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BRAZIL

***COELBA Investment Program
Companhia de Eletricidade do Estado da Bahia
(BR-L1015)***

***ENVIRONMENTAL AND SOCIAL MANAGEMENT REPORT
(ESMR)***

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BR-LI015 COELBA Investment Program - Companhia de Eletricidade do Estado da Bahia
Environmental and Social Management Report (ESMR)

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LIST OF ACRONYMS

AGERBA – Regulatory Agency of Public Energy, Transportation, Gas and Telecommunications of the State of Bahia
ANEEL – National Electric Energy Regulatory Agency
CEPRAM – Bahia State Environmental Council
COELBA – Electricity Company of the State of Bahia
CRA – Environmental Resources Center
DEC - Equivalent Duration of Interruptions per Consumer
EAR – Environmental Analysis Report
EIS – Environmental Impact Study
ELETROBRÁS – Brazilian Electricity Company
EMS - Environmental Management System
ESDD – Environmental and Social Due Diligence
ESMP - Environmental and Social Management Plan
ESMR – Environmental and Social Management Report
ESMS - Environmental and Social Management System
FEC – Equivalent Frequency of Interruptions per Consumer
FUNAI - National Indian Foundation
HSMP – Health and Safety Management Plan
HSMS - Health and Safety Management System
IDB – Inter-American Development Bank
IBAMA – Brazilian Institute for Environment and Natural Renewable Resources
IPHAN – National Historic and Artistic Heritage Institute
ISO 14001 – International Standard for Environmental Management Systems
NGO – Non-Governmental Organization
NR – Regulatory Standard
OHSAS 18001 - International Standard for Health and Safety Management Systems
PCB – Polychlorinated Biphenyl
PPE - Personal Protective Equipment
ROW – Right-of-Way

I INTRODUCTION

- 1.1 COELBA, *Companhia de Eletricidade do Estado da Bahia* (or “Company”), was created, in March 1960 and privatized in July 1997 (*Grupo Neoenergia* as main shareholder), to distribute electricity in its service area, which comprises the entire State of Bahia in Brazil’s Northeast Region (see **Figures 1 and 2**). This state presents an area of approximately 563 thousand square kilometers (corresponds to 6.6 percent of Brazil’s territory, equivalent to the combined area of Paraguay and Uruguay) and population of almost 13.3 million inhabitants (over 60 percent of the population lives in urban areas). The Company’s activities comprise mainly electricity distribution. Presently, with a workforce of about 2776 employees, the Company provides service to the 415 municipalities in the state, servicing approximately 3,800,000 consumer units, and distributing around 10,261-GWh per year. Of the energy provided by COELBA, approximately 34.1 percent is used by residential consumers, 20.6 percent commercial, 20.1 percent industrial, and others (government, municipalities, street lighting, etc.) make up 25.2 percent.
- 1.2 To increase service coverage and quality under its Concession contract, COELBA has developed an Investment Program, part of which (the 2006-2010 component, amounting to US\$ 1.2 billion) is under analysis for support by IDB. COELBA is seeking from IDB partial financing for its Investment Program, under the IDB A/B loan program, which would amount to US\$ 182 million (IDB participation US\$ 112 million; other institutions US\$ 70 million).
- 1.3 COELBA’s Investment Program (or “Project”) can be sub-divided in the following main components: (i) high-voltage distribution expansion; (ii) rural electrification expansion (in association with the electric energy universalization “Light for All” – *Luz para Todos* - Program); (iii) urban electrification expansion; (iv) renovation of distribution network; and (v) distribution system quality improvement. The Investment Program comprises basically twelve (12) main plans, as follows:
- Plan 1:** Network expansion, including essentially the construction of new 69 kV and 138 kV high-voltage distribution lines, and 13.8 kV and 34.5 kV moderate-voltage distribution lines. This Plan includes also construction of a small segment (2.9 km) of 230 kV line to connect a single industrial user, but this segment will not integrate COELBA’s assets. Expansion of some existing substations is planned, as is the construction of new ones.
- Plan 2:** Special projects, including the “Light for All” rural electrification program, research and development programs, and program for development and/or updating of technical standards and guidelines.
- Plan 3:** Substation modernization, consisting of equipment substitution and other improvements at outdated substations. Purchase of maintenance equipment is also foreseen.
- Plan 4:** Restoration of 69 kV and 138 kV high-voltage distribution lines, including mostly cable and tower substitution, as well as other materials.

- Plan 5:** Substation and network automation, including modernization of the operation control centers.
 - Plan 6:** Telecommunications infrastructure, aimed at implementing in-house capabilities to support the telecommunications demand of COELBA operation and maintenance activities.
 - Plan 7:** New connections (other than those that are included in the “Light for All Program”) to new consumers resulting from natural market growth, as established in Company’s market projections. This program component also includes activities related to control of irregular connections, reduction of system losses and improved metering.
 - Plan 8:** Quality improvement of distribution network operation and maintenance, including the costs of restoring primary and secondary distribution networks as well as purchase and installation of equipment.
 - Plan 9:** Information technology, including hardware and software acquisition in order to upgrade Company’s data processing capabilities.
 - Plan 10:** Purchase of tools and equipment for the maintenance department (measuring instruments, etc.).
 - Plan 11:** Purchase of new vehicles to renew the company’s fleet.
 - Plan 12:** Other fixed assets, including purchase of real state and office equipment, construction, expansion and renovation of administrative buildings, purchase of land, etc.
- 1.4 The majority of the investment (*i.e.* approx. 67 percent of the total) will be directed toward Plan 2. The Plan that might raise some concern in terms of risks of associated potential negative environmental and social impacts is Plan 1, which will require approximately 6.6 percent of the total amount of the Investment Program.
- 1.5 The Company has an Environmental Policy, as well as an Environmental Unit and a Health and Safety Department in their organizational structure, both staffed with full-time specialists. Coelba possesses a Health and Safety Management System, albeit not consistent with the OHSAS 18001, and recently initiated the implementation of an Environmental Management System within the Company. Moreover, Coelba presently adopts several plans, procedures, guidelines and standards to specifically address environmental, social, health and safety issues.
- 1.6 Coelba has also health and safety plans and environmental procedures that apply specifically to their contractors (*e.g.*, Health and Safety Plan for Contractors), as well as to monitor and follow-up their compliance. Furthermore, the Company provides specific training on environmental, and health and safety issues to their contractors.

II PROJECT DESCRIPTION

A. Existing Operations and Facilities

- 2.1 COELBA's activities are mainly geared towards electric energy distribution as only an insignificant percentage of the energy distributed comes from its generating units (the remaining is provided through the interconnected system and independent generators).

A.1 *Energy Generation*

- 2.2 COELBA's fixed assets currently include a small diesel-thermoelectric power plant (1.2 MW), located in the *Ilha Grande de Camamu*, which is not yet connected to the grid, and other smaller generators used sporadically, mainly under emergency situations. Following Article 20 of the Unbundling Law (National Electric Energy Regulatory Agency – ANEEL - Law 10.848/04), which required distribution companies in Brazil to split up generation and distribution assets, COELBA transferred its former hydroelectric power plants to other companies. As the thermal power plants are part of the isolated system, they are not included in the unbundling process. Nevertheless, COELBA is planning to take permanently out of service most of the small thermal generators and use biomass in the *Ilha Grande* thermal power plant.

A.3 *Distribution System*

- 2.3 The existing COELBA electric energy distribution network comprises approximately: (i) 8,250 km of 69 and 138 kV high-voltage distribution lines; (ii) 148,000 km of 13,8 and 34,5 kV medium-voltage distribution lines; and (ii) 260 electric substations (amounting to a total installed capacity of almost 4400 MVA).
- 2.4 COELBA operates two main warehouses, the first in *Feira de Santana* and the second in *Salvador*. The first, named Central Warehouse, is the major and the location performing the activities related to the control on inflow and outflow of new materials and equipment purchased for use in the company facilities; sorting, storage, and final destination of damaged or returned materials, and components quality and performance lab tests (electric and mechanical testing, equipment gauging, etc.).
- 2.5 The Company has developed a program for implementation of solar photovoltaic energy systems in hard-to-reach locations and approximately 3000 individual service systems have been installed in rural dwellings, schools, health centers, artesian wells, small irrigation processes, street lighting, and others, and Coelba is responsible for the maintenance of these systems.

B. Investment Program Proposed Components

- 2.6 As mentioned, COELBA's Investment Program comprises basically 12 Plans as described in the following sub-sections.
- 2.7 **Plan 1 - Network expansion.** This plan comprises the activities related to the expansion of high-voltage distribution systems (69 and 138 kV) and medium-voltage (13.8 and 34.5 kV) destined toward the expansion, enhancement, and increased network dependability. Plans are for construction of: (i) 26 high-voltage distribution segments ranging from 0.22 to 99.4 km

and of 69 or 138 kV; and (ii) six new substations. Furthermore, the capacity of 22 existing substations will be expanded. These projects will be implemented in different regions of the state of Bahia, embracing areas that have urban, suburban and rural characteristics. This Plan includes also construction of a small segment (2.9 km) of 230 kV line to connect a single industrial user, but this segment will not integrate COELBA's assets.

2.8 **Plan 2 – Special projects** comprises the following projects:

- “Light for All” (*Luz para Todos*) Program: is a program being implemented by COELBA in conjunction with the Federal and State Governments, aiming at the universalization of access to the public electric energy service to all rural dwellings and establishments. The program goal in the state is to extend the service to approximately 350,000 new consumers by 2008.
- Research and Development (R&D) Program: pursuant to Federal Law 9.991/2001, electric energy companies must invest 0.25% of the net operational revenue in R&D projects. The funds will be invested in the purchase of special equipment to be used in the R & D program, in order to allow the access of COELBA professionals as well as researchers from associated educational institutions to efficient and modern technological platforms.
- Electric System Registry/Dwellings Project: this project intends to register (establish a cadastre) the whole COELBA distribution network, through the use of a management program (GEOREDE) with a view to reducing operating costs. Technicians from the areas responsible for operation and maintenance activities will access this tool. It will facilitate the performance of electric projects and preliminary budgets; minimize the need for *in loco* surveys, and expedite the operation, maintenance, reading, and billing tasks.

2.9 **Plan 3 – Restoration of Substations** includes the improvement and restoration of substations. The objective is to improve and modernize some substations and extend their life cycle, by restoring some of the equipment and facilities, and by acquiring and installing various pieces of equipment, such as for protection and control and measuring.

2.10 **Plan 4 – Restoration of High-Voltage Distribution Lines (69 and 138 kV).** The main objective of this Plan is to restore and enhance high-voltage distribution line components to extend their life cycle and improve operation and maintenance conditions in some line segments. This component will basically involve replacement of conductors, structures and other equipment.

2.11 **Plan 5 – Substation and Network Automation** includes substation automation projects, improvements and adequacy in the system control centers, through new equipment acquisition and installation. These projects will enable the Company to improve its quality of service and reduce its operational costs. Automation of the substations will optimize the operation and maintenance of the electric system, facilitating the location of defects, reducing interruptions and lengths of time to restore the loads, and improving operating safety and control. This component will basically involve digitalization and automation of substations, improvements in the Control Centers, equipment acquisition and installation for technical reserve (spare equipment for automated systems), and equipment acquisition and installation for automatic fault location detector.

