

BRAZIL: REHABILITATION PROGRAM OF THE HYDROELECTRICS "*FURNAS*" AND "*LUIZ CARLOS BARRETO*" (BR-L1278)⁽¹⁾

ENVIRONMENTAL AND SOCIAL STRATEGY⁽²⁾

A. Program and Company Overview

1. *Furnas Centrais Eletricas S.A.* (“Furnas” or the “Company” or the “Borrower”) is a state-owned limited liability company established on February 1957, by Decree No. 41.066. The Company supplies electric energy to the Southeastern and the Midwestern regions of Brazil and interconnects eight states and the Federal District, where approximately 50 percent of the Brazilian population is located.
2. Furnas is the second largest energy generation company and the largest electricity transmission service provider in Brazil. Furnas has diversified energy generating installations that include ten operational hydroelectric power plants with an installed capacity of 8,662 MW and two thermoelectric power plants with an installed capacity of 805 MW and its transmission system comprises 33 substations and high-voltage electric lines with approximately 19,277 km of extension. The high-voltage network runs across the states of *São Paulo*, *Minas Gerais*, *Rio de Janeiro*, *Espírito Santo*, *Goiás*, *Mato Grosso*, and *Tocantins*.
3. The Company is seeking financing to finalize the rehabilitation and modernization of two of Furnas’ hydroelectric power plants (“UHEs” or *Usinas Hidrelétricas*), namely *Furnas* (1216 MW) and *Luiz Carlos Barreto* (1050 MW), by renewing obsolete equipment and switchyards, with the objective of recovering their generation capacity and increase their reliability and operational flexibility (the Program). The estimated financing from the Bank is US\$180 million. The *Furnas* and *Luiz Carlos Barreto* hydropower plants were brought into commercial operation in 1963 and 1969, respectively. The Program under analysis comprises essentially renovation and modernization of existing equipment and systems. No changes in dam or reservoir characteristics are foreseen.
4. The main objectives of the modernization are:
 - (a) recuperation of the energy generation capacity;
 - (b) reliability increase and operational flexibility;
 - (c) increase of the useful life, ensuring the reliable equipment operation for the second service life (30 years)
 - (d) technological update;
 - (e) reduction of the maintenance period;

(1) The previous number for the Program was BR-L1157

(2) This Environmental and Social Strategy (ESS) is being made available to the public in accordance with the Bank’s Policy on Disclosure of Information. The ESS has been prepared based primarily upon information provided by the project sponsors and does not represent either the Bank’s approval of the project or verification of the completeness or accuracy of the information. The Bank, as part of its due diligence on the feasibility of the project, will assess the environmental and social aspects.

- (f) introduce up-to-date means of control (digital type) ensuring improvement in operating efficiency.
5. The principal activities involved in the modernization will be:
- (a) regeneration of the turbine;
 - (b) regeneration of the electric generator;
 - (c) modernization of the electric transformer;
 - (d) modernization of the cooling system;
 - (e) replacement of analogical control panels by digital ones;
 - (f) replacement of mechanical systems by hydraulic ones;
 - (g) replacement of cables;
 - (h) equipment automation;
 - (i) installation of new remote monitoring and control systems;
 - (j) installation of new electric protection systems;
 - (k) use of new materials in mechanical and electric systems;
 - (l) improvement in the intercommunication management system.
6. The modernization will include also improvements in the impermeable layer and spill containment devices for electric transformers and oil storage facilities, in oil-water separator systems, and in the acoustic treatment of some buildings and facilities.

B. Environmental and Social Compliance Status

7. The Program involves mainly modernization of existing equipment and systems and as such an environmental license is not required. However, if vegetation clearing is involved an environmental permit is needed before any clearing is performed. The Company has in place a system to identify the need for environmental licenses and permits, and to follow up licensing and permitting processes, as well as the implementation of associated requirements.

