>
<td>-3.91</td>
</tr>
<tr>
<td>Net Gap S3</td>
<td>-5.61</td>
<td>-11.89</td>
<td>-3.16</td>
<td>-3.99</td>
<td>-5.63</td>
<td>-5.64</td>
<td>-5.21</td>
</tr>
</tbody>
</table>

48. Tariff rationalization assuming modest 7% tariff increase in FY11 and in FY14 is likely to bring significant benefits to improve the financial viability of the distribution company. Projections also indicate that improvement in end use efficiency and demand side measures can bring modest improvement in the financial performance. These policy decisions would reduce the subsidy burden on state government, which is particularly important in the unfolding environment of economic slow-down.

Risk Factors

49. The political economy of power sector reforms imposes significant risk on the financial performance of DHBVN. While there is much wider acceptance of power sector reforms by the political parties, the implementation is often constrained by the ground realities of managing the populist demands. The expectation of financial turnaround over medium term must be moderated and success will critically depend on ability of key stakeholders to mitigate the some key risks as presented below

- Regulatory Risk - Lack of harmonization of actual expenditure and the norms set by the regulator affect the financial position of the company. There is a need to set up truing mechanism. The mechanism for fuel surcharge adjustment has been in place but the process of submission of application for FSA and its review needs to be streamlined. In technical assistance support to HERC and the Discom in the areas of regulatory issues are aimed to strengthen regulatory environment and minimize the risk.
- Inadequate tariff –Political risks around willingness of government to allow tariff rationalization, would push DHBVN into deeper financial crisis. Decline in creditworthiness would make it difficult for the company to raise resources, meet its operational costs and ultimately result in deterioration in service delivery overtime. Affordable tariff adjustments along with efficiency improvement will be critical for the distribution companies to manage its business in the coming years.
- Power supply to agriculture and subsidies- The high proportion of sales to agriculture consumers and low levels of tariff would adversely affect the financial position of DHBVN. Further, the lack of uniform approach for estimating sales to agriculture between discom and the regulator is a key risk. HERC’s estimates for sales to agriculture in FY07 was about 14% lower than the actual sales reported...
by the utilities, and therefore for these additional amount of sale the discom have
not received additional subsidy and have to bear the financial implications.
Technical assistance for credible estimation of sale to agriculture consumers
supported by the Bank under this project is expected to minimize this potential
risk.

- Availability of power – Delay in generation expansion plan and resultant
procurement of expansive short term power is likely to adversely affect the
financial performance of DHBVN. Close monitoring of generation expansion plan
will be undertaken by the state government and the Bank during project
supervision to minimize the potential risk of delays.

Table 16: Financial Projections for DHBVN

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Historical Estimate</th>
<th>Projections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FY 08</td>
<td>FY 09</td>
</tr>
<tr>
<td>Cross Revenue from Sale of Power</td>
<td>23904</td>
<td>33699</td>
</tr>
<tr>
<td>Revenue Subsidies &amp; Grants</td>
<td>8292</td>
<td>9890</td>
</tr>
<tr>
<td>Other Income</td>
<td>494</td>
<td>529</td>
</tr>
<tr>
<td>Total Revenue</td>
<td>36506</td>
<td>44118</td>
</tr>
<tr>
<td>Purchase of Power</td>
<td>3641</td>
<td>41444</td>
</tr>
<tr>
<td>Repair and Maintenance</td>
<td>350</td>
<td>444</td>
</tr>
<tr>
<td>Employees Cost</td>
<td>2450</td>
<td>3643</td>
</tr>
<tr>
<td>Administration and General Expenses</td>
<td>446</td>
<td>492</td>
</tr>
<tr>
<td>Depreciation</td>
<td>887</td>
<td>1022</td>
</tr>
<tr>
<td>Total Interest and finance charges</td>
<td>1161</td>
<td>2174</td>
</tr>
<tr>
<td>Total Expenditure</td>
<td>41504</td>
<td>49730</td>
</tr>
<tr>
<td>Profit/Loss</td>
<td>-2814</td>
<td>-5613</td>
</tr>
</tbody>
</table>

SOURCES OF FUNDS

| Share Capital                     | 8064 | 9471 | 10641 | 11811 | 12981 | 13731 | 14361 | 14981 |
| Capital Reserve                   | 4404 | 5064 | 6236 | 6264 | 7443 | 7416 | 7469 | 7457 |
| Contingency Reserve               | 302 | 302 | 302 | 302 | 302 | 302 | 302 | 302 |
| Loan                              | 13460 | 27209 | 41699 | 47578 | 52362 | 57946 | 62792 | 78436 |
| Consumer Security Deposits        | 3944 | 4543 | 5351 | 6056 | 6981 | 8049 | 9279 | 10695 |

APPLICATION OF FUNDS

| Net Block                         | 11917 | 17981 | 22366 | 25684 | 36562 | 30023 | 29707 | 28653 |
| Capital Work in Progress          | 3651 | 3630 | 3611 | 2996 | 3007 | 2098 | 1553 | 1590 |
| Deposit with Commercial Bank      | 234 | 298 | 298 | 298 | 298 | 298 | 298 | 298 |
| Current Assets                    | 4216 | 9110 | 8536 | 9156 | 9753 | 10236 | 11304 | 23984 |

III. Fiscal Sustainability Analysis

50. The recurring losses of the power sector are financed by borrowing at domestic
market rates, continuously raising the cost of supply, as interest costs get accumulated
and enter the calculation of tariff in subsequent years. Rising costs imply rising subsidy
and/or higher tariffs over time. It is therefore useful to examine the trend in what is
called a Consolidated Revenue Balance (CRB), defined as the Revenue Balance of the
state government and power utilities combined.

51. There are two possible definitions of the CRB. If only the profit/loss of the power
sector is consolidated with the state’s Revenue Balance on budget, then we get CRB-1.
This is the first level of consolidation. In the format used by the Indian Ministry of

---

78 A fiscal sustainability analysis of Haryana was carried out by the PREM team of the World Bank. In this
section, only the impact on power sector finances is presented.
Finance, Department of Expenditure, for monitoring states’ fiscal health, a further consolidation is done, of debt and debt servicing liabilities of the power utilities, to define CRB-2. In the case of Haryana, the power utilities borrow from the domestic market without seeking any state guarantee. Hence it is questionable whether such borrowing ought to be treated as contingent liability of the state and hence part of ‘quasi-fiscal deficit’. The consolidated current account balance has improved significantly, irrespective of which definition is used, and has been positive for three successive years until FY08. The level of power sector losses has been almost brought to zero by FY08.

52. The finances of GoH are among the strongest among Indian states, with aggregate fiscal ratios well within comfort zone. The project would help improve the power sector’s financial position, by supporting critical investments in transmission and distribution that would lower unit cost and could enhance unit collection. By contributing to the overall improvement in the sector’s finances, the project would help improve the consolidated fiscal balance of the state and power sector combined.
Annex 10: Safeguard Policy Issues

INDIA: Haryana Power System Improvement

1. Haryana is one of India’s largest producers of food grains and in 2005 its forest area was less than 4% most of which is in the south-eastern and north-eastern parts. Its proximity to Delhi has also resulted in development of manufacturing facilities and corporate headquarters of many service industry companies. In this context, there are few recognized environmentally sensitive receptors in the state. A portion of southern Haryana (Gurgaon district) is recognized as eco-sensitive by the Ministry of Environment and Forests (MoEF), GoI. In addition, there are several sanctuaries and 2 national parks in the state. Given the large geographical spread and assumption that some of the project transmission lines may pass through forest areas, some Sub-stations/transmission/distribution may fall in the eco-sensitive zone, the project has been assigned category-A.

2. The implementing entities have developed and adopted systematic guidelines for managing environmental and social aspects in all stages of the project cycle through their in-house teams, underlining a high degree of ownership of the process and products. They have used as benchmark well-recognized ESPP of Powergrid for developing their own ESPPs to fit the needs of Haryana. The provisions of the ESPP would be applicable to all their sub-projects irrespective of the source of funding.

3. The ESPP provides a framework for identification, assessment and management of environmental and social concerns at both organizational as well as project levels. ESPP has been formulated by all the Companies as a dynamic document which will continue to evolve, reflecting the new opportunities to enhance the effectiveness of environmental and social management and is applicable for all projects, irrespective of financing source.

4. The policy statement recognizes the need to address concerns related to social, environment and safety aspects of their activities. It commits the organizations to “identify, assess, and manage environmental and social concerns at both organization and project levels by strictly following the basic principles of avoidance, minimization and mitigation of environmental and social impacts with the improvement of Management Systems and introduction of State of the Art and proven technologies.” ESPP assures the entities’ commitment to transparency, corporate responsibility towards employees, consumers and civil society as well as minimization of impact on environment and social through conscious economizing on land requirement. The documents also state their aspiration to graduate to ISO 9001, ISO 14000, and OHSAS 18000 standards.

