

## Ex-ante Evaluation

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

Country: The Republic of Iraq

Project: Al-Mussaib Thermal Power Plant Rehabilitation Project

(Loan Agreement: January 25, 2008; Loan Amount: 36,764 million yen; Borrower: The Government of the Republic of Iraq)

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

In the aftermath of many years of economic sanctions and conflicts, which have left deep scars in its economy and society, Iraq has begun to move toward reconstruction with assistance from the international community after the war.

As is pointed out in Iraq's national development strategy of 2005–2007, which was launched in June 2005, the power sector is the bedrock of all economic and social activities. Nevertheless, because of the many years of lack of new investments and inadequate operation and maintenance, looting and the like, all three components of the electric power system – generation, transmission, and distribution – have virtually broken down. Consequently, Iraq's power sector is one of the most important sectors that need to be restored for reconstruction of the country.

The amount of electricity generated, which exceeded 9,000 MW in the 1990s, has today decreased to less than 4,000 MW. The steep drop in power supply has forced the Government of Iraq to constantly carry out planned nationwide outages for long stretches. This has resulted in, among other things, power supplies to waterworks, hospitals and other basic infrastructure being cut off, which in turn has become a huge obstacle for economic reconstruction and restoration of social stability. Consequently, restoration of power generating installations has become an urgent issue.

The Al-Mussaib Thermal Power Plant (300 MW x 4 installations) is located near the Baghdad metropolitan area. It began operating in the latter half of the 1980s, and is one of the most important power generating installations in Iraq. Nevertheless, because of inadequate operation and maintenance caused by economic sanctions and the like, both the output and the rate of operation have dropped precipitously. Thus, there is now an urgent need for comprehensive rehabilitation of all related facilities.

In the International Conference on Reconstruction in Iraq held in Madrid in October 2003, besides grand aid amounting to \$1.5 billion for urgent reconstruction of Iraq, the Government of Japan pledged a total of \$3.5 billion in yen loans to support medium-term reconstruction after 2005. Additionally, in JBIC's Medium-Term Strategy for Overseas Economic Cooperation Operations (April 2005), one of the sectors is the assistance it provides for efforts being made to solve global problems and build peace. Consequently, the support for Iraq, where social instability continues even after major conflicts have ceased, is consistent with JBIC's assistance policy.

JBIC's support for the project is therefore highly necessary and relevant.

### **3. Project Objectives**

This project aims to streamline and stabilize Iraq's electric power system by rehabilitating the thermal power plant in Al-Mussaib, located 75 km south of Baghdad, and thereby contribute to the economic and social reconstruction of Iraq.

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

(1) Target Area

Al-Mussaib, Babil Province

(2) Project Outline

- (1) Rehabilitation of power generating installations (Installations 1 and 3)
- (2) Rehabilitation of shared facilities
- (3) Consulting services

(3) Total Project Cost / Loan Amount

42,198 million yen (Yen Loan Amount: 36,764 million yen)

(4) Schedule

March 2007 – December 2012 (70 months). The definition of project completion is “when the facilities are delivered.”

(5) Implementation Structure

- (a) Borrower: The Government of the Republic of Iraq
- (b) Executing Agency: Ministry of Electricity (MOE)
- (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 Consideration” (established in April 2002). Thus this project is classified as Category B.

(iii) Environmental Permit

Preparation of the Environmental Impact Assessment (EIA) report related to the project is not required under Iraq’s domestic laws.

(iv) Anti-Pollution Measures

This project involves the rehabilitation of the existing power plant including effluent treatment facilities. Thus it is not assumed that the project will have any significant negative impact on the environment.

(v) Natural Environment

This project will be implemented on the premises of the existing power plant, and so the adverse impact on the natural environment is assumed to be minimal.

(vi) Social Environment

This project involves rehabilitation of the existing thermal power plant, and so it involves

neither land acquisition nor resident rehabilitation.

(vii) Other / Monitoring

The executing agency will monitor the project's impact on the environment on the basis of an environment monitoring plan prepared with the support of the project's consulting services.

(b) Promotion of Poverty Reduction

None

(c) Promotion of Social Development (e.g. Gender Perspective, Measures for Infectious Diseases including AIDS, Participatory Development, Consideration for the Handicapped, etc.)

None

(7) Other Important Issues

(a) Its size and proximity to the capital region render the Al-Mussaib Thermal Power Plant one of the most important power generating installations in Iraq's electric power system, and so it has a huge ripple effect on the Iraqi economy. Being a rehabilitation project, the time lag between project completion and the manifestation of its effects will be relatively short.

(b) Assistance in cooperation with the grant assistance provided by the Government of Japan by way of UNDP.

(c) This project aims to rehabilitate an existing power plant that was built by a Japanese company. It involves providing adequate training for the staff of the Ministry of Electricity and establishing a remote-control operation system from neighboring countries. Also, the project will share experiences and survey results concerning implementation of similar projects with UNDP and other organizations.

## 5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicator)

Indicator	Baseline (2005)	Target (2014, 2 years after completion)
Maximum output (MW)	180 (Inst. 1), 0 (Inst. 3)	180 & more (Inst. 1), 240 & more (Inst. 3)
Plant load factor (%)	N.A. (Inst. 1), 0 (Inst. 3)	65 & more (Inst. 1), 65 & more (Inst. 3)
Availability factor (%)	N.A. (Inst. 1), 0 (Inst. 3)	91 & more (Inst. 1), 91 & more (Inst. 3)
Net electric energy production (GWh/year)	N.A. (Inst. 1), 0 (Inst. 3)	953 & more (Inst. 1), 1270 & more (Inst. 3)

(2) Internal Rate of Return (Financial and Economic Internal Rate of Return)

Based on the following conditions, the financial internal rate of return (FIRR) of the project is 10.6%. Since there are no valid data on the ripple effect of the project on the national economy, it is not possible to calculate the economic internal rate of return (EIRR)

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

(b) Benefit: Earnings from selling electricity

(c) Project Life: 15 years

## 6. External Risk Factors

Deterioration of law and order, etc.

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

A lesson learned in the similar past projects is that establishing an appropriate operation and maintenance system is indispensable for ensuring smooth operation and maintenance of facilities after they are launched. The Ministry of Electricity, the project's operation and maintenance agency, has operated and maintained the power generating installations targeted for rehabilitation by this project during the period of economic sanctions as well as before and after the current conflict. However, attention will continue to be paid to establish an operation and maintenance system by, among other things, offering training for the staff of the Ministry of Electricity as part of the project.

### **8. Plans for Future Evaluation**

#### (1) Indicators for Future Evaluation

- (a) Maximum output (MW)
- (b) Plant load factor (%)
- (c) Availability factor (%)
- (d) Net electric energy production (GWh/year)

#### (2) Timing of Next Evaluation

2 years after project completion