

## Ex-ante Evaluation

### **1. Name of the Project**

Country: India

Project: Rural Electrification Project

Loan Agreement: 03/31/2006; Loan Amount: 20,629 million yen; Borrower: Rural Electrification Corporation Limited

### **2. Necessity and Relevance of JBIC's Assistance**

Although the household electrification rate in urban areas in India has reached 88% (2001), the household electrification rate in rural areas is only 44% (2001). Revision of the regional gap in electrification is necessary for the achievement of balanced and sustainable growth.

In response to these issues, India's 10<sup>th</sup> Five-Year Plan (2002-2007) declares rural electrification as one of the important issues in regional development, on par with supply of drinking water, healthcare, and primary education. In the current administration's Common Minimum Programme as well, emphasis is placed on social policies for poverty alleviation and improvement of the welfare of vulnerable groups, and the rural electrification support plan called Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) was started in April 2005. By 2009, this plan aims to (1) electrify all villages, (2) install the necessary facilities so that all households can access electric power, and (3) provide electrification free of charge for poor households.

In JBIC's current Medium-Term Strategy for Overseas Economic Cooperation Operations, priority areas in assistance to India are "Economic Infrastructure Development" and "Regional Development Benefiting the Poor." The assistance provided by this project is consistent with the strategy.

In the project area, the demand outlook for household electrification henceforth is relatively high, but lack of access to electric power, which is basic infrastructure, is a bottleneck to improvement of living standards and economic activities. Therefore, from the standpoint of revising regional gaps and poverty alleviation, JBIC's assistance is highly necessary and highly relevant.

### **3. Project Objectives**

The objective of this project is to stabilize the power transmission and distribution system (through load reduction and reduction of transmission/distribution loss) and to improve the access to electric power for un-electrified households and other rural activities in the three States of Andhra Pradesh in the south and Madhya Pradesh and Maharashtra in the west by constructing and augmenting the substations and associated distribution lines, thereby contributing to the improvement of living standard of local residents and the promotion of economic and social activities in the concerned areas.

#### **4. Project Description**

(1) Target Area

States of Andhra Pradesh, Madhya Pradesh, and Maharashtra

(2) Project Outline

- (a) New construction and augmentation of substations
- (b) Development of electricity distribution network

(3) Total Project Cost/Loan Amount

24,649 million yen (Yen Loan Amount: 20,629 million yen)

(4) Schedule

April 2006 – September 2008 (30 months)

(5) Implementation Structure

- (a) Borrower: Rural Electrification Corporation Limited (REC)
- (b) Executing Agency: REC and state-owned power distribution companies in the states in the project area (a total of 8 companies)
- (c) Operation and Maintenance System: State-owned power distribution companies in the states

(6) Environmental and Social Consideration

(a) Environmental Effects/Land Acquisition and Resident Relocation

(i) Category: B

(ii) Reason for Categorization

This project is classified as Category B because the project will not have a significant negative environmental impact given that the sector and the project do not have characteristics that are likely to exert impact, and the characteristics of the region make it unsusceptible to impact, based on the “Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations” (established April 2002).

(iii) Environmental Permit

The EIA report is not required for the project in India’s legal system.

(iv) Anti-Pollution Measures

No particular negative impact caused by the project is expected. In the event that some pollution is caused by the construction, appropriate measures will be taken as necessary to deal with it by the construction company.

(v) Natural Environment

The project will be implemented along an existing road, and it is likely to have a minimal adverse impact on the natural environment.

(vi) Social Environment

The project requires land acquisition of an estimated 13 ha, which will be implemented in accordance with the country’s domestic procedures. The project will not involve any

involuntary resettlement.

(vii) Other/Monitoring

For this project, REC and each power distribution company will conduct monitoring through the steering committee, etc., concerning the environmental impact during the construction.

(b) Promotion of Poverty Reduction

In rural areas with large poor populations, the poorer the population, the more it is left behind in electrification because usage of electricity requires an initial cost and usage fees. This project will establish a stable supply of electricity to rural areas and promote access to electric power by households in rural areas, including poor people among its beneficiaries. Moreover, the Government of India is implementing measures, from the standpoint of ensuring benefits for the poor population, for the government to bear the initial cost involved in electrification of poor households, under the RGGVY. All poor un-electrified households in the project area will be electrified.