Environmental management

5. Key Principles of the ESPP on Environment are:
• Avoid carrying out operations in environmentally sensitive areas such as forests, national park, and biosphere reserves
• Consider environmental implications of location, terrain, and sensitive areas in impact identification and mitigate these with innovative/practical engineering solutions; through appropriate EMP and/or SIP.
• Application of efficient and safe technology practices
• Abate pollution in all its activities and operations
• Minimizing energy losses and promote energy efficiency in all activities

6. Key Environmental Issues addressed in the ESPP are:

• Removal of Trees within Right of Way:
  Minimum cutting of trees is done within right of way. Clearance from the forest department is invariably taken.
• Clearing of Ground vegetation for movement of Machinery:
  Due care is taken in movement of machinery so that minimum damage is done to ground vegetation. Due compensation is given for any such minimum damage also.
• Clearing of Ground vegetation for sub-stations:
  Due care is taken in movement of machinery so that minimum damage is done to ground vegetation. Due compensation is given for any such minimum damage also. In addition efforts are always made to procure barren land and not fit for agriculture.
• Used transformer oil:
  The used transformer oil is disposed off with utmost care as per prescribed norms so that no pollution or environmental effect is left unattended.
• Disposal of used batteries and capacitor bank:
  The used battery and capacitors banks are disposed off (auctioned) as per the prevalent rules. The same are auctioned only to those firms who hold valid license from the concerned department/ regulatory body.
• Potential for Water harvesting:
  As Haryana is ground-water stressed in most parts, ESPP specifies consideration and incorporation wherever feasible of rainwater harvesting structures. The civil works contracts include provisions for these items.

7. The power transformers containing Printed Circuit Boards (PCB) have been phased out and no power equipment with PCBs are in use.

Environmental management for transmission routes

8. To avoid or minimize the impacts while identifying the transmission system, a preliminary route selection will be done by HVPN using tools such as the Forest Atlas, village cadastral maps and Survey of India maps. After field verification, finalization of route alignment will be done. The guiding principle behind this is avoidance of human displacement and involvement of bare minimum forest. Only when absolutely unavoidable, HVPN consider minimum routing through forest and other lands (both
private and public) on which the local population is dependent. HVPN will use modern techniques/tools like GIS, GPS to optimize route alignment.

9. HVPN endeavors to avoid orchards, plantations, and forests in line routing through studies of alternative routes. HVPN takes into consideration the following points while routing its transmission lines:

   - The route does not involve any human habitation
   - The route does not affect any monument of cultural or historical importance;
   - The proposed route does not threaten the survival of any community, especially tribal communities;
   - The proposed route does not affect any public utility services like playgrounds, school and other establishments, etc.
   - The line route does not pass through any sanctuaries, National park, or similar ecologically fragile areas, etc

10. After the finalization of route, HVPN carries out a baseline environmental survey. Rationale for selecting choice of a particular alternative is presented. Following approval of the transmission works, detailed surveys would be carried out by the field staff and accordingly the EMP and RAP of sub projects would be prepared. Simultaneously the design and finalization of the specifications would be finalized. The relevant portions of the EMP, such as quantities and specifications for water harvesting structures, are made part of the bid document. Thereafter, the process of award of contract would be initiated and work would be executed under the supervision of respective field offices or consultants hired to assist the companies.

Environmental management for sub-stations

11. HVPN considers various sites for sub-stations. On the basis of data for various parameters considered during selection process, a comprehensive analysis for each alternative site will be carried out. Due consideration is given to availability of infrastructure facilities such as access roads, railheads etc. type of land viz. government, revenue, private, agriculture, environment such as trees to be cut, and social impacts such as number of families affected as well as cost of compensation and rehabilitation. Water harvesting structures have been incorporated in the works contracts for all sub-stations wherever feasible.

Land Acquisition, displacement and management of social issues

12. Physical displacement of people, in general, is not a major consequence of T&D projects given its inherent flexibility in routing and location of sub stations. Except for sub stations, land is not acquired for towers. Irrespective of whether displacement occurs, the ESPP will be a base for the mitigation and management of social issues. The mitigation provisions include the principle of ‘Benefit Sharing’. The key principles on social policy (HVPN and DHBVN) are:
• Involuntary resettlement will be avoided or minimized by exploring all viable alternative project designs.
• Avoid any disruption of socially sensitive areas with regard to human habitation and areas of cultural significance;
• Wherever losses are suffered, assistance will be provided to the affected persons to improve or at least regain their living standards;
• Consultations will be held among local population regarding finalization of proposed route of the transmission lines and sub-stations;
• Ensure in delivering resettlement and rehabilitation (R&R) entitlements and compensation for lost assets based on the entitlement framework.
• All adversely affected persons including those without title to land will be provided assistance to improve or regain their living standards to the pre project levels.
• Special attention will be paid for the improvement of living standards of marginalized and vulnerable groups.
• RAP will be prepared in close consultation with the affected families to ensure their acceptability as well as timely delivery of entitlements and assistance.
• If any person’s remaining land holding becomes operationally non viable, the entire holding will be acquired and compensated accordingly, if the Affected Family (AF) desires. A similar approach will be adopted for structures affected partially.
• Physical works will not commence on any portion of land before compensation and assistance to the affected population have been provided in accordance with the policy framework.

Impacts and entitlements

• Loss of land (Homestead/agriculture land): Besides compensation following the LA Act, the land owners will be paid annuity for 33 years over and above the usual land compensation and this will be increased by a fixed sum every year. Registration charges for purchase of alternate land will be paid.
• Loss of structure (title and non-titleholders): The affected titleholders will receive one-time financial assistance for shifting of family, building material, belongings and cattle etc besides compensation as per Haryana Public Works Department (PWD) schedule rates. The affected will be allowed to carry the salvage material.
• Loss of standing crops/ trees: Compensation will be paid for the loss of crop/tree during construction and operation and maintenance
• Loss of livelihood: All adult earning members will be assisted for inclusion in various State Government schemes for self employment.
• Assistance to Vulnerable Persons: The vulnerable (people below poverty level, widow, physically handicap and SC/ ST) will be assisted with one time additional assistance amount over and above other entitlements.
• Loss of access to Common Property Resources (CPR) and facilities: The CPRs will be replaced to ensure equivalent community resources and amenities or provisions of functional equivalence
• **Tenants, lease holders:** Reimbursement for unexpired tenancy/share cropping/lease period and this amount will be deducted from the compensation payable to land owners.

**Operation and maintenance**

13. HVPN continuously monitors the transmission lines and sub-stations. The lines are patrolled regularly to identify any defects in the components. Monitoring of the line is carried out by the respective HVPN field offices.

**Project Review**

14. The HVPN headquarters monitor construction, technical, environmental and social components of the power transmission projects. Apart from this, monthly review meetings are conducted at the district level. The social components of the project are reviewed annually by the Environment and Social Management Unit (ESMU) of HVPN. As part of the SIP, three key indicators of environmental management progress will be monitored for each sub-project: i) Cumulative Forest impacted, ii) No. of trees planted, and iii) Water harvesting potential created.

**Institutional Arrangements**

15. A three tier structure is being envisaged under the project. Environmental and R&R Committee at headquarters, Environment and Social Monitoring Committee (ESMC) at the zonal level, and Environment and Social Implementation Unit (ESIU) have been constituted at the sub-project level would ensure that the environmental and social aspects are duly considered and incorporated at each stage. Training and development of employees on Social and Environmental management is integral to implementation of ESPP. HVPN has engaged a consultant firm to assist the preparation of EMPs and RAPs for the first batch of schemes and also mandated them to prepare modules for internal staff training based on their experience in the field. Initially, training would be imparted in-house to new engineers to be recruited by HVPN and staff to be deployed for the proposed project implementation teams through specialist faculty and reputed agencies/organizations so as to enable them to understand the ESPP document. Thereafter, the training would be imparted at the HPTI, the in-house training institute of the HVPN on regular basis with a special module on ESPP.

16. The total cost of Environment and R&R (ER&R) – including cost of compensation, relocation and rehabilitation, social assessment, planning, implementation, supervision monitoring and evaluation – shall be included as the integral part of project cost to ensure so that provision for adequate funds is to take up the ER&R activity as per provisions of the policy.
Public Consultation and Awareness

17. As part of the ESPP development and finalization process, consultation with public at large was ensured. In order to systematically address any environmental impacts that may be caused, each of the three participating companies – HVPN and DHBVN have prepared and adopted ESPP tailored to their own needs after state-level stakeholder consultations.

