

Ex-Ante Evaluation (for Japanese ODA Loan)

Private Sector Investment Finance Division,

Private Sector Partnership and Finance Department, JICA

1. Name of the Project

Country: Federal Republic of Brazil (“Brazil”)

Project: Northeastern Clean Electrification Project (the “Project”)

Loan Agreement: March 30, 2021

2. Background and Necessity of the Project

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

Brazil has a large income disparity, with a poverty rate of 12.1% (about 3.6 million people) of the state population in the relatively developed south, while the rate rises to 43.6% (around 25 million people) in the poorest northeastern region (Brazilian Institute of Geography and Statistics (IBGE), 2019). Although Brazil has achieved an electricity grid connection rate of 99.4% of the total population, the 1.25 million people that are not connected to the electric power grid are mainly in the northeast, and of these, 215,000 people are in the northeastern state of Bahia, which is the target site of the Project (Neoenergia, 2019).

73% of Brazil’s electricity matrix comes from renewable energy sources, mainly hydropower, (Brazil’s Energy Research Office (EPE), 2019), and even in the northeast the main sources of electricity include wind power, hydropower, and solar power. However, there are many areas that are not connected to the grid and they have to use coal and firewood for cooking, and relatively expensive diesel engine generators and kerosene lamps for lighting, which puts a strain on poor households’ finances, emits greenhouse gases, affects vegetation, and raises safety and health concerns regarding household fires and air pollution. For these reasons, the Federal Government of Brazil launched the Luz para Todos (Light for All) program in 2003, with the aim of achieving an electricity grid connection rate of 100%. Also, in 2015, Brazil experienced electric distribution losses of 13.5%, and the average annual power outage time was 18.6 hours, and thus stabilization of the existing system in this vast country is also an important issue, as well as connecting the unconnected areas to the electricity grid. The Brazilian government’s “Ten-Year Energy Expansion Plan 2029” states that in addition to promoting investment in renewable energy, it will strengthen the power grid. The government also commits to reducing greenhouse gas emissions in its “Nationally Determined Contributions” based on the Paris Agreement

The Project will contribute to solve the problems of Brazil's electric power sector by carrying out repairs to existing transforming equipment and connecting people to the power grid in Bahia, where a lot of the population is unconnected. It will substitute fossil fuels like coal and diesel, which are used in unconnected areas and during power outages, with renewable energy. The Project will also contribute to energy saving through the reduction of electric power losses and to promoting climate change countermeasures (mitigation measures).

(2) Japan's and JICA's Cooperation Policy and Operations in the Electric Power Sector in Brazil

The Project, through support to the private sector, will increase connectivity with an electric grid mainly powered by renewable energy, promote energy conservation by reducing power losses in the existing system, and promote climate change countermeasures (mitigation measures) and the use of low carbon energy. Thus, it can be considered to be contributing to Goal 7 (sustainable energy), 10 (reduced inequalities), 13 (climate action), and 17 (partnerships) of the SDGs. It also contributes to a priority area of the Japanese government's Country Development Cooperation Policy for Brazil (April 2018), "Urban Problems and Environment and Disaster Planning," and the Cooperation Program's "Climate Change Countermeasures Program." The Project is consistent with the Country Analysis Paper (January 2016) that considers cooperation with the power transmission and distribution field, as JICA deals with the issues of the increase of technical losses (losses due to resistance and leakages during transmission of electricity) and frequent power outages.

(3) Other Donors' Activity

The Project is co-financed by BNDES (Brazil's National Bank for Economic and Social Development).

3. Project Description

(1) Project Objective(s)

The objective of the Project is, by establishing an electric power grid, to electrify the state of Bahia in Brazil and promote energy efficiency through the reduction of electric power losses, thereby contributing to reducing regional inequalities and to promoting climate change countermeasures (mitigation measures).

(2) Project Sites / Target Areas

Bahia, Brazil

(3) Project Outlines

In 1997, the borrower of this project, Companhia de Electricidade do Estado da Bahia (hereafter referred to as “Coelba”) entered into a 30-year (until 2027) concession contract with the Ministry of Mines and Energy for power distribution services in Bahia state in the northeast of Brazil. Based on this contract, Coelba has an overall plan to construct a new substation, repair and update existing substations, and establish the power grid. This Project will support the this plan for 2021-2022.

