S O C I A L A N D E N V I R O N M E N T A L R E P O R T

Porto de Sergipe I Thermoelectric Complex Social and Environmental Report

Pepared for:

Centrais Elétricas de Sergipe S/A – CELSE

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CH2M Hill do Brasil Engenharia Ltda.
Rua do Rócio, 351, 1º andar
Vila Olímpia – CEP: 04552-000
São Paulo, Brasil

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1 Executive Summary

The Porto de Sergipe I Thermoelectric Complex will be implemented in the city of Barra dos Coqueiros, state of Sergipe, a municipality next to the capital, Aracaju. This project is composed of three main basic units: a floating offshore storage and regasification unit (FSRU), a thermoelectric plant (UTE) and the transmission line (TL) to conduct the energy towards the public system. Through burning of natural gas, the project will have an installed capacity of 1,516 MW. Figure 1 below shows the macro-location of the Porto de Sergipe I Thermoelectric Complex.

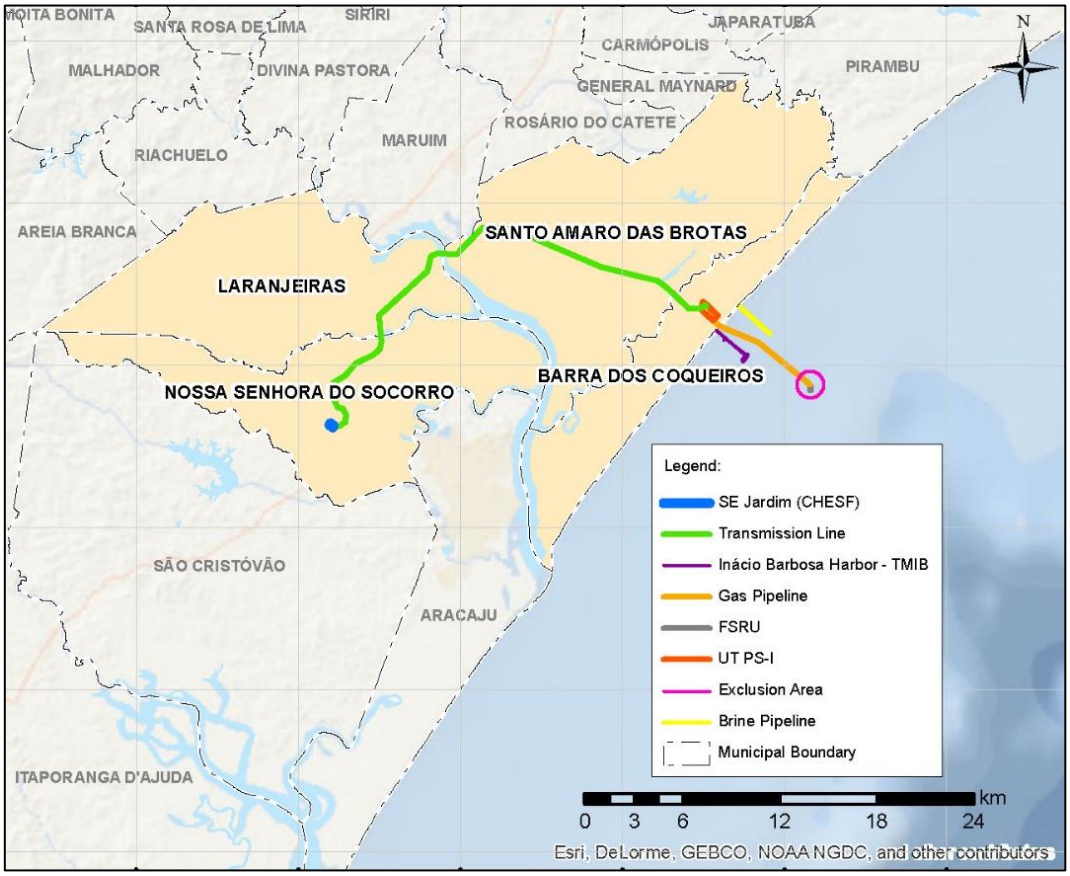

Figure 1: Porto de Sergipe I Thermoelectric Complex macro-location

1.1 Objective and Justification

The Brazilian electric energy supply, marked by concentration on hydraulic sources, has been changing significantly in recent years, presenting diversity of both renewable and non-renewable sources. Among those, natural gas was responsible for generating 12.9% of Brazil's electricity in 2015, according to the National Energy Balance, base year 2015, prepared by MME / EPE, 2016.

To meet the diversification of the Brazilian energy matrix and, at the same time, to provide security to the system by reducing dependence on climatic factors, without reducing the relevance of renewable resources, natural gas has increased its contribution among non-renewable sources.

This growing scenario of the Brazilian electric energy market requires more investment in public planning due to the demand of the consumer market, besides the growth of the strategic use of natural gas. To provide greater efficiency and safety in the national energy matrix, Centrais Elétricas

de Sergipe SA - CELSE SA, having as shareholders EBRASIL Energia Ltda. and GG Power S.A., each with a 50% share, participated in the 21st New Energy Auction held by the Energy Research Company (EPE) in April 2015.