18. A two pronged strategy was followed to ensure that all stakeholders could contribute to the process and improvement of an early draft. Copies of the Executive Summary of the document were available in English and Hindi, free of cost, at circle headquarters and full documents were available for a fee. The draft was also hosted on each entity’s website. Both these were widely publicized through advertisements in the local language and English newspapers. Comments were received at the offices, over email, and in a public meeting organized to elicit public response. These have been duly considered and addressed in the ESPP by each entity.

19. The entities have reaffirmed their commitment towards public awareness of possible social and environmental impacts, however minor these may be. As a first step, as per Section 29 of Electricity (Supply) Act-1948, public notification of the projects is published in local newspaper to invite objections from Public within two months. During preparation of the individual EMPs, interface with the potentially affected people has been maintained with on-site consultations providing an effective means for exchange of views and information. This will be continued during the project implementation stage in line with provisions of the ESPP.

RAPs

20. The review of RAPs on land availability for 15 sub-stations presented in the first eight packages (G1 to G8) indicates no private land acquisition. Three of the proposed sub stations will be located in the existing sub-station sites and the remaining 12 will be located in government (panchayat) land. These lands are not in use for any common community purposes and have no encroachments. All village panchayats have adopted the resolutions transferring the land for Substation purposes. However the legal transfer process has yet to be initiated in the name of the HVPN. HVPN will instruct all the field offices to initiate the transfer process immediately and obtain the possession certificate from the panchayat before the awarding the contract. The community consultations demonstrate the local support the proposed schemes. RAPs for the remaining schemes will also be prepared.

21. Conditional Panchayat Resolutions: Most of the panchayats have given conditional transfer of the land for sub-stations. It was found in some cases conditions like (i) providing employment opportunities; (ii) 24 hours power supply, were mentioned. The corporate office will guide the field offices on the content of the resolution acceptable to both the HVPN and the village panchayat.
EMPs

22. The EMPs are also prepared for the first eight schemes G1 to G8. Scheme level interventions identified to be implemented as part of impact assessment have been included in the EMP with suitable budget estimate. EMPs on similar lines shall be prepared for the remaining schemes.
## Annex 11: Project Preparation and Supervision

**INDIA: Haryana Power System Improvement**

<table>
<thead>
<tr>
<th>Event</th>
<th>Planned</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCN review</td>
<td>7.7.2008</td>
<td>29 May, 2008</td>
</tr>
<tr>
<td>Initial PID to PIC</td>
<td>22.5.2008</td>
<td>23 September, 2008</td>
</tr>
<tr>
<td>Initial ISDS to PIC</td>
<td>22.5.2008</td>
<td>23 September, 2008</td>
</tr>
<tr>
<td>Appraisal</td>
<td>23.2.2009</td>
<td>27 April, 2009</td>
</tr>
<tr>
<td>Board/RVP approval</td>
<td>6.8.2009</td>
<td></td>
</tr>
<tr>
<td>Planned date of effectiveness</td>
<td>15.9.2009</td>
<td></td>
</tr>
<tr>
<td>Planned date of mid-term review</td>
<td>15.11.2011</td>
<td></td>
</tr>
<tr>
<td>Planned closing date</td>
<td>31.7.2014</td>
<td></td>
</tr>
</tbody>
</table>

Bank staff and consultants who worked on the project included:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashish Khanna</td>
<td>Senior Energy Specialist &amp; Task Team Leader</td>
<td>SASDE</td>
</tr>
<tr>
<td>Kwawu Gaba</td>
<td>Lead Energy Specialist</td>
<td>SASDE</td>
</tr>
<tr>
<td>VJ Ravishankar</td>
<td>Lead Economist</td>
<td>SASGP</td>
</tr>
<tr>
<td>Debabrata Chakraborti</td>
<td>Senior Procurement Specialist</td>
<td>SARPS</td>
</tr>
<tr>
<td>Manoj Jain</td>
<td>Senior Financial Management Specialist</td>
<td>SARRM</td>
</tr>
<tr>
<td>Bhavna Bhatia</td>
<td>Regional Program Leader</td>
<td>PPIAF</td>
</tr>
<tr>
<td>Sudeshna Banerjee</td>
<td>Economist &amp; Task Team Leader</td>
<td>SASDE</td>
</tr>
<tr>
<td>Mani Khurana</td>
<td>Operations Analyst</td>
<td>SASDE</td>
</tr>
<tr>
<td>Gaurav Banerjee</td>
<td>Environment Specialist</td>
<td>SASDI</td>
</tr>
<tr>
<td>Pyush Dogra</td>
<td>Environment Specialist</td>
<td>SASDI</td>
</tr>
<tr>
<td>Sudip Mozumdar</td>
<td>Senior Communications Officer</td>
<td>SAREX</td>
</tr>
<tr>
<td>Pedro Antmann</td>
<td>Senior Energy Specialist</td>
<td>ETWEN</td>
</tr>
<tr>
<td>Yash Gupta</td>
<td>Extended Term Consultant – Procurement</td>
<td>SARPS</td>
</tr>
<tr>
<td>Venkata Rao Bayana</td>
<td>Extended Term Consultant – Social</td>
<td>SASDI</td>
</tr>
<tr>
<td>Gulgoren Ayse Cansiz</td>
<td>Extended Term Consultant – Technical</td>
<td>SASDE</td>
</tr>
<tr>
<td>Ramola Bhuyan</td>
<td>Extended Term Consultant – Financial Management</td>
<td>SARFM</td>
</tr>
<tr>
<td>J.L. Bajaj</td>
<td>Consultant – Regulation</td>
<td>SASDE</td>
</tr>
<tr>
<td>Saurabh Yadav</td>
<td>Consultant- Energy Efficiency</td>
<td>SASDE</td>
</tr>
<tr>
<td>Priya Barua</td>
<td>Consultant- Energy Efficiency</td>
<td>SASDE</td>
</tr>
<tr>
<td>Minerva S. Espinosa Apurada</td>
<td>Program Assistant</td>
<td>SASDO</td>
</tr>
<tr>
<td>Neelima Kapur</td>
<td>Program Assistant</td>
<td>SASDO</td>
</tr>
<tr>
<td>Shaukma Javed</td>
<td>Program Assistant</td>
<td>SASDO</td>
</tr>
</tbody>
</table>

Bank funds expended to date on project preparation:
1. Bank resources: $218,648
2. Trust funds: $125,000
3. Total: $343,648

Estimated Approval and Supervision costs:
1. Remaining costs to approval: $50,000
2. Estimated average annual supervision cost: $151,000
Annex 12: Documents in the Project File

INDIA: Haryana Power System Improvement

I. Project Concept Note
II. Project Information Document
III. Risk Identification Worksheet
IV. Governance and Accountability Action Plan
V. Operations Manual for HVPN & DHBVN
VI. Detailed Project Report (DPR), Scheme Implementation Plan (SIP)
   a. DHBVN: DPR for Dadri, Gurgaon and Faridabad
   b. HVPN: SIP for Package 1 & 2
VII. Diagnostic Reports and Vision Workshop Presentations
   a. HVPN
      i. Interim Report
      ii. Vision Workshop Output
   b. DHBVN
      i. Energy Auditing and Load Management Report
      ii. Vision Workshop Output
   c. UHBVN
      i. Energy Audit As Is and To Be Study
      ii. Load Management As Is and To Be Study
      iii. Organisational Review
      iv. Vision Workshop Output
VIII. Economic and Financial Analysis
   a. Project Economic Analysis Model
   b. Project Financial Analysis Model
   c. Financial Projections- HVPN & DHBVN
IX. Environment and Social Safeguards
   a. Integrated Safeguards Data Sheet
   b. ESPP for HVPN, DHBVN & UHBVN
X. Procurement and Financial Management
   a. Procurement Plan for HVPN & DHBVN
   b. CGFA plan for HVPN & DHBVN
## Annex 13: Statement of Loans and Credits

