Inter-American Investment Corporation
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12048-01

Porto de Sergipe LNG-to-Power Plant

Review of Environmental, Social, and Labor Issues

Environmental Review:

CELSE Centrais Elétricas de Sergipe S.A. ("CELSE" or the "Sponsor") is developing the Power Plant Port of Sergipe I ("The Project"), a greenfield gas-fired combined cycle thermal power plant and associated infrastructure. CELSE was created in 2015 by EBRASIL- Eletricidade do Brasil and Golar Power (a joint-venture between Golar LNG and Stonepeak Infrastructure Partners).

The Project consists of a 1,500 MW combined-cycle power plant using three GE 7HA.02 gas turbines (GTs) with corresponding Heat Recovery Steam Generators (HRSG) and one steam turbine (ST). It will be connected to the grid via a 34.2 km double circuit 500-kV transmission line (TL) and air-insulated connection bay linking to an existing substation with potential to receive up to 3,000 MW. The Project further includes a fully dedicated chartered floating storage and regasification unit (FSRU) with a storage capacity of 170,000 m3 and a liquefied natural gas (LNG) regasification capacity of up to 14 million m3/day with a Submerged Soft Yoke (SSY) mooring structure. The FRSU will be located 6.5 km offshore and will connect to the power plant via an 18-inch diameter offshore and onshore gas pipeline to transfer the regasified LNG (RLNG) from the FSRU to the combined-cycle power plant. Seawater cooling towers will be used for the condenser cooling. The water intake and cooling water discharge are located offshore, and are connected to the power plant with pipelines that follow routing along to the RLNG pipeline with a seawater pumping station located on-shore.

The power plant will be constructed on a 511,622m² site located in the Municipality of Barra dos Coqueiros, approximately 20km from Aracaju, the capital of Sergipe State, in northeastern Brazil.

The Project is potentially the first of three gas-fired power plants to be developed by CELSE's Sponsors at the site. As per initial studies, CELSE's Sponsors intends to pursue development of two additional gas-fired plants within the same site area, for a total of approximately 3,000 MW of generating capacity although timing of future developments has yet to be determined.

The FSRU, named "Golar Nanook", is a new FSRU with a regasification capacity of 14 million m3/ day, currently under construction at the Samsung Heavy Industries (SHI) shipyard. LNG delivery to the FSRU will be through Ship-to-Ship (STS) process. The FSRU is being chartered to the project by Golar Power, one of the Project Sponsors. The submerged pipeline will lie on the seabed except for the nearshore portion which will be buried. Once past the shoreline the pipeline continues for a distance of 1.5 km and terminates at a gate which has three branches (Porto de Sergipe I and two future facilities).

General Electric (GE) is under a turnkey Engineer Procure Construct (EPC) contract to provide the power plant, the 34.2-km transmission line, the substation expansion, and the sea-water intake/discharge infrastructure for the power plant's cooling requirements. The installation of the SSY and the construction of the gas pipeline will be contracted under separate EPC contract with Sapura

Energy. For the operational phase of the Project, CELSE has selected GE as the operations and maintenance (O&M) contractor for the power plant and GOLAR LNG as the O&M operator for the FRSU.

The TL will have a 70-meter wide right-of-way (ROW) with approximately 60 towers, and will cross the municipalities of Barra dos Coqueiros (site of the power plant), Santo Amaro das Brotas, Laranjeiras and Nossa Senhora do Socorro (site of the CHESF's Jardim Substation and the proposed CELSE' bay).

The site of the power plant had previously been cleared and prepared to serve as an industrial site and is located near the State Road SE-100 and 1.2 km from Praia do Jatoba, on the Atlantic Ocean, near the Community of Praia do Jatoba. The power plant site is separated from the Community of Praia do Jatoba by the Wind Farm Barra dos Coqueiros. An existing marine terminal "Terminal Maritimo Inacio Barbosa (TMIB)" is located adjacent, and south/southwest of the power plant site. The TMIB will be used to receive large pieces of equipment for the project. State road SE-100 is located immediately to the west of the power plant site and provides a connection to local communities including the City of Aracaju.

The project will operate as a backup base load power plant and is expected to dispatch to the national grid between 30-50% of the time, as required by the Electric System National Operator (ONS – Operador Nacional do Sistema Eletrico). The power plant is currently under construction with start of operation scheduled for January, 2020. The FSRU conversion is expected to be completed by the second semester of 2018 and will arrive at the site during the first quarter of 2019. Total project cost is estimated at US$ 1.8 billion, and IIC proposed investment in the project is up to US$ 238 million A loan (IIC US$38 million, IDB US$200 million). Site preparation started in February 2017.

1. General Information and Overview of Scope of IIC E&S Review

The IIC scope of review during the CELSE's appraisal included review of three ESIAs (TL, power plant and FRSU/offshore structures), field studies, mathematical models (e.g., noise, air dispersion, thermal discharge, quantitative risk analyses [QRA]), occupational health and safety plans and management plans for the construction and operational phases of the Project. Due to the complexity and footprint of the project, IIC's E&S specialists conducted a 5-day site visit (May 7-12, 2017), in conjunction with IFC E&S specialists, which included the following activities: 1) meetings and interviews with CELSE's directors, managers, E&S personnel and consultants (environmental, social, and engineering experts), EPC Contractor's project directors and managers; 2) meetings with environmental regulatory agencies (ADEMA and IBAMA); 3) meeting at the Town Hall of Barra dos Coqueiros; 4) meetings with representatives from the Quilombola Community Pontal da Barra; Cajueiro; Praia do Jatoba; the fisherman association of Pirambu (Colônia Z15); 5) interviews with stakeholders who had their houses acquired by CELSE in Praia do Jatoba; 6) field visit to the location of the power plant, transmission line and surrounding areas; 7) visit to the nearby marine terminal/pier Teminal Maritimo Inacio Barbosa-TMIB; 8) a subsequent field visit by an E&S specialist on August 23-24; and 9) conference calls and meetings with CELSE following the site visit.

2. Environmental and Social Categorization and Rationale

Key environmental and social (E&S) impacts associated with this type of operation include air emissions, liquid effluent discharges, noise, handling of hazardous materials, land and marine

biodiversity, water quality, GHG emissions, land acquisition and resettlement, and community related impacts and risks during construction and operation.

The proposed Project has been classified as Category A per IIC's Environmental and Social Sustainability Policy. Although it is expected to bring economic and social benefits, it will also be a source of significant, diverse and irreversible impacts during the construction and operational phases, as discussed below.

3. Environmental and Social Context

The Porto de Sergipe I thermoelectric power plant complex will be implemented in the city of Barra dos Coqueiros, a municipality neighboring Sergipe's state capital Aracaju, Brazil. The Project's area of influence encompasses the municipalities of Santo Amaro das Brotas, Aracaju, Pirambu, Nossa Senhora do Socorro, Laranjeiras and Barra dos Coqueiros. Barra dos Coqueiros has approximately 25,000 inhabitants. The municipality has experienced significant urbanization over the last several years, as result of migratory flows from previously predominant rural areas seeking employment opportunities in industrial development projects that have not yet fully materialized in the area. Insufficient housing has provoked the occupation of public land and irregular human settlements, some of which are adjacent to the Project site. The plant site is located between the state road SE-100 to the north, the marine port 'Terminal Marítimo Inácio Barbosa' (TMIB) to the west, and the windpower park 'Parque Eólico de Barra dos Coqueiros' to the east and south. The alignment of the TL crosses predominantly rural properties where a mix of cattle ranching, agriculture (both subsistence and plantation e.g. coconuts), aquaculture (i.e. shrimp farms) as well as extractivism (e.g. mangaba) activities take place.

4. Environmental Risks and Impacts and Proposed Mitigation and Compensation Measures

4.1 Assessment and Management of Environmental and Social Risks and Impacts

a. E&S Assessment and Management System

IIC's appraisal considered the E&S management planning process and documentation for the Project, as well as gaps between the project planning process and IIC's E&S requirements. Where necessary, corrective measures, intended to close these gaps within a reasonable period of time, are summarized in the paragraphs that follow, in an Environmental and Social Action Plan (ESAP) mutually agreed with the Client.

b. Policy

CELSE is a young company, created in 2015. The Port of Sergipe I is CELSE's first investment and the company is currently in the process of developing corporate policies and procedures. CELSE will develop and implement a corporate environmental, social, health and safety policy consistent with PS1 requirements (see action 1 of the ESAP[1]).

c. Identification of Risks and Impacts

Brazilian environmental regulations require the preparation of detailed an E&S impact assessments (ESIA) as part of a stepwise environmental licensing process applicable to major impacting

[1] The Environmental and Social Action Plan (ESAP) is a set of actions agreed with the Client to close any gaps identified during the Environmental and Social Due Diligence process between the project's performance and the requirements listed in the IIC's Environmental and Social Sustainability Policy.

activities. Either the state or federal regulatory entities are responsible for reviewing ESIAs prior to issuing a Preliminary License (Licença Prévia or LP) and Installation License (Licença de Instalação or LI) required prior to the start of construction activities of any major projects. This is followed by the issuance of an environmental operating license (Licença de Operação or LO) granted after regulatory inspection of the fully constructed project, just before commencement of operations. CELSE initiated the assessment of the E&S risks and impacts in 2015 in coordination with the Environmental Agency of Sergipe State (ADEMA- Administracao Estadual de Medio Ambiente de Sergipe). Three separate ESIAs have been prepared for 1) the transmission line-TL and connection bay, 2) the gas-fired power plant and auxiliary onshore components, and 3) the offshore facilities (FSRU, SSY, water intake and discharge. Permitting of the power plant is under the jurisdiction of the state agency ADEMA while for the offshore structures is the federal environmental agency, IBAMA (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis). ADEMA has already granted the construction license for the power plant. It will also issue the construction license for the transmission line. IBAMA will issue the licenses for the offshore component. A single Operations License for all project components will be granted by IBAMA.

The three original ESIAs prepared in 2015 by a local consultancy were subsequently updated through a supplemental ESIA undertaken by an international engineering company, CH2M, to reflect changes to the project design and to include more comprehensive assessments of potential E&S risks and impacts, in alignment with IIC requirements and international good practices.

The supplemental ESIA comprise a set of baseline studies, including background ambient air quality; background noise; soil quality, surface and groundwater quality, terrestrial fauna and flora, marine fauna and flora, greenhouse gas emissions, and mathematical models for dispersion of air pollutants, noise levels and thermal discharge. The supplemental ESIA also contains a number of socioeconomic baseline studies, including a review of the conditions in the municipalities and communities that may be impacted or influenced by the project due to their proximity to the project site and/ or project components outside of the power plant site[2].