- 2.12 **Plan 6 – Telecommunications** comprises investments to create its own telecommunication channels to meet operation and maintenance needs of the electric system, especially for automation of substations and distribution lines. This Plan includes the acquisition of telecommunication equipment to the operation and maintenance activities of the Company as well as to provide support to automation projects (Plan 5), since those will rely on teleprotection, telecontrol and telemeasurement channels. This set of projects will complement those of Plan 5 so as to ensure a full use of the control centers. Plan 6 will essentially involve the acquisition and use of: (i) VHF radios, repeaters, portable equipment in order to fulfill substations communication needs related to automation, protection and metering; (ii) mobile phones for telemeasurement and teleprotection; and (iii) radio systems (bi-channel) to interconnect the various offices of the Company.
- 2.13 **Plan 7 – New connections** refers to the connection of new consumers that results from the natural growth of the demand and expansion of the Concessionaire Universalization Plan (excluding the figures and projects of the “Light for All Program”), as well as from the regularization of abnormal billing situations and clandestine connections. Investments in the recovery of losses and acquisition of new meters are also foreseen.
- 2.14 **Plan 8 – Quality improvement of distribution network operation and maintenance.** This Plan aims at improving the service quality and reliability of the Company, as dictated by the market as well as by ANEEL regulations. The projects in this Plan involve essentially updating and restoration of distribution electric equipment as well as the provision of adequate technical reserve (spare parts). This component will include the following main activities: (i) preventive and corrective maintenance services of distribution systems, involving the replacement of components in poor state of conservation (*e.g.*: poles, conductors, service circuits, distribution transformers, voltage regulation equipment, switchgears, protection equipment, and components of the reactive support system); (ii) replacement of bare conductors by semi-insulated or insulated conductors in networks located on timbered areas; (iii) replacement of blown-out transformers; car-hit poles; primary and secondary networks, broken service circuits; (iv) restoration and improvement of active primary and/or secondary circuits or deactivation of non-used circuits that may cause accidents or bodily harm to maintenance crews and customers; and (v) purchase and installation of equipment such as regulators, reclosers, switchgears, capacitors, and sectionalizers, for replacement, response to new customers, and primary circuit protection.
- 2.15 **Plan 9 – Information Technology** comprises the renovation of the Company’s information technology assets upon acquisition and installation of hardware and software. Given the use of Internet for communication between COELBA, vendors and service provides, protection against viruses and hacker invasions must be intensified, and all levels of access to the company computer environment must be monitored and controlled. Such measures depend on the implementation of network safety architecture and on users’ training/awareness.
- 2.16 **Plan 10 – Service equipment and tools** is destined toward the replacement and acquisition of new tools and equipment to be used on improving maintenance activities by line and substation maintenance crews as well as by inspection crews of consumer facilities, new connections, and business services. This component includes the acquisition of service and metering equipment and instruments, and tools used by testing, gauging, and maintenance laboratories throughout the Company.

- 2.17 **Plan 11 – Renovation of vehicle fleet** refers to the acquisition of new vehicles to replace those in the end of lifetime and renew the fleet available to Company units. The main objectives are to reduce fleet operation and maintenance expenses, and reduce unavailability of vehicles. Furthermore, some benefits in terms of reduction of air contaminants emissions may be envisaged.
- 2.18 **Plan 12 – Reinforcement and renovation of assets** comprises the acquisition of office furniture and equipment as well as the construction, expansion, and refurbishing of administrative buildings, acquisition of land, etc. Main objectives are to replace the furnishings in an advanced state of wear, keep the equity value of corporate assets, and improve the working environment and customer service.
- 2.19 The activities involved in the implementation of Plans 3 to 12 will not represent significant risks in terms of associated potential negative environmental and social impacts. Plan 2 projects, namely the ones integrated in the Light for All Program, have the potential to pose lower to moderate risks; however, it should be noted that the works involved, individually of low magnitude, will be dispersed in time and geographically throughout the state, decreasing the potential for generating significant negative environmental and social impacts. The activities associated with Plan 1 are the ones that raise some concern in terms of risks of having associated potential negative environmental and social impacts of some level of significance.
- 2.20 The major construction activities comprised in the implementation of the projects foreseen in the Investment Program are the following:
- (a) Construction of new high and medium-voltage distribution lines: removal of vegetation from the line's right-of-way (in 6m, 15m or 30m wide strip of land); localized excavation, for tower foundations in reinforced concrete; assembly of tower structures (in steel or concrete); placement of power conductor cables and other components (insulators, grounding devices, etc.). Sometimes construction of new accesses to the tower bases is needed; however, it should be pointed out that some of the accesses used during construction will only be temporary, as they are not needed for maintenance purposes (in many instances the access for maintenance can be performed through the right-of-way).
 - (b) Construction of new substations: site clearing, grading-oriented earthmoving, implementation of electric grounding grid (in 0.5m deep trenches); implementation of equipment yards (crushed rock overlay, assembly of metal or concrete structures). Installation of transformers, circuit breakers, etc.; construction of buildings (to lodge the security and operating control equipment, the sanitary facilities and staff rooms, and the reception area), and perimeter closure of the area (fences or walls).
 - (c) Construction of low-voltage distribution lines: bore drilling usually in public roads or other corridors (in rural or urban areas) for pole placement; installation of concrete or wooden poles; placement of conductor cables and other distribution line components (insulators, switches, fuses, transformers, etc.); connections to the secondary network circuits, and meter installation.
 - (d) Restoration or expansion of substation and line capacity: removal or trimming of vegetation within line right-of-way; reconductoring of lines (replacement by larger diameter cables to assimilate increase in the demand); replacement of damaged or

obsolete electric equipment and components as well as the ones at the end of their useful life; installation of new transformers and other related equipment in substations; replacement of structures and poles not fit for use; sometimes increase in the area of equipment yards at substations, and expansion in the total floor area of substation control rooms.

C. Project Workforce

- 2.21 Presently COELBA relies on 43 regional contractors located in various regions of the state to execute the necessary topographical surveys, detailed design, construction work and some of the maintenance activities. The Company estimates that for the implementation of the 12 Plans integrated in the Investment Program, the total use of outsourced workforce (contractors) shall increase to an average of 4500 jobs in construction and assembly services (direct and indirect workforce).

D. Project Alternative Analysis

- 2.22 In planning and designing lines and other relevant infrastructure, COELBA effectively takes into consideration environmental criteria to guide the selection of alignments and sites, and try to avoid, as much as possible, affecting sensitive areas, such as conservation and indigenous areas, as well as housing, commercial and industrial areas, even though this may implicate in longer line segments to circumvent those sensitive areas. The Company tries as much as possible to expand their network through established rights-of-way, or existing corridors, roads, and pathways, to avoid establishment of new rights-of-way and construction of new accesses (temporary or permanent). Therefore, when applicable, a study of alternative routes is performed, especially when there is the potential to disturb indigenous areas, environmental sensitive areas (e.g., protected areas, wetlands, native vegetation, and remaining Atlantic Rainforest). The study is performed with the assistance of COELBA's Environmental Unit, which helps to address appropriately the environmental aspects in the evaluation of the alternatives.
- 2.23 As restrictions on potential disturbances on protected areas usually are very stringent and licensing processes may become relatively lengthy, COELBA prioritizes investments in lines that will not interfere with Conservation Units, indigenous areas, and other areas of environmental interest. The network expansion projects will disturb very few legally protected areas of environmental interest.
- 2.24 Risks of disturbance on archeological sites are low and limited in space given the fact that the implementation of lines and substations does not imply great volumes of excavation or earth movement over large areas. Therefore, the consideration of this aspect is seldom a determinant factor in the need to adopt alternative routes.
- 2.25 When electing plots of land for the implementation of new substations, COELBA always prioritizes areas with little or no native vegetation. In urban areas, Coelba avoids lots adjacent to schools and hospitals, to preclude problems associated with operational noise. In general, the title status of the areas elected is surveyed in order to assess and prevent possible legal problems associated to ownership, possession, etc.
- 2.26 In urban areas, the distribution lines are often designed and constructed in established corridors and other public places. Therefore, usually there is no need to study alternative

routes. Nevertheless, in the case of roads crossing heavily wooded areas, the Company usually adopts technical solutions to protect the aerial cables or reduce the area occupied by these and consequently minimize vegetation trimming or cutting needs. In areas where National Historic and Artistic Heritage Institute (IPHAN)-listed historic sites are found and no alternative route is possible or feasible, COELBA adopts underground distribution network service in order to avoid visual and other impacts on the urban landscape.

III ENVIRONMENTAL LICENSING COMPLIANCE

- 3.1 According to national and state environmental laws electric distribution projects involving line voltages above 230 kV are required to present an Environmental Impact Study (EIS) in their environmental licensing process. As all projects included in COELBA's Investment Program involves voltages lower than 230 kV, and they are not expected to significantly and negatively affect conservation and/or indigenous areas, none of the projects is supposed to require the presentation of an EIS.
- 3.2 However, IDB has requested COELBA to perform an Environmental Analysis (EA) of the Investment Program, as well as of existing facilities and operations to assess associated environmental, social, health and safety impacts, risks and liabilities, and evaluate the actions and measures that are foreseen and/or being adopted to prevent or control relevant impacts, risks, and liabilities. The ensuing Environmental Analysis Report (EAR), or *Relatório de Análise Ambiental*, has been publicly disclosed according to Bank's OP-102 Disclosure of Information Policy, in six of COELBA's Regional Unit sites in the State of Bahia, representative of the Concession Area, at IDB's Public Information Center in Washington, DC, and Country Representative Office, and at the Bank's web site.
- 3.3 Two other types of environmental permit and/or authorization may be required in licensing electric distribution projects in the State of Bahia. One is the Authorization for Vegetation Clearing, which is required whenever the implementation of the project involves the removal of native vegetation, and the other is the Prior Assent of the Environmental Authority, which is required when the project will be located in conservation areas (e.g., protected areas, wetlands, native vegetation, and remaining Atlantic Rainforest). It should be pointed out that all projects that involve clearing of native vegetation need to submit a request for a permit based on detailed characterization and quantification of the vegetation to be affected, and in the process to obtain the Prior Assent the sponsor must present a Simplified Environmental Impact Study. Both the Authorization for Vegetation Clearing and the Prior Assent of the Environmental Authority are usually granted integrating compensatory and/or other environmental control measures that the sponsor needs implement.
- 3.4 Furthermore, whenever indigenous areas may be significantly disturbed the licensing requires an authorization from the National Indian Foundation (FUNAI). Similarly, when listed historic sites (e.g., historic centers, communities of former African slave descendants known as *quilombolas*, etc.) or archeological resources are involved an authorization is required from the IPHAN.
- 3.5 COELBA has specific written procedures in their Environmental Management System (EMS) to address all licenses that may be required to implement as well as to operate and maintain their projects and facilities. These include procedures to: (i) reduce the need of licenses, authorizations and/or prior assents, by judiciously selecting appropriate location for projects;

- (ii) identify when licenses, authorizations and prior assents may be required; (iii) ascertain what documents and studies may be needed; (iv) follow-up and report the development of licensing processes; and (v) follow-up and monitor the implementation of associated compensatory and/or other environmental control measures.
- 3.6 Through cautious adoption of these procedures COELBA has effectively and substantially reduced the need of authorizations and/or prior assents. After three years of implementation of these procedures the results indicate that only less than 10 percent of the new 34.5 kV medium-voltage projects (among more than 1000) required an environmental permit; the remaining 90 percent were constructed without the need of cutting native vegetation. Relative to the Light for All Program, in the implementation of approximately 3500 works, from 2004 up to April 2006, only 3.3 percent required some sort of environmental permit.
- 3.7 Concerning the projects integrated in the Investment Program, it should be noted that they are presently at different stages of their planning, implementation, and license procedures; therefore, the associated environmental and social requirements and impacts are known at a level compatible with that of the development of the projects. Nevertheless, regarding the projects integrated in Plan 1, which comprises new high-voltage distribution lines and substations, it is possible to indicate the following: (i) it is very likely that 10 of the 26 new line projects will require Authorization for Vegetation Clearing and/or Prior Assent, and the Company has already started the licensing process for some of them; (ii) one of the line projects may require authorization from FUNAI, but this particular project is at a very early stage of planning, and no engineering or environmental studies have been performed; (iii) three substation projects may require Authorization for Vegetation Clearing; and (iv) one substation project will very likely require authorization from the IPHAN, as it will be located near a listed historic area.
- 3.8 It should be stressed that COELBA will not start implementation in the field of any of the projects integrated in the Investment Program without receiving the applicable environmental and/or other licenses, authorizations and/or permits. For projects included in the Investment Program, the Company is and will continue to adopt its established environmental licensing procedures and perform the necessary environmental impact assessment studies required by the authorities, as have been done in the past to obtain the required licenses. It should be stressed that if the studies to be carried out indicate the potential for significant impacts on sensitive communities and areas, COELBA will integrate the appropriate control measures proposed in the studies and/or recommended by competent authorities.
- 3.9 In November 2001, COELBA and the Bahia State Environmental Agency (Environmental Resources Center or CRA) established a Term of Agreement aiming at the environmental regularization of all distribution system projects and facilities under operation that would require an Operating License (essentially high and medium-voltage lines and substations), as determined in the Bahia State Environmental Council (CEPRAM) Resolution No. 2916. The concession area has been divided in fifteen Administrative Regions established by CRA, and the licensing processes are prepared and treated individually for each one of these Administrative Regions. Operating Licenses have already been granted to nine of the fifteen regions. The processes for other five of the regions are in advanced stages waiting the approval from CRA. For only one of the regions the process has not yet been submitted to the environmental authority. The due date for this in the amended Term of Agreement is December 30, 2006, but the Company expects to submit the request before then, as the respective environmental and other studies have already been initiated.