C Potential Impacts and Risks and Control Measures

8. As the Investment Program under analysis comprises essentially renovation and modernization of existing equipment and systems and no changes in dam or reservoir characteristics are foreseen, the main potential negative environmental and social impacts will be associated with the construction, installation and assembling activities. The additional environmental and social impacts associated with the operation of the modernized equipment and facilities will be mainly positive, as the modernization will include also strengthening of spill control systems and acoustic protection of buildings and facilities.
9. It should be pointed out that the hydroelectric power plants are located away from conservation, indigenous and urban areas, and the land to be used for installation of the construction yards will be in areas already assigned for the hydroelectric power plants. Thus, the Program will not: (i) convert or degrade critical natural habitats or damage critical cultural sites; (ii) convert or degrade natural habitats; (iii) raise any negative indigenous issues; or (iv) generate any resettlement issues.

10. The strip of land around a reservoir is considered by Brazilian regulations as Permanent Preservation Areas (“APP”), some types of interventions are allowed in APPs after the necessary permit is obtained. The Program apparently will not significantly affect APPs. IDB will confirm during the due diligence that no significant impacts will be generated, or the Company has in place the necessary permits and plans to recover the areas after use, if this is the case.
11. The nature and magnitude of the civil works and assembling activities involved will require the installation of fairly sizable construction yards, which may have associated environmental and social, and health and safety impacts and risks during their installation and operation. The main potential negative impacts related to the construction and assembling activities, construction yards and supply of construction materials and equipment associated with the Program will be those typical of works of this nature: (i) clearing of vegetation and associated impacts, if it is the case; (ii) dust and noise emissions; (iii) interference in the day-to-day life of the local population in association with the increase in construction-related road traffic and influx of workers to the region; and (iv) construction work-related accidents. However, these impacts will be limited in scale and temporary, and can be mitigated with the standard construction environmental and social, and health and safety management procedures established by the Company. Other impacts and risks can be prevented and/or mitigated by adopting basic precautions and standard procedures, as established in Company’s environmental management and health and safety systems and plans.
12. Additionally, there may exist some limited environmental liabilities associated with Furnas’ existing facilities and operations, which go beyond the Program that is being considered for financing by IDB. These risks are expected to be of limited magnitude, as, based upon information provided, the Company procedures and systems to manage these risks include: (i) apparent adequate capacity and commitment to address and manage environmental matters; (ii) the Company has in place an environmental policy and have specific procedures and resources to address environmental and social impacts and risks; (iii) the Company has a Health and Safety Management System that is certified under OHSAS 18001 (international standard for health and safety management); and (iv) Company undertakes also activities to monitor water quality and other limnological parameters, in the realm of monitoring plans developed taking into account requirements set for by environmental authorities and/or established by specific technical standards.

D. Environmental and Social Strategy

13. Taking into account the environmental and social aspects related to the Program and the requirements outlined in IDB’s OP 703 Environment and Safeguards Compliance Policy, the Team proposes that the Program be classified as a Category B operation, mainly because of the nature and magnitude of the civil works and assembling activities involved, which will require the installation of fairly sizable construction yards that in turn may have associated environmental and social, and health and safety impacts and risks during their installation and operation.
14. The Team proposes to perform an Environmental and Social Due Diligence (“ESDD”) to:

- (a) confirm that appropriate mitigation and monitoring measures are adopted to control relevant environmental and social, and health and safety impacts associated with the Investment Program;
- (b) review Program compliance with in-country national, state and municipal environmental, health and safety laws, and applicable IDB's environmental and social policies and guidelines;
- (c) assess the Company's management procedures to dispose the hazardous and non-hazardous waste resulting from the rehabilitation and modernization of the three hydroelectric power plans, with a special focus on the disposal of old and obsolete equipment and other wastes.
- (d) assess potential impacts or risks associated with the installation and operation of new equipment and materials;
- (e) evaluate potential Program impacts or risks on workers health and safety during construction (equipment upgrade) and operation of new equipment, and, evaluation of Furnas health and safety procedures, to ensure that adequate measures are developed to avoid or mitigate potential Program-specific health and safety issues;
- (f) assess potential social impacts in the Program's area of influence, due to the migration and/or inflow of temporary workers during the construction;
- (g) evaluate potential impacts on natural vegetation and protected areas, if it is the case;
- (h) review Furnas' main activities and relevant existing facilities to identify possible liabilities associated with environmental and social, and health and safety impacts and risks; and
- (i) assess Program and Company's commitment, capacity, and systems to adequately manage environmental and social, and health and safety matters and comply with applicable regulatory and IDB's environmental and social, and health and safety requirements.