

Ex-Ante Evaluation (for Japanese ODA Loan)

1. Name of the Project

Country: The Republic of Cape Verde

Project: Electricity Transmission and Distribution Network Development Project

Date of Loan Agreement: March 30, 2012

Loan Amount: 6,186 million yen

Borrower: The Government of the Republic of Cape Verde

2. Background and Necessity of the Project

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

The total capacity of the power generation facilities in the Republic of Cape Verde (hereinafter called the Country) is 92MW (82MW with thermal power, 2MW with wind power and 8MW with solar power in 2010). Thanks to the growing service industry including tourism especially, the Country achieved the average annual GDP growth rate of about 6% from 2001 to 2010. The electric power demand is expected to increase at an annual average rate of about 10% in the next five years. As the Country is not rich in water resources and gets part of the drinking water through seawater desalination, it needs stable and sufficient electric power supply to secure water resources as well.

Moreover, in addition to the insufficient capacity of power generation, transmission and distribution facilities, the existing facilities are getting old and electric power cannot be imported from the neighboring countries. Therefore, the Country is actively increasing the capacity of power supply facilities, while giving consideration to the principle of the “ex-fossil-fuel society”. Especially because the local municipalities have separately developed small-scale power generation facilities and terminal distribution networks, there are not enough long-distance and high-voltage power distribution facilities and it has caused a problem of power transmission and distribution losses. Also with growing demand, the improvement of the power distribution networks is urgently required.

Also, due to the shortage of power transmission and distribution facilities, the electrification rate of the Country stays at 80% (2008) and the electricity demand is not met for healthcare, medical and social service facilities as well as desalination of drinking water, which is a basic need. Moreover, as the annual electric power demand is expected to increase from the current 204GWh to 448GWh in 2016 due to the rapid growth of the service sector including tourism especially as well as population increase, there is a pressing need for the improvement of power generation, transmission and distribution facilities.

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

With a goal of “becoming a modern and energy-efficient country”, the government aims to equip the Country with international competitiveness and a high level of public welfare and living standard. With the government ordinance 54/99, they plan to reduce power generation cost, increase supply capacities and develop a more reliable transmission and distribution network by introducing the principle of market competition and integrating small and

inefficient power plants. Environmental protection and electrification in rural areas are also important policies for the electric power sector.

The priority goals identified in the “Electric Power Sector Investment Plan (2010)” include (1) increase of production capacities for electric power energy, (2) increase of efficiency in energy production, distribution and consumption, (3) utilization of renewable energy, and (4) reduction of non-electrified population. Improvement of a power transmission and distribution network, which the Project will work on, is considered to be a highly urgent task in the plan.

(3) Japan and JICA’s Policy and Operations in the Electric Power Sector

Japan has cited “acceleration of growth” as one of the priority goals in the “Yokohama Action Plan”, established in TICAD IV in May 2008, with emphasis on the improvement of infrastructures as one of the concrete assistance areas and the only priority area in the Rolling Plan for the Country is “economic and social infrastructure reinforcement”. The Project is in line with such development policies of Japan and JICA. As for the past aid in the area, a yen loan was extended for the Power Generation, Transmission and Distribution Capacity Building Project on Santiago Island in March 2008 (approved amount of 44.68 billion yen).

(4) Other Donor’s Activities

Other donors providing assistance in the electric power sector of the Country include the World Bank (improvement of Palmarejo Thermal Power Plant in Santiago Island, Lazareto Thermal Power Plant in São Vicente Island etc.), the African Development Bank (AfDB) (improvement of Calheta Substation, Palmarejo Thermal Power Plant and a wind power station in Santiago Island, and a wind power station in Sal Island) and the Agence Française de Développement (AFD) (extension of Palmeira Power Plant in Sal Island). Japan provided the yen loan in 2008 through co-financing (EPSA/ACFA) with the AfDB.

(5) Necessity of the Project

As stated above, the Project, which is for stabilization of electric power supply and improvement of the access to electricity, will deal with the issues of the Country and is in line with the development policies of the Country. As it is also in line with the assistance policies of Japan and JICA, the necessity and relevance of JICA’s assistance to the implementation of the Project is high.

3. Project Description

(1) Project Objective(s)

The Project will contribute to the improvement of the living conditions of the people and the economic revitalization of the Country by stabilizing electric power distribution and improving the access to electricity through the new construction, enhancement and update works of power transmission and distribution lines in 6 islands of the Country. It will also contribute to climate change mitigation by reducing the greenhouse gas emissions through the reduction of power transmission and distribution losses and electrification of non-electrified communes.

(2) Project Site/Target Area

6 islands of the Country (Santo Antão, São Vicente, Sal, Maio, Santiago and Fogo)

(3) Project Component(s)

- 1) New construction, enhancement and update works of power transmission and distribution lines (about 360km of transmission lines etc.) (international competitive bidding)
- 2) Procurement and installation of supervisory control and data acquisition system (SCADA) (3 islands of São Vicente, Sal and Santiago) (international competitive bidding)
- 3) Procurement of equipment and materials for construction (30 vehicles etc.) (international competitive bidding)
- 4) Consulting services (such as bidding assistance, construction supervision, audit and environmental monitoring services) (shortlist method) etc.

