

Ex-Ante Evaluation

March 23 2026

Private Sector Partnership and Finance Department, JICA

1. Basic Information

Country: Federative Republic of Brazil (hereinafter referred to as “Brazil”)

Project Name: Northeast Clean Power Distribution Improvement Project
(hereinafter referred to as “the Project”)

Date of L/A Signing: March 23, 2026

2. Project Background and Necessity

(1) Current Status and Challenges in the Development of the Electricity and Energy Sectors in the Country, and the Role of the Project

Brazil has significant regional disparities in income; while the poverty rate in the relatively developed South is 10.5% of the state population (approximately 3.13 million people), it reaches 41.3% (approximately 18.92 million people) in the Northeast—the poorest region, which includes the state of Bahia, the target area of the Project (World Bank, 2022). Furthermore, while the electricity grid connection rate is 100% in urban areas, it stands at 97.3% in rural areas (World Bank, 2022). The unelectrified population in Bahia is estimated at approximately 29,500 households (100,542 people) as of 2024. It is the only state among Neoenergia’s concession areas where the federal government’s “Luz para Todos” (Light for All) program—aiming for 100% grid connection—is ongoing, and Coelba aims to complete the program by 2026 with government funding (Neoenergia Sustainability Report 2024). Furthermore, Bahia’s GDP growth rate in 2023 was 6% (Invest in Brazil 2025), and its population stood at 14.85 million (a 5% increase from the previous year) (G1 BA 2024). Due to economic growth and population increase, approximately 200,000 new connections are made annually, and annual electricity distribution volume is growing at an annual rate of about 5%. Consequently, upgrades to the distribution grid are necessary to ensure a stable power supply.

Furthermore, in Brazil, power losses occurring in the power system—primarily in transmission and distribution networks—stand at 14.0% (National Electric Energy Agency (ANEEL), 2024), and the average annual power outage duration is 10.24 hours (ANEEL, 2024). Additionally, the adoption of renewable energy sources such as wind and solar power, where generation fluctuates with weather

conditions, is progressing, making grid stabilization an urgent priority. In the state of Bahia, power losses stand at 15.7% and the average annual power outage duration is 10.2 hours (Neoenergia Sustainability Report 2024). Furthermore, wind and solar power now account for 67.5% of the power mix (EPE, 2023). Therefore, grid infrastructure improvements are necessary, and the renewal of distribution equipment is a pressing issue, particularly as the distribution network is nearing the end of its service life due to aging. To ensure grid stability amid the increasing share of intermittent renewable energy sources, the digitization of the power grid through the introduction of smart meters and grid management systems—enabling real-time supply and demand management—is essential. This approach also contributes to reducing power losses by selecting the optimal power source based on demand, taking into account transmission and distribution distances. (IEA 2023)

Furthermore, in its “10-Year Energy Expansion Plan 2029,” the Brazilian federal government has set forth the goal of strengthening the power grid in addition to promoting investment in renewable energy. It has also committed to reducing greenhouse gas emissions in its “Nationally Determined Contribution” under the Paris Agreement.

Furthermore, in Brazil, technical and engineering fields were long considered male-dominated professions; as a result, the proportion of women in these fields and in related educational institutions remains low. The electricity sector is also one of the sectors facing the most challenges from a gender equality perspective (British Embassy in Brazil, 2019), and the proportion of women among workers in the electricity sector remains limited at 20–25% (CIGRE, 2022). Brazilian President Lula, as G20 Chair, has pledged to promote social inclusion under the slogan “Building a Fair World and a Sustainable Planet” (Brazilian Government, 2023), and the promotion of gender equality aligns with the Brazilian government’s policies (Convington, 2023).

In the Brazilian government’s multi-year development plan (PPP: 2024–2027), climate change adaptation, gender equality, and clean energy are all identified as priority issues, aligning with the government’s development policies.

Under these circumstances, the Project, implemented in the state of Bahia—which has a large population without access to the power grid—will promote the use of electricity primarily generated from renewable energy sources by upgrading the existing distribution network. It will also contribute to climate change mitigation by reducing energy losses through improved efficiency, thereby

helping to address challenges in Brazil's electricity sector. Furthermore, the Project promotes climate change mitigation—such as reducing greenhouse gas emissions through the optimization of power sources, including distribution distances, by the Neoenergia Group companies (including the borrower) and the borrower itself—as well as gender mainstreaming initiatives by providing incentives, such as reduced interest rates, in response to efforts by Neoenergia Group companies (including the borrower) to digitize the distribution system and increase the proportion of female electrical engineers.

(2) Positioning of the Project within Japan's and JICA's Cooperation Policies for the Electricity in the Host Country and Power Sector

The Project contributes to climate change countermeasures (mitigation) and the promotion of low-carbon energy use by ensuring a stable supply of electricity primarily from renewable energy sources and promoting energy conservation through the reduction of power losses in the existing grid. It contributes to the priority area of “Environment, Climate Change, and Disaster Risk Reduction” in the Country Development Cooperation Policy for the Federative Republic of Brazil (September 2024) and the cooperation program “Sustainable Development Program Based on the Japan-Brazil Green Partnership Initiative.”