### INDIA: Haryana Power System Improvement

<table>
<thead>
<tr>
<th>Project ID</th>
<th>FY</th>
<th>Purpose</th>
<th>Original Amount in US$ Millions</th>
<th>Difference between expected and actual disbursements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>IBRD IDA SF GEF Cancel. Undisb. Orig. Frm. Rev’d</td>
<td></td>
</tr>
<tr>
<td>P093478</td>
<td>2009</td>
<td>Orissa Rural Livelihoods Project</td>
<td>0.00 82.40 0.00 0.00 0.00 81.99 0.00 0.00 0.00</td>
<td></td>
</tr>
<tr>
<td>P094360</td>
<td>2009</td>
<td>National VBD Control&amp;Polio Eradication</td>
<td>0.00 521.00 0.00 0.00 0.00 518.38 0.00 0.00 0.00</td>
<td></td>
</tr>
<tr>
<td>P096023</td>
<td>2009</td>
<td>Orissa State Roads</td>
<td>250.00 0.00 0.00 0.00 0.00 250.00 0.00 0.00 0.00</td>
<td></td>
</tr>
<tr>
<td>P100735</td>
<td>2009</td>
<td>Orissa Community Tank Management Project</td>
<td>56.00 56.00 0.00 0.00 0.00 109.69 0.00 0.00 0.00</td>
<td></td>
</tr>
<tr>
<td>P095114</td>
<td>2008</td>
<td>Rampur Hydropower Project</td>
<td>400.00 0.00 0.00 0.00 0.00 337.96 -11.04 0.00</td>
<td></td>
</tr>
<tr>
<td>P101653</td>
<td>2008</td>
<td>Power System Development Project IV</td>
<td>1,000.00 0.00 0.00 0.00 0.00 852.03 62.03 0.00</td>
<td></td>
</tr>
<tr>
<td>P102547</td>
<td>2008</td>
<td>Elementary Education (SSA II)</td>
<td>0.00 600.00 0.00 0.00 0.00 354.45 -113.37 0.00</td>
<td></td>
</tr>
<tr>
<td>P102737</td>
<td>2008</td>
<td>Bihar DPL</td>
<td>150.00 75.00 0.00 0.00 0.00 112.02 111.10 0.00</td>
<td></td>
</tr>
<tr>
<td>P105124</td>
<td>2008</td>
<td>HP DPL I</td>
<td>135.00 65.00 0.00 0.00 0.00 100.90 0.00 0.00 0.00</td>
<td></td>
</tr>
<tr>
<td>P090585</td>
<td>2007</td>
<td>Punjab State Roads Project</td>
<td>250.00 0.00 0.00 0.00 0.00 161.71 -18.89 0.00</td>
<td></td>
</tr>
<tr>
<td>P090592</td>
<td>2007</td>
<td>Punjab Rural Water Supply &amp; Sanitation</td>
<td>0.00 154.00 0.00 0.00 0.00 138.03 65.89 0.00 0.00</td>
<td></td>
</tr>
<tr>
<td>P083187</td>
<td>2007</td>
<td>Uttarakhal RWSS</td>
<td>0.00 120.00 0.00 0.00 0.00 120.90 32.52 0.00</td>
<td></td>
</tr>
<tr>
<td>P090768</td>
<td>2007</td>
<td>Bihar Rural Livelihoods Project</td>
<td>0.00 63.00 0.00 0.00 0.00 57.49 111.10 0.00</td>
<td></td>
</tr>
<tr>
<td>P096019</td>
<td>2007</td>
<td>TN IAM WARM</td>
<td>335.00 150.00 0.00 0.00 0.00 243.16 66.80 0.00</td>
<td></td>
</tr>
<tr>
<td>P078539</td>
<td>2007</td>
<td>TBII</td>
<td>0.00 170.00 0.00 0.00 0.00 114.54 -25.12 0.00</td>
<td></td>
</tr>
<tr>
<td>P090619</td>
<td>2007</td>
<td>HP State Roads Project</td>
<td>220.00 0.00 0.00 0.00 0.00 195.63 111.10 0.00</td>
<td></td>
</tr>
<tr>
<td>P090947</td>
<td>2007</td>
<td>Vocational Training India</td>
<td>0.00 280.00 0.00 0.00 0.00 228.48 -18.25 0.00</td>
<td></td>
</tr>
<tr>
<td>P100789</td>
<td>2007</td>
<td>AP Community Tank Management Project</td>
<td>94.50 94.50 0.00 0.00 0.00 178.87 7.87 0.00</td>
<td></td>
</tr>
<tr>
<td>P102768</td>
<td>2007</td>
<td>Stren India's Rural Credit Coops</td>
<td>300.00 300.00 0.00 0.00 0.00 549.18 240.00 0.00</td>
<td></td>
</tr>
<tr>
<td>P078538</td>
<td>2007</td>
<td>Third National HIV/AIDS Control Project</td>
<td>0.00 250.00 0.00 0.00 0.00 201.47 66.73 0.00</td>
<td></td>
</tr>
<tr>
<td>P071160</td>
<td>2007</td>
<td>Karnataka Health Systems</td>
<td>0.00 141.83 0.00 0.00 0.00 92.83 -49.57 0.00</td>
<td></td>
</tr>
<tr>
<td>P075060</td>
<td>2007</td>
<td>RCH II</td>
<td>0.00 360.00 0.00 0.00 0.00 219.64 17.00 0.00</td>
<td></td>
</tr>
<tr>
<td>P075174</td>
<td>2007</td>
<td>AP DPL III</td>
<td>150.00 75.00 0.00 0.00 0.00 76.02 -77.33 0.00</td>
<td></td>
</tr>
<tr>
<td>P093720</td>
<td>2006</td>
<td>Mid-Himalayan (HP) Watersheds</td>
<td>0.00 60.00 0.00 0.00 0.00 38.70 2.15 0.00</td>
<td></td>
</tr>
<tr>
<td>P092735</td>
<td>2006</td>
<td>NAIP</td>
<td>0.00 200.00 0.00 0.00 0.00 179.79 42.15 0.00</td>
<td></td>
</tr>
<tr>
<td>P086414</td>
<td>2006</td>
<td>Power System Development Project III</td>
<td>400.00 0.00 0.00 0.00 0.00 46.10 -163.90 0.00</td>
<td></td>
</tr>
<tr>
<td>P083780</td>
<td>2006</td>
<td>TN Urban III</td>
<td>300.00 0.00 0.00 0.00 0.00 209.49 85.24 0.00</td>
<td></td>
</tr>
<tr>
<td>P078832</td>
<td>2006</td>
<td>Karnataka Panchayats Strengthening Proj</td>
<td>0.00 120.00 0.00 0.00 0.00 79.42 -37.68 0.00</td>
<td></td>
