BR-L1192 TERMOMARANHAO COAL-FIRED THERMAL PLANT
BRAZIL

ENVIRONMENTAL AND SOCIAL STRATEGY[1]

A. Project and Company Overview

1. The project consists of the design, development, construction, operation and maintenance of a 360 Megawatt ("MW") coal-fired thermal generation plant in the state of Maranhao, in the Northeastern Region of Brazil (the "Project" or the "Plant") (**See Figure 1**). The Project will be located in a 5 hectares area inside the Industrial District of Sao Luis ("DISAL"), in the municipality of Sao Luis, capital de Maranhao State. The Project is part of the Brazilian Government *Programa de Aceleração do Crescimento* ("PAC") (regulated by law 11.488); a federal government program intended to accelerate the country's growth through investments in infrastructure and certain state and federal tax-incentives.

2. The Project will be constructed utilizing state-of-the-art engineering equipment. A desulfurization system will be installed to reduce sulfur and bag filters will be adopted to reduce particulate matter emissions by the Project. Additionally, imported mineral coal will be utilized, with a relatively higher heat rate and lower sulfur and ash content than the Brazilian coal, therefore reducing the environmental impact. Previously the Project was designated as Porto do Itaqui Thermal Power Plant.

3. The company that is implementing the Project is *Diferencial Energia Empreendimentos e Participações, Ltda.* ("Project Company" or "Borrower"). Since October 2007 *MPX Energia S.A.* ("MPX or "the Sponsor") became the sole shareholder of the Project Company. It should be pointed out also that MPX is co-sponsoring another similar project under analysis for support by IDB (the Pecem Coal-Fired Thermal Plant in Ceara, Brazil).

4. A thermal power plant is justifiable in the Northeastern Region of Brazil in view of limitations associated with the more conventional source (hydroelectricity), which result in irregularities and insufficiencies in service, particularly for industrial consumers and at peak hours. As other renewable sources (e.g., wind or solar power) are not yet feasible or sufficient, the installation of thermal power plants in the Industrial District will be essential to insure an adequate and regular supply of electric energy for the industries that will be installed in the region.

5. Under the terms of the long-term power purchase agreements ("PPAs") as resulted from an auction coordinated by the regulatory agency, the Project will be allowed the Project will be allowed to produce and sell up to 2,759,400 MWh/year of energy corresponding to the equivalent assured energy capacity of 315 MW ("Assured Capacity" measured in MW average per year).

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[1] *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.*

B. Project Description

6. Essentially the power plant will be composed of one boiler equipped with pulverized-coal burner, and one steam-turbine generator. The boiler will be equipped with steam superheaters and reheaters, economizer and air and gas pre-heaters. The Plant will also be equipped with a lime-based flue gas desulfurization scrubber ("FGD"), to reduce sulfur emissions, and bag filters, to reduce emissions of particulate matter, and induced-draft cooling towers with water recirculation.

7. The Plant is being designed to consume around 3120 ton of coal per day. The Plant will use imported coal with low sulfur content (less than one percent) and low ash content (less 18 percent). No other type of coal is expected to be used in the Plant. The coal may come from different origins. As per information provided in the EIA/RIMA, the mineral coal is expected to come from Colombia and/or Venezuela. During due diligence we will try to obtain more information on the contract with the coal supplier. The coal will come by ship to the Itaqui Port and then transported five kilometers to the Plant through covered conveyor belts.

8. The raw water to the Plant will come from the sea. The sanitary water will be pre-treated and re-used in coal storage piles, and industrial wastewaters, as well as the storm water runoff generated at the Plant will be pre-treated separately and then sent to the sea. The domestic waste will be transported and managed by official waste companies.

9. The Plant will also use diesel oil to start coal combustion in the boiler furnace. In relation to the coal, the Plant is being designed to use mineral coal with low sulfur content (less than one percent) and low ash content (less than 18 percent).

10. It is estimated that 1500 workers will be required at the peak of construction and 160 during operation and maintenance of the Plant. Some of the workers will be hired locally or in the region and trained, others more specialized workers will have to come from other regions.

