

# Energy Efficiency, Security, and Conservation in India

- **Energy** is vital to economic growth and **poverty reduction**. In the last 30 years, productivity and wealth have risen rapidly in Asia and the Pacific—so has dependence on energy.
- **India's** economy grew by about 6% per annum in the 1990s and by about 8% in recent years. The **energy policy of India** has been shaped by fast economic growth, but also by increasing household incomes, limited domestic reserves of **fossil fuels**, and environmental impacts.
- **ADB and India** partnered in the energy sector 20 years ago. What have been the results? How can ADB now promote **energy efficiency**, **energy security**, and **energy conservation**?

## Background

Since 1986, the Asian Development Bank (ADB) has provided 24 public sector loans worth \$4.6 billion to the energy sector of India, or 29% of ADB's total public lending to that country. The **Private Sector Operations Department** has supported this with \$337 million of loans. ADB's assistance has displayed a constant focus on transmission and distribution. Lately, in line with its new **energy policy**, ADB has exited generation and hydrocarbons, played a larger role in transmission, and encouraged sector restructuring.

In 2007, the Operations Evaluation Department completed a **Sector Assistance Program Evaluation of the Energy Sector in India**,<sup>1</sup> focusing on 1996–2006. With the **Sector Assistance Program Evaluation of the Transport Sector**, the study aimed to inform the **Country Assistance Program Evaluation for India** planned for completion ahead of the new **country partnership strategy** for India. It also built on a **Special Evaluation Study on Energy Policy 2000 Review: Energy Efficiency for a Better Future** conducted in 2006 to facilitate work toward a new energy policy.

The study examined generation, transmission, and distribution; legislation and regulation; and fuel requirements. It followed broadly the **Guidelines for the Preparation of Country Assistance Program Evaluation Reports** and framed analyses as top-down and bottom-up assessments. The first integrated sector positioning and quality of sector entry, contribution to development results, and ADB's performance. The

second looked at the relevance, effectiveness, efficiency, sustainability, and impact of operations.

## Summary of Findings

Based on the five evaluation criteria, the bottom-up assessment judged the sector assistance program "successful" overall. The projects were well prepared and consonant with the absorptive capacity of the executing agencies, leading to timely completion. Ownership was high at both central and state levels and facilitated institutional changes across the sector. Demonstration effects were observed in states other than **Assam**, **Gujarat**, and **Madhya Pradesh**, where ADB concentrated state-level assistance.

From 1996 to 2006, ADB responded to the key, evolving circumstances of the energy sector with "substantial" sector positioning and quality of sector entry. It aligned the sector assistance program with the Government's development plans and ADB's energy policy and country strategies. Its focus on sector restructuring and efforts toward that, in coordination with the **World Bank**, helped the Government to deliver the reforms linked to the Electricity Act, 2003. ADB's assistance to the state electricity boards of Assam, Gujarat, and Madhya Pradesh was highly effective.

ADB contributed significant additionality. It catalyzed private sector participation, especially in recent years; developed environmental evaluation capacity; encouraged efficient processing of contract variations originating from savings; assisted bid approvals and awards; and provided sound advice on

technical matters. The technical assistance it provided to build capacity was appropriate to the design, operation, and development of projects.

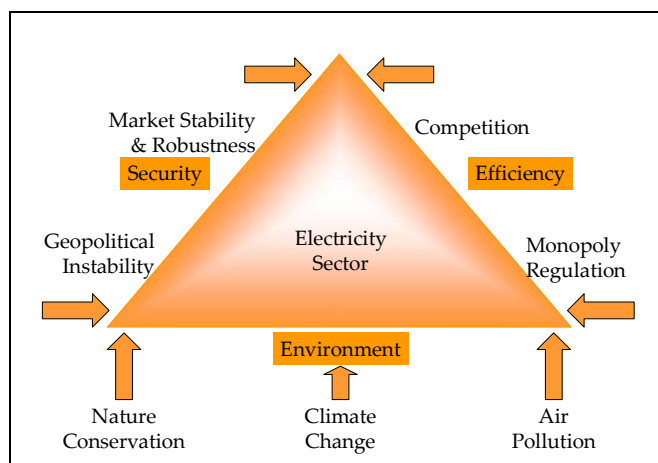
Combining the bottom-up and top-down assessments, the study rated ADB's sector assistance "successful" overall.

### Overall Rating of ADB's Sector Assistance Program

Item	Rating
<b>Top-Down Assessment, Countrywide</b>	
• Positioning of Country Strategies	Substantial
• Contribution to Development Results	Modest (bordering on substantial)
• ADB Performance	Substantial
<b>Countrywide Rating</b>	<b>Successful</b>
<b>Bottom-Up Assessment, Sector Assistance Program</b>	<b>Successful</b>
<b>Overall Rating</b>	<b>Successful</b>

The study identified the main lessons of experience to be: (i) ADB's approach to lending at the state level has worked well and could be used as a model for future assistance, (ii) sustained technical assistance is needed to support reform programs, and (iii) corporatization can provide benefits similar to those normally attributed to privatization.

### Trade-offs Between Potentially Conflicting Goals



The study identified major challenges in the future to be: (i) the continuing shortage of energy supplies—both for fuel and generation—which threatens the Government's development goals; (ii) the need to improve the viability of the energy sector through better governance and higher operational efficiency; and (iii) the necessity to minimize environmental impacts from increased generation.

The strongest impediments to meeting these potentially conflicting goals are located at the state

levels, where electrical power continues to be affected by weaknesses in operational and technical efficiencies, and continuing financial losses. As electricity provides the primary revenue for system expansion, restructuring the state electricity sector should be the highest priority for assistance. In parallel, general electricity system expansion, including transmission and generation, should be undertaken to balance supply and demand as viability will be assured with reliable revenues from restructured state sectors. Concurrently, environmental concerns must be integrated through (i) state system upgrades that reduce losses from the overloaded systems, (ii) rehabilitation of existing older generation plants, (iii) greater emphasis on energy efficiency, and (iv) a strategic environmental focus on the development of the system. Supporting these efforts, there should be continued emphasis on improving the operational efficiency of electrical power through better governance and the development of independent regulation.

### Recommendations

- Subject to the Government's agreement, ADB should continue and expand its current focus on sector restructuring and system expansion at the state level to balance supply and demand.
- ADB should integrate into, and increase energy efficiency and renewable energy initiatives in, lending programs at both central and state levels.
- ADB should tailor products and services to meet the evolving needs of clients.
- ADB should increase the number and volume of nonsovereign transactions to expand generation and transmission.

### Feedback

At the time of preparation of these *Learning Curves*, **ADB Management's Response** and the **Chair's Summary of the Development Effectiveness Committee Discussions** were not yet available for disclosure to the public. The study was completed in August 2007.

<sup>1</sup> ADB. 2007. *Sector Assistance Program Evaluation of the Energy Sector in India*. Manila. Available: <http://adbweb/Documents/Reports/SAPE/IND/SAP-IND-2007-17.pdf>