Mitigation and management measures corresponding to each of the identified impacts are currently being incorporated into the project's design and construction phase E&S management plans, as well as in the EPC contractors' contracts. Similarly, mitigation and management measures corresponding to each impact have been proposed as part of environmental and social management plans to be developed prior to the operational phase (see below).

i. Direct and indirect impacts and risks

The supplemental ESIA identified key E&S impacts likely to be generated during the project construction including, for example: vegetation removal/biodiversity impacts; impacts to archaeological sites, generation of noise and dust and from trucks/buses and heavy machinery, increased traffic in local access roads, surface runoff, generation of large volumes of sanitary waste, generation of solid waste, occupational health and safety risks, incremental change in the landscape and visual character of the area; community health and safety impacts due to increased

[2] The potentially impacted jurisdictions include the municipalities of Barra dos Coqueiros, Aracaju, Pirambu, Santo Amaro das Brotas, Laranjeiras, and Nossa Senhora do Socorro; the quilombolas communities Pontal da Barra (known in Portuguese as Comunidade Remanescente de Quilombo Pontal da Barra, or CRQ Pontal da Barra) and Mussuca (known in Portuguese as Comunidade Remanescente de Quilombo Mussuca, or CRQ Mussuca); small-scale subsistence and artisanal fishermen; and the project surrounding communities Praia do Jatobá (east of the site), Cajueiro (west of the site), and Povoado do Jatoba (south of the site). Surveys included interviews with community leaders and household surveys to evaluate socioeconomic aspects and communities' perception related to the project.

traffic, dust, noise, and influx of construction workers; and economic and physical displacement due to land acquisition for the project implementation.

The studies also identified key E&S impacts likely to be generated during the project operation including, for example: impacts to air quality due to stack emissions from the combustion of natural gas during combined cycle operation (mainly NOx emissions); seawater quality, effluent discharge; noise associated with the operation of the power plant; landscape and visual impact due to the addition of an industrial component in the area; generation of various types of non-hazardous and hazardous wastes from plant O&M activities; community health and safety mainly associated with the unlikely event of a natural gas leak; among others.

The supplemental ESIA identified small-scale subsistence, artisanal, and commercial fisheries operation at the offshore facilities area of influence. The artisanal fishing communities located near project components include: Praia do Jatoba, Touro, São Sebastião, Canal, and CRQ Pontal da Barra. A socioeconomic census and survey was conducted in August 2017 with 157 fishermen of these localities and two artisanal fishermen associations were consulted, namely Colônia de Pescadores Z-13 and Colônia de Pescadores Z-5. The ESIA identified potential impacts on fishing resources and habitats and peoples' access to and use of these resources during the construction and operation of the FSRU and pipelines due to increased shipping traffic, the enforcement of exclusion zones, and increased level of acoustic and vibration disturbance. According to the studies, these impacts will be temporary during construction and limited during operation since the area used for fisheries are not restricted where the project components will be installed. Such impacts will be monitored during the construction and operation phases of the Project. CELSE will commission a skilled and experienced consultant to monitor project-related impacts on fish resources and habitats, fisheries, and fishing communities during the construction and operation of the project. If impacts on fishing-based livelihoods resulting in economic displacement are identified, CELSE will develop and implement a livelihood restoration plan, consistent with IIC's requirements (ESAP action 3).

ii. Cumulative impact analysis

The supplemental ESIA studies included preliminary evaluations of cumulative impacts associated with the two proposed power plants for the Barra dos Coqueiros for certain environmental valued components, namely cumulative impacts to ambient air quality. CELSE will augment and update the cumulative impact assessment contemplating at least: a) air quality, including wake effect; b) noise; c) water resources (e.g. intake and effluents); d) increment of traffic and informal settlements along the road (ESAP action 2).

iii. Analysis of alternatives

The Project studies contain a series of analysis of alternatives chosen to minimize overall environmental and social impacts. These included choice of technology (e.g. state of the art gas turbines with corresponding heat recovery steam generators, dedicated offshore regasification structures, FSRU innovative soft yolk/swivel connection, small footprint anchoring system), location and siting (e.g. previously converted plant site, alternate alignment and micro-routing of transmission line), as well as design options (e.g. efficient use of natural gas, use of seawater for cooling towers).

d. Management Programs

Environmental and social management plans (ESMPs or Plano Basico Ambiental [PBA] in Portuguese) are being developed to address E&S impacts identified in the updated ESIA. Key ESMPs include solid waste management, liquid waste management, flora and fauna rescue and relocation, traffic management, air emissions and air quality, effluent quality and seawater quality. Social management plans include workers' management, resettlement and livelihood restoration plan, cultural resources conservation plan, environmental education plan, socioeconomic indicators management plan, and social communication plan. As described in the ESAP, ESMPs will be updated to reflect the results of on-going supplemental ESIAs for example covering such aspects as contractors' management, workers' accommodation, fisheries, quilombolas communities, and ambient noise levels.

The project will be constructed by two separate EPC contractors. Currently, GE has been secured to serve as the EPC contractor for the power plant and transmission line. Letter of Intent has been issued to Sapura Energy for the installation of the SSY, the construction of RLNG pipeline and the hook-up of the FSRU. All EPC contractors will be expected to establish environmental, health, safety (EHS) and social management and monitoring programs during both construction and operation. The responsibility for compliance with the ESIA findings including EHS and social management commitments and management planning will be included in all EPC contracts. GE has a corporate level construction EHS plan, which sets the overall requirements to be followed at each project and sets responsibilities and duties for its key personnel at the project level. GE is in the process of finalizing project-specific EHS plans, which will reflect both applicable Brazilian regulatory requirements and contractual EHS requirements by CELSE, including compliance with IFC Performance Standards (PS). Similarly, Sapura's EHS plans will also need to reflect applicable Brazilian regulatory requirements and contractual EHS requirements by CELSE, including compliance with IFC PS. EPC contractors will be required to develop detailed environmental pollution control and occupational health and safety measures based on project-specific ESMPs and in compliance with Brazilian regulations and IFC PS requirements, including duty of care procedures (ESAP action 4).

For the operational phase of the project, CELSE has selected GE as the operations and maintenance (O&M) contractor for the power plant and GOLAR LNG as the O&M operator for the FRSU. Both companies have extensive experiences operating similar facilities worldwide. GOLAR LNG has 10 years of experience operating FSRU in Brazil. For the maintenance of the 500-kV transmission line, CELSE will sign contracts with qualified companies. All O&M contractors will prepare EHS plans for the operational phase of the project and such EHS plans and procedures will include contractors' own corporate standards, Brazilian regulatory requirements, contractual requirements by CELSE, including IFC PS. O&M contractors will develop EHS plans and implement them through environmental, health and safety management systems consistent with IFC PS requirements, including duty of care procedures (ESAP action 5).

CELSE's responsibilities during the construction and O&M phases of the project include: 1) management of relationships and engagement with governmental, regulatory and community bodies, agencies and groups regarding the project components, 2) overall compliance of the project with the legal requirements and conditions of environmental licenses and authorizations; 3) implementation of social and environmental compensations signed with affected stakeholders and regulatory agencies; 4) implementation of E&S programs such environmental education, flora and fauna rescue and relocation, biodiversity conservation, surface water quality, ambient noise and air quality, among others. To fulfill its responsibilities during construction and O&M phases of the project, CELSE will

develop and implement an ESMS based on the Brazilian regulations and IFC's PS requirements (ESAP action 6).

e. Organizational Capacity and Competency

For the Port of Sergipe I project, CELSE has created an integrated environmental, social, health and safety (ESHS) department. The ESHS department is led by a qualified manager who joined the company in July 2017. The manager is supported by three coordinators (social, environmental, health and safety) who in turn are supported by their respective staff. The ESHS department is also supported by various E&S consultants who conducted the E&S baseline studies and impact assessments and will continue to conduct E&S monitoring programs such as flora and fauna, air quality, noise, etc. These teams are responsible for managing the implementation of EHS programs by the two EPC contractors and overseeing their EHS and social performance, ensuring regulatory compliance, implementing compliance audits, stakeholder engagement, grievance, and E&S monitoring and record keeping, management and documentation among others. Promon, an engineering firm, is developing CELSE's ESMS, which will be pivotal to CELSE's ESHS team as they implement the ESMPs.

f. Emergency Preparedness and Response

During construction, the EPC contractors will be required to develop and implement Emergency Preparedness and Response Plans and to have qualified personnel and equipment to respond to potential emergencies at their construction areas. Potential emergency scenarios will also be identified by each EPC contractor in conjunction with CELSE and adequate emergency response arrangements will have to be developed and implemented by each contractor. This will include provisions for an on-site trained and equipped emergency response team to be ready to respond to emergency events. As per ESAP action 7, CELSE will ensure that all EPC contractors will prepare and implement an emergency and preparedness plan in accordance with Brazilian regulations and IFC PS requirements.

In coordination with CELSE, GE and GOLAR LNG will also develop emergency preparedness and response plans for their respective facilities during operations, taking into consideration emergency scenarios from potential fire/explosion, gas leak, oil spills, etc. These offsite emergency preparedness and response plans will identify, amongst others, likely emergency scenarios, appropriate response equipment, emergency training and drill frequencies, identification of potentially affected communities and appropriate external resources, etc. CELSE will ensure that qualified personnel to respond to any emergency are available at all times during the operational phase of the project. CELSE's social staff will ensure that community awareness programs are tailored to reflect potential impacts on specific communities, based on the results of the emergency scenario models and additional QRAs that will be prepared upon final project design (for details, see ESAP action 8).

g. Monitoring and Review

As part of the implementation of the project, CELSE will develop the monitoring plans referenced in the ESIAs for both the construction and operation phases, covering aspects such as air emissions, air quality, liquid effluents, noise, water quality, workplace conditions, biodiversity, social aspects, water and energy consumption, GHG emissions, etc. The contractors will develop the monitoring plan for the construction phase and CELSE the procedures to oversee contractors' EHS performance. CELSE will also implement EHS & social measures and continue to assess the project E&S performance during the operational phase. For all phases of the project, CELSE will commission an independent third party E&S consultancy to audit the project E&S performance and verify compliance with Brazilian regulatory requirement and IFC PS (see ESAP action 9).

h. Stakeholder Engagement

Stakeholder Mapping, Analysis and Engagement Planning

The ESIA includes a stakeholder mapping step to identify key stakeholders that should be engaged during the construction and operational phases of the Project. During construction, stakeholder engagement will be guided by a Social Communication Program, which establishes a high-level process and approach for informing project stakeholders about the project, its impacts, mitigation, and management measures. The plan includes (i) a communications campaign to keep stakeholders informed of project milestones such as commencement of construction and employment opportunities; (ii) a monitoring commission with the participation of members from the company, local government, and project-affected communities; (iii) meetings with government authorities, as needed; (iv) grievance mechanism for affected communities; and (v) monitoring reports of the engagement process. Nonetheless, the company will strengthen stakeholder engagement to be consistent with PS1. Based on the results of the ESIA, stakeholder mapping and analysis will be reviewed, strengthening measures related to those with the potential to be directly affected by the project (including by physical and/or economic displacement) including "quilombolas" communities, workers' housing neighbors, municipal entities, e.g. Health Secretariat and the municipal body responsible for ensuring the rights of children and adolescents (Conselho Tutelar), among others. Stakeholder engagement activities will be scaled to the project risks and impacts, tailored to the characteristics of the affected communities, and will include tailored measures to allow the effective participation of those identified as disadvantaged or vulnerable. CELSE will develop a Stakeholder Engagement Plan (SEP) aligned with PS-1 requirements (see ESAP action 35).