11. The power plant will only work five or six months per year, to respond to emergency situation or extra demand form the National Electric System.

C. Environmental and Social Compliance Status

12. The respective environmental impact assessment reports ("EIA/RIMA") relating to the Project had been prepared and submitted to the competent environmental authorities. The public consultation process included a public hearing performed in the municipality of Sao Luis. Also, the Company performed a census of the affected people and started the information process specifically devoted to the potentially affected people in view of informing them about the project and its effects, and to obtain comments and concerns from the affected people.

D. Potential Impacts and Risks and Control Measures

13. The Project will be located in an industrial area and some of the major infrastructure and facilities needed to support the Project are already in place or are being introduced; therefore, the magnitude and significance of potential negative environmental and social impacts associated with Project implementation will be substantially reduced. Moreover, there are no

sensitive receptors or units nearby and these circumstances will contribute to lower the significance of impacts related to air and noise emissions.

14. As the Project will be located in an industrial district, away from conservation or indigenous areas, it is possible to anticipate that the Project will not: (i) convert or degrade critical natural habitats or damage critical cultural sites; (ii) significantly convert or degrade natural habitats; (iii) raise any significantly negative indigenous issues.

15. Relevant potential negative impacts associated with construction of the Project will be those typical of works of this nature: (i) disturbance of fauna, change in the natural drainage, initiation and acceleration of erosive processes, in association with vegetation clearing and earthmoving work; (ii) dust and noise emissions; (iii) increased concentration of suspended solids in nearby creeks; and (iv) risk of accidents involving workers. However, these impacts will be limited in scale and temporary, and can be mitigated by adopting basic precautions and standard procedures, as established in Project's environmental management and health and safety procedures and plans (see list of some plans and programs at the end of this section).

16. The Project will involve people resettlement; essentially 85 households, 50 residents and 35 non-residents (approximately 137 inhabitants in the area). The resettlement process is ongoing, and is being implemented with public participation, and public disclosure, in agreement with IDB OP-710 Involuntary Resettlement Policy and OP-102 Disclosure and Information Policy, as the Company has in place a complete and integral (socio-economic) resettlement plan developed in accordance to that IDB Policy. The environmental factors considered to define the area to be involved in the resettlement plan were: noise, dust, vibration, air quality, and transportation impacts. The Company developed models to analyze these parameters and based on the results of those studies and the social relationship structure in this zone (social relations) the area to be encompassed by the plan was determined.

17. Most of the vegetation to be cleared is common in the region and does not present particular relevance, except 0,19 hectares of mangrove located within the limits of the area directly affected ("ADA") that is directly affected but that compared to the total size of the mangrove, which is above 500 thousand hectares, is negligible. Anthropic intervention in this section of the mangrove is very high but the populations will be relocated. This, together with studies performed by the company to place the discharge and the requirements of water quality entering the sea, will reduce anthropic pressure on the mangrove. The company currently has a very strict effluent control program and coastal area water quality monitoring system.

18. The project's direct influence area presents a high anthropic intervention (small farming for subsistence). The main vegetation in the zone is arboreal (mainly bushes of 5 to 20 years old), and palm trees. Also, no threatened or vulnerable fauna species are found in the area of the Plant. Nevertheless, to minimize the impacts associated with vegetation clearing, the Company has a specific Recovery Affected Areas Program that includes revegetation program and soil recovery program.

19. There may be some potential negative environmental and social indirect impacts related to an increase in both marine and road traffic associated with the supply of construction materials and equipment during installation of the Project, as well as to the influx of workers. Nevertheless, the significance of these impacts will be attenuated by the fact that the Project

will be located in an industrial district and near a port complex. Moreover, some standard practices will be adopted to further mitigate these impacts.