</tr>
<tr>
<td>P079675</td>
<td>2006</td>
<td>Karn Municipal Reform</td>
<td>216.00 0.00 0.00 0.00 0.00 176.57 45.57 0.00</td>
<td></td>
</tr>
<tr>
<td>P079708</td>
<td>2006</td>
<td>TN Empwr &amp; Pov Reduction</td>
<td>0.00 120.00 0.00 0.00 0.00 96.54 22.87 0.00</td>
<td></td>
</tr>
<tr>
<td>P077977</td>
<td>2005</td>
<td>Rural Roads Project</td>
<td>99.50 300.00 0.00 0.00 0.00 139.39 50.72 0.00</td>
<td></td>
</tr>
<tr>
<td>P073370</td>
<td>2005</td>
<td>Madhya Pradesh Water Sector Restructurin</td>
<td>394.02 0.00 0.00 0.00 0.00 322.39 72.58 0.00</td>
<td></td>
</tr>
<tr>
<td>P094513</td>
<td>2005</td>
<td>India Tsunami ERC</td>
<td>0.00 465.00 0.00 0.00 0.00 383.27 89.60 0.00</td>
<td></td>
</tr>
<tr>
<td>P073651</td>
<td>2005</td>
<td>DISEASE SURVEILLANCE</td>
<td>0.00 68.00 0.00 0.00 0.00 52.21 39.19 0.00</td>
<td></td>
</tr>
<tr>
<td>P075058</td>
<td>2005</td>
<td>TN HEALTH SYSTEMS</td>
<td>0.00 110.83 0.00 0.00 0.00 20.06 57.11 33.22</td>
<td></td>
</tr>
<tr>
<td>P084632</td>
<td>2005</td>
<td>Hydrology II</td>
<td>104.98 0.00 0.00 0.00 0.00 87.63 66.70 31.02</td>
<td></td>
</tr>
<tr>
<td>P084790</td>
<td>2005</td>
<td>MAHAR WSIP</td>
<td>325.00 0.00 0.00 0.00 0.00 263.39 116.39 0.00</td>
<td></td>
</tr>
<tr>
<td>P084792</td>
<td>2005</td>
<td>Assam Agric Competitiveness</td>
<td>0.00 154.00 0.00 0.00 0.00 111.54 73.77 0.00</td>
<td></td>
</tr>
<tr>
<td>Project ID</td>
<td>FY</td>
<td>Purpose</td>
<td>Original Amount in US$ Millions</td>
<td>Difference between expected and actual disbursements</td>
</tr>
<tr>
<td>------------</td>
<td>-----</td>
<td>------------------------------------------------</td>
<td>--------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>P077856</td>
<td>2005</td>
<td>Lucknow-Muzaffarpur National Highway</td>
<td>620.00 0.00 0.00 0.00 0.00 289.25 39.25</td>
<td>0.00</td>
</tr>
<tr>
<td>P050655</td>
<td>2004</td>
<td>RAJASTHAN HEALTH SYSTEMS DEVELOPMENT</td>
<td>0.00 89.00 0.00 0.00 0.00 41.87 33.99</td>
<td>0.00</td>
</tr>
<tr>
<td>P078550</td>
<td>2004</td>
<td>Uttar Wtshd</td>
<td>0.00 69.62 0.00 0.00 0.00 42.93 3.62</td>
<td>0.00</td>
</tr>
<tr>
<td>P073776</td>
<td>2004</td>
<td>ALLAHABAD BYPASS</td>
<td>240.00 0.00 0.00 0.00 0.00 35.78 27.38</td>
<td>0.00</td>
</tr>
<tr>
<td>P082510</td>
<td>2004</td>
<td>Karnataka UWS Improvement Project</td>
<td>39.50 0.00 0.00 0.00 0.00 8.05 8.05</td>
<td>0.00</td>
</tr>
<tr>
<td>P067606</td>
<td>2003</td>
<td>UP ROADS</td>
<td>488.00 0.00 0.00 0.00 0.00 119.54 119.54</td>
<td>0.00</td>
</tr>
<tr>
<td>P050649</td>
<td>2003</td>
<td>TN ROADS</td>
<td>348.00 0.00 0.00 0.00 0.00 90.43 74.43</td>
<td>0.00</td>
</tr>
<tr>
<td>P076467</td>
<td>2003</td>
<td>Chatt DRPP</td>
<td>0.00 112.56 0.00 0.00 0.00 20.06 52.89</td>
<td>0.00</td>
</tr>
<tr>
<td>P071272</td>
<td>2003</td>
<td>AP RURAL POV REDUCTION</td>
<td>0.00 215.03 0.00 0.00 0.00 36.00 -4.80</td>
<td>0.00</td>
</tr>
<tr>
<td>P072123</td>
<td>2003</td>
<td>Tech/Engg Quality Improvement Project</td>
<td>0.00 250.00 0.00 0.00 0.00 40.11 8.56</td>
<td>-29.76</td>
</tr>
<tr>
<td>P073094</td>
<td>2003</td>
<td>AP Comm Forest Mgmt</td>
<td>0.00 108.00 0.00 0.00 0.00 24.50 4.78</td>
<td>0.00</td>
</tr>
<tr>
<td>P050647</td>
<td>2002</td>
<td>UP WSRP</td>
<td>0.00 149.20 0.00 0.00 0.00 40.11 77.08</td>
<td>91.59 0.00</td>
</tr>
<tr>
<td>P050653</td>
<td>2002</td>
<td>KARNATAKA RWSS II</td>
<td>0.00 151.60 0.00 0.00 0.00 15.04 20.53</td>
<td>8.37 0.00</td>
</tr>
<tr>
<td>P050668</td>
<td>2002</td>
<td>MUMBAI URBAN TRANSPORT PROJECT</td>
<td>463.00 79.00 0.00 0.00 0.00 283.13 271.21</td>
<td>47.71</td>
</tr>
<tr>
<td>P040610</td>
<td>2002</td>
<td>RAJ WSRP</td>
<td>0.00 140.00 0.00 0.00 0.00 25.84 44.80</td>
<td>32.38 0.00</td>
</tr>
<tr>
<td>P069889</td>
<td>2002</td>
<td>MIZORAM ROADS</td>
<td>0.00 78.00 0.00 0.00 0.00 0.00 22.01</td>
<td>-7.91 0.00</td>
</tr>
<tr>
<td>P071033</td>
<td>2003</td>
<td>KARN Tank Mgmt</td>
<td>32.00 130.90 0.00 0.00 0.00 25.07 112.16</td>
<td>52.56 27.51</td>
</tr>
<tr>
<td>P072539</td>
<td>2002</td>
<td>KERALA STATE TRANSPORT</td>
<td>255.00 0.00 0.00 0.00 0.00 15.04 98.13</td>
<td>98.13 0.00</td>
</tr>
<tr>
<td>P067216</td>
<td>2001</td>
<td>KAR WSHD DEVELOPMENT</td>
<td>0.00 100.40 0.00 0.00 0.00 20.06 16.16</td>
<td>15.64 10.92</td>
</tr>
</tbody>
</table>

