SECTOR ASSESSMENT (SUMMARY): POWER

A. Sector Performance, Problems and Opportunities

1. Rapid economic growth in Bangladesh at 6% a year during 2005-2010 is causing electricity demand to increase exponentially. The operational performance of the power sector in terms of total generation and gross revenues has improved steadily since 1995. Capacity addition by the public and the private sector has brought installed generation capacity from 2,908 megawatts (MW) in 1995 to 5,716 MW in 2009\(^2\) and 6,208 MW in March 2011.\(^3\) Losses have steadily dropped since 1995 following sector reforms, a greater focus on distribution, and better commercial performance. The average cost of supply is $0.0439 per kilowatt-hour.

### Table 1: Sector Performance

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</thead>
<tbody>
<tr>
<td>Installed capacity of BPDB (MW)</td>
<td>2,908</td>
<td>3,331</td>
<td>3,420</td>
<td>3,895</td>
<td>3,812</td>
</tr>
<tr>
<td>Installed capacity of IPP plants (MW)</td>
<td>0</td>
<td>380</td>
<td>1,260</td>
<td>1,260</td>
<td>1,681</td>
</tr>
<tr>
<td>Installed capacity of REB plants (MW)</td>
<td></td>
<td></td>
<td></td>
<td>226</td>
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<tr>
<td>Total installed capacity (MW)</td>
<td>2,908</td>
<td>3,711</td>
<td>4,680</td>
<td>5,155</td>
<td>5,716(^a)</td>
</tr>
<tr>
<td>Total generation (GWh)</td>
<td>10,806</td>
<td>15,563</td>
<td>19,180</td>
<td>23,703</td>
<td>26,533</td>
</tr>
<tr>
<td>Gross revenues (Tk billion)</td>
<td>14.27</td>
<td>22.89</td>
<td>36.57</td>
<td>44.60</td>
<td>59.31</td>
</tr>
<tr>
<td>Sales (GWh)</td>
<td>8,371</td>
<td>12,461</td>
<td>16,332</td>
<td>20,954</td>
<td>24,757</td>
</tr>
<tr>
<td>System losses (%)</td>
<td>22.5</td>
<td>19.9</td>
<td>14.8</td>
<td>11.6</td>
<td>6.6</td>
</tr>
<tr>
<td>Village electrification (number)</td>
<td>2,867</td>
<td>3,201</td>
<td>3,400</td>
<td>3,495</td>
<td>4,204</td>
</tr>
</tbody>
</table>

BPDB = Bangladesh Power Development Board, GWh = gigawatt-hour, IPP = independent power producer, MW = megawatt, REB = Rural Electrification Board, Tk = taka.

\(^a\) Derated capacity is 5,166 MW and net dependable capacity is about 4,162 MW.

Source(s): Bangladesh Power Development Board

2. **Demand–supply gap.** The addition of power generating capacity has not kept pace with growth in demand. Existing generating stations do not operate with maximum efficiency or at maximum capacity. In 2009, the country’s dependable power generating capacity allowed it to serve only a maximum peak demand of 4,162 MW, a deficit of nearly 1,900 MW less than the estimated peak demand of 6,060 MW. Many industrial and commercial establishments depend on expensive and inefficient captive generation to address power shortages. The government is attempting, with supported from its development partners, to improve energy efficiency on both the demand and the supply side. Also fuel diversification through renewable and other energy sources has been emphasized. The proposed project interventions in energy efficiency and renewable energy form part of these government plans.

3. **Limited access to power.** Despite its notable progress on the macroeconomic front, Bangladesh’s electrification ratio is still very low. Electricity is available to only 47% of the population.\(^4\) Improving access to electricity is a key objective of the government’s Vision 2021, and achieving it will require significant transmission and distribution investments. Regional differences leave the western part of the country traditionally underserved because power generation and transmission are concentrated in the east. Since 2001, the Asian Development

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\(^1\) This summary is based on Final Report for TA 7242-BAN Power System Efficiency Improvement Project. Available on request.


