

Ex-Ante Evaluation (for Japanese ODA Loan)

1. Name of the Project

Country: The Republic of Uzbekistan

Project: Electric Power Sector Capacity Development Project

Loan Agreement: January 27, 2015

Loan Amount: 3,000 million yen

Borrower: The Government of the Republic of Uzbekistan

2. Background and Necessity of the Project

(1) Current State and Issues of the Electric Power Sector in Uzbekistan

In the electric power sector in Uzbekistan, many of thermal power plants, which generate approximately 90% of all power, are aging due to operation of more than 40-50 years, and their average generation capacity is only around 30% against the total rating capacity. This causes not only a short supply of electric power, but also over fuel consumption, and CO₂ emission. (The country has one of the highest CO₂ emission per unit of GDP per capita; ranked the worst in 2009 with 1.5kg; and the 5th in 2010 with 1.2kg, World Development Indicators, World Bank).

(2) Development Policies for the Electric Power Sector in Uzbekistan and Priority of the Project

Though the government of the Republic of Uzbekistan has promoted modernization of aged power generation facilities with assistance from international financial institutions and JICA, the country still faces challenges such as maximizing benefit from continued modernization, stabilizing and improving efficiency of long-term electric power supply. For that purpose, there are a lot to do besides building infrastructure, such as institutional and human capacity development for proper operation and maintenance of power generation facilities and capacity building of development planning. Regarding the planning of individual projects, the government of the Republic of Uzbekistan has formulated “the concept of producing electric power in the Republic of Uzbekistan by 2030”. As the modernization of the Syrdarya Thermal Power Station which is included as a priority project in the said concept, engineering service (E/S) will be conducted under the Project, in order to accelerate preparation of the modernization of the Power Station.

(3) Japan and JICA's Policy and Operations in the Electricity Sector

Japan's Country Assistance Policy for Uzbekistan (April 2012), defines the

renovation and development of economic infrastructure (for transportation and energy) as one of priority areas, and JICA country analysis paper (July 2012, updated in November, 2014) also highlights development of economic infrastructure especially for transportation and power sector as a priority area, which is consistent with the objective of the Project. As for the past Japanese ODA loan projects in the electricity sector, JICA has provided four loans totaling 159,094 million yen to Uzbekistan. Also, JICA has been supporting improvement of electric power company's management and enhancement of technical capacity related to thermal power plants through its training courses; "Training on management of electric company" and "Training for Thermal Power Generation (Gas Turbine Combined Cycle)"

(4) Other Donors' Activity

The World Bank and the Asian Development Bank are assisting in such areas as the introduction of the smart meters, development transmission lines and extension of generation facilities.

(5) Necessity of the Project

As the Project is in response to Uzbekistan's development issues and is in line with its development policies as well as Japan's assistance policy, there is a high level of necessity and validity to JICA's support for the Project.

3. Project Description

(1) Project Objectives

The objective of the Project is to enhance the capacity of Uzbekenergo and its affiliate for planning, operation and maintenance of combined cycle power projects by introducing relevant equipment, materials, and services, and thus to contribute to improvement of stability and efficiency of the electric power supply in Uzbekistan.

(2) Project Site/Target Area: Tashkent city, Navoi province, and Syrdarya province

(3) Project Components

- 1) E/S for modernization of "Syrdarya Thermal Power Station" (preparation of feasibility study, basic design, documents related to environmental and social considerations, study for situation of land acquisition, assistance for making tender documents etc.)
- 2) Procurement and installation of CCPP Training Center equipment (Turbine cut-away model, CCPP operation simulator, etc.)
- 3) Procurement of goods and services for regular inspections of the existing power plant

(4) Estimated Project Cost (Loan Amount)

3,774 million yen (Loan amount: 3,000 million yen)

(5) Schedule

From January 2015 to March 2018 (total: 39 months). The Project completion is defined as the completion of the service of the facilities (March 2018).