The Porto de Sergipe I Thermoelectric Power Plant *(UTE Porto de Sergipe I)* will be responsible for supplying electric power beginning in January 2020. The commercialization of electricity will be through an Energy Trading Contract in Regulated Environment - CCEAR *(Contrato de Comercialização de Energia no Ambiente Regulado)* by Availability. The project was authorized by Ordinance MME No. 530, dated November 23, 2015.

1.2 Main Characteristics of The Enterprise

The process of electric power generation of this complex is initiated in the reception of the fuel, natural gas in its liquefied form, transported by tankers (LNGC) to the Floating Storage and Regasification Unit (FSRU), which is equipped with a regasification system with a storage capacity of 170,000 m^3 of Liquified Natural Gas (LNG) and a regasification capacity of 21 MNm^3/day (millions of normal cubic meters per day), located 6.5 km from the coastline, linked to a Submerged Anchoring System called softyoke. This anchorage system will allow the free rotation of the FSRU and will provide for the interconnection of this unit to the pipeline and fuel directing to the plant. The gas pipeline, in turn, starts at the connecting flange of the softyoke and ends at the inlet flange of the UTE Porto de Sergipe I onshore. As a result, it is 6.5 km long in the offshore area, and is complemented to the area of the plant by 1.2 km in the onshore portion.

The thermoelectric plant, located about 1.2 km from the coast line, will use natural gas as fuel for the generation of electric energy in Combined Cycle. In order to attend to the processes involved in the operation of the UTE, seawater will be collected by a 2.6 km long pipeline (1.2 km in the onshore part and 1.4 km in the offshore area), interconnected to a pumping station. In addition, the effluents generated in the plant, in turn, will be launched into the sea through a submarine emissary 1.2 km long in the marine region, whose exit is located about 400 m before the water inlet.

The electric power generated at the plant will be connected to the National Interconnected System (SIN) by the third unit of the system, consisting of a 500 kV Transmission Line of 34.2 km extension, connecting the UTE Porto de Sergipe I Elevatory Substation to the Jardim Substation, located in the municipality of Nossa Senhora do Socorro.

Figure above shows the simplified project diagram, with the structures distributed between Offshore, UTE and Transmission Line, indicating if the structure is located in offshore or onshore environment.