The SEP will also include cross references to other relevant management plans implemented by the company to manage environmental and social risks and impacts. The Community Relations Coordinator will ensure proper implementation of the SEP as well as management and expansion of the community liaison team as needed throughout the construction and operation phases of the project. In addition, the company is committed to updating the SEP for each phase of the project, as appropriate.

Informed Consultation and Participation

As part of the environmental licensing process CELSE is conducting the consultation process mandated by regulatory authorities including public notifications, disclosure of a summary of the ESIAs (known in Portuguese as Relatório de Impacto Ambiental – RIMA), and public meetings. Between February 2016 and August 2017, four public meetings were conducted to discuss the environmental and social studies and the proposed management programs associated with the thermal power plant and the offshore facilities. Approximately 200 people attended each meeting on average. Consultations are carried out in a participatory manner and all findings (including list of attendees) are recorded in official meeting minutes. Community members emphasized their interest in employment opportunities and their concerns associated with potential project related environmental impacts on air and on the marine environment. A fifth public meeting is scheduled for October 2017 to discuss the studies associated with the installation of the transmission line.

External Communications and Grievance Mechanisms

CELSE commissioned a third-party company to implement a grievance mechanism to receive and register affected communities' issues, concerns, and grievances associated with the project. Affected communities are able to communicate with the company and bring grievances to CELSE's attention via a toll-free telephone number, email, and/or directly with staff. As mentioned above, CELSE will

include in the SEP a well-defined workflow for registering, following up, responding to, and closing out complaints, as well as the timeframes within which the company will act on grievances and report back to complainants. The SEP will include a work plan to ensure the grievance mechanism results are shared with the EPC and subcontractors, and if necessary additional actions will be taken to improve and/or change performance. The grievance mechanisms will be disclosed and communicated among the Project affected communities (ESAP action 35).

Disclosure of Information and Ongoing Reporting to Affected Communities

As part of the SEP (ESAP action 9 and 35) CELSE will make publicly available periodic reports on environmental and social performance, including feedback to government and affected communities about monitoring and management of project related impacts and risks. All relevant Environmental and Social Impact Assessment (ESIA) studies have been published at the IIC's website[3]. In addition, project ESIA documentation has also been made available locally[4]

4.2 Labor and Working Conditions

As described under PS1, there will be two major EPC contractors for the project: GE for the power plant and transmission line, and Sapura Energy for the RLNG pipeline, the installation of the SSY and the hook-up of the FSRU. As of September 2017, there were approximately 720 workers engaged by GE and its subcontractors at the power plant site. Peak construction for GE is expected to reach approximately 2,200 workers. The workforce required during the operational phase is anticipated to reach approximately 200 direct and third-party contractors. Local communities have high expectations for employment opportunities, particularly among residents in Barra dos Coqueiros (site of the power plant) and Pirambu. Questions related to employment opportunities have been raised at all meetings held as part of the ESIA engagement process. The project has been required to give priority to workers sourced from its area of influence insofar as they meet skill requirements. For this reason, CELSE developed a Local Workers' Recruiting Program (Programa de Contratação de Mão de Obra Local – PCMO), through which the recruiting process for direct and contracted workers is conducted in partnership with the Employment Agency of Municipality of Barra dos Coqueiros (known in Portuguese as Site Nacional de Emprego - SINE) and the Workers' Support Center of Aracaju (Núcleo de Apoio ao Trabalho – NAT). Together with the Municipality of Barra dos Coqueiros, CELSE conducted an analysis of the workforce locally available in relation to the range of skills that will be required for the construction phase. It is expected that 60 percent of the workforce will be locally hired and approximately 40 percent, i.e. 900 workers, will be sourced from out of the Project area.

In September 2017, two protests were conducted by community members associated with a social movement called "SOS Employment". The protesters blocked the entrance to the project to prevent workers from accessing the site and complained that the recruiting process was not transparent and was not prioritizing local workers from municipalities in the project area of influence. CELSE will review and enhance its local workers' recruiting plan to ensure local workers are being prioritized and to identify and provide training and skills development opportunities among local community members (ESAP action 10).

[3] http://www.iic.org/es/proyectos/project-disclosure/12048-01/porto-de-sergipe-lng-power-plant

[4] http://licenciamento.ibama.gov.br/Termeletricas/Instala%C3%A7%C3%B5es%20Offshore%20de%20Gas%20Natural,%20Adutora%20e%20Emissario%20Submarino-%2002001.102580_2017-41/

Human Resources Policies and Procedures

In May 2017, CELSE hired a human resources (HR) manager and personnel to develop and implement policies and procedures applicable to all employees, in compliance with the Brazilian labor code (known as the Consolidação das Leis de Trabalho, or CLT), which is prescriptive and consistent with IFC IIC's PS2. CELSE will develop and implement human resources policies and procedures appropriate to its size and workforce, consistent with IIC IFC PS2 and national law. The company will ensure that relevant parts of CELSE's human resource policies and procedures will be extended to cover the labor practices of construction contractors and their sub-contractors (e.g., compliance with local laws, provisions to ensure timely payment of salaries, no child and forced labor, occupational health and safety plans and procedures, etc.). In addition, CELSE will develop a Code of Conduct defining principles and expected conduct of its direct employees and workers engaged by contractors and subcontractors. (see per ESAP action 11). During the construction phase, EPC contractors are committed through contractual agreements to ensure that employment conditions comply with the requirements of Brazilian labor regulations. CELSE will ensure that all EPC contractors have human resources policies and procedures specific to the project, consistent with the Brazilian labor law and IIC IFC PS2 (see ESAP action 12).

CELSE will monitor the performance of the EPC contractors to ensure that labor conditions are in compliance with the contractual requirements and consistent with IFC PS2 requirements. Monitoring will include regularly scheduled audits, review of the EPC contractor internal monitoring reports and documentation, as well as review of grievances logged by contractors and subcontractors' employees (ESAP action 13).

Working Conditions and Terms of Employment

Terms of employment will be defined in the policies and procedures to be developed by CELSE and its contractors (ESAP actions 11 and 12) and should include, but not be limited to, wages and benefits, wages deductions, hours of work, time off, overtime arrangements and compensation, medical insurance, pension, leave, and workers' accommodation (when applicable), in compliance with the Brazilian labor code, collective bargaining agreements in place, and consistent with IFC PS2 requirements.

Because 40 percent of the workforce during construction is expected to be from out of state, these migrant workers will need accommodation, transportation, and basic services, which will be provided by construction contractors and sub-contractors. As of September 2017, approximately 360 out-of-state migrant workers had been hired by contractors and subcontractors and were being housed in two hotels in Pirambu and approximately 30-40 houses in Barra dos Coqueiros and Pirambu.

CELSE will map current migrant workers' accommodation and commission a qualified company approved by IIC to develop and implement a Workers' Accommodation Management Plan to: (i) ensure workers' accommodations meet the Brazilian regulatory standards (applicable Ministry of Labor's NRs), in relation to worker accommodation; and (ii) monitor and manage migrant workers' interactions with local communities (see ESAP action 14). As part of direct workers' management and contractors' management, CELSE will also implement robust measures to address the risk of gender-based violence (ESAP action 15). These will include: (i) developing policies on non-discrimination, exclusion, sexual harassment and gender-based violence; (ii) developing and implementing explicit 'zero tolerance' codes of conduct for direct workers, contractors and subcontractors that address gender-based violence, strengthen supervision and implementation of such codes, and provide

incentives for reporting inappropriate behavior; (iii) conducting induction and training program on HR policies and procedures, Code of Conduct, local laws, and awareness raising for the workforce about refraining from unacceptable conduct toward local community members, specifically women, (iv) prepare and adopt a grievance mechanism to ensure proper handling of gender-based violence related grievances, including but not limited to sexual harassment; and (v) a policy to cooperate with law enforcement agencies in investigating complaints about gender-based violence, that includes contractors and subcontractors.

Workers' Organization

Brazil is a signatory to numerous international conventions and treaties relevant to labor rights, including the International Labor Organization (ILO) Convention 87 on Freedom of Association and Protection of the Right to Organize. Under the national labor code, all employees have the right to freedom of association. The human resources policies and procedures to be developed by CELSE and the EPCs (see ESAP actions 11 and 12) will state the employees' right to freedom of association. As of September 2017, CELSE, GE and subcontractors had signed agreements with specific unions, such as SINERGIA, SINTEPAV, and SINDIMONT, and are abiding by the collective agreements on salaries and benefits negotiated under the collective bargaining.

Non-discrimination and Equal Opportunity

CELSE and its EPC contractors will include explicit codes regarding non-discrimination and principles of equal opportunity in its HR policy and Code of Conduct. No evidence of discrimination based on personal characteristics was observed during appraisal.

Grievance Mechanism

CELSE commissioned a third-party company to implement a grievance mechanism through which workers may raise grievances and workplace concerns. The mechanism will ensure that: (i) there is a clear procedure to receive, register, and address grievances, (ii) there is a comprehensive mechanism at the construction site to allow contractors' and subcontractors' employees to submit grievances and/or concerns, using an understandable and transparent process that provides timely feedback to those concerned, and (iii) the mechanism is extensively communicated throughout the company and construction site. The mechanism will also allow for anonymous complaints to be raised and addressed. CELSE will maintain a database with information regarding grievances and results, which will be reported monthly to IIC (ESAP action 16).