IV ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS

- 4.1 The projects integrated in the Investment Program are presently at different stages of their planning, implementation, and license procedures; therefore, the associated environmental and social impacts and risks are known at a level compatible with that of the development of the projects.
- 4.2 The main environmental, social, health and safety negative impacts and risks associated with the Investment Program will be related to the first two components (Plans 1 and 2), i.e. high-voltage distribution expansion and rural electrification expansion. It should be pointed out, however, that the projects and actions involved in COELBA's proposed Investment Program are not likely to generate negative environmental, social, health and safety impacts of significant magnitude and importance, as: (i) no large-scale engineering work is involved, and no concentration of works in time and space is expected; (ii) COELBA effectively takes into consideration environmental criteria to guide the selection of alignments and sites, and try to avoid, as much as possible, affecting sensitive areas, such as conservation and indigenous areas, as well as housing, commercial and industrial areas, even though this may implicate in longer line segments to circumvent sensitive areas; and (iii) the Company tries as much as possible to expand their network through established rights-of-way, or existing corridors, roads, and pathways, to avoid establishment of new rights-of-way and construction of new accesses (temporary or permanent).
- 4.3 The implementation of the projects included in COELBA's Investment Program is not likely to require resettlement of people and will not significantly and negatively affect sensitive areas, such as conservation or indigenous areas. In fact, some indigenous communities that have requested to be linked to the energy distribution network, and after approval by FUNAI, may benefit from some of the projects integrated in the Light for All Program.

A. Construction Phase

A.1 *Environmental Impacts and Risks*

- 4.4 *Suppression of native vegetation and soil erosion:* Activities such as vegetation suppression and soil moving may result in topsoil exposure to rainfall action. This may potentially carry solids to the closest water bodies. The areas most susceptible to erosion are the steepest slopes, and the river margins. The risk of erosive processes during construction is higher when associated to vegetation suppression, required both for the construction itself and for maintenance of rights-of-way. However, it should be pointed out that COELBA makes, as much as possible, use of non-forested areas for the installation of power lines or substations, as well as adopt specific engineering solutions to minimize the need for vegetation suppression. Some small magnitude erosion is expected during construction of substations, mainly due to opening of ditches for installation of the grounding grid. Six of the 26 new line segments and 3 of the 6 new substations will cross or be located in conservation areas (e.g., protected areas, wetlands, native vegetation, and remaining Atlantic Rainforest), and the Company is adopting the appropriate measures in terms of licensing as well as of impact and risk mitigation.

- 4.5 *Habitats fragmentation:* This risk is considerably reduced in COELBA's activities since all distribution lines are planed, prior to its installation, in order not to cross forested fragments. In cases when crossing of forested fragments is inevitable, the Company has special procedures in order to reduce disturbance at minimum, such as the use of higher posts, reduction of the ROW strip that needs to be cleared (reduced to 6m wide, down from the usual 15 or 30m), and selective vegetation suppression.
- 4.6 *Fauna disturbance:* The construction aspects that may cause disturbance to fauna are noise generation, vehicles movement, vegetation suppression, and presence of workers. The noise and the movement may temporarily drive fauna off. The workers must be trained not to hunt or collect animals or eggs. Thus, the major negative impacts will be associated with the suppression of native vegetation within the right-of-way (ROW), which may chase away individuals and species, cause habitat fragmentation, and destroy nesting sites. These impacts may be significant only in rural areas or in protected areas of environmental interest where there is a stronger presence of forest fragments and other ecosystems inhabited by wild animals. Nevertheless, COELBA adopts special procedures to deal with these issues and avoid or mitigate impacts. In some instances, the Company, with the assistance of biologists and local experts, implements actions to drive wild animals, in a controlled manner, away from construction areas before the work begins.
- 4.7 *Disturbances on environmentally protected areas:* This type of impact is expected to be of moderate magnitude in the case of the new distribution lines and substations integrated in the Investment Program, since 6 of the lines and 3 of the substations will cross or be located in conservation areas. COELBA's Environmental Unit analyses all projects in order to define the best options of alignment, considering the presence of conservation areas, and try as much as possible to avoid affecting these areas. However, sometimes it is not possible to avoid those areas and in these cases adequate environmental studies are prepared and submitted and due permits and/or licenses are obtained from the relevant authorities. In cases in which disturbances on Conservation Units are expected and unavoidable, the Company adopts specific and proven procedures to minimize the magnitude of the impacts, and follows judiciously the compensatory and/or other control measures established by the environmental licensing authorities.
- 4.8 *Soil and groundwater contamination:* The risk of soil and groundwater contamination during the implementation of the Investment Program will be relatively low as no large-scale engineering work is involved and the works will not be concentrated in space and time. Spills may occasionally occur during construction, especially considering septic tanks, chemical toilets, fuel and lubricant oil storage sites, oil leaks from machines and vehicles, and mineral oil from transformers.
- 4.9 *Re-suspension of dust and air emissions:* Earthmoving activities and traffic of construction vehicles may cause the re-suspension of dust in construction sites and roadways used on a localized and temporary manner. The traffic of construction vehicles as well the operation of construction machinery and equipment may generate combustion gases and particulate material. However, these impacts will be restricted to the construction phase, will be localized and of low magnitude since the traffic will be relatively low, and the dispersion conditions are usually good, especially in rural areas. Furthermore, if needed, dust emissions can be controlled with simple measures such as aspersion of water in soil exposed areas.

A.2 *Social Impacts and Risks*

- 4.10 *Disturbances on third party property:* Clearing of distribution line rights-of-way or easements as well as the purchase of land for the new substations usually involve amicable negotiations with owners and compensation for loss of arable areas, considering sometimes the value of the specific crop in cases involving valuable crops, such as cacao. Legal expropriation proceedings are used only when unavoidable. Among the new line projects integrated in the Investment Program, only one required a legal procedure for integration of the ROW in the public domain. It should be noted that in this case, following sector regulation (ANEEL Resolution N° 259/03), COELBA promoted a public meeting prior to the approval by the regulatory agency. Involuntary resettlements are not a practice of COELBA and are not expected in the scope of the projects included in the Investment Program, since the study of locational alternatives always prioritizes unused or low-use areas.
- 4.11 *Consideration of indigenous areas and peoples:* The state of Bahia has a few indigenous communities scattered mainly along the coastal zone. COELBA avoids as much as possible to cause any negative interference with indigenous areas and peoples. In effect, the alignments of the distribution lines are designed in accordance with COELBA's Environmental Unit guidelines and orientation in order not to interfere with indigenous areas and communities. Of the projects integrated in the Investment Program only one segment of a new line has the potential to interfere negatively with an indigenous community; however, this project is at a very early stage of planning and no studies have yet been performed, including to ascertain if the interference could materialize and its degree. In addition, the Company is engaged in the Light for All governmental program and must provide electrification to indigenous lands, if requested by indigenous communities, and after approval by FUNAI for these connections. In these cases, the construction work involved in bringing the connection of the distribution network to the indigenous communities, as well as the necessary maintenance activities may bring some slight and temporary disturbance to the communities, because of noise, dust and waste generation.
- 4.12 *Consideration of quilombola communities:* The State of Bahia presents dispersed throughout its territory, particularly at or near the coastal zone, communities of former African slave descendants (known individually as *quilombolas*, and the communities as *quilombos*). According to Brazilian laws and institutional framework, IPHAN coordinates, develops and promotes and/or supervises the contacts and consultations with *quilombolas*. Similarly to the case with indigenous peoples, some of the *quilombola* communities will be connected to COELBA's network to be serviced by electric energy. In these cases the Company proceeds with the project only after approval by IPHAN and following specific control measures.
- 4.13 *Risk of disturbance on archaeological elements:* In general, excavation work for construction of new substations and distribution lines may potentially contact archaeological elements. However, since excavations in the projects integrated in the Investment Program are extremely limited in space, this impact may be considered of low magnitude and significance.
- 4.14 *Risk of disturbance on historic heritage sites:* In the state of Bahia there are several historic sites which are legally protected by IPHAN, such as the historic district of Salvador (*Pelourinho*) and areas in the cities of *Lençóis*, *Porto Seguro*, *Trancoso*, *Santa Cruz de Cabrália* and *Arraial d'Ajuda*, among others. All these sites are within COELBA's concession area and subject to specific restrictions affecting the type of installation that is allowable. In most cases, underground distribution lines have been adopted in these sites.

Furthermore, COELBA established both a technical cooperation agreement and a Term of Agreement with IPHAN to address specific measures to be adopted to avoid and/or minimize the impacts on historic sites. It should also be noted that one of the new substations integrated in the Investment Program will be located near a historic area and special measures have been adopted to dissimulate the substation site and minimize the associated visual impact.

- 4.15 *Induction of new occupation frontiers:* Just a few areas of the State of Bahia may be considered as still under colonization process and the arrival of electricity may act as an inductor for further occupation and industrialization in these cases. Therefore, this is not considered as a significant impact in the case of the implementation of COELBA's Investment Program. Another related aspect that might be considered is that in highly urbanized areas some segments of the ROW are prone to be illegally occupied by residences, domestic cultures or commercial units. However, COELBA periodically inspects their ROW in order to avoid this type of occupation and/or adopts specific measures to minimize risks when illegal occupation occurs.
- 4.16 *Increase in noise and vibration levels:* There might occur an increase in noise and vibration levels at some construction sites; in these cases, the most likely potential receptors would be residents or users of educational and health institutions that might possibly be located in neighboring areas. These effects will be more significant in urban areas but will be of a limited and temporary character. In rural areas, these impacts will not be too significant due to a higher dispersion of occupied areas and lower number of receptors likely to be affected.
- 4.17 *Impacts associated with the increase in traffic of construction vehicles:* The implementation of new substations and distribution lines may generate accrued traffic of vehicles at some of the construction sites. The roads directly affected will be the ones providing access to the construction sites. The traffic in urban roads with a more intense traffic are likely to be more adversely affected, due to the circulation of trucks and other heavy vehicles that may cause traffic slowness and congestion. Despite the relatively low traffic that is expected in any given construction site in association with the construction works related to the Investment Program, pavement in some local roads in residential neighborhoods may wear more rapidly. In rural areas, this impact will be in general less significant. In any of the situations, it will be a temporary impact of low magnitude and with a restricted geographic coverage in view of the characteristics of the works foreseen.
- 4.18 *Risk of disturbance on other infrastructure networks:* Excavations for implementation of new aerial or underground networks may bring risks of damage to water, sewerage, piped gas, and other networks. The implementation of underground distribution lines, a solution adopted in listed areas of historic interest, presents the highest risk of disturbing the existing infrastructure networks. However, during the design stage of COELBA networks, disturbances on underground public utilities are assessed and mapped and a registry of disturbances in each case is organized prior to commencement of the works, thus greatly reducing the risk of accidents. That is the reason why rare are the interruptions in public utilities due to COELBA works. Some of the projects integrated in the Investment Program may possibly include the construction of underground networks although the sites at which it may take place have not been defined yet. In small municipalities, the governments usually do not have a survey of underground public services. However, it is important to note that even in small municipalities, the interruption in public utilities due to COELBA works is rare.

- 4.19 *Disturbances on flows of pedestrians and vehicles, and commercial activities:* In urban areas, the restoration of distribution lines (replacement of poles, conductors, transformers, and other electric components) in public places may cause the interruption (usually partial) of the flow of pedestrian on affected sidewalks as well as restrict the access of vehicles to homes and establishment located on streets affected. Indirectly, the works may bring discomfort to existing commercial activities, by hampering the access of customers and vendors. However, this will be a temporary impact, limited to the period of replacement of line materials and components.
- 4.20 *Risks of accidents involving persons:* The construction of new COELBA's projects and facilities may increase the risks of accidents involving the population in general, such as fall of persons into trenches and holes excavated at construction sites; electric shocks due to accidental contact with conductors and energized equipment (especially due to vehicular collision with poles during the works), or pedestrian accidents involving construction work related vehicles. These are temporary risks and easily prevented by the adoption of safety measures at construction sites.
- A.3 *Health and Safety Impacts and Risks*
- 4.21 *Risk of falls involving workers:* Works at high places will be a common activity for the great part of employees involved in the construction of new COELBA's electric installations. Suppression of vegetation in future rights-of-way or easements, the assembly of transmission structures and installation of aerial cables and other electric components in towers and poles are the activities presenting the higher risks of accidents involving workers. The risk of falling is also associated with the digging trenches and holes at construction sites. However, COELBA has specific procedures to prevent accidents of this nature.
- 4.22 *Risk of electric shock involving workers:* The construction of new substations and lines will comprise new electrical installations, involving works dealing sometimes with energized equipment and networks. The risk of electric shocks is a constant consideration for contractors and their employees. Therefore, workers in this type of work usually follow specific safety procedures and wear proper protection equipment.
- 4.23 *Risk of exposure to health-hazardous environmental conditions (noise, dust, and combustion gases):* The activities associated with the expansion of COELBA's network will comprise minor risks usually associated with civil works, such as exposure to high levels of noise and concentration of dust and pollutants in the air. Nevertheless, in the case of COELBA's works, the risk and duration of exposure to unhealthy environmental conditions are much lower than other types of civil works (roads, buildings, large industrial facilities, etc.).
- 4.24 *Risk of explosions and fire:* The risk of occurring explosions and fires will be relatively very low in the implementation of the projects involved in the Investment Program, as it is not foreseen the use of explosives and there will be no accumulation of inflammable products. It should be pointed out that construction of underground distribution networks may carry in some cases the risk of explosions and fires caused by accumulation of certain gases.
- 4.25 *Accidents with poisonous animals:* During construction activities in rural areas, workers may be exposed to the contact with poisonous animals (e.g., snakes, spiders, scorpions, etc.). COELBA's employees and contractors are usually instructed not to disturb wild fauna. They also receive personal protective equipment (PPE) that reduces this type of risk.