(6) Project Implementation Structure

- 1) Borrower: The Government of the Republic of Uzbekistan
- 2) Executing Agency: The State Joint-Stock Company “Uzbekenergo”
- 3) Operation and Maintenance System: The main income source of Uzbekenergo is sales of electricity and heat, and the electricity tariff is set so as to meet the cost-recovery level. In recent years, a surplus is continuing and cash flow from operating activity has increasing tendency, due to tariff increase, therefore, there is no problem with its financial position. As Uzbekenergo has built capacity of management level staff and engineers through trainings by JICA and so on, there is no concern over capacity on project implementation.

(7) Environmental and Social Considerations/Poverty Reduction/Social Development

1) Environmental and Social Considerations

(i) Category A

(ii) Reason for Categorization: The Project falls under the thermal power generation sector under the “JICA guidelines for environmental and social considerations” (issued in April 2010).

(iii) Environmental Permit: To be considered during the E/S.

(iv) Anti-Pollution Measures: To be considered during the E/S.

(v) Natural Environment: To be considered during the E/S.

(vi) Social Environment: To be considered during the E/S.

(vii) Other / Monitoring: To be considered during the E/S.

2) Promotion of Poverty Reduction: none

3) Promotion of Social Development (e.g. Gender Perspective, Measure for Infectious Diseases including HIV/AIDS, Participatory Development, Considerations for Persons with Disabilities, etc.): none

(8) Collaboration with Other Donors: none

(9) Other Important Issues: This project belongs to Electric Power Sector Project Loan (SPL) composed of three individual projects. This Project is expected to contribute to mitigation of climate change because it promotes energy efficiency.

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect Indicator)

For the component of E/S for modernization of “Syrdarya Thermal Power Station”, operation and effect indicators are to be set through E/S. As for Procurement of goods and services for regular inspections of existing CCPPs

and Procurement and installation of CCPP training center equipment, effect indicators are not to be set, because effects that each component brings to plants or the training center are limited, while quantitative effects are set as below.

Indicators	Base line (Yr 2014)	Target (Yr 2020) 2 years after project completion
Operational Indicators (Sub-component 3: Procurement of goods and services for regular inspections of existing CCPP)		
Rated Net Power Output of existing CCPP (MW)	478	478
Plant Load Factor (%)	75	78
Availability Factor (%)	87	88
Outage Hours per cause (hours/year)	Human Error	0
	Machine Trouble	84
Operational Indicators (Sub-component 2: CCPP Training Center equipment)		
Number of trainees who use the equipment	0	-*
Number of lectures for which the equipment is used	0	-*

*As for the component of Training Equipment, Indicators will be considered with the progress of technical cooperation project “the Project for Establishment of the Combined Cycle Gas Turbine (CCGT) Operation and Maintenance Training Center”, which is planned to start from the second quarter of 2015.

2) Internal Rate of Return: Internal rate of return is not to be calculated because this is a sector loan.

(2) Qualitative Effects: Capacity development of operation and maintenance of CCPP and planning capacity of individual projects related to electric power sector.

5. External Factors and Risk Control

Uzbekistan’s Policies on electric power sector is not changed.

6. Lessons Learned from Past Projects

Uzbekistan’s Tashkent Thermal Power Plant Modernization Project had difficulties in process of contractor bidding, due to delay of proposal evaluation process, price increase of material, lack of competitiveness, and unsatisfactory technical bid of candidates. Thereafter, JICA has promoted capacity development of procurement through dispatch of procurement experts and other assistances on similar projects, and significant problem has not been observed. In this project, the consultants to assist with bidding are not planned to be employed and the executing agency is in charge of all procurement procedure by itself, therefore, JICA will closely communicate with the executing agency to assist its process. In

order to prevent any delay of procurement procedure, JICA will monitor and discuss the progress with the executing agency and consultants for E/S on appropriate cost estimation and specifications.

7. Plan for Future Evaluation

(1) Indicators to be Used in Future Evaluations

- 1) Maximum Power Output (MW)
- 2) Plant Load Factor (%)
- 3) Availability Factor (%)
- 4) Outage Hours per cause (Human Errors, Machine Errors) (hours/year)
- 5) Number of trainees who use the equipment
- 6) Number of lectures for which the equipment is used

(2) Timing of Next Evaluation

Two years after project completion