(c) Promotion of Social Development (e.g. Gender Perspective)

The executing agency will implement educational activities for beneficiary village residents concerning household electrification (i.e., notification of implementation of electrification, encouragement for household electrification, notification of and recommendations concerning the burden involved in connection) and consideration involving the burden of connection cost (installment payments of the cost, usage of micro-finance).

(7) Other Important Issues

To promote household electrification and boost the efficiency of power distribution operations through a franchise scheme, the pilot project is planned to take place by the US Agency for International Development in the project area.

## 5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicator)

	Household Electrification Rate (electrified households/total households)(%)*		Distribution Loss (%)*		Bill Collection Rate (%)*		Electricity Sales Volume (MWh)*		System average interruption duration index (hours/user per year)*	
	Baseline (2005)	Target** (2010)	Baseline (2005)	Target** (2010)	Baseline (2005)	Target** (2010)	Baseline (2005)	Target** (2010)	Baseline (2005)	Target** (2010)
Central Andhra Pradesh	70%	93%	21%	16%	80%	86%	2,852	3,547	1,320	930
Eastern Andhra Pradesh	61%	85%	15%	12%	95%	95%	6,252	10,252	1,260	870
Northern Andhra Pradesh	58%	100%	19%	18%	93%	97%	1,142	1,590	1,373	1,005
Southern Andhra Pradesh	70%	91%	22%	21%	95%	98%	1,788	2,536	1,300	920
Central Madhya Pradesh	24%	45%	44%	38%	83%	86%	5,132	6,000	2,328	2,100
Western Madhya Pradesh	39%	80%	31%	25%	91%	100%	8,929	10,872	15,082	9,600
Eastern Madhya Pradesh	37%	85%	38%	27%	93%	97%	1,020	1,288	3,000	2,400
Maharashtra	66%	87%	31%	24%	100%	100%	7,359	9,848	3,500	2,600

\* The indicators in this table are figures for the entire districts of the project area.

\*\* Two years after project completion

(2) Economic Internal Rate of Return (EIRR): 15.4%

(a) Cost: Project cost (excluding tax), operation and maintenance expense, connection charge for each household

(b) Benefit: Effect of providing alternative to existing energy (candles and lamp oil, etc.)

(c) Project Life: 25 years
<b>6. External Risk Factors</b>
<p>(1) Economic stagnation/deterioration in India and the surrounding area of the project as well as natural disasters</p> <p>(2) Increases in project cost due to steep increases in prices of materials and exchange rate fluctuation</p>
<b>7. Lessons Learned from Findings of Similar Projects Undertaken in the Past</b>
<p>In the ex-post evaluation of previous rural electrification projects, it has been learned that in projects for boosting the distribution network, etc., constant review of the plan and flexible response is necessary. Based on this, a steering committee for project implementation will be established to check the progress of the project and to study measures in the event that problems occur.</p> <p>Moreover, it has also been learned that it is difficult for rural electrification projects to recover the total amount of the project cost through income from sale of electricity and that it is necessary for costs to be appropriately apportioned among the power distribution companies, beneficiaries, and local governing bodies. Monitoring will be conducted concerning progress of the power sector reform including the above point. The report from the steering committee and the report on the progress of power sector reform sent from the power distribution companies to JBIC attached to the progress report will be available for the monitoring.</p>
<b>8. Plans for Future Evaluation</b>
<p>(1) Indicators for Future Evaluation</p> <ul style="list-style-type: none"> <li>(a) Household electrification rate in the project area (%)</li> <li>(b) Distribution loss (%)</li> <li>(c) Bill collection rate (%)</li> <li>(d) Electricity sales volume (MWh)</li> <li>(e) System average interruption duration index (hours/user per year)</li> <li>(f) Economic internal rate of return (EIRR) (%)</li> </ul> <p>(2) Timing of Next Evaluation After project completion</p>