20. The main potential negative environmental and social impacts associated with the Project will be related to the operation phase, such as: (a) air emissions and subsequent effects on ambient air quality; (b) potential soil and water contamination by liquid effluents, solid wastes and spills generated at the Plant and fuel storage facilities, as well as from fuel transport; and (c) noise emissions from the Plant. The Project will be designed and implemented using modern engineering techniques and equipment, including air pollution control equipment and effluent treatment facilities, and will use low sulfur and ash content coal; these factors will contribute to minimize the negative environmental and social impacts associated with the Project. Furthermore, a series of monitoring programs are foreseen in association with the Project.

21. To minimize the impacts on air quality the Plant will use low sulfur and ash content coal and adopt equipment to control emissions of regulated air contaminants, such as sulfur dioxide ("SO2") and particulate matter ("PM"). The air pollution control equipment will be designed and operated to comply with air emission standards determined in national regulations. Furthermore, the Plant will adopt procedures to reduce the emissions of nitrogen oxides ("NOx"). Due diligence will confirm that the Project is in compliance with the requirements of national regulations and assess compliance with international standards.

22. The combustion gases coming out of the boiler furnace will pass through bag filters that will capture the particulate matter and substantially reduce their concentration in the outgoing flue gas. After passing through the filters, the combustion gases will go through a lime-based flue gas desulfurization scrubber ("FGD") that will absorb the sulfur oxides ("SOx") and substantially reduce their emissions. To reduce NOx emissions the Plant will use combustion modifications. The purpose of combustion modifications is altering the conditions that contribute to the formation of both thermal and fuel NOx. Most of these techniques involve a reduction in the peak gas temperatures, a reduction in the oxygen concentrations in the high temperature areas of the burner flames, and/or a reduction in the residence time of combustion products in the high temperature areas of the burner flame. Therefore, at the Plant's boiler furnace the combustion air temperature will be controlled and the amount of oxygen in the main combustion area will be reduced. Furthermore, the diesel oil combustion starter will be turned off as soon as the pulverized coal starts to ignite to avoid temperature peaks, which could provoke an increase in NOx formation. There will also be a specific program to monitor air emissions and ambient air quality.

23. The main liquid effluents to be generated at the Plant will be the liquid effluent from the scrubber, periodic purges from boiler and cooling tower water recirculation systems, sanitary wastewaters from bathrooms and cafeteria facilities, and storm water runoff and leach ate from open areas and coal piles. The liquid effluent from the scrubber will be reused in the Plant. The sanitary and other industrial wastewaters, as well as the storm water runoff and leach ate generated at the Plant will be pre-treated separately and then sent to the sea. The wastewater treatment systems will be designed and operated to comply with national regulations. Due diligence will confirm that the Project is in compliance with the requirements of national regulations and assess compliance with international standards. The Project comprises also specific programs to monitor the quality of liquid effluents as well as of surface and groundwater bodies in the area.

24. The main solid wastes generated at the Plant will be ashes from boiler furnace and bag filters, and gypsum from the FGD scrubber. There will also be generation of domestic type waste from offices, cafeteria facilities, mechanical shops and laboratories. The domestic waste will be transported by truck to municipal landfills, the ashes and gypsum may serve as raw materials for other industries or used as fill material in various construction works. The Project integrates a specific program to manage solid wastes.

25. The main equipment at the Plant will be designed to comply with noise level regulations or will be provided with silencers to reduce noise emissions. A specific noise monitoring program is being devised for the Project.

26. In order to better manage the potential impacts and risks associated with the Project, the following programs and plans have already been devised and detailed by the Company:

(i) Occupational Health and Safety Plan;
(ii) Plan for the Restoration of Degraded Areas;
(iii) Plan for the Adaptation to the Existing or Designed Infrastructure;
(iv) Fauna Protection Program;
(v) Environmental Education Program;
(vi) Worker Training and Capacity Building Program;
(vii) Water Resources and Landscape Preservation Program;
(viii) Noise Monitoring Program;
(ix) Air Quality Monitoring Program;
(x) Solid Waste Management Program;
(xi) Liquid Effluent Monitoring Program;
(xii) Water Resources Monitoring Program;
(xiii) Resettlement Plan;
(xiv) Construction Environmental Plan;
(xv) Environmental Compensation Program;
(xvi) Transit Management Program;
(xvii) Local Hiring Program; and
(xviii) Archeological Preventive Program.