Bank (ADB) has provided two loans to help the less-developed western region of Bangladesh improve its power and gas transmission and distribution infrastructure.\textsuperscript{5}

4. Single fuel dependence. About 85% of power-generating capacity uses gas as fuel. Gas supply shortages have seriously impaired power generation, causing power cuts that have reduced economic output. Dependence on a single source of energy for power generation weakens energy security. To address the crippling shortages of power, the government has recently announced the construction of an liquefied natural gas terminal, new plants using dual-fuel technology, and generation facilities using domestic and imported coal, as well as international power transfers.

5. Environment for investment. The Ministry of Power, Energy, and Mineral Resources has indicated that an investment of over $9.5 billion in the power sector is required to bolster generation, transmission, and distribution. Private sector participation is imperative for the rapid expansion of generation capacity, and the ministry expects more than half of any additional generating capacity to be developed by the private sector. Improving the business environment, the policy and regulatory environment, fuel availability, and logistics are major challenges, as is addressing barriers to mobilizing local long-term financing. Implementing the plan to expand the power sector will require significant public sector investment, improvements to the business environment, and implementation support for joint venture and private sector projects.

6. Governance and planning. Several new public sector entities have been established and are listed on the country’s stock exchanges. The government, through the Power Division of the Ministry of Power, Energy, and Mineral Resources, continues to be a majority shareholder and supervises the functioning of these entities. The intended corporatization of BPDB is not yet complete. While the government has announced plans for significant capacity addition over the period 2010-2015, the required planning expertise to make these plants operational and procure power to meet demand remains inadequate.

7. Tariffs and regulation. The Bangladesh Energy Regulatory Commission, established in 2004, has the legislated mandate to set electricity and gas tariffs. In March 2010, the regulator increased retail tariffs by 4%—6%. However, carrying out politically sensitive tariff reform remains a challenge. The government announced a 5-year road map for the power sector retail tariff in May 2010. However, potential investors consider the regulatory environment for the power and energy sector to be weak. The regulator needs to engage with broader energy sector planning and coordination, including reviews of the generation and transmission expansion plans. Existing electricity tariffs are inadequate, especially as the use of imported fuels such as liquefied natural gas, heavy fuel oil, high-speed diesel, and imported coal is expected to increase significantly. An increasingly active regulatory commission and the newly published draft tariff regulations are expected to provide a better regulatory environment, particularly in tariff setting.

8. Regional power trading. South Asia has significant hydropower capacity. Bangladesh has signed a memorandum of understanding with the Government of India to initiate cross-border trade in electricity. Based on this memorandum of understanding, ADB approved a loan to implement the first cross-border electricity interconnection of 500 MW between the two

\textsuperscript{5} ADB. 2001. Report and Recommendation of the President to the Board of Directors: Proposed Loans and Technical Assistance Grant to the People’s Republic of Bangladesh for the West Zone Power System Development Project. Manila; ADB. 2010. Report and Recommendation of the President to the Board of Directors: Proposed Loans to the People’s Republic of Bangladesh for the Natural Gas Access Improvement Project. Manila.
countries⁶. This beginning has provided a great opportunity to add more cross-border transmission capacity and power trade with other South Asian countries, such as Bhutan and Nepal, particularly in harnessing low-cost hydropower in the region.

B. Government’s Sector Strategy

9. To address Bangladesh’s constrained economic growth and widespread poverty, the power sector development framework identifies the need to establish an adequate and reliable power supply and expand access to power. The sector development framework sets the government’s target for increasing power generation capacity at an additional 9,400 MW before 2016, including sourcing power from India. The target of expanding electricity access to 70% of households by 2016 will be an important intermediate milestone to reaching the government’s vision of 100% electricity access by 2021.

10. The government’s power sector reform road map for 2006–2008 recognizes the need to address structural weaknesses, including making the Bangladesh Electricity Regulatory Commission fully functional, improving the corporate governance of sector entities, completing the restructuring of BPDB, unbundling and granting managerial independence to sector entities, streamlining the process for private sector investments, and mobilizing funds from capital markets for power sector entities. ADB continues to support such initiatives through its participation in the local consultative group of various development partners and through its technical assistance program.

C. ADB Sector Experience and Assistance Program

11. ADB has been a key multilateral development partner of Bangladesh in the power sector with five ongoing projects: (i) Dhaka Power System Upgrade Project ($75 million), (ii) West Zone Power System Development Project ($123 million), (iii) Power Sector Development Project ($186 million), (iv) Sustainable Power Sector Development Project ($400 million), and (v) Bangladesh–India Electrical Grid Interconnection Project ($100 million).

