

## Ex-ante Evaluation

### 1. Name of the Project

Country: The Islamic Republic of Pakistan

Project: Dadu-Khuzdar Transmission System Project

(Loan Agreement: December 15, 2006; Loan Amount: 3,702 million yen; Borrower: The President of the Islamic Republic of Pakistan)

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

Challenges facing Pakistan's power sector include: (1) responding to the surge in power demand (average annual growth of about 6% from 2000–2005) with rapid economic growth; (2) promoting sector reform; (3) efficiently combining thermal power generation (mainly as a base-demand response) and hydroelectric power generation (mainly as a peak-demand response); and (4) reducing power loss rates in power transmission and distribution.

Based on the 10-Year Long-Term Development Plan (September 2001) and the Poverty Reduction Strategy Paper (December 2003), the government of Pakistan is tackling “acceleration of economic growth” and “poverty reduction”. In terms of power sector, it is acknowledged that more reliable and affordable power supply is important.

Power demand in Balochistan Province, located in the southwestern part of Pakistan, accounts for 6% of the total power demand of Pakistan (2005), and the rate of electrification was 26% (the lowest in Pakistan) as of end of 2005, as compared with the national average of 72%. However, the growth rate for power demand in Balochistan was much higher than the national average of 35% at 94% (annual average of about 14%), between 2000 and 2005. In fact, it was the highest in Pakistan.

While power consumption in the agricultural sector is very high in Balochistan (where power is primarily used to pump groundwater, and the demand per household is about 4.6 times more than that of the national average), the demand for power also has been increasing in other sectors that cater to the cotton and mineral industries as well as cold storage facilities for crops.

Electrical power is currently supplied to Balochistan mainly through a single transmission line that extends from Guddu in neighboring Punjab Province to northern Balochistan (part of which was constructed with Japanese ODA loan provided in 1989 for the Second 220 kV Guddu–Sibbi–Quetta Transmission Project). In particular, end-consumers sometimes face load shedding of about 8 hours a day in central Balochistan, hindering the development of agriculture and other industries. Additionally, since Balochistan gets very little rain, it is difficult to build hydroelectric power plants. Furthermore, considering the factors such as transporting fuel and securing cooling water, building thermal power plants is not an efficient way to secure power. Therefore, there is a strong need to stably supply a sufficient amount of power by extending transmission lines into the region.

In its Medium-Term Strategy for Overseas Economic Cooperation and Operations (April 2005), JBIC adopts “achievement of balanced regional socio-economic development” as one of its priority areas. Thus, this project, which helps stabilize power supply and improve accessibility, is consistent with the medium-term strategy. Consequently, it is highly necessary and relevant that JBIC should support the project.

### 3. Project Objective

This project aims to meet the power demand in Balochistan Province through the installation of a new 220 kV transmission line (total length of 300 km) from Dadu, Sindh, to Khuzdar, Balochistan, as well as the installation of new 220/132 kV grid stations; thereby contributing to the revitalization of the local economy and improvement of the local infrastructure in the province.

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

(1) Target Area

Between Dadu, Sindh, to Khuzdar, Balochistan

(2) Project Outline

- (a) Construction of new grid stations in Khuzdar and expansion of existing transformation installations in Dadu
- (b) Installation of a new transmission line from Dadu to Khuzdar (total length of 300 km)
- (c) Consulting services

(3) Total Project Cost / Loan Amount

6,280 million yen (Japanese ODA Loan Amount: 3,702 million yen)

(4) Schedule

April 2006–March 2011 (60 months)

(5) Implementation Structure

- (a) Borrower: The President of the Islamic Republic of Pakistan
- (b) Executing Agency: National Transmission & Dispatch Company Ltd. (NTDC)
- (c) Operation and Maintenance System: Same as (b)

(6) Environmental and Social Consideration

(a) Environmental Effects / Land Acquisition and Resident Relocation

(i) Category: B

(ii) Reason for Categorization

This project is not likely to have significant adverse impact on the environment due to the fact that the project sector and project characteristics are not likely to exert impact and the project is not located in a sensitive area under the “Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations” (established in April 2002). Thus, this project is classified as Category B.

(iii) Environmental Permit

The Environmental Impact Assessment (EIA) report concerning this project is not required under the domestic laws of Pakistan.

(iv) Anti-Pollution Measures

With regard to air pollution, noise, etc., since appropriate construction machinery will be used, no adverse impacts are foreseen during the construction period.

(v) Natural Environment

The area targeted by this project is not located in or around sensitive areas such as national

parks, and so adverse impact on the natural environment is assumed to be minimal.

(vi) Social Environment

In this project, acquisition of land is required to construct the steel towers for the transmission line, but the required land has already been acquired. Resident relocation will not be required.

(vii) Other/Monitoring

In this project, the executing agency will monitor noise and other types of pollution.

(b) Promotion of Poverty Reduction

None

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

None

(7) Other Important Issues

None

## 5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicator)

Indicator	Baseline (2005)	Target (2013, 2 years after completion)
Availability factor (%)	—	63
Load shedding (MW)	7	0
Voltage drop at end user (%)	24	0

(2) Internal Rate of Return

Financial Internal Rate of Return (FIRR): 8.29%

(a) Cost: Project cost, operation and maintenance expenses

(b) Benefit: Revenue from the sale of electricity

(c) Project Life: 29 years

## 6. External Risk Factors

While there are concerns about deterioration in the security situation, security is expected to be taken into consideration by the government of Balochistan Province and NTDC.

## 7. Lessons Learned from Findings of Similar Projects Undertaken in the Past

A lesson learned from the ex-post evaluations of similar projects in the past is that the project site cannot be adequately patrolled because the proposed transmission lines are being constructed about 10–20 km from an arterial road, resulting in the loss of construction material due to theft and difficulties in accessing the sites when trouble develops with the transmission lines and steel towers, which takes a long time to resolve. Based on this lesson, measures are being taken to prevent these problems from occurring through installation of the bulk of the transmission line route along an arterial road.

## 8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

(a) Availability factor (%)

(b) Load shedding (MW)

- (c) Voltage drop at end user (%)
- (d) Internal rate of return: FIRR (%)

(2) Timing of Next Evaluation  
After project completion