Protecting the Work Force

CELSE is committed to follow Brazilian legislation on minimum age and working conditions, which will be reflected under the client's and its contractors' human resources policies and procedures (ESAP actions 11 and 12). Minimum age of employment in Brazil is 18 years old, except for apprentices, which can range from 14 to 24 years (Federal Decree 5.598/2005).

As described above, during construction workers' accommodation will be managed by a third-party company to ensure these comply with the Brazilian standards.

Occupational Health and Safety

CELSE is in the process of developing the framework for the project's ESMS. ESHS policies and procedures are also being prepared, including health and safety at work policy, for both construction and operational phases. GE as well as the other two EPC contractors for the offshore components, will be required to prepare and implement EHS plans for the construction phase to ensure safe working conditions and practices at the construction sites, as part of the EPC contractors' ESMS (ESAP action 4). Procedures will include H&S induction training for all site personnel thus ensuring its personnel have the necessary skills to identify hazards and carry out their work responsibilities safely. Other procedures will include the recording and recordkeeping of all incidents and near misses and follow-up to prevent re-occurrences, workplace condition monitoring programs and routinely reporting of E&S performance to CELSE and IIC. In addition, the company will commission independent health & safety and environmental consultants to monitor and supervise construction activities to ascertain compliance with the agreed policies and procedures. Potential emergency scenarios will also be identified by the company in conjunction with the EPC contractor and adequate emergency response arrangements will be developed for implementation. This will include provisions for a trained and equipped emergency response team to be ready to respond to emergency events.

4.3 Resource Efficiency and Pollution Prevention

Resource Efficiency

The main resources to be used by the project are natural gas and water. The power plant will have a best-in-class thermal efficiency of around 60% in base-load operation. There will be three General Electric (GE) model 7HA.02 combustion turbines (CTs). These CTs are the largest and most efficient CTs offered by GE and amongst the most efficient CTs on the market, making the power plant one of the most efficient thermal power plants in Brazil and globally.

The double-circuit transmission line will operate at 500 kV. This voltage matches the highest voltage used in the regional grid. Generally, use of higher voltages for transmission results in lower line losses (higher efficiency) compared to use of lower voltages. While each circuit can handle the full output of the power plant, to optimize efficiency under normal conditions power will flow in both circuits. Based on the preliminary design the typical line loses have been estimated to be 0.4% which is considered acceptable per international industry standards. In cases where only one circuit will carry the whole power output the losses will increase to 0.79%.

Seawater will be used to meet the power plant's most significant water demand for cooling the condensate in the steam cycle. The cooling system will use forced draft cooling towers that require less water than a once-through cooling water system to help reduce this source of water use. The FSRU will use warm ocean water as the source of heat for re-vaporization of LNG to NG. This avoids the need to use natural gas or other fuel as the source of heat, although it does contribute to use of seawater.

Water Use & Wastewater Treatment

Freshwater for construction will be sourced from an on-site deep tube wells, supplemented by water transported to worksites by tanker truck. The abstraction of fresh water is not expected to have an effect on local water supplies or water users. All sanitary wastewater and oily wastewater generated during construction of the power plant and transmission line will be collected and shipped off-site for treatment and disposal at a licenced facility. The client will adopt the principles of "duty of care" for off-site disposal of wastes including procedures for verifying the fate of materials removed from site.

The Client will require the power plant and transmission line to contractor to protect against sedimentation and water contamination by using measures such as fencing, silt barriers, and settling ponds in the case of sediments, and secondary storage, and strict handling procedures for fuels and hazardous materials (see ESAP action 4).

Seawater will be the principle source of water for operation of the FSRU and the power plant; the transmission line will not require water. Specifically, the FSRU will take approximately 12,000 m^3/h from the Atlantic Ocean and return about the same amount back to the sea. The Power Plant will take approximately 3,600 m^3/h from the ocean and about 2,000 m^3/h will be returned back, with the balance (approximately 1,600m^3/h) transferred to the atmosphere through evaporation from the power plant cooling towers.

Most of the water used by the FSRU will be for vaporization of LNG, and lesser amounts for cooling. On-board desalinization process will generate potable water and process water. The FSRU will have dedicated structures built into the hull for water uptake and wastewater discharge, including any brine water.

Most of the water used at the power plant will be for plant cooling. Similar to the FSRU, a desalination process will be used to generate potable water and the small amounts of process water needed by the plant. To protect aquatic life water intakes are designed to achieve intake velocities in line with WB-EHS Guidelines. The power plant will have a 1.3 m diameter water intake pipeline that will extend 1,500m into the ocean and a 0.9 m diameter wastewater discharge pipeline will extend 1,200 m into the ocean. The end-points of the two pipelines will be located approximately 400 m apart. In compliance with applicable World Bank Group Environmental Health and Safety (WBG EHS) guidelines, the Project will use forced draft cooling towers to reduce the thermal discharge to the sea, and multi-port diffusers to promote rapid and efficient dispersion of the effluent in the seawater.

Hydrodynamic modeling predicts that the brine effluent plume will achieve a maximum nearfield diameter of 2-3.7 meters at surface and 4-6 meters deep, with approximately the same length –and where the salinity gradient is predicted to be within 2.5ppm of baseline conditions. Similarly, wastewater effluent contents are expected to comply well with the assimilative capacity of the receiving ocean nearshore area. Modeling also predicts that the thermal plumes from the FSRU and from the power plant will be within 3 degrees Celsius of ambient temperature a short distance from the discharge points (in the case of the FSRU, approximately 20 meters from the ship). For this reason, significant effects on marine life of human heath are not expected. Similarly, the pollutant load in the wastewater streams are well within the assimilative capacity of the vast quantity of water in the nearshore area.

GHG Emissions

Combined cycle gas turbine (CCGT) power plants are the most efficient fossil fuel fired technologies available today. The CO_2 emission rate for this power plant will be about 374 gCO_2/kWh, which is about 5% lower than the typical emission rate for a similar plant. The emission rate for the power plant and the FSRU together is about 404 gCO_2/kWh. It is expected that the power plant will operate as back-up power with total project generation of 6.851 million MWh/y of electricity and total greenhouse gas emissions (power plant + FSRU) of 2.768 million tCO_2/y. The sponsor will track the greenhouse gas contributions from the power plant and FSRU and report the amounts in the projects annual environmental reporting.

Air Emissions and Ambient Air Quality

Air quality monitoring completed as part of the ESIA indicates the airshed is non-degraded for particulate matter 10 micrometers or less in diameter (PM10) and 2.5 micrometers or less in diameter (PM2.5), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). Measured concentrations of these substances were all well below the applicable Brazilian regulatory limits. However, the air quality baseline measurements also showed that concentrations of ground level ozone (O_3) were high for some days, nearing and occasionally exceeding the applicable guideline limits. The nature of the chemical reactions that generate ozone involve precursor compounds (e.g. volatile organic compounds-VOCs), and concentrations of the latter were found to be comparatively low in the measured air quality baseline. To better understand and characterize the ambient air quality and baseline conditions, CELSE will immediately supplement an ambient air quality baseline for VOC and O_3, as well as NO and NO_2, on a quarterly basis during construction. (ESAP action 17).

During the construction period, emissions to air will be generated from both onshore and offshore activities. Emissions from offshore activities will consist of stack emissions from vessels involved in laying the pipeline and installing the yolk.

On-shore activities, which will take place at the power plant site, the pumphouse and pipeline corridor, and the transmission line, will result in exhaust emissions from vehicles and motorized equipment and tools. During construction, there will also be emission of particulates resulting from wind and vehicle raised dust, material handling, and construction activities such as cutting and grinding.

Key measures to limit particulate emissions include use of cover during transport of excavated earth; application of dust suppressants to internal roads, stabilizing/covering friable material prone to wind erosion, regulated vehicles speed; regular road maintenance; grading and compacting road surfaces to prevent uneven running surfaces to prevent both noise and dust impacts. In addition, mandatory preventive vehicles and equipment maintenance to reduce generation of combustions gases will be also implemented. The contractor environmental management plan will detail these measures as well as the implementation procedures (ESAP action 5).

The air impacts during operation will be primarily generated by the combustion of natural gas at the power plant and FSRU both of which primarily generate nitrogen oxides (NOx). Emissions of particulate mater (PM) and sulfur dioxide (SO_2) are considered negligible. The emission from the FSRU will meet applicable MARPOL requirements. The emissions from the power plant will meet applicable WBG EHS guidelines for emissions from gas fired combined cycle power stations. The power plant will include a continuous stack emissions monitoring system.

As part of the ESIA, the client has conducted dispersion modeling to predict the effect of the project's emissions (power plant plus FSRU) on ground level concentrations of pollutants. The modelling predicts that in the affected airshed the contribution of the plant plus background levels will be below the applicable Brazilian air quality standards for all pollutants.

As part of the ESIA the company also conducted dispersion modelling to predict the cumulative effect of the project's emissions plus two additional, similar-sized, power plants to be located immediately north of the power plant site. The modelling predicts that in the cumulative contribution of the three plants plus background levels will remain below the applicable Brazilian air quality standards for all pollutants, with only localized and discreet (i.e. hourly) potential exceedances of NOx in terms of the 25% recommended IFC guideline for the airshed's carrying capacity for future development. The client will undertake an analysis to assess the effects of the wake from nearby wind-turbines on dispersion

of emissions from the power plant stacks (ESAP action 2), and will establish and maintain an ambient air quality monitoring program during O&M that complies with WBG EHS guidelines (ESAP action 18).

Noise

During the construction period, noise will be generated from both onshore and off shore activities. On-shore activities will take place at the power plant site, the pumphouse and pipeline corridor, and the transmission line corridor. Noise sources will include operation of: i) heavy equipment such as trucks, bulldozers, compactors, cranes; ii) stationary generators, pumps, and portable power tools such as grinders and saws. Offshore noise sources include barges and other watercraft, as well as the equipment used on the vessels. The Sponsor's management measures include implementing a process to collect and respond to complaints about noise and requiring contractors to take measures to manage construction phase noise levels in accordance with IFC and national law noise requirements including limiting noisy activities near residences to daytime hours.

During operation, noise will be generated by the FSRU and associated visiting LNGC's, and the power plant. Noise from the FSRU and visiting LNGCs, which are moored far offshore, are not expected to be noticeable above existing ambient noise levels on-shore. As part of the ESIA, the client conducted noise propagation modeling to predict the effect of the power plant's noise emissions on off-site noise levels. The model included all major noise sources at the power plant site except for the seawater intake pumphouse that is located offsite, near the beach in Praia do Jatoba.