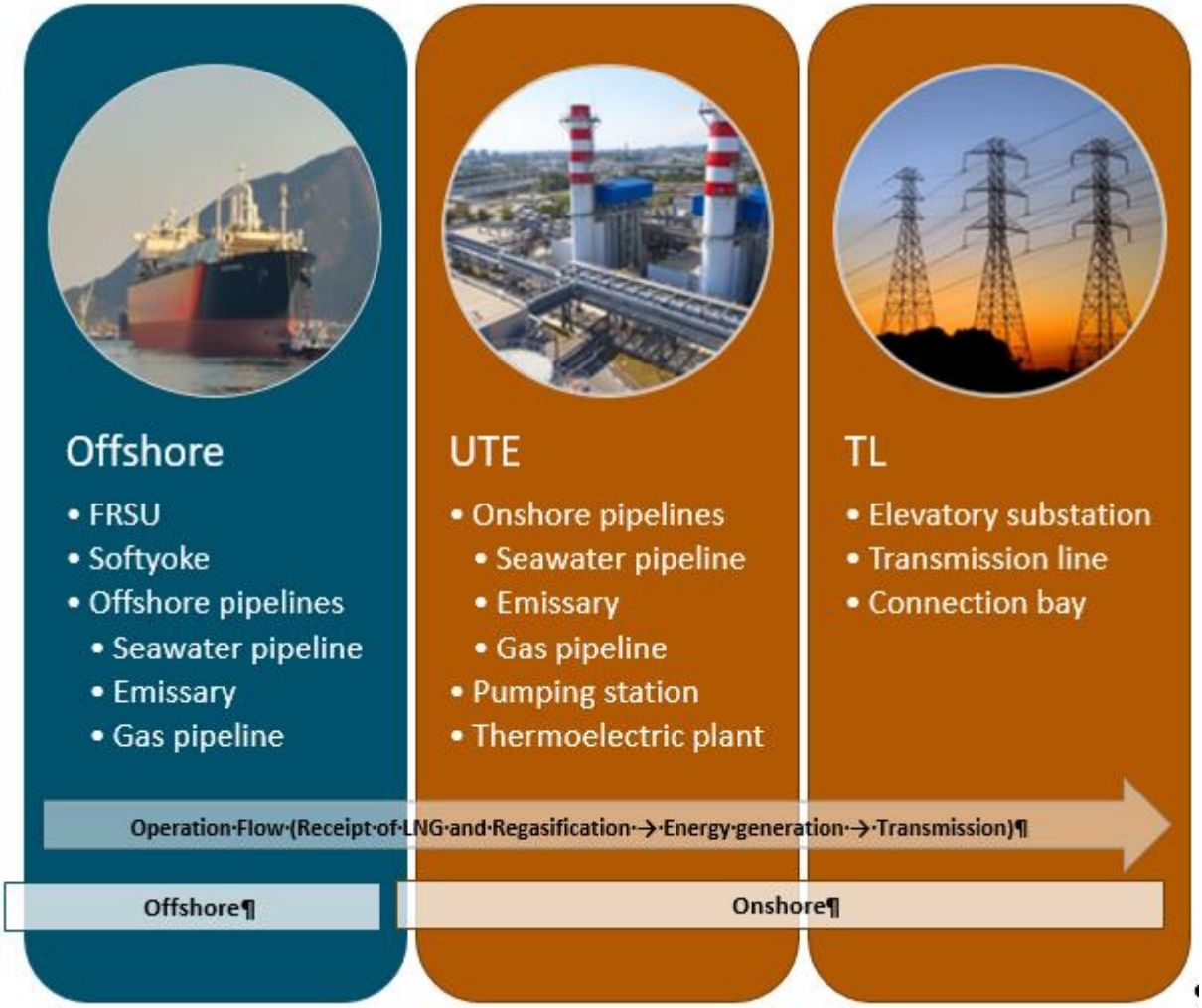

Figure 2: Porto de Sergipe I Thermoelectric Complex diagram

1.2.1 Temporary Structures:

The construction sites of the UTE, Transmission Line and Offshore facility will be implemented in the acquired area of CODISE, near the UTE's deployment area, in an area without vegetationthat has already been modified by previous occupations.

In addition, it is planned to install a support tent for the works of the offshore installations, next to the beach strip, adjacent to the Pumping Station, and another for the installation of the connecting bay, adjacent to the Jardim Substation. Both planned areas do not envisage vegetation suppression, as they are located in an anthropic area.

1.2.2 Schedule and Investments:

The implementation of the entire Barra dos Coqueiros Thermoelectric Facility has already begun and should be fully completed by December 2019, with the start of the operation scheduled for January 2020.

The total estimated investment, considering the Offshore facility, the Thermoelectric Plant and the Transmission line, is approximately R$ 5 billion (Brazilian reais).

1.3 Thermoelectric Complex History

As explained above, the 21st Energy Auction was carried out by the Energy Research Company (EPE, initials in Portuguese) in April 2015, to commercialize the energy to be generated by the Porto de Sergipe I Thermoelectric Power Plant, with commercial start up in January 2020.

At the time this UTE was part of the Thermoelectric Complex Marcel Deda, the design of which was conceived to contain the following units: Thermoelectric Power Plants (i) Porto de Sergipe I; (ii) Laranjeiras and (iii) Marcelo Deda; Transmission line of 500 kV (34 km); and offshore installations and operations (based on TMIB).

The grant by ANEEL took place through Decree MME No. 520, November 23rd, 2015. It should be noted that by this time, Marcelo Deda and Laranjeiras UTEs were not considered, since there was no demand for the use of this energy to be sold.

The environmental licensing process was initiated by ADEMA, under the auspices of the Process No. 2016/TEC/LP-0003, and received Advance License No. 11-3/2016, on April 15th, 2016, for the so-called Thermoelectric Complex Marcelo Deda. Currently this authorization is in the rectification phase for scope adequacy, since the current project refers exclusively to the UTE Porto de Sergipe I and the regasification base had its design concept changed, being now called Termoelectric Complex Porto de Sergipe I. Due to this project change, the offshore portion was detached from the process passing to IBAMA's local authority, as will be presented in sequence.

In continuation with the licensing process for the UTE Porto de Sergipe I and the 500kV TL, ADEMA issued in 2016 Environmental Authorizations N. 78/2016 and 115/2016, referring to geotechnical drilling and to the land levelling service, respectively, aiming at the land preparation for UTE Porto de Sergipe I's installation, and Land Use and Occupancy Certificate for Environmental Licensing No. 15/2016.

In complementation, in 2017, the Environmental Authorizations ADEMA No. 02/2017 and No. 36/2017 were issued for the building site construction (probing the land and installing utilities) and to carry out the pegging of the UTE Porto de Sergipe I, respectively. Although UTE Porto de Sergipe I and TL 500 kV are under the aegis of the same process with ADEMA, as the structures of the Transmission Line are still being definition, this segment will have its Installation License issued separately. It is also considered that the original tracing of this LT was redefined and optimized, aiming at lower interference with areas of native vegetation, notably mangrove and PPP intervention.

On June 20th, 2017, the National Electric Energy Agency (ANEEL) has transferred from Genpower Participações S.A. and GPE Sergipe - Empreendimentos SPE Ltda. for Celse - Centrais Elétricas de Sergipe S.A., the authorization for the UTE Porto de Sergipe I (Authorizing Resolution No. 6,431, Process 48500.000454/2015-61).

At the same time, as the offshore structure's original project conception has changed, the environmental licensing of those structures went from the state sphere (ADEMA) to the federal (IBAMA), under the IBAMA Process No. 02001.102580/2017-41. To clarify, the original proposal considered (according to the scope of LP ADEMA nº 11-3/2016) that the FSRU would be moored to the dock of the Inácio Barbosa Maritime Terminal – TMIB and the gas would be transported to the UTE through a pipeline to be installed on the connecting bridge between the quay and the retro-area. After the environmental performance evaluation, it was defined that the FRSU would be anchored at a fixed point (softyoke) in the territorial sea, as well as the gas pipeline and other offshore structures (pipeline and emissary).