Total: 7,665.50 6,828.87 0.00 0.00 206.35 9,144.61 2,253.80 120.62

COUNTRY STATEMENT OF IFC's Held and Disbursed Portfolio In Millions of US Dollars

<table>
<thead>
<tr>
<th>FY Approval</th>
<th>Company</th>
<th>IFC Committed</th>
<th>IFC Disbursed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Loan</td>
<td>Equity</td>
</tr>
<tr>
<td>2005</td>
<td>ADPCL</td>
<td>39.50</td>
<td>7.00</td>
</tr>
<tr>
<td>2006</td>
<td>AHEL</td>
<td>0.00</td>
<td>5.08</td>
</tr>
<tr>
<td>2005</td>
<td>AP Paper Mills</td>
<td>35.00</td>
<td>5.00</td>
</tr>
<tr>
<td>2005</td>
<td>APIDC Biotech</td>
<td>0.00</td>
<td>4.00</td>
</tr>
<tr>
<td>2002</td>
<td>ATL</td>
<td>13.81</td>
<td>0.00</td>
</tr>
<tr>
<td>2003</td>
<td>ATL</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2005</td>
<td>ATL</td>
<td>9.39</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>Atul Ltd</td>
<td>16.77</td>
<td>0.00</td>
</tr>
<tr>
<td>2003</td>
<td>BHF</td>
<td>10.30</td>
<td>0.00</td>
</tr>
<tr>
<td>2004</td>
<td>BILT</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2001</td>
<td>BTVL</td>
<td>0.43</td>
<td>3.98</td>
</tr>
<tr>
<td>2003</td>
<td>Balrampur</td>
<td>10.52</td>
<td>0.00</td>
</tr>
<tr>
<td>FY Approval</td>
<td>Company</td>
<td>Committed</td>
<td>Disbursed</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IFC</td>
<td>IFC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loan</td>
<td>Equity</td>
</tr>
<tr>
<td>2001</td>
<td>Basix Ltd.</td>
<td>0.00</td>
<td>0.98</td>
</tr>
<tr>
<td>2005</td>
<td>Bharat Biotech</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1984</td>
<td>Bihar Sponge</td>
<td>5.70</td>
<td>0.00</td>
</tr>
<tr>
<td>2003</td>
<td>CCIL</td>
<td>1.50</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>CCIL</td>
<td>7.00</td>
<td>2.00</td>
</tr>
<tr>
<td>1990</td>
<td>CESC</td>
<td>4.61</td>
<td>0.00</td>
</tr>
<tr>
<td>1992</td>
<td>CESC</td>
<td>6.55</td>
<td>0.00</td>
</tr>
<tr>
<td>2004</td>
<td>CGL</td>
<td>14.38</td>
<td>0.00</td>
</tr>
<tr>
<td>2005</td>
<td>COSMO</td>
<td>0.00</td>
<td>3.73</td>
</tr>
<tr>
<td>2006</td>
<td>Chennai Water</td>
<td>24.78</td>
<td>0.00</td>
</tr>
<tr>
<td>2003</td>
<td>DQEL</td>
<td>0.00</td>
<td>1.50</td>
</tr>
<tr>
<td>2005</td>
<td>DSCL</td>
<td>30.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>DSCL</td>
<td>15.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2005</td>
<td>Dabur</td>
<td>2.50</td>
<td>0.00</td>
</tr>
<tr>
<td>2003</td>
<td>Dewan</td>
<td>8.68</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>Federal Bank</td>
<td>0.00</td>
<td>28.06</td>
</tr>
<tr>
<td>2001</td>
<td>GTF Fact</td>
<td>0.00</td>
<td>1.20</td>
</tr>
<tr>
<td>2006</td>
<td>GTF Fact</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1994</td>
<td>GVK</td>
<td>0.00</td>
<td>4.83</td>
</tr>
<tr>
<td>2003</td>
<td>HDFC</td>
<td>100.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1998</td>
<td>IAAF</td>
<td>0.00</td>
<td>0.47</td>
</tr>
<tr>
<td>2006</td>
<td>IAL</td>
<td>0.00</td>
<td>9.79</td>
</tr>
<tr>
<td>1998</td>
<td>IDFC</td>
<td>0.00</td>
<td>10.82</td>
</tr>
<tr>
<td>2005</td>
<td>IDFC</td>
<td>50.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1994</td>
<td>IHDC</td>
<td>6.94</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>IHDC</td>
<td>7.90</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>Indecommm</td>
<td>0.00</td>
<td>2.57</td>
</tr>
<tr>
<td>1996</td>
<td>India Direct Fnd</td>
<td>0.00</td>
<td>1.10</td>
</tr>
<tr>
<td>2001</td>
<td>Indian Seamless</td>
<td>6.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>JK Paper</td>
<td>15.00</td>
<td>7.62</td>
</tr>
<tr>
<td>2005</td>
<td>K Mahindra INDIA</td>
<td>22.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2005</td>
<td>KPTT</td>
<td>11.00</td>
<td>2.50</td>
</tr>
<tr>
<td>2003</td>
<td>L&amp;T</td>
<td>50.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>LGB</td>
<td>14.21</td>
<td>4.82</td>
</tr>
<tr>
<td>2006</td>
<td>Lok Fund</td>
<td>0.00</td>
<td>2.00</td>
</tr>
<tr>
<td>2002</td>
<td>MMFSL</td>
<td>7.89</td>
<td>0.00</td>
</tr>
<tr>
<td>2003</td>
<td>MSSL</td>
<td>0.00</td>
<td>2.29</td>
</tr>
<tr>
<td>2001</td>
<td>Mahindra</td>
<td>0.00</td>
<td>10.00</td>
</tr>
<tr>
<td>2001</td>
<td>Montalvo</td>
<td>0.00</td>
<td>3.00</td>
</tr>
<tr>
<td>1996</td>
<td>Moser Baer</td>
<td>0.00</td>
<td>8.74</td>
</tr>
<tr>
<td>1999</td>
<td>Moser Baer</td>
<td>0.00</td>
<td>8.74</td>
</tr>
<tr>
<td>2000</td>
<td>Moser Baer</td>
<td>12.75</td>
<td>10.54</td>
</tr>
<tr>
<td></td>
<td>Nevis</td>
<td>0.00</td>
<td>4.00</td>
</tr>
<tr>
<td>FY Approval</td>
<td>Company</td>
<td>Committed IFC</td>
<td>Disbursed IFC</td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loan</td>
<td>Equity</td>
</tr>
<tr>
<td>2003</td>
<td>NewPath</td>
<td>0.00</td>
<td>9.31</td>
</tr>
<tr>
<td>2004</td>
<td>NewPath</td>
<td>0.00</td>
<td>2.79</td>
</tr>
<tr>
<td>2003</td>
<td>Niko Resources</td>
<td>24.44</td>
<td>0.00</td>
</tr>
<tr>
<td>2001</td>
<td>Orchid</td>
<td>0.00</td>
<td>0.73</td>
</tr>
<tr>
<td>1997</td>
<td>Owens Corning</td>
<td>5.92</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>PSL Limited</td>
<td>15.00</td>
<td>4.74</td>
</tr>
<tr>
<td>2004</td>
<td>Powerlinks</td>
<td>72.98</td>
<td>0.00</td>
</tr>
<tr>
<td>2004</td>
<td>RAK India</td>
<td>20.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1995</td>
<td>Rain Calcining</td>
<td>0.00</td>
<td>2.29</td>
</tr>
<tr>
<td>2004</td>
<td>Rain Calcining</td>
<td>10.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2005</td>
<td>Ramky</td>
<td>3.74</td>
<td>10.28</td>
</tr>
<tr>
<td>2005</td>
<td>Ruchi Soya</td>
<td>0.00</td>
<td>9.27</td>
</tr>
<tr>
<td>2001</td>
<td>SBI</td>
<td>50.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1997</td>
<td>SREI</td>
<td>3.21</td>
<td>0.00</td>
</tr>
<tr>
<td>2000</td>
<td>SREI</td>
<td>6.50</td>
<td>0.00</td>
</tr>
<tr>
<td>1995</td>
<td>Sara Fund</td>
<td>0.00</td>
<td>3.43</td>
</tr>
<tr>
<td>2004</td>
<td>SeaLion</td>
<td>4.40</td>
<td>0.00</td>
</tr>
<tr>
<td>2001</td>
<td>Spryance</td>
<td>0.00</td>
<td>1.86</td>
</tr>
<tr>
<td>2003</td>
<td>Spryance</td>
<td>0.00</td>
<td>0.93</td>
</tr>
<tr>
<td>2004</td>
<td>Sundaram Finance</td>
<td>42.93</td>
<td>0.00</td>
</tr>
<tr>
<td>2000</td>
<td>Sundaram Home</td>
<td>0.00</td>
<td>2.18</td>
</tr>
<tr>
<td>2002</td>
<td>Sundaram Home</td>
<td>6.71</td>
<td>0.00</td>
</tr>
<tr>
<td>1998</td>
<td>TCG/ICICI</td>
<td>0.00</td>
<td>0.80</td>
</tr>
<tr>
<td>2005</td>
<td>TISCO</td>
<td>100.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2004</td>
<td>UPL</td>
<td>15.45</td>
<td>0.00</td>
</tr>
<tr>
<td>1996</td>
<td>United Riceland</td>
<td>5.63</td>
<td>0.00</td>
</tr>
<tr>
<td>2005</td>
<td>United Riceland</td>
<td>8.50</td>
<td>0.00</td>
</tr>
<tr>
<td>2002</td>
<td>Usha Martin</td>
<td>0.00</td>
<td>0.72</td>
</tr>
<tr>
<td>2001</td>
<td>Vysya Bank</td>
<td>0.00</td>
<td>3.66</td>
</tr>
<tr>
<td>2005</td>
<td>Vysya Bank</td>
<td>0.00</td>
<td>3.51</td>
</tr>
<tr>
<td>1997</td>
<td>WIV</td>
<td>0.00</td>
<td>0.37</td>
</tr>
<tr>
<td>1997</td>
<td>Walden-Mgt India</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>2006</td>
<td>iLabs Fund II</td>
<td>0.00</td>
<td>20.00</td>
</tr>
</tbody>
</table>

Total portfolio: 956.52 249.41 42.30 536.35 604.74 175.91 38.60 236.35

<table>
<thead>
<tr>
<th>FY Approval</th>
<th>Company</th>
<th>Loan</th>
<th>Equity</th>
<th>Quasi</th>
<th>Partic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>CGL</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2000</td>
<td>APCL</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>Atul Ltd</td>
<td>0.00</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2001</td>
<td>Vysya Bank</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>Federal Bank</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>FY Approval</td>
<td>Company</td>
<td>Loan</td>
<td>Equity</td>
<td>Quasi</td>
<td>Partic.</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------</td>
<td>------</td>
<td>--------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>2001</td>
<td>GI Wind Farms</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2004</td>
<td>Ocean Sparkle</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2005</td>
<td>Allain Duhangan</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Total pending commitment:</td>
<td>0.04</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
</tr>
</tbody>
</table>
# Annex 14: Country at a Glance

## INDIA: Haryana Power System Improvement

**KEY ECONOMIC RATIOs and LONG-TERM TRENDS**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP (US$ billions)</td>
<td>276.0</td>
<td>101.3</td>
<td>161.3</td>
</tr>
<tr>
<td>Gross capital formation/GDP</td>
<td>22.6</td>
<td>23.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Exports of goods and services/GDP</td>
<td>17.1</td>
<td>10.8</td>
<td>22.1</td>
</tr>
<tr>
<td>Gross domestic savings/GDP</td>
<td>20.6</td>
<td>22.8</td>
<td>22.0</td>
</tr>
<tr>
<td>Gross national savings/GDP</td>
<td>20.0</td>
<td>24.7</td>
<td>26.0</td>
</tr>
<tr>
<td>Current account balance/GDP</td>
<td>-1.9</td>
<td>-1.4</td>
<td>-1.1</td>
</tr>
<tr>
<td>Interim payments/GDP</td>
<td>-0.7</td>
<td>11.1</td>
<td>11.7</td>
</tr>
<tr>
<td>Total debt/GDP</td>
<td>29.1</td>
<td>23.0</td>
<td>16.7</td>
</tr>
<tr>
<td>Total debt service/GDP</td>
<td>23.1</td>
<td>21.6</td>
<td>7.5</td>
</tr>
<tr>
<td>Present value of debt/GDP</td>
<td>-</td>
<td>-</td>
<td>12.7</td>
</tr>
<tr>
<td>Present value of debt service</td>
<td>-</td>
<td>-</td>
<td>40.6</td>
</tr>
</tbody>
</table>

**STRUCTURE of the ECONOMY**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>25.6</td>
<td>26.1</td>
<td>10.3</td>
</tr>
<tr>
<td>Industry</td>
<td>25.3</td>
<td>26.0</td>
<td>22.9</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>16.4</td>
<td>16.4</td>
<td>12.0</td>
</tr>
<tr>
<td>Services</td>
<td>44.3</td>
<td>47.1</td>
<td>52.4</td>
</tr>
</tbody>
</table>