The modelling predicts that noise levels in community areas will increase above the existing baseline in all of the residential areas surrounding the site for both daytime and nighttime periods. During daytime, while the change in noise may be noticeable, the noise levels will remain below, and will comply with, the Project applicable daytime noise limits[5]. However, during nighttime, the predicted noise levels may exceed the project applicable nighttime noise limits in all community areas.

The Client will update the noise model to include noise emissions from the seawater-intake pumphouse and will carry out additional baseline measurements to confirm the project applicable noise limits. The client will then identify noise reduction measures that will result in compliance with project applicable noise limits in surrounding community area. As part of the modeling the company will also consider the cumulative effect of the two additional power plants that may be developed at the site (ESAP action 19).

Solid Waste Management

Construction of power plant and transmission line will generate large amounts of solid waste including packing materials, scrap metal, scrap wood, waste concrete, and food waste. The FSRU will be constructed at a shipyard and not result in production of wastes locally. The client will require all construction phase contractors to establish plans and procedures for managing solid wastes that fully address applicable regulations and IFC guidelines. These include use of manifests and logs to track materials, worker training, protected storage with secondary containment, one-site equipment and material for spill response and cleanup. All wastes will be segregated and properly stored in temporary on-site waste storage area managed by the EPC contractor. All wastes will be transferred off site to a properly equipped and licenced facility for treatment and disposal. Small amounts of solid wastes will be generated during operations compared to construction.

[5] As per IFC's General EHS Guidelines: daytime 55dB, nighttime 45dB, or measured baseline values plus a maximum increase up to 3 dB in case the baseline exceeds the 55/45dB limits.

On the FSRU, solid waste will be managed in accordance with Golar's established plans and procedures, and in accordance with the requirements of the vessels classification. All solid wastes will be segregated and stored protected from the elements. Wastes will be shipped to shore for treatment and disposal at properly equipped and licenced facilities. The Nanook will have procedures and equipment on hand to protect against and clean up spills that might occur during ship-to-ship transfers. At the power plant, solid wastes will be managed in accordance the management plans and procedures to be developed as per ESAP action 5. Permanent, dedicated facilities will be established for safe storage of solid waste (ESAP action 5).

Management of Hazardous Material

Construction and operation will require use of hazardous material such as fuels, oils and lubricants, paints, solvents, and corrosive agents. The client will require all construction phase contractors to establish plans and procedures for managing hazardous material that fully address applicable regulations and IFC guidelines. These include the use of logs to track materials, worker training, protected storage with secondary containment, one-site equipment and material for spill response and cleanup.

On the FSRU hazardous material will be managed in accordance with Golar's established plans and procedures, and in accordance with the requirements of the vessels classification. All hazardous material will be segregated and stored protected from the elements and with secondary containment. The Nanook will have procedures and equipment on hand to protect against and clean up spills that might occur during ship to ship transfers. At the power plant, hazardous material will be managed in accordance the management plans and procedures to be developed (ESAP action 4). It is expected these plans and procedures will be based on well establish plans and procedures of GE. Permanent, dedicated facilities will be established for safe storage of hazardous material that meet applicable regulations and IFC guidelines. This include providing secondary containment for hazardous materials, including any transformers that contain oil, ventilation, signage, personal protective equipment including eye-wash and shower stations, and worker training.

FSRU Pollution Prevention Measures

The FSRU and the port service vessels retained for the project conform with and are certified to IMO (International Maritime Organization) MARPOL (Marine Pollution Prevention) standards for waste management and pollution control. The vessel was designed, constructed and is audited to all applicable classification society, IMO and other relevant body practices and standards. Golar, the owner and operator of the FSRU, has an established environmental management system that has been certified as complying with ISO 14001:2004. The management system applies to Golar's fleet, which currently consists of 21 vessels. Golar shall update the management system to incorporate the Nanook. Waste management plans for the handling and disposal of non-hazardous, hazardous and liquid wastes are consistent with and are certified to MARPOL requirements. This includes, although is not necessarily limited to, the shipment-to-shore for disposal of all hazardous and non-hazardous solid waste material and the treatment and disposal of sewage waters and oily waters. In line with IMO requirements, GOLAR ensures segregated handling and storage of all hazardous materials is standard practice.

The FSRU and port service vessels meet IMO dry docking requirements, also ensuring that tributyltin (TBT) containing anti-fouling paints are not used as per IMO regulations. Golar does not use ozone-depleting refrigerants on their vessels. The Nanook has a Green Passport, as noted in its classification, which refers to a detailed inventory being made during construction of all equipment to confirm that no hazardous or prohibited materials were used in the construction of the vessel. The FSRU is fitted

with Segregated Ballast Tank systems with water discharge systems being certified to IMO International Oil Pollution Prevention (IOPP) requirements. Air emissions are managed and certified to the IMO International Air Pollution Prevention (IAPP) standards in accordance to current guidelines and requirements.

Shipboard Oil Pollution Emergency Plans (SOPEP) are available for each vessel as required by the ISM Code. These emergency plans contain the oil and/ or chemical spill contingency arrangements in place and the response to be implemented in the event of a spill. Golar has not experienced any material spill incidents in their operational history.

The vessel complies with the IMO's International Energy Efficiency Certificate requirements. The certificate requires the FSRU's Energy Efficiency Design Index (EEDI) meets the requirements set by the revisions to MARPOL annex IV (January 1, 2013). The amendment sets mandatory limits to greenhouse gas emissions from shipping. In addition, the International energy efficiency certificate certifies that the vessel has a Ship Energy Efficiency Management Plan (SEEMP) on board, a mandatory requirement. The SEEMP informs a vessel owner on where improvements to the operational efficiency of a vessel, in a cost-effective manner, can be made over the course of a vessel's lifespan.

4.4 Community Health, Safety and Security

The proposed Project has been designed and is being constructed by internationally recognized EPC contractors with experience in construction and operation of gas-fired power plants and FSRU projects. The project will be designed, constructed and operated using Good International Industry Practice (GIIP) and is expected to meet applicable national and international guidelines, standards and safety codes. The FSRU design and equipment will be in line with proven technologies (e.g., a vessel certified by a recognized third party for the service as an LNG, transfer arms appropriate for continuous service, powered emergency release couplings, comprehensive emergency shutdown system, etc.).

Infrastructure and Equipment Design and Safety

During construction, increase in traffic to transport workers, equipment and materials to the construction site will be considerable. For this reason, in addition to the mitigation measures identified in the ESIA, CELSE will prepare a Traffic Safety Management Plan (ESAP action 20), that will identify the increase in number of vehicles/trucks/buses/vans required for the construction and the impacts on highway, roads and local communities and include a driver monitoring system, as well as alternative transportation routes and traffic management measures to reduce impacts may include infrastructure upgrades, optimum route selection, and vehicle management. Project–related vehicles will be continuously monitored to ensure their quality to minimize noise and vehicle emissions and drivers will receive defensive driving training to prevent accidents involving local communities.

The power plant and ancillary facilities within the power plant site will not allow for community access. These are industrial facilities that will have controlled access with the property boundaries being fenced and security personnel at access points, 24 hours a day.

The FSRU will be located 6.5 km from the coast and will have an exclusion zone of approximately 500-meters per rules established by the International Maritime Organization (IMO). Under these rules, fishing boats and commercial boats will be required to give way and pass at safe distances from the FSRU. Members of the local fishing communities will be informed in advance of the project as part of the company's stakeholder engagement activities. CELSE will develop and implement a port security assessment as required under the International Ship and Port Facility Security (ISPS) Code. The results

of this assessment will be presented to relevant authorities and disclosed to affected communities to allow for appropriate controlled areas to be agreed and defined, to help regulate the safe movement of vessels within the project area of influence, protect affected communities from dangers arising from offshore activities, and prevent events that may result in injury to workers and the public, including fishers and recreational users (ESAP action 21),

The RLNG pipeline will be buried at a depth of 2.5 meters along the beach and near shore. Major risks from the power plant, RLNG and FSRU were assessed as part of the Quality Risk Assessment (QRA) that was conducted based on preliminary information of the project infrastructure and equipment design. Specifically, regarding the RLNG pipeline, the results of the QRA indicated that risks are within acceptable levels under Brazilian standards, however, the area within 154 meters from the axis of the RLNG pipeline is considered a high-risk zone due to thermal radiation that could result from a rupture of the pipeline. The QRA will be updated based on the final project infrastructure and equipment design (ESAP action 22). The results of the updated QRA, together with ANSI/ASME classification of the gas pipeline, will be used to either modify the pipeline design specifications to further mitigate risks and/or establish an exclusion zone for residential households living within the high-risk zone on Praia do Jatoba, offering compensation and resettlement support to affected households consistent with IFC PS5.

Hazardous Materials Management and Safety

Hazardous materials that are likely to be stored at site during construction and operation include: liquid fuel (diesel, gasoline), gas cylinders, hydrochloric acid, sulfuric acid, caustic soda, sodium hypochlorite/chlorine, solvents, lubricating oils, transformer oil and other chemicals. The sponsor will require the EPC and O&M contractors to put in place procedures for appropriate storage of hazardous materials, including appropriate segregation, protection from the elements, labeling, storage based on compatibility assessment, where required provision of secondary containment, corrosion resistant lining as required and access control (ESAP Actions 4 and 5).

Community Exposure to Disease

The mobilization of 2,200 or more workers at peak construction, including 900 migrant workers, may increase the risk of transmission of communicable diseases including sexually transmitted and waterborne diseases. To monitor potential health impact on the local communities, CELSE will implement a monitoring program consisting of (i) a health baseline for the surrounding communities to establish current health conditions of the municipalities included in the project area of influence and surrounding communities, and (ii) monitoring of key socioeconomic indicators (ESAP action 23). In parallel, the Client in a joint effort with the EPC contractors will implement a health management plan that will include: (i) appropriate medical facilities are available for all labor and a periodic health checkup program is in place, (ii) information and awareness-raising campaigns for community members (specifically women and girls) and workforce, including program on STI including HIV/AIDS, (iii) provision of information to host communities about CELSE's and its contractor policies and worker Code of Conduct, and (iv) measures to control disease vectors. These actions will be implemented in coordination with relevant stakeholders such as the women's union, youth union, health workers, the municipal body responsible for ensuring the rights of children and adolescents (Conselho Tutelar), and representatives from affected communities (ESAP Action 24).

Emergency Preparedness and Response

For the construction phase, the EPC contractors will be required to develop and implement an Emergency Response Plan (ERP) and have qualified personnel and equipment response to potential emergencies (ESAP action 7).