In this sense, an Environmental Impact Assessment was prepared by the CH2M Environmental Consultancy, formally received by IBAMA by Official Letter No. 49/2017/CGTEF/DILIC-IBAMA, and is

being analyzed by this agency. On August 4th, 2017, ADEMA issued the Installation License No. 62/2017 for the Thermoelectric Plant - UTE Porto de Sergipe I installation.

As described, the 500kV Transmission Line will be dismantled from the ADEMA Process 2016/TEC/LP-003, which grants the Advance License No. 11-3/2016 for Marcelo Deda Thermoelectric Complex. The Reference Term No. 20277/2017-0074 was issued, describing the procedures and criteria for a Simplified Environmental Report (SAR) elaboration that will subsidize the process of advance licensing of the TL with ADEMA.

1.4 Areas of Influence

The Areas of influence were defined based on the statements of the Terms of Reference issued by both ADEMA and IBAMA, as well as in first approximation on the interference on the following environmental factors: occupation area; environmental security; public equipment; waste disposal; ecosystems; housing areas; fishing activity; and fauna species concentration areas.

Below are the definitions of the Areas of influence for each environmental compartment: physical, biotic and socioeconomic.

Table 1: Areas of Influence

Areas of influence	Environmental Compartment	Onshore	Offshore
DAA – Directly Affected Area	All	Onshore pipelines, 26 meters (gas pipeline, emissary and seawater pipeline) Pumping Station UTE plant TL dedicated passage (35 meter buffer at both sides from center axis) Square of the towers (base of 50x50 meters) Connection bay New accesses and construction sites	100 meters of offshore pipelines (pipeline, emissary and seawater pipeline) Exclusion zone associated with the FRSU (500 meters from the stern of FRSU), totaling a radius of 860 meters from the anchorage point (softyoke)
ADI – Area of Direct Influence	Physical and biotic	Buffer of 80 meters at both sides from the central axis of the TL and buffer of 500 m lateral from the land of the UTE with delineation to the north with the Pomonga river and south, with the coast line	Buffer of 10 km lateral at both sides from the central axis of the offshore structures, up to 10 km from the coast line
	Socioeconomic	Buffer of 80 meters at both sides from the central axis of the TL and the totality of the municipality of Barra dos Coqueiros	Coastal area of Barra dos Coqueiros, between the Japaratuba and Sergipe rivers, up to 10 km from the coastline
AII –Area of Indirect Influence	Physical and biotic	Buffer of 500 meters at both sides from the central axis of the TL and the totality of the municipality of Barra dos Coqueiros	Coastal area of Barra dos Coqueiros, between the Japaratuba and Sergipe rivers, up to 10 km from the coastline
	Socioeconomic	Municipalities of Barra dos Coqueiros, Santo Amaro das Brotas, Laranjeiras, Nossa Senhora de Socorro, Pirambu and Aracaju	Coastal zone of the municipalities of Barra dos Coqueiros, Aracaju and Pirambu, up to 10 km from the coastline

1.5 Environmental Impact Matrix and Evaluation Summary

Per Sanchéz (1995, 2006), the Environmental Impact Assessment is a planning instrument, a technical-scientific activity the purpose of which is to identify, predict and interpret the effects of a given human action on the environment. As such, an environmental impact is understood as changes in environmental quality derived from the mechanism or process generated by a given human action.

In this way, the identification of sensitive and changeable environmental factors was first made, based on the diagnosis of the physical, biotic and socioeconomic environment. At the same time, the activities inherent to the project were considered, considering its different phases: planning, installation and operation. From the intersections of this information, with the description of the environmental aspects that are inextricably linked to the respective activities, the environmental impacts related to the *Porto de Serigipe I* Thermoelectric Complex were identified and evaluated.

In order to do so, each impact was classified according to 13 attributes, to comprehend the nature of the impact, its range and its transformation capacity, as well as its interaction with other impacts.

A total of 28 environmental impacts were identified, of which 14 are related to the environmental components of the Socioeconomic compartment, 8 to the Physical compartment and 6 to the Biotic compartment. When separated by the phase when the impact occurs, a total of 47 impacts are obtained, being 01 during the planning phase, 27 during the installation and 19 during the operation. This does not mean an increase in identified impacts, but that the same impact can be observed both in the installation phase as in the operation.

Considering that the Installation Phase refers to the construction stage, when a series of changes to the environment is expected, it is during this stage that most of the environmental impacts generated by the project are concentrated, totaling 27 impacts. For the same reason, during the planning phase, when field activities are not foreseen, only one impact was identified, related to generation of population expectation.

Although the impacts are concentrated in the installation phase of the project, with a duration of 30 months, most of these are temporary, reversible and low or medium significance, being compatible with that expected for the construction stage of this type of enterprise.