- 4.26 *Accidents during sub-aquatic work:* According to the information currently available one of the network extension projects of the Investment Program will require underwater crossing and installation of sub-aquatic cable. In general, this type of work may have associated risks of accidents with divers. However, it should be noted that COELBA has appropriate experience in the installation of this type of cables and adopts the necessary precautionary procedures and adequate equipment.

B. Operation Phase

B.1 Environmental Impacts and Risks

- 4.27 *Suppression of native vegetation and tree branch trimming:* As mentioned, COELBA makes, as much as possible, use of non-forested areas for the installation of power lines or substations. Nevertheless, some specimens must always be trimmed out during maintenance for safety reasons. The periodic maintenance of distribution line ROW areas may include the removal of native vegetation that has regenerated through time. Replacement of conductors may also implies removal of vegetation from ROW in order to facilitate access to the towers. The competent environmental authority must authorize all native tree branch trimming. COELBA developed and adopts specific written guidelines for vegetation suppression and trimming, and shares these guidelines with their contractors.
- 4.28 *Induced erosion processes:* The periodic removal of vegetation from the ROW, performed for maintenance purposes, may induce localized erosion processes, especially on sloped sites where towers or poles are located. To control this type of impact, COELBA performs periodic inspections along the distribution lines, and erosive processes within the ROW area are identified and corrected as soon as possible.
- 4.29 *Fauna disturbance:* During operation, there is the risk that wild animals may make accidental contacts with aerial conductors or high-voltage equipment at substations. This type of risk is more elevated in rural areas or in areas of environmental interest where there is a stronger presence of forest fragments and other ecosystems inhabited by wild animals. COELBA has special internal procedures to deal with these issues. In some of the areas prone to accidents with birds, COELBA replaced regular cables insulated or shielded cables that precludes short-circuiting when cables are contacted by the birds.
- 4.30 *Solid waste generation:* The solid wastes generated during operation will be mainly related to operation of maintenance shops, substations, and offices, and may involve wastes characterized as domestic and/or office wastes and others categorized as industrial. The Company has specific and organized procedures to deal properly with the wastes that might be generated at their facilities. These procedures include guidelines to keep track of types and quantities of wastes generated, as well as for reduction and recirculation of wastes. The more relevant industrial wastes associated with the operation of the projects integrated in the Investment Program will be: used mineral oil from transformers and other electric equipment, used batteries containing acid, burned lamps containing mercury, lubricating oil and tires from vehicle fleet, and scrap metals (essentially steel, copper and aluminum).
- 4.31 *Soil and groundwater contamination:* Mineral oil spills from transformers may occur during the operation of substations. However, COELBA uses a secondary containment pit under each transformer to control this impact. It is possible that substation's septic tanks may spill, but

this impact has very low magnitude, since COELBA's substations are mostly unmanned and remotely controlled. Maintenance activities in shops offers the highest soil contamination risks since there may be generation of materials and effluents contaminated with diesel, mineral oil or lubricants. Maintenance shops must be paved, impermeable, and provided with proper drainage and effluent and solid waste collection. Oily effluent and oil spills shall be collected in impermeable water/oil separation tanks prior to its discharge. Oil contaminated solid waste and oily sludge shall be collected in metallic barrels and sent to proper destination in authorized processor.

- 4.32 *Impacts associated with natural threats:* In Brazil, in general, the risks of natural disasters are relatively low. Major emergency situations associated with natural events and involving COELBA's electric facilities are related to the effects of heavy rainstorms on distribution network components, such as the fall of trees and branches on power lines, and electric discharges that may also cause short circuits and interruptions in power supply. It should be noted that the implementation of some of the Plans integrated in the Investment Program will contribute considerably to reduce system vulnerability, increase its robustness and resilience and reduce interruptions and lengths of time to restore the loads; thus, improving operating safety and control. Floods and landslides are also other nature-related events that might pose some risks to COELBA's facilities and equipment. However, the Company adopts specific procedures to avoid or control these risks; therefore, the risks of impacts associated with natural threats will be low in terms of floods and landslides and moderate relative to heavy rainstorms and electric discharges.

B.2 *Social Impacts and Risks*

- 4.33 *Risk of illegal settlements within ROW areas:* Illegal settlements within ROW areas of infrastructures are not uncommon in highly urbanized and low-income areas of large Brazilian cities, despite legislation and land use control mechanisms enforced sometimes by municipal governments. COELBA understands that this is a social problem that must be solved in agreement and with support of public authorities. The Company has experience in this type of situation and adopts specific procedures to address it. In most of the projects included in the Investment Program this risk will be low due to the nature of the predominant land use and sparse population encountered.
- 4.34 *Increase in noise levels:* This type of impact might be associated with the operation of substations foreseen in the Investment Program. However, COELBA considers some environmental criteria in the selection of sites for their facilities; thus, lowering the risk that the accrued noise levels might disturb human receptors and sensitive areas. In cases where an adequate site is not available or feasible, the Company may adopt acoustic barriers to attenuate the noise coming from transformers.
- 4.35 *Risk of accidents involving persons (electric shock):* This risk is associated to accidents with the energized network involving third parties. They may be accidental contacts with the network in normal conditions (by negligence or misinformation about the risk), in exceptional conditions (fall of energized cables on the floor caused by vehicle-hit poles or by faulty network maintenance), and during fraud attempts (energy theft). COELBA adopts specific technical specifications and procedures to minimize the consequences of these accidents, and promotes educational activities to inform the public of the hazards involved.

- 4.36 *Risk of damage to equipment and appliances due to interruptions and surges in power supply:* (see Section C – Existing Operations and Facilities).

B.3 Health and Safety Impacts and Risks

- 4.37 *Risk of falls involving workers:* Work performed at high places, such as the maintenance and renovation of transmission and distribution lines and trimming of trees expose employees to the risk of falls. However, COELBA adopts specific technical specifications and procedures to minimize the occurrence and consequences of this type of accident. Furthermore, workers (COELBA's and contractors) are requested to use appropriate personal protective equipment (PPE) to reduce this risk.
- 4.38 *Risk of electric shock:* Similarly, the very same above-referenced services, together with the activities related to the maintenance and automation of substations, will bring risks to employees. In addition, sharing of poles by electricity and telephone systems is very common in Brazil. Thus, there are also electrical risks linked to installation of telephone cables at electric poles. However, COELBA adopts specific technical specifications and procedures to minimize the occurrence and consequences of this type of accident. Furthermore, workers (COELBA's and contractors) are requested to use appropriate personal protective equipment (PPE) to reduce this risk.
- 4.39 *Generation of Electromagnetic Fields:* (see Section C – Existing Operations and Facilities).

C. Existing Operations and Facilities

- 4.40 The Environmental and Social Due Diligence (ESDD) performed involved also the evaluation of potential environmental and social risks and impacts related to possible liabilities associated with COELBA's existing operations and facilities.
- 4.41 Most of the impacts previously described with regards to projects in the Investment Program are also applicable to existing operations and facilities. However, the Investment Program does not include some types of facilities that are currently operated by COELBA, such as warehouses, maintenance shops, and one thermoelectric power plant. Similarly, some impacts such as soil contamination are unlikely to occur in new substations of the Investment Program, but may still constitute a risk in some of the older existing substations. Other impacts, such as solid waste generation and disposal, risk of electric shock, interruptions in electric power supply and generation of electromagnetic fields, are basically related to existing operations and facilities, and are described in the following paragraphs.
- 4.42 *Solid waste generation and disposal:* replacement of damaged or obsolete electric equipment, components, and materials at COELBA facilities generates wastes of several types, which must be disposed of accordingly. Scrap material made of copper, aluminum, steel, iron, glass, porcelain and wood are the most common ones. In addition, some wastes that can be considered hazardous are also generated, such as batteries containing acid, discharged lamps, used oil, etc. According to procedures adopted by the Company, all the industrial wastes are sent to COELBA's Central Warehouse in *Feira de Santana*, where they are sorted, stored and segregated for final destination (repair, recycling, reselling, incineration, or donation). However, it is possible that some discarded wires may be found at work sites. Also, vehicle maintenance activities are totally outsourced and therefore associated wastes (used oil, lubricants, etc.) are not generated internally. Similarly, vehicle tires are returned to the

manufacturer. Furthermore, all new projects involving restoration of equipment in substations specify sealed batteries for standby systems, which do not release gases and have a useful life span of 10 to 15 years; in addition maintenance and replacement are provided by the manufacturer.

- 4.43 *Polychlorinated Biphenyls (PCBs)*: COELBA does not have PCB-containing equipment in operation since 2003, when all PCB-containing equipment was replaced by equipment containing mineral dielectric fluid, and the PCB-containing equipment sent for incineration at appropriate and authorized processor located in *Camaçari* (Bahia). All known equipment containing PCB has already been properly disposed. However, as the concession area is very large and the Company assets involve many and diverse equipment, there is the possibility of the existence of remaining out of service equipment that might contain PCBs. Nevertheless, no potential significant liability is expected in relation to PCB-containing equipment.
- 4.44 *Soil and groundwater contamination*: The following aspects shall be considered concerning potential liabilities associated with soil and groundwater contamination at existing facilities:
- (a) Diesel spills in the thermoelectric power plant and other smaller fuel-combustion generator units: Usually the thermal power plant and other smaller generator units have diesel storage. The diesel tank-parks, and generation parks should be provided with paved contention, to prevent infiltration into the soil. There is also the risk of soil contamination during diesel collection and discharge; since the truck-parking areas are not usually paved, some oil may usually spill from the truck valves and hoses. Similarly, the more relevant facilities should have underground water/oil separator drainage and sumps that recovers oil and infiltrates the effluent water.
 - (b) Occasional oil spills: Occasional oil spills may also occur during operation of substations. Mineral oil may spill from transformers, but the use of secondary containment pits under each transformer control this impact. Older substations, such as *Federação* in Salvador, are not equipped with tanks or dikes for spill containment. Units constructed and/or restored after 1999 have been equipped with spill containment boxes, which greatly reduce the risk of this kind of impact. It is also possible that substation's septic tanks may spill, but this impact has very low magnitude and significance, since most of the substations are unmanned and remotely controlled.
 - (c) Maintenance activities: Maintenance activities and maintenance shops offers elevated soil contamination risks since there may have generation of materials and effluents contaminated with diesel, mineral oil or lubricants. This risk can be controlled, on the field, with the use on portable contention units during maintenance activities. Maintenance shops must be paved, impermeable and provided with proper drainage and effluent and solid waste collection. During site visits, some signs of possible soil contamination were observed in some of the maintenance shop areas.
- 4.45 *Air emissions*: Air emissions may be an issue related to the existing thermoelectric power plant and other small generators. These units have diesel-fueled engines, whose operation results in emission of particulate material, carbon monoxide and dioxide, nitrogen and sulfur oxides, and hydrocarbons. None of the power plant or generator units have air emission control equipments or are subject to monitoring procedures. However, COELBA has not yet received any complaint regarding air emissions generated at their facilities.
- 4.46 *Risk of illegal settlements within ROW areas*: Illegal settlements within ROW areas of infrastructures are not uncommon in large Brazilian cities, despite legislation and land use

control mechanisms enforced sometimes by municipal governments. COELBA understands that this is a social problem that must be solved in agreement and with support of public authorities. In Salvador, illegal housing settlements have been found within segments of COELBA distribution line's ROW, and this occurred mainly prior to commencement of the concession. The Company has experience in this type of situation and adopts specific and systematic procedures to address it. It is a current practice in the Company to perform periodic inspections in the ROW areas to detect and try to prevent new occupations. Any new occupant is warned of the dangerous involved in occupying areas bellow high voltage lines, and asked in an amicably way to vacate the area.