For the operational phase, GE and GOLAR LNG will develop emergency preparedness and response plans for their respective facilities, and will coordinate with CELSE to develop offsite emergency operations, taking into consideration emergency scenarios from potential fire/explosion, gas leak, oil spills, etc. The offsite emergency preparedness and response plan will identify likely emergency scenarios, appropriate response equipment, emergency training and drill frequencies, identification of potentially affected communities and appropriate external resources, etc. CELSE will ensure that qualified personnel to respond to any emergency are available at all times during the O&M phase of the project. CELSE's social staff will ensure that community awareness programs are tailored to reflect potential impacts on specific communities, based on the results of the emergency scenario models and additional QRAs that will be prepared upon final project design (ESAP action 8).

Security Personnel

A private security contractor (namely PRESERV) has been commissioned by the EPC contractor to provide armed security services of the project personnel and property. The client will conduct a security risk assessment to identify the risks posed by security arrangements to those within and outside facilities and determine whether such private security personnel are being vetted, hired, equipped, and trained adequately. With the results of the security personnel assessment, the Client will develop a Security Management Plan to manage private armed security force to avoid potential harm to employees, communities and other stakeholders. This plan will include formal procedures for reporting, responding to and documenting security incidents, training requirements, and review of security record of security contractors, consistent with IFC PS4. CELSE will put in place procedures such that complaints against security personnel are investigated and disciplinary actions implemented (ESAP action 25).

4.5 Land Acquisition and Involuntary Resettlement

Power plant and Offshore structures

As part of the implementation of the RLNG pipeline, seawater and outfall lines and pumping station, in 2017 CELSE acquired five properties in Praia do Jatoba, which resulted in the physical and economic displacement of six households that had been living in the area for more than 20 years. Since the properties located at Praia do Jatoba are officially owned by the Federal Union (Brazilian government entity known in Portuguese as Secretaria do Patrimônio da União – SPU), CELSE and the households signed agreements, i.e. private instruments of assignment of possession rights and purchase and sale of improvements, by which the occupants of the properties assigned their occupancy rights over the lands and sold the infrastructure built on the plot. CELSE informed IIC that the Client decided to demolish the houses in order to expedite the proceeding with the Union, requesting the assignment of the right to use the real estate area where the houses were constructed for the implementation of the project. In addition to being public land, Praia do Jatoba is classified as an environmental protected area and therefore there is a class action proposed by the federal environmental agency (IBAMA) and the Public Prosecutor's Office requesting the eviction of all houses located in this area. It is IIC's understanding that if the negotiated settlements had failed, the Union would have been able to request the removal of these properties through legal procedures on behalf of CELSE.

As part of the negotiation process, CELSE commissioned a third-party company to conduct a valuation of households' assets to establish the compensation rates for these properties. At the time of the appraisal, most of these households had been compensated and had already been moved or were in the process of moving. Compensation has been provided according to local standards. CELSE will commission (i) an assessment to verify if people resettled by the project were able to reestablish their

living conditions and restore their livelihoods, in the event there are any gaps with PS5 requirements, a Supplemental Compensation Plan will be implemented to ensure that compensation outcomes are consistent with IFC PS5; and (ii) a completion audit will be conducted by independent resettlement specialists to verify that the objectives of the Supplemental Compensation Plan have been met, and are consistent with PS5 requirements (ESAP action 26).

Transmission line (TL) and connection bay:

Although the ROW easement agreements along the TL and the property acquisitions for the project connection bay at the CHESF's Jardim Substation will be negotiated between property owners and the company, CELSE will resort to the power of eminent domain, in accordance with the Brazilian regulations, in the event the negotiations are not successful, and obtain the Declaration of Public Utility that will be issued by the National Electricity Agency, (ANEEL - Agência Nacional de Energia Elétrica). The 500kV double circuit transmission line will run for approximately 34.2 km from the power plant site to the substation and cross the municipalities of Barra dos Coqueiros, Santo Amaro das Brotas, Laranjeiras, and Nossa Senhora do Socorro. The TL final route was designed to minimize interference on residential or industrial urban areas, communities, buildings / improvements and natural protected areas, thus minimizing social and environmental impact. However, 96 properties will be affected along the TL, where ROW easements will be negotiated between CELSE and land owners. To date, 82 landowners have allowed access to their land for topography and geotechnical surveys and further negotiations are being conducted with the remaining land owners. In July 2017, a socioeconomic study was conducted to identify the households that will be physically and/or economically affected by the implementation of the TL. The study identified that although 80 percent of the landowners do not live in these properties, 86 percent use the area for land-based livelihood activities such as grazing, harvesting of coconut and mangaba, and plantations of fruit and cassava. The assessment indicates that although physical displacement will not take place, 46 percent of the properties have the potential to be economically affected due to restrictions on land use within the 70-m ROW. For the construction of the substation bay expansion, 228 properties will be acquired. With exception of two households who live in this area, most of these properties are not occupied by physical structures or other assets and are also not used as a source of livelihood or economic activities.

CELSE has developed a Resettlement and Livelihood Restoration Plan (RLRP) outlining the guidelines for physical and economic displacement associated with the project related impacts, and will review it to ensure full alignment with PS5 requirements (ESAP Action 27). An independent monitoring and evaluation of the implementation of the RLRP and a completion audit will be conducted by qualified independent resettlement specialists to ensure full alignment with PS5 requirements (ESAP 28).

Offshore facilities and operation

As described under PS1, potential impacts on fishing communities are being assessed. If project related impact on fishermen livelihoods are identified, the RLRP described above will be expanded into a specific Livelihood Restoration Plan for the fishing community to compensate affected people and ensure they are able to restore their livelihood conditions.

Community Engagement and Grievance Mechanism

The Supplemental Action Plan referred to above will contain provision for affected households at Praia do Jatoba to be engaged during the implementation of corrective actions, monitoring, and evaluation to be conducted. As part of the implementation of the RLRP focused on the TL and connection bay, CELSE's social team will work closely with the land management department and the third-party company responsible for the asset valuations and compensation to ensure an effective engagement

process with transparency through the disclosure of relevant information to affected households. Thus, the revised RLRP will include specific actions to ensure (i) disclosure of entitlement matrix covering both physical and economic displacement, (ii) adequate engagement with individuals belonging to vulnerable groups, (iii) disclosure of CELSE's grievance mechanism among affected households (ESAP action 27).

4.6 Biodiversity Conservation and Natural Habitats

Baseline studies for flora and fauna were conducted as part of the ESIAs for the power plant site, the transmission line and offshore structures, for the assessment of potential biodiversity and ecosystem risks and impacts, on both terrestrial and marine ecosystems. The onshore (terrestrial) project area of influence is located within the Mata Atlantica Biome, although there are few fragmented remains of the natural vegetation. Along the margins of estuaries, there are mangroves of varying degrees of density. There were two field surveys conducted for plants, one in February 2017 and a second in August 2017, and a single survey for fauna on August 2017. In addition, the initial EIA conducted in 2015 included a preliminary assessment of terrestrial biodiversity.

Impacts on Terrestrial Flora and Fauna

The site of the power plant was cleared of vegetation and prepared for the installation of an industrial district about four decades ago. Therefore, no vegetation removal was required for the construction of the power plant. The 34.2-km long 500-kV TL will cross the municipalities of Barra dos Coqueiros (site of the power plant), Santo Amaro das Brotas, Laranjeiras and Nossa Senhora do Socorro (site of the CHESF's Jardim Substation and the proposed CELSE' bay). The general area of the project has been affected by human activities and includes residential developments, agricultural land, and infrastructure (e.g., highways, bridges, transmission/distribution lines, etc.) as well as fragments of terrestrial forests and mangroves.

The ROW of the TL will cover an area of 293.4 ha, of which 24.7 ha consist of mangrove, 33.4 ha of forest in initial stage of revegetation, and 12.7 ha of "Restinga", a coastal ecosystem that consists of vegetation that grows on sandy soils, on the beach and similar conditions. The anticipated maximum vegetation suppression includes: 3.7 ha of mangrove, 2.0 ha of "Restinga" and 6.0 ha of forest in initial stage of revegetation. As required by Brazilian Law 11.428/2006, areas of vegetation suppression will be compensated to preserve the same biodiversity value of area impacted, at a rate to be determined by ADEMA (usually in the range of 1:2-1:5).

A total of 93 plant species was identified in the various types of vegetation along the TL ROW. None of them was classified as vulnerable, threatened or near threatened by the International Union for Conservation of Nature (IUCN) or by the Brazilian Ministry of Environment. The terrestrial fauna field survey along the TL corridor identified a total of 164 species of terrestrial animals, with 14 mammals, 118 birds, 12 amphibians, and 20 reptiles. Two reptile species, Lagartinho-de-Abaeté (*Ameivula abaetensis*) and lagartixa-da-areia (*Tropidurus hygomi*) were identified as endangered and vulnerable, respectively, by the Brazilian Ministry of Environment. These species were not included in the IUCN Red List. Because only one fauna survey has been conducted to date, CELSE will conduct additional field surveys to better identify fauna species in the area of influence of the TL and connection bay prior to the start of any vegetation removal (ESAP action 29).

Prior to the site preparation phase, the company will conduct a fauna capture and relocation program under the guidance of qualified experts with proven experience with requirements of the PS6, hired by the company to lead this effort. The ESIA included a fauna capture and relocation plan which establishes the methods and procedures to be followed.

In addition, to compensate for the loss of vegetation along the TL ROW, the company will develop a biodiversity management plan for the terrestrial (vegetation compensation) and mangrove (Offsets Strategy) loss, and to achieve no net reduction in the population of the Lagartinho-de-Abaeté (*Ameivula abaetensis*), which is listed as endangered (ESAP action 30). The biodiversity monitoring plan will identify the locations for compensation, long-term biodiversity offset implementation and management, the biodiversity qualified resources to coordinate all the biodiversity aspects, the monitoring plan to determine how will "gains" at the offset site be measured and monitored over time, among other aspects.

Impacts on Marine Flora and Fauna

The offshore structures will not require dredging during construction or O&M. As part of the construction of the pumping station, RLNG pipeline, water intake structure, and seawater and effluent discharge lines, as well as the installation of the SSY, there will be spatially limited and temporary disturbances of the sea bottom. Preliminary marine studies indicate the presence of sandy substrate free of presence of rocks or coral reefs. Sediments raised by construction are expected to quickly settle from the water column and marine life will probably quickly recolonize disturbed areas.