**Growth of exports and imports (%)**

<table>
<thead>
<tr>
<th>1997-98</th>
<th>2006-07</th>
<th>2007-08</th>
<th>2008-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
<td>5.6</td>
<td>5.8</td>
<td>10.0</td>
</tr>
<tr>
<td>Imports</td>
<td>5.5</td>
<td>5.9</td>
<td>10.0</td>
</tr>
</tbody>
</table>

**Growth of capital and GDP (%)**

<table>
<thead>
<tr>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>6.0</td>
<td>6.3</td>
<td>6.3</td>
</tr>
</tbody>
</table>

**Note:** 2007 data are preliminary estimates. This table was produced from the Development Economics LCD database.

*The diamond shown on this page indicates the country (in bold) compared with the income-group average. If data are missing, the diamond will be incomplete.*
PRICES and GOVERNMENT FINANCE

**Domestic prices**

(\% change)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer prices</td>
<td>7.8</td>
<td>7.0</td>
<td>6.7</td>
<td>5.3</td>
</tr>
<tr>
<td>Implicit GDP deflator</td>
<td>5.8</td>
<td>5.5</td>
<td>5.9</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**Government finance**

(\% of GDP, includes current grants)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current revenue</td>
<td>19.4</td>
<td>17.4</td>
<td>20.8</td>
<td>22.4</td>
</tr>
<tr>
<td>Current budget balance</td>
<td>-2.7</td>
<td>-3.5</td>
<td>-4.4</td>
<td>-16.</td>
</tr>
<tr>
<td>Overall surplus/deficit</td>
<td>-9.2</td>
<td>-9.3</td>
<td>-6.5</td>
<td>-6.6</td>
</tr>
</tbody>
</table>

TRADE

(US$ millions)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total exports (fob)</td>
<td>12,644</td>
<td>35,680</td>
<td>128,083</td>
<td>146,632</td>
</tr>
<tr>
<td>Marine products</td>
<td>411</td>
<td>1,207</td>
<td>1,744</td>
<td>1,744</td>
</tr>
<tr>
<td>Ores and minerals</td>
<td>600</td>
<td>1,061</td>
<td>7,033</td>
<td>7,033</td>
</tr>
<tr>
<td>Manufactures</td>
<td>8,036</td>
<td>20,647</td>
<td>62,910</td>
<td>51,057</td>
</tr>
<tr>
<td>Total imports (fob)</td>
<td>19,612</td>
<td>51,927</td>
<td>191,219</td>
<td>238,296</td>
</tr>
<tr>
<td>Food</td>
<td>1,141</td>
<td>1,463</td>
<td>3,231</td>
<td>3,231</td>
</tr>
<tr>
<td>Fuel and energy</td>
<td>3,188</td>
<td>8,64</td>
<td>57,074</td>
<td>57,074</td>
</tr>
<tr>
<td>Capital goods</td>
<td>5,684</td>
<td>5,796</td>
<td>52,344</td>
<td>71,111</td>
</tr>
<tr>
<td>Export price index (2005=100)</td>
<td>113</td>
<td>116</td>
<td>116</td>
<td>116</td>
</tr>
<tr>
<td>Import price index (2005=100)</td>
<td>116</td>
<td>110</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>Terms of trade (2005=100)</td>
<td>97</td>
<td>106</td>
<td>106</td>
<td>106</td>
</tr>
</tbody>
</table>

BALANCE OF PAYMENTS

(US$ millions)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports of goods and services</td>
<td>20,252</td>
<td>45,019</td>
<td>224,264</td>
<td>243,071</td>
</tr>
<tr>
<td>Imports of goods and services</td>
<td>22,039</td>
<td>58,257</td>
<td>239,625</td>
<td>259,069</td>
</tr>
<tr>
<td>Resource balance</td>
<td>-6,823</td>
<td>-14,158</td>
<td>-15,361</td>
<td>-14,776</td>
</tr>
<tr>
<td>Net income</td>
<td>1,387</td>
<td>2,623</td>
<td>5,873</td>
<td>6,576</td>
</tr>
<tr>
<td>Net current transfers</td>
<td>2,123</td>
<td>13,000</td>
<td>2,941</td>
<td>3,041</td>
</tr>
<tr>
<td>Current account balance</td>
<td>-5,832</td>
<td>-5,570</td>
<td>-9,990</td>
<td>-12,400</td>
</tr>
<tr>
<td>Financing items (net)</td>
<td>4,526</td>
<td>9,772</td>
<td>46,599</td>
<td>44,562</td>
</tr>
<tr>
<td>Changes in net reserves</td>
<td>736</td>
<td>-2,083</td>
<td>-6,606</td>
<td>-7,074</td>
</tr>
</tbody>
</table>

*Note:*

- Reserves including gold (US$ millions)
  | 6,223 | 29,367 | 189,710 | 219,542 |
- Conversion rate (AED/USD): 0.0
- Composition of 2006 debt (US$ millions)

EXTERNAL DEBT and RESOURCE FLOWS

(US$ millions)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total debt outstanding and disbursed</td>
<td>55,570</td>
<td>94,317</td>
<td>151,075</td>
<td>200,000</td>
</tr>
<tr>
<td>IBRD</td>
<td>4,769</td>
<td>9,338</td>
<td>3,177</td>
<td>7,040</td>
</tr>
<tr>
<td>IDA</td>
<td>11,165</td>
<td>17,312</td>
<td>24,859</td>
<td>26,582</td>
</tr>
<tr>
<td>Total debt service</td>
<td>5,686</td>
<td>12,413</td>
<td>17,879</td>
<td>7,900</td>
</tr>
<tr>
<td>IBRD</td>
<td>608</td>
<td>1,410</td>
<td>597</td>
<td>739</td>
</tr>
<tr>
<td>IDA</td>
<td>116</td>
<td>311</td>
<td>841</td>
<td>915</td>
</tr>
<tr>
<td>Composition of net resource flows</td>
<td>Official grants</td>
<td>531</td>
<td>549</td>
<td>873</td>
</tr>
<tr>
<td>Official creditors</td>
<td>2,496</td>
<td>4,686</td>
<td>2,144</td>
<td>2,144</td>
</tr>
<tr>
<td>Private creditors</td>
<td>2,072</td>
<td>1,089</td>
<td>16,037</td>
<td>16,037</td>
</tr>
<tr>
<td>Foreign direct investment (net inflows)</td>
<td>412</td>
<td>3,677</td>
<td>17,463</td>
<td>17,463</td>
</tr>
<tr>
<td>Portfolio equity (net inflows)</td>
<td>0</td>
<td>2,056</td>
<td>9,549</td>
<td>9,549</td>
</tr>
<tr>
<td>World Bank program</td>
<td>Commitments</td>
<td>3,004</td>
<td>2,006</td>
<td>1,220</td>
</tr>
<tr>
<td>Disbursements</td>
<td>2,412</td>
<td>1,772</td>
<td>1,797</td>
<td>1,965</td>
</tr>
<tr>
<td>Principal repayments</td>
<td>498</td>
<td>1,070</td>
<td>942</td>
<td>1,083</td>
</tr>
<tr>
<td>Netflows</td>
<td>1,714</td>
<td>302</td>
<td>645</td>
<td>645</td>
</tr>
<tr>
<td>Interest payments</td>
<td>476</td>
<td>721</td>
<td>436</td>
<td>506</td>
</tr>
<tr>
<td>Nettransfers</td>
<td>1,238</td>
<td>-419</td>
<td>349</td>
<td>251</td>
</tr>
</tbody>
</table>

*Note:* This table was produced from the Development Economics LDB database.

9/24/08

135
Annex 15: Maps
INDIA: Haryana Power System Improvement
1. In addition to the institutional development component, the HPSI has two main components: Component I dealing with transmission investments (75% of total project) and implemented by HVPN, and Component II covering pilot distribution investments in urban areas, carried out by DHBVN.

2. The risk profile of these components is essentially determined by three factors: (i) the nature of investments – bulky or spread geographically; (ii) the complexity of the environments under which the implementing agencies operate; and (iii) the level of interactions with end-users – none or extensive.

3. The approach to risk mitigation has been to distinguish between:

(i) Risks affecting project preparation and implementation, which are essentially the low institutional capacity and the inability of the utilities to carry out the identified investments. Among the two main project components – the larger component of Transmission investments (75% of total project) and implementing entity HVPN present moderate risks compared to significant risks on smaller component on Distribution investments and the implementing entity (DHBVN).

(ii) Broader sector risks, which are not directly under the control of the project, but some of which may impact the sustainability of the PDOs. These include issues linked to power supply to agriculture, low regulatory effectiveness, and ability of GoH to sustain high subsidy levels.