During the Operation Phase, 19 impacts were identified, being mostly permanent, reversible and of low or medium significance. Although during the operation of the project the impacts have been evaluated as permanent, measures of control, mitigation and monitoring are established, consolidated in the environmental programs that make up the Basic Environmental Plan (PBA), which contemplate actions aimed at the resolution of such impacts, guaranteeing better environmental performance, reducing the impacts of the enterprise on the environmental components (socioeconomic, physical and biotic).

The effectiveness of control, mitigation and monitoring measures is demonstrated in the Environmental Impact Assessment, with respect to the analysis of the relevance of each impact. After considering the proposed measures and programs, most of the negative impacts were assessed as irrelevant or of low relevance (18), and for the positive impacts, all were assessed as hight relevance, as can be observed in the Environmental Impact Assessment Matrix (Table 2).

Table 2: Environmental Impact Assessment Matrix

Environment	Environmental Impact	Nature	Phase	Significance	Resolution Degree	Relevence Classes
Physical Environment	Coastal Dynamics Change	Negative	I	Low	High	Irrelevant
		Negative	O	Low	High	Irrelevant
	Triggering Surface Dynamics Processes	Negative	I	Low	High	Irrelevant
	Land Subsidence and/or Collapse	Negative	I/O	Medium	High	Low
	Surface Water Quality Change	Negative	I	Medium	High	Low
		Negative	O	Medium	High	Low
	Groundwater Water Quality Change	Negative	I	Medium	High	Low
		Negative	O	Medium	High	Low
	Air Quality Change	Negative	I	Medium	High	Low
		Negative	O	Medium	Low	Medium
	Underground Hydrodynamics Change	Negative	I	Medium	High	Low
	Noise Levels Change	Negative	I	Medium	Low	Medium
		Negative	O	Medium	High	Low
Biotic Environment	Loss of terrestrial habitat and increased fragmentation (LT and pipelines)	Negative	I	Low	High	Irrelevant
	Interference on Terrestrial Wildlife	Negative	I/O	Alta	High	Medium
	Interference on Estuarine Aquatic Communities	Negative	I/O	Low	Low	Low
	Interference on Permanently Proctected Areas (PPA) and Environmental Conservation Units (CI)	Negative	I	Low	Low	Low
	Disturbance in reproduction areas of chelonians on the Jatobá beach	Negative	I/O	Medium	Low	Medium
		Negative				
	Marine Wildlife Dynamics Change	Negative	I/O	Medium	Low	Medium
Social Environment	Population expectations	Negative	P	Medium	High	Low

Environment	Environmental Impact	Nature	Phase	Significance	Resolution Degree	Relevence Classes
		Negative	I	Alta	High	Medium
	Interference in Vehicle Traffic related to the Enterprise	Negative	I	Medium	High	Low
		Negative	O	Low	High	Irrelevant
	Nuisances that can affect the local population	Negative	I	Alta	High	Medium
		Negative	O	Low	High	Irrelevant
	Pressure over public equipment and services	Negative	I	Medium	Low	Medium
	Nuisances to the users and vacationers of Jatobá Beach	Negative	I	Low	Low	Low
	Interference on fishing activities	Negative	I	Low	Low	Low
		Negative	O	Low	Low	Low
	Interference on affected properties by pipeline	Negative	I	Alta	High	Medium
	Interference on affected properties by the 500 KV TL	Negative	I	Medium	High	Low
		Negative	O	Low	High	Irrelevant
	Interference on affected properties by bay of connection	Negative	I	Medium	Low	Medium
	Interference on Traditional Communities (Quilombolas)	Negative	I	Low	High	Irrelevant
		Negative	O	Low	High	Irrelevant
	Interferences on the Historical, Cultural and Archaeological Heritage	Negative	I	Low	High	Irrelevant
		Negative	O	Low	High	Irrelevant
	Local landscape changes	Negative	O	Low	Low	Low
	Employment and Income Generation	**Positive**	I	Alta	High	Alta
		Positive	O	Low	High	Medium
	Impacts on municipal revenues	**Positive**	I	Alta	High	Alta
		Positive	O	Medium	High	Alta

Legend: Phase – P (Planning) / I (Instalation) / O (Operation) / I/O (Instalantion and Operation)

1.6 Cumulative Impact Assessment

It should be noted that **a cumulative analysis, considering the joint effect of the 03 UTEs working in parallel, was run for a hypothetical scenario**, and therefore only the parameters thought to be highly critical were analyzed, as aligned in technical meetings. In the case of this scenario coming true, new studies involving all potential impacts should be carried out, using specific data of the UTE Porto de Sergipe I and based on an assertive basic design of the potential new enterprises that are planned to be installed in the area.

The results that are considered here are based on modelling carried out for atmospheric emissions and noise, exclusively for the operation phase.

In the scenario of simultaneous operation of the 03 UTEs (Porto de Sergipe I and, hypothetically, Laranjeiras and Marcelo Deda), the noise modelling showed an increase in sound pressure of more than 3 dBA at 2 points, which are: P-04, located in the Povoado do Jatobá community, close to the wind turbines, and P-05, located at the Praia do Jatobá, far away from where the Thermoelectric Complex Marcelo Deda is planned to be installed, close to the wind turbine park.