(4) Estimated Project Cost: 7,401 million yen (Loan Amount: 6,186 million yen)

(5) Schedule

The Project is scheduled to be from March 2012 to September 2017 (a total of 67 months). The Project will be completed at the time of the completion of the construction (September 2016).

(6) Project Implementation Structure

- 1) Borrower: The Government of the Republic of Cape Verde
- 2) Executing Agency: Ministry of Tourism, Industry and Energy
- 3) Operation and Maintenance System: Empresa de Electricidade e Água (ELECTRA)

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

1) Environmental and Social Consideration

① Category: B

② Reason for Categorization: The Project does not include sensitive sectors, characteristics or areas described in the Guidelines for Environmental and Social Considerations (issued in April 2010), and therefore the adverse impact of the Project is considered to be moderate.

③ Environmental Permit: The Environment Impact Assessment (EIA) Report of the Project was approved by the Ministry of the Environment, Housing and Land Planning of the Country in October and December 2011.

④ Anti-Pollution Measures: The Project is expected to satisfy the emission and environmental standards of the World Bank for air and water quality.

⑤ Natural Environment: The Project site does not fall into the category of sensitive areas such as a national park or its vicinity. Therefore the adverse impact on the national environment is expected to be minimal.

⑥ Social Environment: The Project will involve the acquisition of about 1.1 hectares of land, which will be carried out according to the procedures of the Country and the Guidelines for Environmental and Social Considerations of JICA.

⑦ Other / Monitoring: For the Project, air quality, water quality, soil, ecosystem, land acquisition etc. will be monitored during the construction period mainly by the executing agency.

2) Promotion of Poverty Reduction: As preferential treatment to improve access of the poor,

lower rates are given to consumers whose electric power consumption is low.

- 3) Promotion of Social Development (e.g. Gender Perspective, Measure for Infectious Diseases Including HIV/AIDS, Participatory Development, Consideration for the Handicapped etc.): As the Project will achieve stable supply of drinking water and electrification of educational and health facilities etc., quality improvement of the social services for local residents can be expected. Educational activities for local residents on safety measures will also be provided.
- (8) Collaboration with Other Donors: The yen loan for the Project will be provided through co-financing with the AfDB.
- (9) Other Important Issues: As the Project is for reduction of power transmission and distribution losses through update works of deteriorated transmission and distribution lines and for heat source conversion through rural electrification, it will contribute to the reduction of greenhouse gas emissions.

4. Targeted Outcomes

(1) Performance Indicators

1) Operation and Effect Indicator

Indicator	Baseline (Actual value in 2010)	Target (2018) 【Expected value 2 years after project completion】
Electric power sales [MWh]	204,394	448,323
Rural electrification rate [%]	85.4	89.5
Outage time caused by human errors of SCADA*1 [min/year]	N.A.	0
Outage time caused by accidents per consumer (SAIDI*2) [min/year]	1,336.5	539.7
Reduction of greenhouse gas emissions [t-CO ₂ /year]	N.A.	3,317

*1 SCADA: Supervisory Control And Data Acquisition

*2 SAIDI: The System Average Interruption Duration Index

2) Internal Rate of Return

Based on the following conditions, the economic internal rate of return (EIRR) of the Project will be 17.6% and the financial internal rate of return (FIRR) will be 17.3%.

[EIRR] Cost: project cost, cost for power generation, operation and maintenance cost (tax not included)

Benefit: increased convenience for consumers, reduction of fuel cost

Project Life: 20 years

[FIRR] Cost: project cost, cost for power generation, operation and maintenance cost

Benefit: increased revenue from electric power sales, reduction of fuel cost

Project Life: 20 years

- (2) Qualitative effect: improvement of living conditions of the people, economic

revitalization, promotion of tourism etc.

5. External Factors and Risk Control

Deterioration of political and economic situations in the Country caused by extremely deteriorated economy in Europe, and natural disasters.

6. Lessons Learned from Past Projects

(1) Evaluation of similar projects

As for rural electrification, the result of the ex-post evaluation of a past power transmission and distribution project (grant aids) shows that about 30% of the local residents are behind on their electricity bills due to poverty. From this, we have learned a lesson that we should be careful about how to deal with the poorest who have difficulty paying electricity bills.

(2) Lesson for the Project

As some poor residents live in the planned electrification area of the Project, based on the above-mentioned lesson, it should be ensured that the project operator will collect rates properly and the executing agency will provide support for that. And regarding the electricity tariff, there is a lower rate applicable to customers of low electricity consumption and the World Bank will provide technical assistance to improve electricity rate collection by ELECTRA.

In the electric power sector, other donors have carried out electrification projects in some islands. Therefore, there will be coordination between the co-financier AfDB and the Project Implementation Unit of the Project to smoothly establish a proper rate collection system.

7. Plan for Future Evaluation

(1) Indicators to be Used

- 1) Electric power sales [MWh]
- 2) Rural electrification rate [%]
- 3) Outage time caused by human errors of SCADA [min/year]
- 4) Outage time caused by accidents per consumer (SAIDI) [min/year]
- 5) Reduction of greenhouse gas emissions [t-CO₂/year]
- 6) Economic internal rate of return (EIRR) and financial internal rate of return (FIRR) (%)

(2) Timing: 2 years after the Project completion