4. Key risks across project and broader sector issues, along with risk mitigation measures already taken by Government of Haryana (GoH) reflecting their commitment and further risk mitigation measures of the project are enumerated through following matrix:
<table>
<thead>
<tr>
<th>Governance Challenges/ Risks</th>
<th>Ways in which risk gets manifested</th>
<th>Measure undertaken by GoH on Risk Mitigation</th>
<th>Project Risk Mitigation Strategy and Timelines for Milestones</th>
</tr>
</thead>
</table>
| Inability of the organization to scale up its internal capacity (for achieving target of doubling of total power capacity in the system over next 5 years), leading to cost overruns and delays in project completion | - Selection and design of schemes are flawed  
- Limited coordination between system planning, engineering, procurement and financial departments | - Adoption of industry tools and standards for effective project selection and design.  
- Organizational restructuring plan to change staffing profile and, as needed, recruitment of additional resources (plan approved for HVPN and under discussion for DHBVN) | - Project preparation involved technical studies on transmission load flow for prioritization of investment schemes, and preparation of Scheme Implementation Plans (SIPs) and Detailed Project Reports (DPRs). Load flow completed in August 2008; SIPs and DPRs completed by June 2009.  
- Organizational restructuring and process re-engineering across company to be undertaken (HVPN to institutionalize project based approach by October 2010 and recruit expert consultant to help implement board approved institutional strengthening plan by December 2009. DHBVN to recruit expert consultant by December 2009 to help implement board approved institutional strengthening plan.  
- Institutional strengthening plan of utilities, generated out of internal diagnostics and vision workshops, to be funded out of project TA component and would focus on internal transformation through initiatives on skill development, process re-engineering and use of technology. Mid term review of project by internal peer reviewers and external panel of experts (in middle of FY 2011)  
- Dedicated project counterpart teams provided on Bank projects in both companies, and supported by Technical Assistance.  
- Strategy to move away from procurement of materials to integrated EPC contracts under execution for last two years  
- GoH already issued circulars on no negotiation policy on Bank and other donor projects  
- Reputed technical consultants (Powerlinks) hired, along with an international technical expert as ETC for assisting HVPN on technical and procurement aspects. Two training programs already conducted by Bank procurement staff, and counterparts availing external Bank procurement courses. Based on these measures, advance procurement of USD 80 Million already underway.  
- Procurement through integrated Supply and Installation contracts based on standardization of standard bidding document, qualification requirements, technical drawing, thereby transferring completion risk to vendors and enabling replication of bidding documents across various projects. (Completed in HVPN, to be completed in DHBVN by June 2009)  
- In addition to use of integrated turnkey supply and installation contracts for all schemes to be funded by World Bank, a reputed third party quality assurance engineering firm would be selected for both HVPN and DHBVN (by October 2009) |
<table>
<thead>
<tr>
<th>Governance Challenges/ Risks</th>
<th>Ways in which risk gets manifested</th>
<th>Measure undertaken by GoH on Risk Mitigation</th>
<th>Project Risk Mitigation Strategy and Timelines for Milestones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>USD 20 Million</td>
<td>• Financial arrangements ring fenced with an operations manual being finalized to cover funds flow and operational arrangements (by appraisal). Preferred payment mechanism for all schemes to be direct payment by World Bank. • A Corporate Governance and Financial Accountability (CGFA) plan agreed and will be implemented over next 2 years with clear timelines on resolving audit qualifications, inter unit reconciliations, strengthening internal audit procedures and key recruitment of staff including Director (Finance) in all companies (refer Annex 6 for details)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inadequately equipped staff to supervise and monitor implementation of projects • Repeated and significant audit qualifications on audited accounts of companies</td>
<td>• $ 101 Million has been incurred for segregating agricultural feeders from non-agricultural rural feeders has been incurred to provide better estimates of agricultural consumption and help determine subsidy requirements. • Better measurement procedures of agriculture power consumption would be initial building blocks through this project. • One year long project TA initiated on setting up MIS system as a Monitoring and Evaluation tool for evaluation of agricultural consumption post segregation of feeders. More transparent and credible information on agricultural power input to be made available through analysis of sample data of feeders across state and setting up MIS system to capture the same. Better measurement would subsequently be used in future estimation of agricultural consumption and subsidy requirement by HERC (TA to be completed by March 2010). • Despite the above actions, a risk of higher subsidy requirement due to higher agricultural consumption than estimated levels - caused by poor rainfall (monsoons) and continued reliance on water intensive crops with falling water table - would still persist. This risk, beyond the scope of current project, requires establishment of baseline as a pre-requisite (as being pursued by current project), followed by initiation of a cross sectoral dialogue involving agriculture – water – energy teams post state elections (due in early 2010).</td>
<td></td>
</tr>
</tbody>
</table>

**Entity/Sector wide issues, beyond scope of project, but impacting sector sustainability**

| Political Economy related to agricultural power supply. | Power consumption of farmers (largest and most influential political group) is largely unmetered and overall subsidy is calculated on the basis of non credible estimates of agricultural consumption. This leads to disputes between utilities and regulator on computation of subsidy requirement. | $ 101 Million has been incurred for segregating agricultural feeders from non-agricultural rural feeders has been incurred to provide better estimates of agricultural consumption and help determine subsidy requirements. | Better measurement procedures of agriculture power consumption would be initial building blocks through this project. • One year long project TA initiated on setting up MIS system as a Monitoring and Evaluation tool for evaluation of agricultural consumption post segregation of feeders. More transparent and credible information on agricultural power input to be made available through analysis of sample data of feeders across state and setting up MIS system to capture the same. Better measurement would subsequently be used in future estimation of agricultural consumption and subsidy requirement by HERC (TA to be completed by March 2010). • Despite the above actions, a risk of higher subsidy requirement due to higher agricultural consumption than estimated levels - caused by poor rainfall (monsoons) and continued reliance on water intensive crops with falling water table - would still persist. This risk, beyond the scope of current project, requires establishment of baseline as a pre-requisite (as being pursued by current project), followed by initiation of a cross sectoral dialogue involving agriculture – water – energy teams post state elections (due in early 2010). |

<p>| Lack of managerial | Lack of full autonomy | Autonomy level for procurement | Institutional strengthening plan of utilities, generated out of internal |</p>
<table>
<thead>
<tr>
<th>Governance Challenges/ Risks</th>
<th>Ways in which risk gets manifested</th>
<th>Measure undertaken by GoH on Risk Mitigation</th>
<th>Project Risk Mitigation Strategy and Timelines for Milestones</th>
</tr>
</thead>
</table>
| autonomy to utilities on operations and contracts | to the implementing agencies in the award of contracts lead to delay in completion of targets. | decision by board of directors of power companies enhanced from USD 20,000 to USD 20 Million.  
- Transparent, timely and non litigious contracting of more than 5,000 MW of new additional generating capacity through combination of state and private sector | diagnostics and vision workshops, to be funded out of project TA and would focus on internal transformation through initiatives on skill development, process re-engineering and use of technology (for details refer Annex 3). |
| Low regulatory effectiveness | • Differences between utilities and regulator on allowance of key costs have resulted in financial losses for utilities, even post payment of these subsidies (see below).  
- Annual subsidy at $482 million comprises 1.5% of GSDP. Under emerging economic slowdown, fiscal space to support sector is expected to contract | • Haryana has taken steps to comply with policy framework enacted by Electricity Act 2003. Haryana has enactment regulations on consumer grievance redressal mechanisms, establishment of an ombudsman, consumer service related standards of performance and open access issues. However, even though tariff revision has been filed last year, tariff issues have not yet been fully addressed.  
- Subsidies declared by regulator, are paid in full and regularly with fiscal ratios under stipulated norms, even after paying high subsidies. | • A year long technical assistance activity, funded by World Bank, has been initiated to provide consultancy service to the HERC (with internal ownership of HERC) to focus on wide range of issues encompassing tariffs, market structure, customer service benchmarks, and consumer advocacy aspects (expected to be completed by June 2010).  
- Business plan preparation for project entities – HVPN and DHBVN – being pursued through dialogue and active consultation will be undertaken with the regulator. Preliminary fiscal assessment by World Bank (corroborated by XIII Finance Commission) reflects Haryana’s fiscal performance to be the one of the best in India on relative terms, though the premise may be tested under emerging slowdown.  
- Haryana is relying on need for infrastructure investments (especially in deficit areas like power) to mitigate impacts of slowdown. While subsidy support is expected to continue being high in short to medium term, additional generation capacity would also be used to alleviate significant unserved load in industries and commercial users, especially in areas around Delhi (please refer to PAD for sensitivity analysis). With upcoming national and state elections spread over coming year, it may be difficult to expect major decisions on tariff rationalization and financial restructuring of the sector in short term. |