- 4.47 *Damage to equipment and appliances due to interruptions and surges in power supply:* Interruptions and subsequent surges in power supply may be caused by natural phenomena (e.g., electric discharges during storms), deficient operation and/or maintenance procedures, and by accidents involving third parties (vehicular collision with poles, fires, animals, etc.). COELBA has specific procedures to deal with these situations, in view of minimizing occurrences and duration, and attenuating consequences. The regulatory agencies (ANEEL and AGERBA) permanently verify the quality of the energy distribution services provided by COELBA. This is based on regulated quality indicators, such as the "Equivalent Duration of Interruptions per Consumer" (DEC) and the "Equivalent Frequency of Interruptions per Consumer" (FEC), among others. Complaints associated with damages to electronic equipment and appliances resulting from outage or voltage variation and/or surge (such as blown-out home appliances and electro-electronic equipment), are usually forwarded to the Company sector responsible for customer services so that the necessary corrective or compensatory measures can be taken. It should be noted that the implementation of some of the Plans integrated in the Investment Program will contribute considerably to reduce system vulnerability, increase its resilience and reduce interruptions and lengths of time to restore the loads; thus, improving operating safety and control.
- 4.48 *Generation of Electromagnetic Fields:* The generation of electromagnetic fields along the lines and substations is another aspect related to the operation of COELBA's electric system that has been analyzed during the ESDD. However, regarding the potential effects of electromagnetic fields on public health, it should be pointed out that the scientific knowledge gathered to date indicates that the risks associated with distribution lines operating at voltages like the ones operated by COELBA, are not significant. On the other hand, for transmission lines operating at voltages above 500 kV (which is not the case of any of COELBA's lines), the assessment of the risks should be an important consideration. In terms of national and state regulations, there are no specific laws establishing threshold limit values, and the regulatory agencies (ANEEL and the Regulatory Agency of Public Energy, Transportation, Gas and Telecommunications of the State of Bahia - AGERBA) do not verify radiation levels, nor is any measurement or other form of monitoring conducted. It should be stressed however that COELBA, with the collaboration of a reputed research institute, has performed measurements of electromagnetic fields generated at some of their lines and substations, representative of the system. The results indicated values that were equivalent to 10 percent of the limit value, i.e. well below the limit for maximum levels recommended by international institutions specialized in the matter.

D. Positive Impacts / Benefits

- 4.49 Electric energy is fundamental for economic and social development, and human well-being. Distribution companies, such as COELBA, provide energy to residential areas, community

services (e.g., hospitals, schools, sports facilities, community centers), as well as to commercial and industrial establishments. Therefore, the projects included in the Investment Program have the potential to benefit several areas and communities throughout the State of Bahia, by providing electricity to areas that did not have it before, and increasing service quality and reliability throughout the system. These improvements may induce significant beneficial impacts on economic and social conditions of served communities. The major positive impacts associated with the implementation of COELBA's Investment Program are described in more detail below.

- 4.50 *Expanded coverage of electric energy distribution services:* The expansion of electricity supply services in the State of Bahia has been substantial after COELBA's privatization. The projects included in the Investment Program will allow further expansion of electric energy coverage, such as: (i) expansion of the high-voltage distribution capacity in the State's main economic hub located in Salvador Metropolitan Region; (ii) electrification of approximately 350,000 new consumers by 2008 in rural areas throughout the state; (iii) electrification for approximately hundreds of thousands new customers living in urban areas; and (iv) improvement in services for most of COELBA's 3,800,000 current consumer units.
- 4.51 *Gradual deactivation of diesel-fueled generator units:* The expansion of the distribution systems will result in the expansion and connection of some segments of COELBA's network to the National Interconnected System (national grid), which will lead to a gradual elimination of individual diesel-fueled power generation units, with corresponding environmental gains in terms of reduced atmospheric and noise emissions, and reduced risk of accidental oil spills during transportation and storage.
- 4.52 *Direct and indirect creation of jobs:* During the construction stage of new COELBA's projects and facilities it will be necessary to increase the number of temporary employees contracted to perform the works. The Company estimates that for the implementation of the 12 Plans integrated in the Investment Program, the total use of outsourced workforce (contractors) shall increase to an average of 4500 jobs in construction and assembly services (direct and indirect workforce). At the operation stage, new permanent jobs will be created at both COELBA and contractors given the need of staff to meet the additional demand for miscellaneous services resulting from the increased number of facilities, connections and service coverage. More importantly though are jobs that may be created indirectly through the improvement in economic activities and easier and more reliable access to electric energy.
- 4.53 *Expansion of low-income population access to electric energy:* This is one of the most noteworthy positive impacts associated with the expansion in COELBA's distribution networks. It is believed that 52 percent of potential consumers in the Company's concession area are in the low-income bracket. Implementation of the projects integrated in the Light for All Program will allow a significant increase in the number of consumers, especially in rural areas.
- 4.54 *Enhancement of economic activities:* the increased number of consumers, especially in rural areas, and modernization of distribution systems will create conditions for improvements in agricultural, industrial, and commercial activities in the State of Bahia. The economic growth in some regions currently faces obstacles such as restrictions on power supply; therefore, implementation of the projects integrated in the Investment Program will directly benefit the communities and also allow the development of local micro and small companies. In other regions, such as in the West Region of the state, growing agribusiness and processing industry

have posed a growing demand for electric energy, which constitutes a basic input for productive activities.

- 4.55 *Growth of municipal revenue:* The incremented productivity of agricultural, industrial, and commercial establishments, as well as the increase in the number of consumers will indirectly cause an increase in the collection of taxes levied on production and consumption, creating multiplying beneficial effects on local economies.
- 4.56 *Improvement in the quality of life of population:* The provision of clean and reasonably priced lighting will allow the extension of educational activities, and provide conditions for improved medical assistance. Furthermore, the access to electricity allows access to other goods and services that make modern life easier and more comfortable, such as telecommunications, home appliances, electro-electronic equipment, etc.

V ENVIRONMENTAL, SOCIAL, AND HEALTH AND SAFETY MANAGEMENT

A. Environmental and Social Mitigation Measures

- 5.1 Measures described below include both formal and informal procedures adopted by COELBA to mitigate environmental and social impacts. These measures are currently adopted by the Company during planning, construction and operation of its facilities, and will also apply to projects included in the Investment Program.

A.1 Planning and Construction Phases

- 5.2 *Prior analysis of locational alternatives:* The participation of professionals from COELBA's Environmental Unit together with the engineering and construction teams during project planning phases has ensured effective incorporation of environmental and social criteria during the feasibility analysis of alternative network alignments and unit sites at preliminary design stages. The avoidance of disturbances on remaining native vegetation, fragile ecosystems, conservation and indigenous areas, historic zones are taken into consideration in the studies of alternatives. Land surveys incorporate a fair amount of environmental information (patches of vegetation, watercourses, slopes, areas subject to flooding and landslides, etc.). In the case of implementation of distribution networks along rural roads or urban roadways, COELBA tries as much as possible to place the lines on the non-timbered, or lightly timbered side. In the case of substations, as often as possible, plots of land with little or no native arboreal-sized vegetation are prioritized in order to minimize or avoid impacts on the vegetation. During the ESDD it has been verified that the integration of environmental and social criteria and constraints is more effective and at a very early stage in the case of distribution lines, than in evaluating locations for substations. The process of siting COELBA's new substations and other relevant facilities will benefit by having a greater and earlier participation of the Environmental Unit in the analysis of sites for installation of these new projects.
- 5.3 *Preparation of environmental impact studies:* COELBA's EMS has specific written procedures to address identification, evaluation and management of environmental aspects and impacts. In projects that may involve sensitive areas, the Company has a proactive attitude and carries preliminary discussions with environmental, indigenous, cultural heritage authorities, as applicable, to define the criteria and specifications to be adopted in developing

the necessary studies. Furthermore, whenever necessary the Company hires consultants and specialists to perform specific studies in relation to environmental and social issues (e.g., anthropologist to properly address indigenous communities concerns, archeologists, biologists, etc.), or establishes agreements with state universities and research institutes to carry out specialized studies, perform environmental and social monitoring activities, or help develop and implement environmental education actions internally or externally within the community. In addition, the Company will continue to contract the preparation of environmental reports whenever the projects imply a significant suppression of native vegetation either within or outside conservation and indigenous areas. None of the projects integrated in COELBA's Investment Program is expected to require the presentation of an environmental Impact Study (EIS). Nevertheless, IDB will introduce language in the loan documents requiring the Company to inform the Bank if the need arises to perform an EIS for any of the Investment Program projects and to take the necessary steps to comply with Bank's Policy in this matter.

- 5.4 *Environmental instructions for contractors:* COELBA's internal documents provide a detailed series of environmental and social related instructions, procedures and standards to be followed by professionals of contracted companies in the performance of the design, construction, and maintenance of distribution networks and other facilities. The Company's EMS has a series of written procedures that are also applicable to their contractors, and other procedures to assess, monitor and follow-up contractor compliance status (e.g., through periodic audits). A typical COELBA contract has several clauses establishing requirements that the contractor has to take into account to properly address environmental and social impacts and risks, including in terms of proper ethic behavior, social responsibility and child labor issues. The Company provides training programs, including in the field, and educational sessions to contractors on environmental and social matters and on COELBA's EMS. The Company has as well, health and safety procedures that apply specifically to their contractors. Most of COELBA's environmental, social, health and safety procedures, instructions and standards applicable to contractors can be considered adequate, but some of them could be improved and a few new ones could be added to help make the EMS a more robust system in dealing with contractors.
- 5.5 *Special technical solutions used in distribution line projects to minimize impacts on conservation areas and reduce habitat fragmentation:* When it is unavoidable to cross conservation areas (e.g., protected areas, wetlands, native vegetation, and remaining Atlantic Rainforest), COELBA adopts the written procedures that integrate their EMS, particularly those specific for management of environmental impacts associated with vegetation clearing and trimming, and applies various techniques to avoid or attenuate disturbance to relevant species, such as: (i) reduction of the ROW strip that needs to be cleared (reduced to 6m wide, down from the usual 15 or 30m); (ii) use of selective vegetation clearing to allow maintenance of species of interest and those of lower stature; (iii) use of higher poles, which will require suppression and trimming only of the highest individuals and/or branches; (iv) use of insulated or shielded cables and more compact line systems that allow less frequent and less intense vegetation suppression and trimming, besides contributing to reduce risk of accidents with wild animals; and (v) use as much as possible existing ROW, corridors, roads and rural pathways to install the distribution lines to avoid construction of new accesses (temporary or permanent) and new ROWs.
- 5.6 *Fauna protection:* Besides the measures described in 5.5, most of which contributes also to minimize negative impacts on wild fauna, and the specific procedures COELBA has in their

EMS to manage impacts on fauna, the Company has invested in the prevention of accidents with animals at its distribution networks and substations. In the case of networks, a special control program on areas of sea turtles nesting has been implemented since 1992 under a Technical Cooperation Agreement with the PRÓ-TAMAR/IBAMA Foundation. In the substations, the Company has installed screens and protective sheets around equipment such as reactors and capacitors in order to protect wild animals and birds and avoid problems in energy supply.

5.7 *Control of impacts and risks on indigenous areas and peoples:* Besides the special technical measures adopted by COELBA to avoid crossing or developing projects at close distance from indigenous areas, the following precautionary measures will be considered:

- (a) When the Company must provide electrification to indigenous lands, in order to properly deal with the associated impacts, COELBA always seeks from FUNAI specific orientation for each case. It is a policy of the Company and of FUNAI that rural electrification at indigenous areas must only be provided under indigenous population request, and after approval by FUNAI.
- (b) According to Brazilian laws and institutional framework regarding indigenous peoples rights, FUNAI coordinates, develops and promotes and/or supervises all contacts and consultation with indigenous communities, and usually adopts specific procedures to negotiate and consult with indigenous communities, including the involvement of FUNAI staff familiar with the specific indigenous community.
- (c) COELBA, in consultation with FUNAI and the Federal Prosecution Service, is preparing a specific program to improve and facilitate the relationship with their clients in indigenous communities. This program is titled Community Indigenous Worker Project (*Projeto Agente Comunitário Indígena*).
- (d) The implementation of most of the projects included in COELBA's Investment Program will not significantly and negatively affect indigenous areas. Nevertheless, IDB will introduce language in the loan documents requesting the Company to comply with the applicable requirements in Bank's indigenous policy, if any of the projects integrated in the Investment Program may potentially involve significant negative impacts on indigenous communities.