27. It is also important to note that, in view of and in line with IDB's Sustainable Energy and Climate Change Initiative ("SECCI") to promote alternative energy sources and clean fuels, the Bank may also assist the Project Company in exploring ways to offset or compensate for greenhouse gas emissions (mainly carbon dioxide) generated by the Project and thereby reduce its carbon footprint.

E. Environmental and Social Strategy

27. Taking into account the aspects discussed in the previous sections and the requirements outlined in IDB's OP 703 Environment and Safeguards Compliance Policy, the Team proposes that the Project be classified as a Category B operation.

28. The Bank will perform an Environmental and Social Due Diligence in order to confirm that all Project relevant impacts and risks have been, or will be properly and adequately evaluated and mitigated. The environmental and social due diligence will specifically address the following aspects:

(a) Assessment of Project compliance status with the applicable country (national, state, and municipal) environmental, social, health and safety and labor regulatory requirements (e.g., laws, regulations, standards, permits, authorizations, applicable international treaties/conventions, etc.), in particular the Brazilian EIA requirements; project-specific legal requirements; and any applicable Bank environmental and social policy or guideline, in particular the OP-703 Environment and Safeguards Compliance Policy, OP-102 on Information Disclosure and OP-710 on Involuntary Resettlement.

(b) Evaluation of the available environmental impact assessment reports related to the Project to confirm that the Project's relevant direct; indirect, cumulative and regional environmental and social impacts and risks have been properly identified and evaluated.

(c) Assessment of the adequacy and sufficiency of Project's existing environmental and social plans, programs and procedures.

(d) Assessment of Project's air emissions and liquid effluent discharges compliance with international standards.

(e) Assessment of Project's contractual agreements with the coal-supplier company regarding the specifics of the supply of imported mineral coal, including an evaluation of the company's environmental policies and criteria toward the coal-energy chain of its coal suppliers (e.g., mining, preparation, transportation, etc.)

(f) Exploring with the Project Company ways to offset or compensate for greenhouse gas emissions (mainly carbon dioxide) generated by the Project and thereby reducing its carbon footprint.

(g) Assessment of Company's Environmental, Health and Safety Management and Labor Systems, including plans and procedures, to assess their adequacy in terms of responsibilities, training, auditing, reporting, and resources to be made available to ensure adequate implementation, and specifically all the system components necessary to ensure that the Project will not generate significant negative impacts. This will also include assessment of the environmental and social, and health and safety procedures the Project Company have in relation to their contractors and suppliers.

(h) Assessment of Resettlement Program developed by company to do and to feasible the small resettlement of Vila Madureira community, according to OP 710 (Resettlement Policy of IDB) and nationals standards.

(i) Review the EIA, particularly the information on: (i) licensing process pertaining to the installation and operation of the Sao Luis Industrial District; (ii) adequacy and sufficiency of assessments that were done to identify and mitigate potential impacts of the Project on the mangrove area; and (iii) adequacy and sufficiency of the analysis of Project's impact on the Port of Itaqui.

(j) Evaluation, and further development as necessary, of Project execution monitoring/supervision procedures to ensure proper implementation of environmental, social, health and safety and labor actions and requirements.

(k) Assessment of corporate social responsibility programs and other initiatives developed by the Company to improve integration and relationship with local communities and, if applicable, formulate actions and opportunities for further improvements. Evaluation of Company's programs intended to maximize the positive outcomes of the Project.

(l) Assessment of Liquid Effluent Monitoring Program and Water Resources Monitoring Program, in relation with potential impacts on the mangrove areas.

(m) As part of the ESDD process, the Project Team will analyze the environmental and social aspects of the Project and prepare an Environmental and Social Management Report ("ESMR").

Figure 1: Project Location