Furthermore, the JICA Country Analysis Paper for the Federative Republic of Brazil (March 2025) states that the Project aims to mitigate the impacts of climate change and ensure a stable supply of electricity through the development of power transmission and distribution networks in impoverished regions. Additionally, the JICA Global Agenda sets forth the following cooperation policies regarding resources and energy: (1) strengthening power transmission and distribution networks, (2) promoting the introduction of renewable energy, and (3) promoting energy conservation. The Project is consistent with these policies and analyses.

3. Project Overview

(1) Project Objectives

The Project aims to ensure a stable supply of electricity primarily from renewable energy sources and to promote energy conservation by reducing power losses in the state of Bahia, Brazil. It will achieve this by providing financing for the capital investment required to develop the power distribution network, using the digitization of the distribution system and an increase in the proportion of female electrical engineers as performance indicators, and offering incentives

in the form of reduced interest rates. Consequently, the Project seeks to address regional income disparities, implement climate change mitigation measures, and gender mainstreaming.

(2) Project Site / Target Region

Bahia State, Brazil

(3) Project Beneficiaries (Target Group)

Direct Beneficiaries: Coelba

Ultimate beneficiaries: Coelba, People receiving services and power distribution provided by the Neoenergia Group, including female electrical engineers belonging to the Neoenergia Group

(4) Project Description

Coelba, which provides power distribution services in the state of Bahia, Brazil, has a power distribution network development plan. This Project supports the 2026–2027 phase of that plan.

(5) Total Project Cost: US\$160 million (of which, the amount eligible for overseas investment and financing: 15,607.3 million yen (equivalent to US\$100 million))

(6) Project Implementation Period: March 2026 – March 2034

(7) Project Implementation Structure

1) Borrower: Companhia de Eletricidade do Estado da Bahia (Coelba)

2) Guarantor: Neoenergia S.A. (Neoenergia)

3) Project Implementing Entity: Coelba

4) Operation and Maintenance Agency: Coelba

(8) Coordination and Division of Roles with Other Projects and Donor Agencies

1) Japan's Assistance Activities:

The project is the successor to the “Northeastern Clean Electrification Project” (signed on March 30, 2021) for the borrower. While the implementation of Project No. 1 has yielded results such as an increase in the number of newly connected households and a reduction in power outages, there is a high need for this project given the necessity to upgrade the distribution network to accommodate growing electricity demand, the continued occurrence of power outages, and the need for large-scale renovation projects due to the aging of distribution facilities. With regard to the Brazilian power sector, we are implementing the “Northeast Transmission and Distribution Network Efficiency Project” (signed on March 30, 2023), which provides financing to Companhia Energetica de Pernambuco (hereinafter “CELPE”), a distribution utility in the state of Pernambuco, Brazil, and a group company of Neoenergia—the borrower’s parent company and guarantor

for this project. In addition, to promote the adoption of distributed solar power generation systems by individuals and corporations throughout Brazil, we are implementing the “Distributed Solar Power Generation System Introduction Project” (signed on March 27, 2020), which provides financing to the Sicredi Group, Brazil’s largest credit union federation. Through these initiatives, we aim to ensure a stable supply of electricity—centered on renewable energy, which is unique to Brazil—in a country with significant regional disparities, while also contributing to climate change mitigation by promoting the efficiency of the power distribution grid.

2) Assistance activities by other aid agencies, etc.: through co-financing with Mitsubishi UFJ Bank Implemented.

(9) Environmental and Social Considerations, Cross-cutting Issues, and Gender Classification

1) Environmental and Social Considerations

- ① Category Classification: B
- ② Basis for Category Classification: This project does not fall under the sectors, characteristics, or regions prone to significant impacts listed in the “JICA Environmental and Social Considerations Guidelines” (promulgated in January 2022; hereinafter referred to as the “JICA Environmental Guidelines”), and it is judged that any adverse environmental impacts will not be significant.
- ③ Environmental Permits and Approvals: Although the preparation of an Environmental Impact Assessment (EIA) report is not required under the host country’s domestic law for this project, it has been agreed with the borrower that an IEE will be prepared for subprojects equivalent to Category B and reviewed prior to the finalization of such subprojects.
- ④ Environmental Measures: While this project primarily involves the installation of equipment and does not involve large-scale construction, it has been agreed with the Borrower that, prior to the decision to implement each subproject, the Borrower will formulate an environmental management plan—including measures such as the proper storage and disposal of construction waste, noise, and vibration, as well as adjustments to working hours—and will comply with the country’s environmental standards.
- ⑤ Natural Environment: It has been agreed with the Borrower that this project will not be implemented in vulnerable areas.

- ⑥ Social and Environmental Aspects: It has been confirmed that this project will not involve any new land acquisition. Furthermore, in the event that land acquisition is necessary, it has been agreed with the Borrower that, prior to the decision to implement each subproject, a resettlement plan will be prepared in accordance with domestic procedures and JICA's Environmental and Social Consideration Guidelines, and implementation will proceed only after securing social consensus in advance through stakeholder consultations, such as those conducted via .
- ⑦ Other/Monitoring: It has been agreed with the borrower that this project will not implement subprojects falling under Category A of the JICA Environmental Guidelines (projects in protected areas or important natural habitats, projects involving large-scale resettlement, large-scale deforestation, or large-scale land conversion, etc.).