5.8 *Control of impacts and risks on quilombola communities:* Similarly, to the case with indigenous areas and peoples, COELBA try to avoid installation of high and moderate-voltage distribution lines and other facilities in or near *quilombos*. However, sometimes the Company is requested to provide their services to these communities. In these cases, COELBA always seeks from IPHAN the necessary permit and specific additional measures to be adopted in each case. It should be noted also that the Company promotes, with the help of specialized NGOs, specific social and educational programs to improve the quality of life of *quilombolas* in some of the communities.

5.9 *Procedures in case of need of resettlement:* The implementation of the projects integrated in COELBA's Investment Program is not likely to require resettlement of people. Nevertheless, IDB will require the Company to incorporate procedures in their Environmental Management System to address this possible situation and will introduce requirements in the loan

documents to instruct COELBA to comply with IDB Policy OP-710 on Involuntary Resettlement, if applicable.

- 5.10 *Procedures for expropriation and third-party compensation:* COELBA has internal guidelines for estimation of real estate property value in case of establishing the ROW, and compensation for loss of arable area, considering sometimes the values of the specific crop in cases involving valuable crops, such as cacao. The Company favors amicable negotiations with owners of areas affected by concessionaire works, and resorts to legal expropriation proceedings only when unavoidable. In these cases COELBA adopts all necessary measures to comply with the requirements of the applicable laws, including the sector regulation specific for this matter (ANEEL Resolution N° 259/03).
- 5.11 *Control of impacts on historic and archeological heritage resources:* COELBA has in its system specific instructions for contractors regarding historic and archeological elements. If, during excavation works, traces of remains of human, animal, or utensils indicating possible sites of a historic or archaeological value are found, the contractor in charge shall interrupt the works and report immediately to the concessionaire so that proper measures be taken. Furthermore, a COELBA standard, specific for underground distribution network, mentions the need of prior consultation to heritage protection authorities, should the network projects have potential to cause any disturbance on listed historic areas. With regard to the historic heritage specifically, COELBA, under a partnership with IPHAN, compiled a complete registry of listed properties and sites in the State of Bahia, including the Historic District of Salvador (*Pelourinho*) and the historic sites in the cities of *Lençóis*, *Porto Seguro*, *Santa Cruz de Cabrália*, *Arraial d'Ajuda*, and *Trancoso*, among others. All these sites are within COELBA's concession area and subject to specific restrictions affecting the type of installation that is allowable (e.g., the metering device cannot be installed on the façade of the buildings). At all the listed areas, the Company installed underground lines (direct burial conduits) in order to avoid undesirable visual impacts. In addition, COELBA established both a technical cooperation agreement and a Term of Agreement with IPHAN to address specific measures to be adopted to avoid and/or minimize the impacts on historic sites. It should also be noted that for the case of the new substation integrated in the Investment Program that will be located near a historic area, special measures have been adopted to dissimulate the substation site and minimize the associated visual impact.
- 5.12 *Protection from risk of electric shock:* COELBA adopts and requires their contractors to adopt all technical standards related to safety in electric installations applicable at design and construction stages. Furthermore, the Company uses electromechanical and digital protection systems that identify failures and disconnect defective circuits immediately.

A.2 *Operation Phase*

- 5.13 *Solid waste management:* The Company has specific and organized procedures to deal properly with the wastes that might be generated at their facilities. These procedures include guidelines to keep track of types and quantities of wastes generated, as well as for reduction and recirculation of wastes. However, COELBA's procedures, guidelines and standards for managing solid wastes could be improved by further detailing some of the instructions and by introducing harmonization in their structure. Similarly, the EMS would benefit by addition of some supplemental procedures, guidelines and standards relating to this matter. Contractors are responsible for the discharge, storage, and handling of the materials supplied by the Company for execution of the services contracted, as well as for packaging and return of non-

used materials. All the wastes are sent to COELBA's Central Warehouse in *Feira de Santana*, where they are sorted, stored, and separated for final disposal (repair, recycling, resale, incineration, or donation). Some issues regarding waste management are highlighted below:

- (a) COELBA does not have PCB-containing equipment in operation since 2003, when all PCB-containing equipment was replaced by equipment containing mineral dielectric fluid, and the PCB-containing equipment sent for incineration at appropriate and authorized processor located in *Camaçari* (Bahia). All known equipment containing PCB has already been properly disposed. However, as the concession area is very large and the Company assets involve many and diverse equipment, there is the possibility of the existence of remaining out of service equipment that might contain PCBs. Albeit no potential significant environmental liability is expected in relation to PCB-containing equipment, the Company should confirm if there are still in their assets and/or warehouses any remaining PCB-containing equipment and, in case there are, take the necessary steps for their proper disposal.
- (b) The mineral oil used in transformers is sent to the Warehouse and then to a specialized and certified recycling company, where it is recycled and reaches a rate of reutilization of 95 percent. The transformers are also sent to specialized and certified company for restoration.
- (c) The scrap metals are either sold directly to potential users or to specialized recycling companies.
- (d) The spent batteries are sent to the Warehouse where they are collected by licensed companies and returned to the manufacturers. The new standby systems in all new projects involving renovation of equipment in the substations specify sealed batteries, which do not release gases and have a useful life span of 10 to 15 years; in addition, maintenance and replacement are provided by the battery manufacturer.
- (e) A specialized and certified company collects all mercury-containing lamps discharged at COELBA's facilities, and then they are processed for recycling some of their components.
- (f) It should be noted that COELBA is presently improving their facilities in the Central Warehouse and implementing a specific controlled shed for temporary storage of wastes considered hazardous, until they are sent to their final destination.
- (g) With regard to wastes generated during maintenance of the Company's vehicular fleet, outsourced workshops perform the change of oil and parts and are responsible for their disposal; tires are returned to the manufacturers.
- (h) Cleaner Production (*Produção Mais Limpa*) Initiative: carried out upon an agreement between COELBA and a specialized company, this initiative is being implemented in the realm of the investments of the Company in Research and Development. Main results obtained were a diagnosis of solid wastes generated by the Company activities and the implementation of waste management software. It is foreseen that COELBA must reduce the impact of its waste-generating activities by 2.6% a year so that they will be sustainable within a 50-year period.

- (i) Also worthy mentioning is the Selective Waste Collection program implemented successfully at COELBA's headquarter in Salvador in conjunction with a specialized NGO.
- 5.14 *Spill containment devices in substations:* All new substations will include spill containment dikes as necessary in order to prevent soil contamination by oil spills from transformers and/or storage areas. These devices will be designed as per the Brazilian technical standard for storage of dangerous liquid products (NBR 12.235). Furthermore, special drainage is designed to convey spills to oil/water separation sumps. Some substations that are being restored are being equipped with these devices. COELBA should formalize these requirements in a written internal standard.
- 5.15 *Liabilities related to soil and groundwater contamination at project sites and existing facilities:* In the selection of possible sites for installation of new substations the Company takes into consideration environmental criteria and constraints, including those related with previous use of the terrains. Furthermore, new and/or restored substations are provided with the necessary devices to avoid soil and groundwater contamination. However, it is uncertain if properly working devices are present at older facilities, as well as at workshops. Therefore, there is the possibility of existence of potential environmental liabilities in relation to possible contamination of soil and groundwater by spills of oil at those older facilities. COELBA has procedures to deal with aspects related to handling and storage of oil, and contingencies, and a survey has been done in the past to ascertain risk situations associated with Company activities. However, the development and implementation of a specific program to properly evaluate and address potential environmental liabilities in association with possible soil and groundwater contamination at existing facilities would greatly contribute to assess and manage the environmental and financial risks associated, and also improve the environmental record and sustainability of the Company. It should be noted that COELBA issues an yearly Social and Environmental Balance Report and includes in their financial statements information on environmental programs and environmental-related expenditures.
- 5.16 *Air emissions:* Air emissions are usually a major issue related to the thermoelectric power plant and smaller diesel-fueled generator units; however, none of the power units have air emission control equipment or are subject to monitoring procedures. It is important to note that COELBA intends to gradually deactivate their small diesel-fueled generator units, with corresponding environmental gains in terms of reduced atmospheric emissions and noise, and reduced risk of accidental spills during transportation and storage.
- 5.17 *Mitigation of Operational Noise at Substations:* COELBA tries to minimize the significance of this impact by selecting substation sites that are distant from schools hospitals and other critical receptors. In addition, to attenuate noise generated at substations, COELBA has, in some urban settings, adopted noise abatement panels and/or completed enclosed facilities (e.g. at the *Amaralina* substation in Salvador). None of the new substations integrated in the Investment Program is expected to require special attenuation measures; however, if needed they will be duly considered by the Company.
- 5.18 *Management of encroachment in the right-of-way (ROW):* COELBA's operation and maintenance personnel continuously inspect the distribution lines and evaluate any irregular occupation of rights-of-way. This includes verification of new constructions and/or expansion of existing ones. The Company has specific procedures and standard for inspection of the distribution lines' right-of-way and to address the issue of illegal occupation. COELBA has

developed and keep updated a registry of illegal occupation in their ROWS. It should also be stressed that COELBA understands that this is a social problem that must be solved in agreement and with support of public authorities. Presently the lines of action adopted by the Company to address this issue could be divided into four main components, as follows:

- (a) *Measures to reduce the risks of occurring illegal occupation* – In planning new line alignments COELBA try as much as possible to use existing public roads and other established corridors and this contributes to reduce the ROW areas vulnerable to illegal occupation. Also, in areas that may be potentially affected by illegal occupation, the Company may adopt tower structures that develops itself more in the vertical direction, to reduce the area assigned to the ROW strip.
- (b) *Actions geared toward the communities to correct and/or preclude illegal occupation* - Corrective action includes discussion with the occupants and negotiations with local municipalities that need to be involved in order to define alternative sites for the affected people. COELBA has tried in the past to solve the most urgent cases that offer a higher risk for the population in terms of accidents with the electric network. Measures such as the negotiated removal of dwellings and creation of squares and community vegetable gardens within easements were adopted in the past, as in the case of *Pernambués* high-voltage distribution line (visited during the ESDD) in a highly urbanized and low-income area of Salvador. As a preventive measure against illegal settlements, free lease agreements were established with elements of the communities to regulate the concession of easement to be used for community vegetable gardens. However, many vegetable gardens were discontinued and only a few succeeded. In other cases, the Company negotiated the creation of recreation areas in the ROW, such as for practice of soccer, and this alternative has presented some degree of success, as it is the community itself that helps avoid new occupation in these recreation areas.
- (c) *Actions in conjunction with municipal and other competent authorities* – COELBA does not have authority to physically remove illegal occupants off their rights-of-way; the competency to do that is granted to the municipal and police authorities. Therefore, the Company usually carries out all the necessary legal procedures it has to do in these cases, including to get the necessary judicial orders, and then has to rely on those authorities to remove illegal occupants. However, the competent authorities seldom implement the removal.
- (d) *Measures to strengthen the lines and decrease risks of accidents* – In those cases where removal of the illegal occupation has not been performed and a solution of this type will very likely not be performed on a short or medium-term basis, the Company adopts measures to increase the robustness and integrity of the distribution lines and related structures, so as to reduce the risks of accidents involving fall of cables and/or other objects from the line onto illegal occupants in the ROW. The Company has specific procedures and appropriate equipment and instruments to perform periodic inspections of the integrity of cables, poles, towers, and other structures.

In general, the procedures and standards adopted by COELBA to address the issue of illegal occupation of ROW areas seem adequate, but still insufficient. As this is a continuous on going process, and as the network is gradually expanding, the procedures, standards, and guidelines should be strengthened and organized in a specific program.

5.19 *Measures to prevent impacts associated with natural threats:* COELBA adopts specific procedures to prevent impacts associated with natural threats, as follows:

- (a) To reduce the risk of deleterious effects of heavy rainstorms on distribution network components, such as the fall of trees and branches on power lines, the Company develops a series of maintenance activities, including periodic inspections of the distribution lines to identify potential situations of risk in terms of branches and/or trees that might pose a threat of falling on lines and other network components. Any potential problematic situation is registered and steps are taken to trim or remove the branch and/or the tree. It should be noted that the implementation of some of the Plans integrated in the Investment Program will contribute considerably to reduce system vulnerability, increase its robustness and resilience and reduce interruptions and lengths of time to restore the loads; thus, improving operating safety and control.
- (b) In the studies of alternative sites for substations and high and moderate-voltage lines the land surveys incorporate a fair amount of environmental information (watercourses, slopes, areas subject to flooding and landslides, etc.) and the Company try to avoid locating substations and towers in flood prone areas or others that are known to have a high potential to be subject to landslide problems. When it is unavoidable to install a tower close to a water body, geotechnical and hydrological studies are performed and the foundations are projected and constructed taking into account the type of terrain and maximum flood level. Furthermore, in these cases, after installation, the Company performs periodic inspections to detect any changes that may represent an accrued risk to the tower foundation. These measures have been demonstrated to be effective, as none of the COELBA's substations have ever been disconnected because of a flood or landslide problem. In some urban areas, some segments of the distribution network have to serve consumers that are located in areas subject to landslide problems. In these situations, the Company executes periodic inspections to detect any change in conditions that may represent a greater threat to the network.