With attention to the cumulative impact assessment of the air quality derived from atmospheric emissions of the gas turbines of the 03 UTEs operating simultaneously, a dispersion study was carried out to determine the emissions and dispersion of pollutants in the atmosphere. The following compounds were taken into consideration: PM_{10} (particulate matter as inhalable particles), NOx (nitrogen oxides), SOx (as Sulphur dioxide) and CO (carbon monoxide).

In this study, it was verified that the emissions from the chimneys comply with the limits of Resolution CONAMA nº 382/06 and the recommendations of the IFC – International Finance Corporation and also with the primary air quality standards of Resolution CONAMA 03/90.

Only with respect to NOx in the air quality, considering the simultaneous emissions of the three UTEs, there is an exceedance of the limit of 25% established by the IFC for NOx as the hourly standard, when they are considered as a single enterprise.

To conclude, it can be observed that in the case of simultaneous operation of the three UTEs, impacts will be observed with results above the standards established by the legislation for noise and for NOx in the air quality, as hourly standards.

These impacts, however, can be controlled by adopting more conservative project specifications, such as more restrictive emission guarantees, and can be mitigated by measures such as increasing the chimney height, improvements in the acoustic isolation of the noise generating equipment, implantation of acoustic barriers between the UTEs and the receptors, and others.

1.7 Risk Assessment

The Risk Assessment Study aimed to estimate and evaluate the social risk to the population present in the surroundings of the Porto de Sergipe I Thermoelectric Facility, composed of the following systems: Floating Storage and Regasification Unit (FSRU), Thermoelectric Unit (UTE) and 500 kV Transmission Line (TL). The TL was not object of the present analysis, since it does not have associated gas flow.

The hazard identification technique PRA (Preliminary Risk Analysis) was performed and 33 accidental hypotheses were pointed out, from which natural gas leaks were contemplated in the systems mentioned above. For those accidental hypotheses, the amplitudes of the consequences were estimated through the software Phast Risk, version 6.7.

The frequency of leakage classes in the pipeline was defined based on the 9th Report of the European Gas Pipeline Incident Data Group (EGIG), and the frequencies of physical effects were estimated by the association of probabilities of immediate and delayed ignition in the event trees. The probabilities of immediate and delayed ignition were defined in accordance with Cetesb Standard P4.261.

The frequency of leaks in the pipeline to the UTE unit was defined based on the bibliographic Reference Manual Bevi Risk Assessments; Version 3.2; 2009; RIVM (National Institute of Public Health and the Environment).

Based on the calculated consequences and the estimated frequencies, the social risks were estimated using the methodology presented in Cetesb P4.261. The result of the social risks to the population, shows that the social risk is tolerable. As for the individual risk, the maximum level obtained was 1.00 x 10^{-7} $years^{-1}$.

Thus, comparing the risks defined in Cetesb Standard Method P4.261 (Accident Risk of Technological Origin) for decision and terms of reference, the risks imposed by CELSE would be considered acceptable.

1.8 Social and Environmental Plans and Programs

The Environmental Impact Assessment identified 47 environmental impacts that were separated by the phases of the enterprise (planning, installation and operation).

Considering the activities and evaluated attributes, measures were defined for environmental conservation through control, mitigation and monitoring strategies associated with these impacts.

Thus, the present chapter refers to the set of these Plans and Programs regarding the environmental impact, describing in detail the actions that must be taken to minimize generation, mitigate, restore (when it occurs) and potentiate (when positive) the identified environmental impacts, and compensate when there is no measure for a given impact.

The social and environmental plans and programs constitute a management tool, the purpose of which is to ensure compliance with the commitments assumed by the entrepreneur in accordance with the environmental legislation.

In total, 22 Social and Environmental Plans and Programs were listed, as follows:

1. EMP: Environmental Management Program
2. SCP: Social Communication Program
3. EEP: Environmental Education Program
4. ECPC: Environmental Control Plan for Construction Works
5. SDP: Supplier Development Program
6. LCP: Labor Contracting Program
7. PWMP: Solid Waste Management Program
8. ECMP: Effluent and Water Quality Control and Monitoring Plan
9. CPEP: Control Plan of Erosive Processes
10. RPDA: Recovery Plan for Degraded Areas
11. HMP: Hydrogeological Monitoring Program
12. AEMP: Air Emissions and Air Quality Monitoring Program

13. NVMP: Noise and Vibration Monitoring Program
14. FMP: Fisheries Monitoring Program
15. MPSI: Monitoring Program for Socioeconomic Indicators
16. FCP: Flora Conservation Program
17. WCP: Wildlife Conservation Program
18. CPP: Compensatory Planting Plan
19. RRLP: Reallocation and Restoration of Livelihoods Program
20. CRPP: Complementary Reallocation Plan for Jatobá Properties (Adherence to PS5 requirements)
21. HCP: Heritage Conservation Plan (Cultural Heritage)
22. PBAq: Quilombola Project of CRQ Mussuca (PBAq Mussuca)

In order to integrate the various proposed programs, to clarify the status and to present to the stakeholders (population and relevant public agencies), the set of social and environmental plans and programs will be organized according to the guidelines of an Integrated Management System - IMS, which will be supported by the Environmental Management Program (EMP).