(4) Total Project Cost

55.9 billion yen

(5) Project Implementation Period

2021 – 2031

(6) Project Implementation Structure

- 1) Borrower: Companhia de Eletricidade do Estado da Bahia (Coelba)
- 2) Guarantor: Neoenergia S.A.
- 3) Executing Agency: Coelba
- 4) Operation and Maintenance Agency: Coelba

(7) Collaboration and Role-Sharing with Other Aid Organizations and Projects

- 1) Japanese Cooperation Activities: Carry out task-based training for multiple members of the Power Distribution Department of the Brazilian Electricity Regulatory Agency (ANEEL), which is the supervisory body of the electric power sector.
- 2) Cooperation Activities of Other Organizations: The Project is co-financed by BNDES (Brazil’s National Bank for Economic and Social Development).

(8) Environmental and Social Considerations, Cross-sectional Items, and Gender Classification

1) Environmental and Social Considerations

1) Category classification: FI

2) Basis for categorization: This project’s categorization is based on the “JICA Environmental and Social Consideration Guidelines” (April 2010, hereafter referred to as “JICA Guidelines”), as it’s assumed that subprojects cannot be specified before JICA’s loan agreement, and that those subprojects will have an effect on the environment.

3) Environmental approval and authorization: In this project, it was agreed in the loan agreement and confirmed in the review that the borrower will carry out category classification for each subproject based on their own

company's environmental and social consideration system, Brazil's domestic legal system and the JICA Guidelines, and that the necessary countermeasures appropriate for each category would be taken. Furthermore, it was also agreed in the loan agreement and confirmed in the review that subprojects classified as Category A under the JICA Guidelines (projects in protected areas and important natural habitats, projects involving largescale resettlement of inhabitants, projects involving large-scale deforestation or land modification, etc.) would not be carried out.

- 2) Cross-sectional Items: This project will contribute to climate change countermeasures (mitigation measures), as it's expected it will reduce greenhouse gas emissions by electrifying the area using renewable energy as the main power source, and save energy by curtailing electric power losses.
- 3) Gender classification: [Not applicable] ■ GI (Gender mainstreaming needs investigation and analysis items) <Reasons for classification> As although gender mainstreaming needs were confirmed, specific efforts to contribute to gender mainstreaming were not included.
- (9) Other Important Issues: Nothing in particular.

4. Project Outcomes

(1) Quantitative Effects

1) Outcomes (Operation and Effect Indicator)

Indicator	Baseline (2019)	Target (2 years after start of operation: Current state 2024)
Number of newly connected households (households)	-	48,838 (End of 2022)
CO2 emissions reduction (t)	-	26,836
Electric power losses rate (%)	15.12	14.14
Annual power outage time per user (hours)	12.19	11.35
Number of power outages per year per user (times)	5.91	5.86

(2) Qualitative effects: Reduced regional inequalities, mitigation of climate change

5. Lessons Learned from Past Projects

The lesson learned in the ex-post evaluation of the ODA loan to Peru for the “Electric Frontier Expansion Project (III),” (2018) was the need to specifically understand and consider experiences from similar projects and the ability of the executing agency, in order to consider the appropriate form of contract for projects where supervising the implementation is considered to be very difficult, due to the inclusion of factors like the procurement of large quantities of materials and equipment, and construction work being carried out at multiple remote locations. Regarding this project, Coelba has carried out new grid connections for 650,000 households and has supplied electricity to 6.1 million homes in Bahia over the last 20 years, and has a track record of procuring large quantities of materials and equipment, and supervising construction work in multiple remote locations. They have established dedicated departments for each region in the state, carry out remote supervision using IT, and make quarterly public disclosures about their financial affairs, etc., as a main subsidiary of the listed company Neoenergia. Therefore, there are no concerns about its experience and ability.

6. Evaluation Outcome

As described above, the need for the Project has been recognized, and there is an appropriate project plan with a sufficient likelihood of achieving it, and thus this loan will be granted.

7. Plan for Future Evaluation

(1) Indicators to be Used

As shown in Section 4 above.

(2) Future Evaluation Schedule (estimate)

2025 Ex-post evaluation

END