B. Environmental and Social Monitoring Programs

5.20 COELBA has specific procedures in their EMS to address monitoring matters and some of them are extended to contractors or are used to monitor their activities as well. Some of these procedures are listed below:

- (a) Monitoring of operational parameters associated with relevant environmental aspects, to ensure compliance with EMS requirements; this procedure incorporates several environmental performance indicators.
- (b) Management of atmospheric emissions, which includes instructions for monitoring air emission parameter.
- (c) Follow-up and report the development of licensing processes, and to follow-up and monitor the implementation of associated compensatory and/or other environmental control measures.
- (d) Management of environmental impacts associated with vegetation clearing and trimming, which includes instructions for monitoring of contractor performance.

- (e) Inspection of distribution lines to monitor and/or evaluate integrity of cables, towers and other network components, particularly when these are located in areas prone to floods and landslides, or vulnerable to illegal occupation of the ROW.
 - (f) Inspection of distribution lines to monitor changes in illegal occupation patterns (e.g., verification of new constructions, expansion of existing ones); operation and maintenance personnel continuously inspect the distribution lines at more urbanized areas to detect irregular occupation of ROW areas.
 - (g) Management of solid wastes and chemical products, which integrates instructions for monitoring type and quantity of wastes generated and/or chemicals used.
- 5.21 It should also be noted that COELBA, with the collaboration of a reputed research institute, has performed measurements of electromagnetic fields generated at some of their lines and substations, representative of the system.
- 5.22 However, it has been verified during the ESDD that there are relevant aspects related to the Company's activities that may be of importance in terms of environmental and social impacts and risks, and which are not presently receiving sufficient consideration in terms of monitoring. This is the case for the following aspects: (i) potential for soil and groundwater contamination at old substations, thermal generator unit sites, warehouses and workshops; (ii) operational noise at old substations and adjacent areas; (iii) air emissions at thermal generator units, which are not systematically monitored using other relevant parameters.
- 5.23 Relative to contractors, whereas the technical standards may include some environmental control measures, particularly relating to vegetation clearing and trimming, there is no systematic and more encompassing monitoring of environmental impacts during construction.
- 5.24 Overall the Company's activities, particularly at regional units throughout the state, are not systematically monitored concerning their environmental performance. Although the EMS is taking some steps in this direction, it will benefit by strengthening some of the procedures (in terms of detail, structure and organization) and by being complemented with additional procedures and standards that presently are lacking.

C. Health and Safety Measures

- 5.25 Planning and design of COELBA's facilities are performed taking into account all applicable sector requirements foreseen in national and state regulations, particularly those addressing safe distances from electric systems.
- 5.26 Regarding other occupational health and safety aspects COELBA has also some specific procedures and standards, as well as a Health and Safety Unit to control Company's and contractors operations. All contractors and new employees are trained on health and safety aspects prior to the beginning of their activities.
- 5.27 COELBA adopts also specific technical specifications and procedures applicable to electric energy sector to minimize the occurrence and consequences of accidents, and also systems to detect failures and proceed to immediate shut down of defective or damaged circuit. Furthermore, workers (COELBA's and contractors) are requested to use appropriate personal protective equipment (PPE) to reduce accident risk as well as their consequences.

- 5.28 The Occupational Health and Safety Policies and Guidelines is a handbook prepared by COELBA Health and Safety Unit detailing the Company's actions related to the issue, organized within the Occupational Health and Safety Management System. Further to establishing basic principles, rights and duties, and the relation with employees, unions, companies contract and the community, the internal standards define the general conditions for prevention of occupational accidents and diseases.
- 5.29 The Health and Safety Plan for Contractors was created by COELBA in 2003. Through audits and inspections the Company verifies contractor's compliance with the Plan. Some of the requirements are also being gradually incorporated into COELBA's contractual requirements for contractors. The plan demands that each company create a Specialized Service on Occupational Health and Safety and prepare a Health and Safety Program based on orientations of COELBA and ELETROBRÁS orientation manuals, contemplating at least the following aspects:
- creation of services and trained personnel on occupational health and safety;
 - annual safety planning, including prevention campaigns of accidents with electricity, use and safekeeping of personal and collective protection equipment, fire fighting, defensive driving, and first aid;
 - mapping of risks in the workplace;
 - safety inspections;
 - training and professional updating courses;
 - occupational accident reports, including for diagnostics and statistical information;
 - guaranteed qualification of professionals, pursuant to Brazilian Standard NR 10;
 - specific planning of activities to be performed, including for identification of associated risks and applicable control measures.
- 5.30 The Health and Safety Plan for Contractors also provides the basic safety requirements related to the wearing the appropriate protective equipment according to the task to be performed; use of vehicles and equipment, equipment and workplace signaling; communication of services to agencies controlling the electric system operation; services in electric equipment and substation; disturbances on distribution lines, energized facilities, energy meters, and confined areas; excavation and construction activities; noise in the workplace, and first aid and fire fighting procedures.
- 5.31 In case of accidents, provisions set forth in the internal standards must be observed, with emphasis on Instruction RHH01.01 (Analysis of Accidents with Employees, with Contractor, and with Third Parties), which requires immediate reporting of the event to the nearest COELBA Safety Supervisor as well as the registration of an Occupational Accident Communication with the competent authority in case of physical injury.

D. Contingency Plan

- 5.32 In Brazil, in general, the risks of natural disasters are relatively low. Major emergency situations associated with natural events and involving COELBA's electric facilities are related to the effects of heavy rainstorms on distribution network components, such as the fall of trees and branches on power lines, and electric discharges that may also cause short circuits and interruptions in power supply. Floods and landslides are also other nature-related events

that might pose some risks to COELBA's facilities and equipment. Vehicular collisions with poles and property fires that ultimately involve the distribution networks are the most important potential non-natural events. The measures adopted by the Company to reduce the impacts associated with natural threats have been discussed in 5.19.

- 5.33 Any person may report to COELBA an accident involving the system by calling the Company's toll free 24/7 Call Center. The Company responds to any emergency occurring on its electric system by the System Operation Department. COELBA electric system is constantly supervised by the Operation and Distribution Centers. In Salvador, there are 40 technicians and 56 technician teams available for 24/7 service; each radio-equipped team is formed of two persons per vehicle and works on shift. Additionally, there are seven supporting teams (heavy-work teams) for situations demanding a stronger support. If there is any victim, the System Operation Department will immediately contact the Health and Safety Department, which will dispatch a technician to the site for investigation.
- 5.34 COELBA has an Emergency Plan to respond to emergency situations caused by rainstorms, applicable to the municipalities of *Salvador, Lauro de Freitas, Simões Filho, Camaçari, Candeias, and Guarajuba*. The different degrees of emergency, the plans for activation of corrective actions, and the Company sectors involved in remediation are characterized. The Supervisor of the Distribution Operation Center in Salvador performs activation and coordination of the operation teams.
- 5.35 All COELBA facilities feature well positioned and distributed fire extinguishers and a proper signaling to identify those pieces of equipment offering risks of electric shock and fire. Central maintenance offices control the validity of the fire extinguishers as well as the recharge dates.
- 5.36 COELBA's EMS has a specific procedure for preparation and response to emergencies. However, the Company does not have formal contingency plans considering eventual environmental emergencies, such as major diesel spills in thermoelectric generator units, substations, warehouses and workshops, and other relevant contingencies.

E. Environmental and Social, and Health and Safety Management Systems

- 5.37 In terms of environmental, social, health and safety management tools, the Company has: (i) an Environmental Policy and a Health and Safety Policy; (ii) an Environmental Unit and a Health and Safety Division in its organizational structure, both staffed with full-time specialists to coordinate all respective activities in relation to the Company as well as to the respective competent authorities; and (iii) several specific procedures, standards and guidelines to address environmental and social issues, or health and safety aspects

E.1 Environmental and Social Management System

- 5.38 COELBA has an Environmental Unit integrated in the Planning Department. This Unit is composed of seven specialists (three seniors), and is responsible for the coordination of all environmental activities and issues related with the Company's activities, as well as contacts with authorities, contractors, non-governmental organizations (NGOs), and other institutions relating to environmental and social aspects.

- 5.39 The Environmental Unit effectively participates in the integration of environmental and social criteria and concerns into project design, particularly at the early stages of analysis of alternative alignments for high and medium-voltage distribution lines, and has successfully contributed to obtain more environmentally favorable solutions. During the ESDD it has been verified that the integration of environmental and social criteria and constraints is more effective and at a very early stage in the case of distribution lines, than in evaluating locations for substations. The process of siting COELBA's new substations and other relevant facilities will benefit by having a greater and earlier participation of the Environmental Unit in the analysis of sites for installation of these new projects.
- 5.40 COELBA's Environmental Unit has a proactive attitude and carries preliminary discussions with environmental, indigenous, archeological and historic heritage authorities, as applicable, to define the criteria and specifications to be adopted in developing the necessary studies relating to licensing processes. Furthermore, the Unit promotes and coordinates the process of selecting and accompanying environmental consultants, and specific agreements with state universities and research institutes to carry out specialized studies, perform environmental and social monitoring activities, or help develop and implement environmental education actions internally or externally within the community.
- 5.41 Recently the Company started the implementation of their Environmental Management System, developed based on the ISO 14001. Information and training sessions have been performed at headquarter and regional units throughout the state, involving Company staff as well as contractor employees. The EMS is composed of a general Environmental Management Manual and the following procedures:
- Environmental Goals and Objectives;
 - Identification and Evaluation of Environmental Aspects and Impacts;
 - Identification of Legal and Other Environmental Requirements;
 - Evaluation of Compliance with Legal and Other Environmental Requirements;
 - Management of Impacts on Flora and Fauna Associated with Clearing of ROW;
 - Management of Impacts on Flora and Fauna Associated with Vegetation Trimming;
 - Management of Atmospheric Emissions;
 - Management of Noise Emissions;
 - Management of Solid Wastes;
 - Management of Chemical Products;
 - Management of Suppliers;
 - Management of the Workplace;
 - Preparation and Response to Emergencies;
 - Non-Compliances and Preventive and Corrective Actions;
 - Monitoring and Measuring;
 - Environmental Communication with Stakeholders;
 - Ecological Training and Education;
 - Documentation and Control of Documents of the EMS;
 - Record Keeping
 - Internal Audits.
- 5.42 COELBA's system has also two internal standards dealing specifically with Trimming of Vegetation and Line Inspection.

- 5.43 Based on the results of the ESDD, it is clear that COELBA produced substantial advancements in terms of conceiving and implementing a workable EMS; however, the system can be further enhanced to incorporate procedures that are lacking to properly address some of the challenges that the Company faces in the day to day operations, as well as in more strategic terms, and also to encompass the whole Company's activities. Management of the environmental and social aspects related to the activities at the Regional Units and of contractors, including monitoring measures and actions, clearly needs to be improved by specific procedures, standards and guidelines. Furthermore, the overall system would benefit from some improvements in detailing and harmonization of structure of procedures and organization of its elements.
- 5.44 Furthermore, the Environmental Unit is composed of well-qualified staff that produces good quality work, in a very diligent way. However, the Unit seems to be understaffed for the multiple tasks and responsibilities involved, as well as for systematic monitoring and supervision of environmental and social aspects pertaining to regional units and contractor's activities.

E.2 Health and Safety Management System

- 5.45 COELBA has an Occupational Health and Safety System that is coordinated by the Health and Safety Division of the Human Resources Department of the concessionaire. The system is formed of several inter-connected elements set forth in the regulatory procedures of the Ministry of Labor; in the Company's "Occupational Safety and Health Management Standard" and in the "Health and Safety Plan for Contractors".
- 5.46 COELBA has several procedures and standards to specifically address health and safety issues relating to Company's as well as contractors activities, as indicated in 5.28 to 5.31.
- 5.47 COELBA has enforced a number of health and safety programs such as lectures and training for its own staff and contractor employees; educational lectures for community members; so-called "Friendly Energy Project"; occupational safety workshops; COELBA Emergency Brigade; vaccination campaigns, and several others.
- 5.48 Similarly to the EMS, based on the results of the ESDD, it is clear that COELBA produced substantial advancements in terms of conceiving and implementing their Health and Safety System. However, the system can be further enhanced to incorporate a few procedures that are lacking. In addition, the overall system would benefit from some improvements in detailing and harmonization of structure of procedures and organization of its elements.
- 5.49 The Health and Safety Unit is also composed of well-qualified staff that produces good quality work, in a very diligent way. However, the Unit seems to be understaffed for the multiple tasks and responsibilities involved, as well as for systematic monitoring and supervision of health and safety aspects pertaining to regional units and contractor's activities.