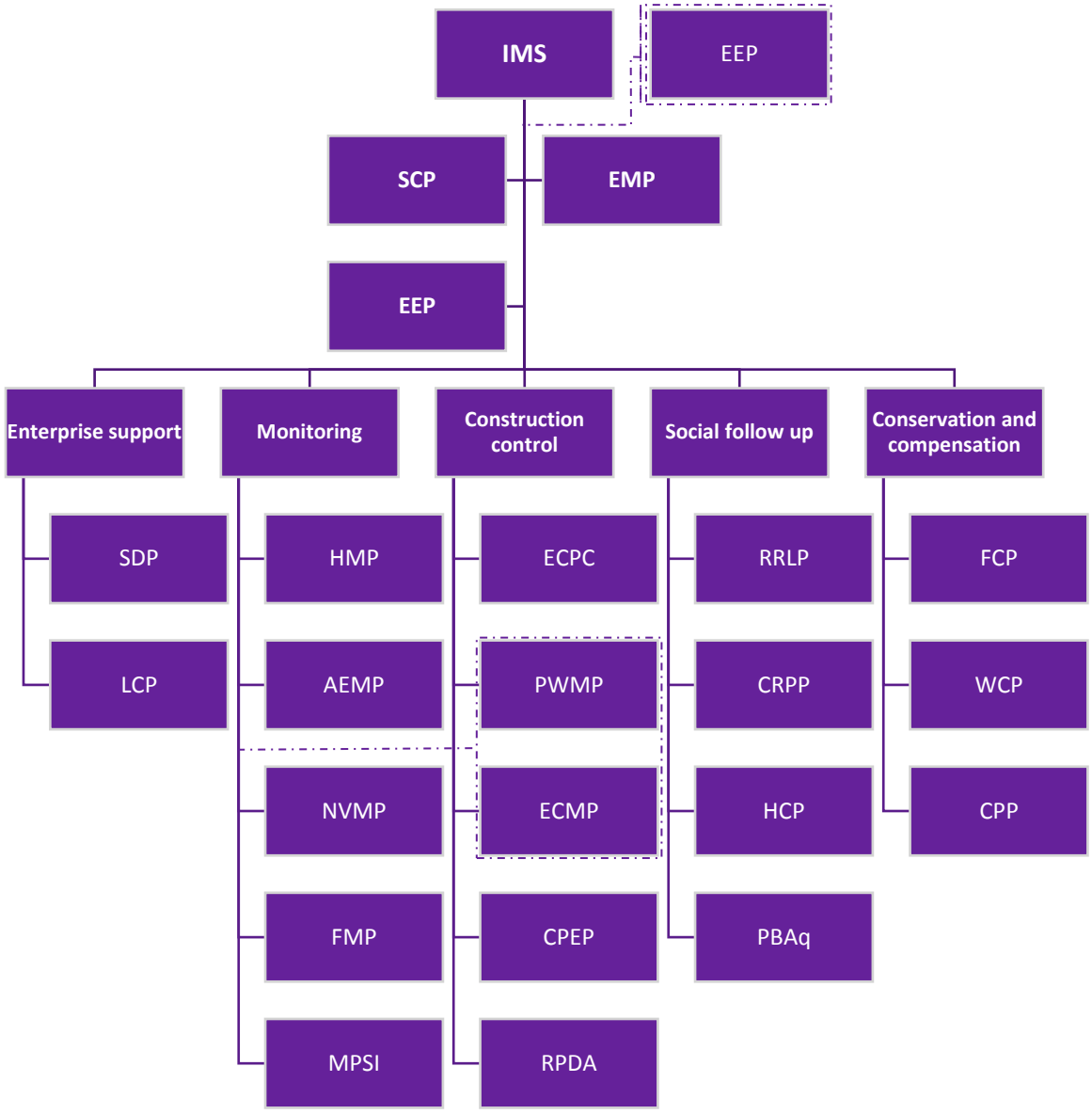

Figure 3: Framework of Social and Environmental Plans and Programs for the Porto de Sergipe I Thermoelectric Facility

Within the perspective of social responsibility and as part of sustainable actions, the IMS aims, among other aspects, to structure projects and implement activities in the areas of influence impacted by the construction works and/or operation of the Porto de Sergipe I Thermoelectric Facility.

The organization of social and environmental plans and programs was based on the present study, on the interactions with the relevant environmental agencies (ADEMA and IBAMA), and on the expertise of the Environmental Consultancy responsible for its elaboration.

In addition, the Social and Environmental Plans and Programs are in accordance with CELSE's socio-environmental guidelines and IFC's Performance Standards, which will support actions throughout the construction and operation phases.

1.9 Environmental Compensation

Environmental Compensation, as defined in Article 36 of Federal Law 9,985 / 2000 (National System of Conservation Units - SNUC), constitutes an important public policy tool, which determines for environmental licensing cases of undertakings of significant environmental impact, that the entrepreneur is obliged to support the implementation and maintenance of the Conservation Unit of the Integral Protection Group, inducing the incorporation of the social and environmental costs of the degradation generated, into its overall costs.