The general coastal area where the Project is located has been monitored for nearly 30 years by the Projeto TAMAR, the National Program for the Conservation of Marine Turtles, which focuses on efforts related to the monitoring and conservation of five turtle species. Four turtle species, *Caretta caretta* (Vulnerable), *Chelonia mydas* (Endangered), *Eretmochelys imbricata* (Critically Endangered), and *Lepidochelys olivacea* (Vulnerable) are known to nest on the beaches near the project, mainly during the months of September-March. Construction associated with the offshore structures that cross the Beach of Jatoba (i.e., seawater, effluent discharge lines and RLNG pipeline) will be restricted to the months of April to September. In addition, CELSE will enter into an agreement with Projeto TAMAR to ensure proper monitoring and rescue, as needed, of turtles or nests during the construction of any project structure that disturbs the marine sediments and the Praia do Jatoba (ESAP action 31).

Operation of the FSRU and power plant will result in entrainment of marine life in the cooling/warming water intakes. To mitigate effects on marine life the power plant uses a recirculating cooling system to reduce water demand. In addition, the water intakes at the FSRU and power plant will be equipped with screens to block larger organisms from entering the system, and the velocity of the flow of water across the screens will not exceed 0.5 ft/s.

4.7 Indigenous Peoples

The ESIA identified two quilombolas communities in the project area of influence: Pontal da Barra (known in Portuguese as Comunidade Remanescente de Quilombo Pontal da Barra, or CRQ Pontal da Barra) located in the municipality of Barra dos Coqueiros at approximately 8.5 km north of the power plant, and Mussuca (known in Portuguese as Comunidade Remanescente de Quilombo Mussuca, or CRQ Mussuca), located in the municipality of Laranjeiras, at 3 km from the transmission line.

The livelihood of CRQ Pontal da Barra is based on small-scale subsistence and artisanal fisheries. As mentioned under PS1, the ESIA identified that potential impacts upon peoples' access to and use of fish resources will be temporary during construction and limited during the operation of the FSRU and pipelines since the area used for fisheries are not restricted to the area where the project components will be installed.

The constitutional rights of the quilombolas communities in Brazil are expressed in the Federal Constitution of 1988 and the Interministerial Ordinance (IO) 60/2015 regulates the participation of

Fundação Cultural Palmares and the Ministry of Health in federal environmental licensing under the responsibility of IBAMA (federal environmental agency). According to this IO, a study specifically focused on the potential social and environmental impacts on quilombolas communities must be developed when quilombolas territories are located within 8 km from a power plant and 5 km from a transmission line.

CELSE will develop a study and a consultation process focused on the potential project-related impacts on CRQ Mussuca and CRQ Pontal da Barra (ESAP action 32). In the event that adverse impacts are unavoidable, a specific management plan will be developed to minimize or compensate for these impacts in a manner commensurate with the nature and scale of impacts, cultural characteristics, and the vulnerability of these communities, in addition to a community development plan to promote sustainable development benefits and opportunities for CRQ Mussuca and CRQ Pontal da Barra in a culturally appropriate manner, consistent with PS7 (ESAP action 32).

A participatory monitoring program will be implemented to monitor and mitigate project related impacts on fishing-based livelihoods on CRQ Pontal da Barra, consistent with PS7 requirements (ESAP action 33).

4.8 Cultural Heritage

The power plant site was surveyed and studied for cultural resources during the environmental permitting process of the Wind Farm Barra dos Coqueiros, which is located immediately adjacent and to the east of the power plant site. The results of such studies led to the finding of two archaeological sites that the National Institute for the Protection of the Artistic and Historic Patrimony (IPHAN – Instituto do Patrimonio Historico e Artistico Nacional) designated as having cultural relevance. These archaeological sites consist of ceramic artifacts and have been fenced and identified as “Sitio Pomonga” and “Dunas do Jatobá I.” Because IPHAN had already permitted the area of the power plant, the institute did not require additional measures as part of the environmental permitting process of the thermal power plant. The ROW of the transmission line has been surveyed, under IPHAN’s authorization, and 28 archaeological sites were identified and registered with the National Registry of Archaeological Sites (CNSA - Cadastro Nacional de Sítios Arqueológicos). None of the sites were designed as Critical by IPHAN. Based on these findings, and to comply with IPHAN’s requirements, CELSE has prepared a Program for the Evaluation of Impacts on Archaeological Sites by the 500kV TL, dated July 2017. If removal of any archaeological artifacts were deemed necessary, removal will be conducted in coordination with IPHAN and artifacts will be transferred to the Museum of Archaeology of Xingó (MAX), associated with the Federal University of Sergipe.

As part of the project ESMPs, CELSE will develop a Chance Find Procedure, compliant with PS08 requirements, that will be applied in the event cultural heritage is discovered during construction activities (ESAP action 34).

5. **Environmental and Social Action Plan** (Annex I).

A. Contact Information

For inquiries about the Project, contact:

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For inquiries and comments to IIC, contact: IIC's Communications Group
E-mail: divulgacionpublica@iadb.org

For Project inquiries, including environmental and social questions related to an IIC investment, please contact the client or the IIC using the contact information provided above. In addition, affected communities have access to the IIC Independent Consultation and Investigation Mechanism (http://www.iic.org/en/who-we-are/integrity-and-transparency).

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Annex 1. ENVIRONMENTAL AND SOCIAL ACTION PLAN (ESAP)

PROJECT: 12048-01 Porto de Sergipe LNG-to-Power Plant (CELSE)

Number	Applicable Performance Standard	Action	Deliverable	Due Date
1	PS01	CELSE will develop and implement a corporate environmental, social, health and safety policy consistent with PS1 requirements.	Submit copy of final board-approved policy, in form and substance acceptable to lenders	December 7, 2017 or Condition Precedent (CP), whichever occurs first
2	PS01	CELSE will augment and update the cumulative impact assessment (CIA) contemplating at least: a) air quality, including wake effect; b) noise; c) water resources (e.g. intake and effluents), d) increment of traffic and informal settlements along the road.	Submit a comprehensive CIA in form and substance acceptable to lenders	Draft for November 7, 2017 and final version for November 21, 2017
3	PS01	CELSE will commission a skilled and experienced consultant to monitor project-related impacts on fish resources and habitats, fisheries, and fishing communities during the construction and operation of the project. If impacts on fishing-based livelihoods resulting in economic displacement are identified, CELSE will develop and implement a livelihood restoration plan, consistent with PS5 requirements.	Monitoring consultant approved by Lenders; Approval of TOR for monitoring Frequency of monitoring will be quarterly during construction and annually during the first five years of operation	November 30, 2017 Approval of specialist and study TOR

4	PS01	EPC contractors will be required to develop detailed environmental pollution control and occupational health and safety measures based on project-specific ESMPs and in compliance with Brazilian regulations and IFC PS requirements, including duty of care procedures	Detailed environmental pollution control and occupational health and safety measures specific for the project	December 7, 2017
5	PS01	O&M contractors will develop EHS plans and implement them through environmental, health and safety management systems consistent with IFC PS requirements, including duty of care procedures.	EHS plans and implementation of ESMS consistent with IFC Performance Standards	July 31, 2019 or 6 months prior to beginning of operation, whichever occurs first
6	PS01	CELSE will develop and implement an ESMS based on the Brazilian regulations and IFC's PS requirements. The ESMS will include; (a) procedures for identifying social and environmental risks and impacts; (b) development and implementation of environmental and social management plans (ESMP); (c) monitoring and internal audits; and (d) development and implementation of a stakeholder engagement program.	Implementation of documented ESMS	March 1, 2018 or Prior to first disbursement, whichever occurs first
7	PS01	CELSE will ensure that all EPC contractors will prepare and implement an emergency and preparedness plan in accordance with Brazilian regulations and IIC requirements	Evidence of Emergency Response Plan implementation	October 22, 2017
8	PS01	For the operational phase, CELSE will ensure GE and GOLAR LNG will develop emergency preparedness and response plans for their respective facilities, and will coordinate with CELSE to develop offsite emergency operations, taking into consideration emergency scenarios from potential fire/explosion, gas leak, oil spills, etc. The offsite emergency preparedness and response plan will identify likely emergency scenarios, appropriate response equipment, emergency training and drill frequencies,	Emergency Preparedness and Response Plan for the operations	October 31, 2019 or 3 months prior to start of operation, whichever occurs first

		identification of potentially affected communities and appropriate external resources, etc. CELSE will ensure that qualified personnel to respond to any emergency are available at all times during the O&M phase of the project. CELSE's social staff will ensure that community awareness programs are tailored to reflect potential impacts on specific communities, based on the results of the emergency scenario models and additional QRAs that will be prepared upon final project design.		
9	PS01	CELSE will report the monitoring results of key environmental and social performance indicators to the Brazilian environmental authorities, IIC, and affected communities, based on its own internal and third party performance assessment.	Periodic reports to IBAMA, Lenders and stakeholders	January 31, 2018 Recipients specific deadlines
10	PS02	CELSE will review and enhance its local workers' recruiting program to ensure local workers are being prioritized and to identify and provide training and skills development opportunities among local community members.	1) Revised Plan, including detailed workforce selection process 2) Report with indicators of performance such as actual # of local workers employed by localities and function compared to the total project workforce, on a monthly basis	October 31, 2017 for Preliminary Plan
11	PS02	CELSE will develop and implement human resources policies and procedures appropriate to its size and workforce, consistent with IFC PS2 and national law. The company will ensure that relevant parts of CELSE's human resource policies and procedures will be extended to cover the labor practices of construction contractors and their sub-contractors (e.g., compliance with local laws, provisions to ensure timely payment of salaries, no child and forced labor, occupational health and safety plans and procedures, etc.). CELSE will develop a Code of Conduct defining	Copy of Code of Conduct and evidence of training Human Resources Policy and procedures consistent with IFC's PS2	December 31, 2017 November 30, 2017 or Closing

		principles and expected conduct of its direct employees and workers engaged by contractors and subcontractors.		
12	PS02	CELSE will ensure that all EPC contractors have human resources policies and procedures specific to the project, consistent with the Brazilian labor law and IFC PS2.	Documented evidence of EPC contractors' HR policies	November 15, 2017
13	PS02	CELSE will monitor the performance of the EPC contractors to ensure that labor conditions are in compliance with the contractual requirements and consistent with IFC PS2 requirements	Monthly monitoring reports	First report on October 31, 2017
14	PS02	CELSE will map current migrant workers' accommodations and commission a qualified company approved by IIC to develop and implement a Workers' Accommodation Management Plan to: (i) ensure that workers' accommodations meet the Brazilian regulatory standards (applicable Ministry of Labor's NRs) in relation to worker accommodation and (ii) monitor and manage migrant workers' interactions with local communities.	1) Mapping of current migrant workers' accommodations 2) Signed contract with qualified company and TOR approved by lenders 3) Results of initial housing options assessment and well-defined strategy to comply with Brazilian NRs and IFC PS requirements 4) Evidence of implementation of workers' housing strategy	October 22, 2017 October 30, 2017 November 15, 2017 November 30, 2017
15	PS02	CELSE will also implement robust measures to address the risk of gender-based violence. This will include: (i) developing policies on non-discrimination, inclusion, sexual harassment, gender-based	1) Policy and Code of Conduct approved by the lenders	1) October 31, 2017