2) Cross-cutting Issues

- ① Climate Change Measures: This project contributes to climate change mitigation by ensuring a stable supply of electricity primarily from renewable energy sources and promoting energy conservation through reduced power losses, which is expected to lead to a reduction in greenhouse gas emissions. Furthermore, this project is consistent with the country's "Nationally Determined Contribution (NDC)" under the Paris Agreement, which aims for net-zero GHG emissions by 2050.
- ② Poverty Reduction: As this is a power distribution project in the Northeast—Brazil's poorest region—and the borrower has established discounted rates for low-income households, replacing the use of diesel generators (which have relatively high electricity costs) with grid connection is expected to lower electricity costs and improve the household finances of the poor.

3) Gender Classification: ■GI(S): Gender-Integrated Project

< Rationale for Classification >

In Brazil, technical and engineering fields were viewed as male-dominated professions until very recently; consequently, the proportion of women in these fields and educational institutions remains low. The share of women among workers in the power sector is limited to 20–25%, and there is a particular challenge in technical positions, where men are overrepresented. To increase the proportion of female electrical engineers, the Project will offer free technical training through the "School for Electrical Engineers" to local residents. To

encourage female participation, it will implement Brazil's first-ever women-only class program. The Project aims to raise the proportion of female electrical engineers from 4.3% in 2022 to 12.2% by 2027, and to implement a sustainability-linked loan that provides incentives in the form of reduced interest rates based on progress toward this target.

(10) Other Notable Items: None.

4. Business Impact

(1) Quantitative Outcomes

Outcome (Operational and Effectiveness Indicators)

Indicator Name	Baseline (2024 Actual Value)	Target Value (2028) [3 years after project completion]
Number of New Connections (Households)	-	993,907
CO2 Emissions Reduction (t)	17.15	11.48
Power loss rate (%)	15.69	15.44
Annual Power Outage Duration per User (hours)	10.24	9.36
Annual number of power outages per customer (times)	4.98 (FY 2023 Actual Figures)	4.16

1/ Calculated by dividing the CO2 emissions from the power source of purchased electricity (falling under Scope 3 Category 3) by the total distributed electricity volume. This indicator takes into account that the Project will enable the introduction of more renewable energy by improving the distribution network and stabilizing the grid. As the proportion of renewable energy in purchased electricity increases, CO2 emissions per unit of distributed electricity decrease.

2/ The annual number of power outages per user (times) is calculated as the total annual number of power outages across Coelba (times) divided by the number of customers (households). The 2024 actual value (4.09) is treated as an outlier because it showed a significant, incidental decrease without any clear cause; therefore, the baseline value uses the 2023 actual value (4.98), and the target value is set based on historical performance (2020: 5.54, 2021: 5.18, 2022: 5.06, 2023: 4.98) to set the target.

(2) Qualitative effects: Reducing regional income disparities, mitigating climate change, and promoting gender equality in the electricity sector

5. Prerequisites and External Conditions

None in particular.

6. Lessons Learned from Past Similar Projects and Their Application to This Project

Lessons learned from the ex-post evaluation of the “Electricity Frontier Expansion Project (III)” (evaluation year: 2018), a yen loan project for Peru, indicate that for projects considered difficult to manage—such as those involving the procurement of large quantities of materials and equipment or construction work at multiple sites including remote locations—it is necessary to specifically assess the experience of similar projects and the experience and capabilities of the implementing agency in order to determine the appropriate contractual structure. In the Project, the borrower, Coelba, has, over the past 20 years, connected 720,000 households in unelectrified areas of Bahia State to the power grid and supplied electricity to 6.75 million households, demonstrating a proven track record in the procurement of large quantities of equipment and materials, as well as in construction and supervision at multiple remote sites. There are no concerns regarding its experience and capabilities, as it has established dedicated departments for each region within the state, utilizes IT for remote management, and, as a major subsidiary of the publicly listed company Neoenergia, discloses financial and other information on a quarterly basis.

7. Evaluation Results

The Project aligns with Brazil's development challenges and policies, as well as Japan's and JICA's cooperation policies and analyses. It contributes to correcting regional income disparities and climate change countermeasures (mitigation), and, it is considered to contribute to. Therefore, the significance of support provided through overseas investment and financing is considerable. gender mainstreaming SDG Goal 5 (gender equality), Goal 7 (Ensure access to affordable, reliable, sustainable, and modern energy for all), Goal 10 (Reduce inequality within and among countries), Goal 13 (Take urgent action to combat climate change and its impacts), and Goal 17 (Strengthen the means of implementation and revitalize the global partnership for sustainable development)

8. Future Evaluation Plan

(1) Indicators to be used for future evaluations: As described in Section 4.

(2) Future Evaluation Schedule: To be conducted by the end of 2028, three years after the Project's completion.

End