The Environmental Compensation related to the quoted Law is linked to the Previous License no 11-3/2016 issued by ADEMA, Process 2016/TEC/LP-0003. The total estimated value for investments in this project is 5 billion reais.

1.10 Conclusion

The main aspect of the Enterprise will be the increased capacity of the national electricity generation and, at the same time, a significant increase in the availability of sources of energy generation that do not depend on climatic factors such as hydroelectric and wind power plants, promoting greater flexibility and security to the system, allowing the conservation of the sources that allow the storage of energy, such as hydroelectric plants, with accumulation reservoirs.

Although the Enterprise is based on non-renewable sources, natural gas is a source that results in lower emissions of polluting substances into the atmosphere, it has availability in several regions of the world and technologies for their use are plenty.

Based on the description and diagnoses of the enterprise presented in the Environmental Impact Assessment of the Porto de Sergipe I Thermoelectric Facility, it is possible to verify that the installation area of the enterprise is characterized by the beach area of the municipality of Barra dos Coqueiros and the offshore installation, previously terraced, and the whole extension of the Transmission Line which is a predominantly rural region interspersed by some rivers and mangroves.

The coastal area, more specifically the beach on which the enterprise will be established, is one of the most abundant regions of the Brazilian coast in terms of spawning of olive ridley sea turtle (Lepidochelys olivacea), green sea turtle (*Chelonia mydas*), hawksbill sea turtle (*Eretmochelys imbricata*) and loggerhead sea turtle (*Caretta caretta*), especially between September and March. Another important aspect of this region is the fishing activity, which is one of the main economic activities for the local community, and shrimp trawling is a relevant resource for those involved in this sector of the economy.

In the UTE area, there is no need for plant suppression of arboreal species or interferences in aquatic environments since this area is already degraded. Thus, it is understood that the enterprise does not present environmental sensitivity or does not compromises the survival of species of fauna or flora.

Due to the LT installation process, the related structures, including construction of accesses for its implementation and maintenance, and interferences of the construction of the towers and the launching of the transmission cables, it is inferred that the impacts in this region are of greater magnitude than the impacts related to the UTE, which indicates a need for environmental monitoring, identified in the impact assessment and duly consolidated in the environmental plans and programs.

A total of 47 socio-environmental impacts generated by the planning, installation and operation of the Porto de Sergipe I Thermoelectric Facility were identified, considering the offshore and onshore structures of the project.

For the socioeconomic compartment, the main impacts are related to the generation of population expectation, pressure on public services, interference in road infrastructure and local traffic, discomfort to the local population and interference with the properties affected by the project. As positive impact, that is the generation of employment and income and tax revenues.

For the biotic compartment, the main impacts related to the project, are: disturbances in the areas of the chelonians reproductive sites, scaring of the fauna and alteration in the dynamics of the marine fauna. For the physical compartment, such impacts are related to the change in air quality and the increase in noise levels.

The positive impacts, in addition to power generation, mentioned above, are the impact on tax revenue, mainly due to the increase in the employed workforce and taxes, as well as the generation of jobs, which is a positive highlight, during the installation phase of the enterprise, when approximately 2,160 workers will be employed at the peak of works for the UTE, offshore and LT. Of these, it is estimated that 60% of the workforce will be hired locally, resulting in a revitalization of the current economic scenario and opportunities for regional growth.

The localities that are most sensitive to the installation of the works are Praia do Jatobá and Cajueiro I and II, since both are closer to the enterprise, inside the Area of Direct Influence, therefore, are more susceptible to the actions of installation and operation of the UTE, such as dust spreading, particulate matter, noise, vibration, machinery, equipment, vehicles and trucks.

In the Area of Direct Influence, there is the coexistence of commercial and artisanal fishing activity, which may suffer low relevat interference from the installation and operation of the offshore equipments. Among the artisanal fishing communities, the following were identified: Fishermen of Praia do Jatobá, Povoado Touro, Povoado Canal de São Sebastião, and CRQ Pontal da Barra. In these localities the traditional fishing predominates for subsistence and/or complementation of family income. Among them, the Touro and Canal communities, located along the Pomonga River, have extractive fishing as main activity, being little or not influenced by the enterprise.

In addition, 26 cases of properties intercepted by the LT and its respective easement range and 2 families in the connecting bay area were identified, which fall into some vulnerability aspect, be it the identification of the interference potential of the installation and operation activities on the daily life the owners, or whether the owner has economic activities in the property, identified as the only source of family income likely to be impacted by the implementation and operation of the 500kV LT dedicated passage.

Therefore, in order to avoid, minimize, mitigate and restore (when it occurs) or potentiate (when positive) the occurrence of relevant impacts on these activities, actions and measures of control and monitoring are recommended, under the responsibility of CELSE and of its contractors, organized in 22 Socio-Environmental Plans and Programs, which will be executed from the planning onwards until during the operation of the enterprise.

In this way, the technical team responsible for this environmental impact study considers that the Porto de Sergipe I Thermoelectric Facility is environmentally feasible, and all actions and measures of control, mitigation and monitoring established in this document should be executed.