		violence; (ii) developing and implementing explicit codes of conduct for direct workers, contractors and subcontractors that address gender-based violence, strengthen supervision and implementation of such codes, and provide incentives for reporting inappropriate behavior. The code of conduct should clearly state a zero tolerance policy for gender-based violence; (iii) conducting induction and training program on HR policies and procedures, Code of Conduct, local laws, and awareness raising for the workforce about refraining from unacceptable conduct toward local community members, specifically women, (iv) the grievance mechanism should ensure proper handling of gender-based violence related grievances, including but not limited to sexual harassment; (v) contractors adopting a policy to cooperate with law enforcement agencies in investigating complaints about gender-based violence.	2) Evidence of training 3) Grievance mechanism	2) February 28, 2018 3) October 31, 2017
16	PS02	CELSE will implement a workers' grievance mechanism ensuring: (i) a clear procedure to receive, register, and address grievances, (ii) a comprehensive mechanism at the construction site to allow contractors and subcontractors' employees to submit grievances and/or concerns, using an understandable and transparent process that provides timely feedback to those concerned, and (iii) that the mechanism is extensively communicated throughout the company and construction site. The mechanism should allow for anonymous complaints to be raised and addressed. CELSE will maintain a database with information regarding grievances and results, which will be reported monthly to IIC.	Workers' grievance mechanism in place Monthly Reports on grievance mechanism	October 31, 2017 November 30, 2017
17	PS03	To better understand and characterize the ambient air quality and baseline conditions, CELSE will immediately supplement the ambient air quality baseline for NO, NO_2, VOC and O_3.	Results of air quality monitoring on a quarterly basis during construction	November 25, 2017
18	PS03	CELSE will establish and maintain an ambient air quality monitoring program during O&M that complies with WBG EHS Guidelines	Results of air quality monitoring	January 31, 2020

19	PS03	CELSE will update the noise model to include noise emissions from the seawater-intake pumphouse and will carry out additional baseline measurements to confirm the project applicable noise limits. The company will then identify noise reduction measures that will result in compliance with project applicable noise limits in surrounding community area. As part of the modeling the company will also consider the cumulative effect of the two additional power plants that may be developed at the site.	1) Monitoring results of baseline noise data 2) Copy of updated noise model	November 7, 2017
20	PS04	CELSE will prepare a Traffic Safety Management Plan. This plan will identify the increase in number of vehicles/trucks/buses/vans required for the construction and the impacts on highway, roads and local communities and include a driver monitoring system. Alternative transportation routes and traffic management measures to reduce impacts may include infrastructure upgrades, optimum route selection, and vehicle management. Project related vehicles will be continuously monitored to ensure their quality to minimize noise and vehicle emissions and drivers will receive defensive driving training to prevent accidents involving local communities.	Copy of the traffic safety management plan	November 7, 2017
21	PS04	CELSE will develop and implement a port security assessment as required under the International Ship and Port Facility Security (ISPS) Code. The results of the assessment will be presented to relevant authorities and disclosed to affected communities in order to allow for appropriate controlled areas to be agreed and defined, to help regulate the safe movement of vessels within the project area of influence, protect affected communities from dangers arising from offshore activities, and prevent events that may result in injury to workers and the public, including fishers and recreational users.	Port security assessment Disclosure of Port Security Assessment to stakeholders	October 31, 2019 3 months before start of operations January 1, 2020 Start of operations
22	PS04	The QRA will be updated based on the final project infrastructure and equipment design. The results of the updated QRA, together	Updated QRA	October 15, 2017

		with ANSI/ASME classification of the gas pipeline, will be used to either modify the pipeline design specifications to further mitigate risks and/or establish an exclusion zone for residential households living within the high-risk zone on Praia do Jatoba, offering compensation and resettlement support to affected households consistent with IFC PS5.	Depending on the result, resettlement plan	3 months before operation
23	PS04	To monitor potential health impact on the local communities, CELSE will implement a monitoring program consisting of (i) a health baseline for the surrounding communities to establish current health conditions of the municipalities included in the project area of influence and surrounding communities, and (ii) monitoring of key socioeconomic indicators.	Monitoring report on health baseline	March 31, 2018
24	PS04	The company will jointly with the EPC contractors implement a management plan that will include: (i) appropriate medical facilities available for all labor; ii) periodic health checkup program in place, (iii) information and awareness-raising campaigns for community members (specifically women and girls) and workforce, including program on STI and HIV/AIDS, (vi) provision of information to host communities about CELSE's and its contractor policies and worker Code of Conduct, and (v) measures to control disease vectors. These should be implemented in coordination with relevant stakeholders such as the women's union, youth union, health workers, the municipal body responsible for ensuring the rights of children and adolescents (Conselho Tutelar), and representatives from affected communities.	Draft Management Plan Evidence of implementation of plan	November 30, 2017 January 31, 2018
25	PS04	Conduct a security risk assessment to identify the risks posed by security arrangements to those within and outside facilities and determine whether such private security personnel are being vetted, hired, equipped, and trained adequately. After the results of security personnel assessment, the company will develop a Security Management Plan for managing private armed security	Documented Assessment Security Management Plan	December 7, 2017 Closing

		force to avoid potential harm to employees, communities and other stakeholders. This plan should include formal procedures for reporting, responding to and documenting security incidents, training requirements, and review of security record of security contractors, consistent with IFC PS4.The company will put in place procedures such that complaints against security personnel are investigated and disciplinary actions implemented.		
26	PS05	CELSE will commission an assessment to verify if people resettled by the project were able to reestablish their living conditions and restore their livelihoods, in the event there are any gaps with IFC PS5 requirements a Supplemental Compensation Plan will be implemented to ensure compliance with PS5. CELSE will conduct a completion audit by an independent resettlement specialists to verify that the objectives of the Supplemental Compensation Plan for Praia do Jatoba have been met, consistent with PS5 requirements.	Annual report from independent monitoring (for 3 years from January 2018) Completion audit report from independent consultant	January 31, 2018 January 31, 2021
27	PS05	CELSE will review the Resettlement and Livelihood Restoration Plan (RLRP) for the transmission line and connection bay to ensure full alignment with PS5 requirements. The RLRP must include the identification of vulnerable groups based on a clear definition of vulnerability criteria and the definition of specific measures to ensure such groups are assisted and properly consulted, measures to ensure compensation at full replacement cost and livelihood restoration, and a comprehensive engagement process. The revised RLRP will include specific actions to ensure (i) disclosure of entitlement matrix covering both economic and physical displacement, (ii) adequate engagement with individuals belonging to vulnerable groups, (iii) disclosure of CELSE's grievance mechanism among affected households.	Revised RLRP	November 10, 2017
28	PS05	An independent monitoring and evaluation of the implementation of the RLRP for the transmission line and connection bay will be conducted by qualified independent	Annual report from independent monitoring (for 3 years from January 2018)	January 31, 2018

		resettlement specialists to ensure full alignment with PS5 requirements. A completion audit will be conducted by qualified independent resettlement specialists to verify that the objectives of the RLRP for the transmission line and connection bay have been met, consistent with PS5 requirements	Completion audit report from independent consultant	January 31, 2021
29	PS06	CELSE will conduct additional field surveys to better identify fauna species in the area of influence of the TL and substation bay prior to the start of any vegetation suppression.	2nd Fauna baseline study report	November 30, 2017
30	PS06	CELSE will develop a biodiversity management plan, as indicated in the ESAP action 26, for the (a) terrestrial (vegetation compensation) and (b) mangrove (Offsets Strategy) loss, (c) demonstrate no net reduction in the population of the Lagartinho-de-Abaeté (*Ameivula abaetensis*), which is listed as endangered. The biodiversity monitoring plan will identify the locations for compensations, long-term biodiversity offset implementation and management, the biodiversity qualified resources to coordinate all the biodiversity aspects, the monitoring plan to determine how will 'gains' at the offset site be measured and monitored over time, among other aspects.	BAP	June 30, 2018
31	PS06	CELSE will enter into an agreement with Projeto TAMAR to ensure proper monitoring and rescue, as needed, of turtles or nests during the construction of any project structure that disturbs the marine sediments and the Praia do Jatoba.	Copy of agreement	December 31, 2017
32	PS07	CELSE will commission an impact assessment and a consultation process focused on the potential project-related impacts on CRQ Mussuca and CRQ Pontal da Barra. In the event that adverse impacts are unavoidable, a specific management plan will be developed to minimize and/or compensate for these impacts in a manner commensurate with the nature and scale of impacts,	1) Copy of TOR 2) Secure qualified specialist/firm 3) Study/management plan	January 31, 2018 March 31, 2018 May 31, 2019

		cultural characteristics, and the vulnerability of these communities, in addition to a community development plan to promote sustainable development benefits and opportunities for CRQ Mussuca and CRQ Pontal da Barra in a culturally appropriate manner, consistent with PS7.		
33	PS07	A participatory monitoring program will be implemented to monitor and mitigate project related impacts on fishing-based livelihoods on CRQ Pontal da Barra consistent with PS7 requirements.	Monitoring consultant approved by Lenders; Approval of TOR for monitoring	March 31, 2018
34	PS08	CELSE will develop a Chance Find Procedure that will be applied in the event cultural heritage is discovered during construction activities. The Chance Find Procedure will be prepared in accordance with PS8 requirements and local regulations.	Copy of chance find procedure	December 15, 2017
35	PS01	CELSE will develop a Stakeholder Engagement Plan (SEP) aligned with PS-1 requirements. The SEP should include the following elements: a) company's description; engagement principles, objectives and criteria; b) local regulations and international requirements; c) description of key social and environmental risks and impacts; d) summary of previous engagement activities; e) identification, analysis and prioritization of stakeholders, focusing on those directly affected and identifying any vulnerable individuals or groups; f) engagement program describing activities that will be conducted by CELSE during the construction phase of the project; g) description of CELSE's grievance redress mechanisms and description of how CELSE will monitor contractors' grievance mechanisms during construction; h) timetable, resources, and responsibilities. The SEP should also include cross references to other relevant management plans implemented by the company to manage environmental and social risks and impacts.	Final SEP	January 31, 2018