12. The sector assessment program evaluation for the Bangladesh energy sector noted in 2009 that the operational, commercial, and financial performance of generation, transmission, and distribution entities had improved⁷. Bill collection was better, the number of outages had been reduced, the voltage profile had improved, and cost recovery was better. The evaluation emphasized the need to promote supply- and demand-side energy efficiency, new investments on power generation, and regional electricity trade with neighboring countries.

13. Current initiatives are expected to address medium-term power shortages and to open up possibilities of additional regional interconnection and trade. The diversification of fuel sources and investments in energy efficiency, especially for generating stations and large consumers, are government priorities supported by ongoing ADB technical assistance⁸. Immediate action is needed to finalize various aspects of the proposed generation facilities to be implemented by the private and public sector, especially with regard to fuel availability, pricing, and associated supply chain logistics. Building capacity for procurement is needed if the ambitious target of adding 9,400 MW of generating capacity is to be achieved.

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⁶ ADB. 2010. Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People’s Republic of Bangladesh for Bangladesh–India Electrical Grid Interconnection Project. Manila (Loan 2661-BAN).
⁸ ADB provided regional technical assistance. ADB. 2009. Expanding the Energy Efficiency Initiative in Developing Countries. Manila.
Problem Tree

Lack of access to commercial energy

Inadequate and unreliable gas and power supplies

Constrained economic growth

Lack of gas production and power generation

Inadequate and unreliable gas and power supplies

Lack of transmission and distribution infrastructure

Inefficient use of resources

Lack of institutional capacity

Lack of progress on gas exploration

Insufficient investment in existing gas fields

Slow progress in installing new power plants

Inadequate investment in transmission and distribution networks

Inefficient use of power plants and large power system losses

Poor efficiency in end-use devices

Inadequate capacity to develop, implement, and operate projects

Inadequate long-term policy making and planning

Corporate governance and transparency issues

Limited private sector participation

Limited financial resources in public sector

Unsustainable energy pricing that does not reflect costs

Poor awareness of energy efficiency
## Draft Sector Results Framework (Power Sector, 2011–2015)

<table>
<thead>
<tr>
<th>Country Sector Outcomes</th>
<th>Country Sector Outputs</th>
<th>ADB Sector Operations</th>
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<tr>
<td><strong>Outcomes with ADB Contributions</strong></td>
<td><strong>Indicators with Targets and Baselines</strong></td>
<td><strong>Planned and Ongoing ADB Interventions</strong></td>
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<tr>
<td>Expanded access to reliable energy supplies</td>
<td>Access to electricity expanded from 47% of households in 2009 to 70% in 2015</td>
<td>Capacity of energy sector institutions strengthened</td>
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<td>Increased production from existing gas fields</td>
<td>Gas transmission company operating and maintaining the gas compressor stations by 2015</td>
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<td>Increased generation capacity</td>
<td>Power generation companies handling PPP contracting in-house by 2015</td>
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<td>Cross-border transmission links established</td>
<td>Increase in gas supplies from existing Petrobangla-operated fields by 300 MMCFD by 2015</td>
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<td>Expansion and upgrading of the gas and power transmission and distribution networks</td>
<td>Installed power generating capacity to increase from to 9,400 MW by 2015</td>
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<td>125 km western border 500 MW, 44 kV power transmission interconnection completed by 2015</td>
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<td>Work on the eastern border 500 MW power transmission interconnection initiated by 2013</td>
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<td>500 km of additional power transmission lines constructed by 2015</td>
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**Projects in pipeline**
- Power System Efficiency Improvement Project, 2011
- Energy Sector Improvement, 2012
- Regional Power Generation and Transmission, 2013
- Public–Private Infrastructure Development Facility Project, Phases 2 and 3, 2012 and 2015

**Ongoing projects**
- Gas transmission and development project ($413 million)
- Natural gas access improvement project ($542 million)
- Sustainable power sector development project ($680 million)

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ADB = Asian Development Bank, km = kilometer, kV = kilovolt, MMCFD = million cubic feet per day, MW = megawatt, public–private partnership.

Source(s): Asian Development Bank