E.3 Environmental and Social Responsibility

- 5.50 COELBA has a proactive attitude toward the consideration environmental and social aspects in relation to their relationship with the communities, NGOs, authorities, and other institutions. It establishes specific agreements with NGOs, universities and other research

institutions to develop specific studies, and promote special educational and other social programs within the communities. Some of the environmental programs developed and implemented by the Company are listed in Section 6.3.1 of the Environmental Analysis Report and they include programs to promote cleaner energy use and production, restoration of the *Mucuri* mangrove, restoration and enhancement of the riparian forest of the Santo Onofre River, native *cerrado* and *caatinga* survey and management, urban tree planning guide for Salvador, and environmental education programs.

- 5.51 COELBA has a very well structured Social Responsibility Program. This program benefits both internal (employees) and external (community) stakeholders. Several third sector projects could be mentioned, including: Friendly Energy (partnership with AGERBA and the Department of Education); Health and Energy; Young Citizen Program; distance learning and *tele-supletivo* (secondary school equivalency) courses; technical network electrician training course (partnership with industrial training institute); employees-oriented Scholarship Program; College Entrance Examination Center Project, and a number of other incentives or sponsorships in the areas of education, environment, and culture. It is also a policy of the Company, to support local activities related to culture, education and sports.
- 5.52 COELBA publications include in-company periodicals such as the “Environmental Bulletin” (*Boletim Ambiental*), and yearly publications such as the “Social and Environmental Balance” (*Balanço Social e Ambiental*), which discloses the corporate actions and the important events in the areas of environment and social responsibility. Pursuant to the principle of transparency, all the publications are available at COELBA site at Internet.
- 5.53 COELBA also supports other social actions and programs that are described in more detail in Section 6.3.4 of the Environmental Analysis Report. Some of these programs are: the Energy to Growth (*Energia para Crescer*) Program, and the Links (*Elos*) Program, that has a component specifically geared toward women, and which envisages to stimulate economic activities in low-income communities, improving economic conditions and enhancing economic independence and autonomy.

VI PUBLIC CONSULTATION

- 6.1 Federal and State of Bahia environmental laws and regulations include requirements that public consultations and, in some cases hearings, be performed in the realm of the environmental licensing process. Also, sector regulation (ANEEL Resolution N° 259/03) establishes the need to perform a public meeting in processes involving the establishment of ROW through request for integration in the public domain.
- 6.2 Among the new line projects integrated in the Investment Program, only one required COELBA to promote a public meeting prior to the approval by the regulatory agency in relation to the legal procedure for integration of the ROW in the public domain, following the sector regulation. IDB has requested COELBA to perform an Environmental Analysis (EA) of the Investment Program, as well as of existing facilities and operations to assess associated environmental, social, health and safety impacts, risks and liabilities, and evaluate the actions and measures that are foreseen and/or being adopted to prevent or control relevant impacts, risks, and liabilities. The ensuing Environmental Analysis Report (EAR), or *Relatório de Análise Ambiental*, has been publicly disclosed according to Bank’s OP-102 Disclosure of Information Policy, in six of COELBA’s Regional Unit sites in the State of Bahia,

representative of the Concession Area, at IDB's Public Information Center in Washington, DC, and Country Representative Office, and at the Bank's web site.

- 6.3 COELBA has already performed in the past public informative meetings, independently of legal requirements, for particular communities and/or consumers in association with specific projects.
- 6.4 In cases involving indigenous areas and peoples, FUNAI coordinates, develops and promotes and/or supervises all contacts and consultations with indigenous communities, and usually adopts specific procedures to negotiate and consult with indigenous communities, including the involvement of FUNAI staff familiar with the specific indigenous community.
- 6.5 In case of works that will cause disturbances on low-income or shantytown areas or areas inhabited by traditional populations, COELBA usually makes preliminary contacts with local leaderships in order to inform the communities about the importance and characterization of the works, and identify possible conflicts and claims. Nevertheless, this does not constitute any formal procedure within any social impact management program.
- 6.6 It should also be noted that COELBA's EMS has a specific procedure for Environmental Communication with Stakeholders.
- 6.7 The Company has also a Social Communication Program, aiming to inform population and COELBA consumers about relevant aspects involving the electricity service. This includes the use of the electricity bill as an information vehicle, as well as some informative booklets dealing with the most popular issued or doubts, such as prevention on electricity risks, fire in transmission lines, burn outs close to the lines.
- 6.8 It should also be pointed out that in line with the good practice standards in terms of promoting public participation and disclosure of information, IDB and their Environmental and Social Consultant performed during the ESDD contacts and meetings with several local, state and federal authorities, as well as with other interested non-governmental institutions.

VII CONCLUSIONS

- 7.1 The main conclusions reached from the ESDD performed by IDB with the support of their Environmental and Social Consultant (*JGP, Consultoria e Participações, Ltda.*), relating to the environmental, social, health and safety aspects relating to the Investment Program, as well as to COELBA's existing facilities and operations are described below.
- 7.2 COELBA must continue to show evidence of compliance with all relevant environmental licensing legislation applicable to the Investment Program as well as to existing facilities and operations.
- 7.3 COELBA must further develop its internal standards, guidelines and procedures related to environmental, social, and health and safety issues, in order to constitute a structured Environmental and Social Management System (ESMS), and a Health and Safety Management System (HSMS) applicable to their overall activities and the Company as a whole.

- 7.4 The Company must perform adequate risk analysis activities and studies, and develop and implement the applicable Corrective Action Plans to appropriately address potential environmental liabilities associated with existing facilities, such as thermal power plant and small diesel-fueled generator units, relevant substations, warehouses, and workshops, and in relation to potential soil and water contamination, noise and air emissions, oil spills, PCB-containing equipment, handling of other hazardous material, and other pertinent factors.
- 7.5 COELBA must continue to improve their solid waste management procedures integrating and organizing them in a solid waste management program covering all wastes generated at their facilities, particularly those that can be considered hazardous. This program, which can be integrated in the Environmental and Social Management System, should include an inventory of the wastes generated as well as the specific procedures to ensure adequate handling, transportation, treatment and final disposal.
- 7.6 Similarly the Company must continue to improve their procedures to properly and systematically address situations of illegal occupation of the right-of-way areas, through development and implementation of a specific program.
- 7.7 The process of siting COELBA's new substations and other relevant facilities will benefit by more effective consideration of environmental criteria and constraints, and having a greater and earlier participation of the Environmental Unit in the analysis of sites for installation of these new projects.
- 7.8 COELBA's Environmental Unit and Health and Safety Unit are composed of well-qualified staff that produces good quality work, in a very diligent way. However, the Units seem to be understaffed for the multiple tasks and responsibilities involved, as well as for systematic monitoring and supervision of environmental and social, and health and safety aspects pertaining to regional units and contractor's activities.
- 7.9 COELBA must prepare and present an Environmental, Health and Safety Action Plan to appropriately address the issues raised in 7.2 to 7.8, as well as any other environmental, social, health and safety non-compliance issues and liabilities, impacts and risks associated with existing operations and facilities. The preventive and mitigation measures established for each of the identified environmental, social, health and safety impacts and risks will be consolidated in the following plans, which will be implemented during both the construction and the operation phases of the Investment Program: (i) Contingency Plan; (ii) Environmental and Social Management Plan (ESMP); and (iii) Health and Safety Management Plan (HSMP), and both the ESMP and HSMP will include monitoring programs. The monitoring results will be used to assess the effectiveness of the mitigation measures and to verify compliance with the applicable Brazilian environmental quality standards and Bank's guidelines.
- 7.10 COELBA's Investment Program must also integrate appropriate resources for development and implementation of: (i) Company's adequate Environmental and Social Management System (ESMS) and Health and Safety Management System (HSMS), including applicable environmental plans and programs; and (ii) other environmental programs, and environmental risk analysis study and associated Corrective Action Plans to properly address environmental, social, health and safety non-compliances and liabilities associated with existing facilities.

VIII RECOMMENDATIONS

- 8.1 IDB will require as part of the Loan Agreement that COELBA (or “Company”), and all portions of the Investment Program shall, at all times during the life of the Loan Agreement, comply with each of the following:
1. All applicable environmental, health and safety Brazilian regulatory requirements.
 2. All requirements associated with any environmental, health and safety related permits, authorizations, or licenses that apply to the Investment Program or the Company.
 3. All environmental, health and safety requirements of the Investment Program contracts, and any subsequent modifications.
 4. All aspects and components of all of the Investment Program’s environmental, health and safety documents.
 5. Applicable aspects of the World Bank General Environmental Guidelines (Pollution Prevention and Abatement Handbook, 1998).
 6. Applicable aspects of the World Bank Monitoring Guidelines (Pollution Prevention and Abatement Handbook, 1998).
 7. Applicable aspects of the International Finance Corporation Electric Power Transmission and Distribution Guidelines (1998).
 8. Applicable aspects of the International Finance Corporation Health and Safety Guidelines (1998).
 9. Consult with IDB before approving or implementing any and all substantive changes to the Investment Program or its timetable that could potentially have negative environmental, social, or health and safety effects.
 10. Send written notice to IDB of any and all non-compliances with any environmental, social or health and safety requirement of the loan agreement and any significant environmental, social, or health and safety accident, impact, event, claim or material complaint.
 11. Ensure that all companies contracted for construction and operation activities comply with the applicable environmental, social and health and safety requirements of the Loan Agreement.
 12. Implement ongoing information disclosure and consultation activities related to environmental, social, and health and safety aspects of the Investment Program, including, if applicable, information from environmental and social, health and safety monitoring reports prepared by external consultants.
 13. Implement Environmental and Social, and Health and Safety Management Systems that are consistent with the principles of ISO 14001 and OHSAS 18001.
- 8.2 Prior to Financial Closure the Company shall submit an Environmental, Health and Safety Action Plan, in form and substance satisfactory to IDB, properly addressing the recommendations indicated in Paragraphs 7.2 to 7.8 of this ESMR, as well as any other environmental, social, health and safety non-compliance and liability associated with the existing facilities and operations. This Action Plan must clearly address the following aspects:
1. The proposed actions, programs and plans to be adopted to correct the non-compliances and liabilities, including the development and implementation of an Environmental and Social Management System (ESMS), and a Health and Safety Management System (HSMS).
 2. The proposed procedures, programs and plans to be developed and implemented to prevent, mitigate and/or compensate for environmental, social, health and safety impacts

- and risks associated with construction and operation of projects integrated in the Investment Program.
3. A time schedule for implementing such proposed actions, programs and plans, including due dates and key milestones.
 4. Estimated costs associated with such proposed actions, programs and plans, as well as indication of budgetary assignment in the Investment Program.
- 8.3 Prior to First Disbursement of the Loan, the Company shall present, in form and substance satisfactory to IDB, the applicable documents, reports and plans indicated in the Environmental, Health and Safety Action Plan, whose due dates are referenced as prior to First Disbursement, including documents pertaining to: (i) Environmental and Social Management Plan (ESMP); (ii) Health and Safety Management Plan (HSMP); and (iii) Contingency Plan.
- 8.4 Prior to each disbursement, the Company shall certify compliance with all environmental social, and health and safety requirements in the Loan Agreement.
- 8.5 Prior to Final Completion of the Investment Program the Company shall submit, in form and substance satisfactory to IDB, a Final Environmental, Social, Health and Safety Report relative to the implementation of the projects integrated in the Investment Program.
- 8.6 During the life of the Loan Agreement, the Company must prepare and submit periodic Environmental and Social Compliance Reports, in form, substance and frequency satisfactory to IDB.
- 8.7 The Bank will monitor the Investment Program's environmental, social, health and safety aspects via internal Bank supervision actions (e.g., site visits, review of documentation, etc.) and will contract an external independent Environmental Consultant to perform more detailed supervision/monitoring actions during the life of the Loan Agreement. In addition, the Bank will have the right, as part of the Loan Agreement, to contract for the performance of independent environmental, health, and safety audits, if needed.

FIGURE 1

Brazil and State of Bahia

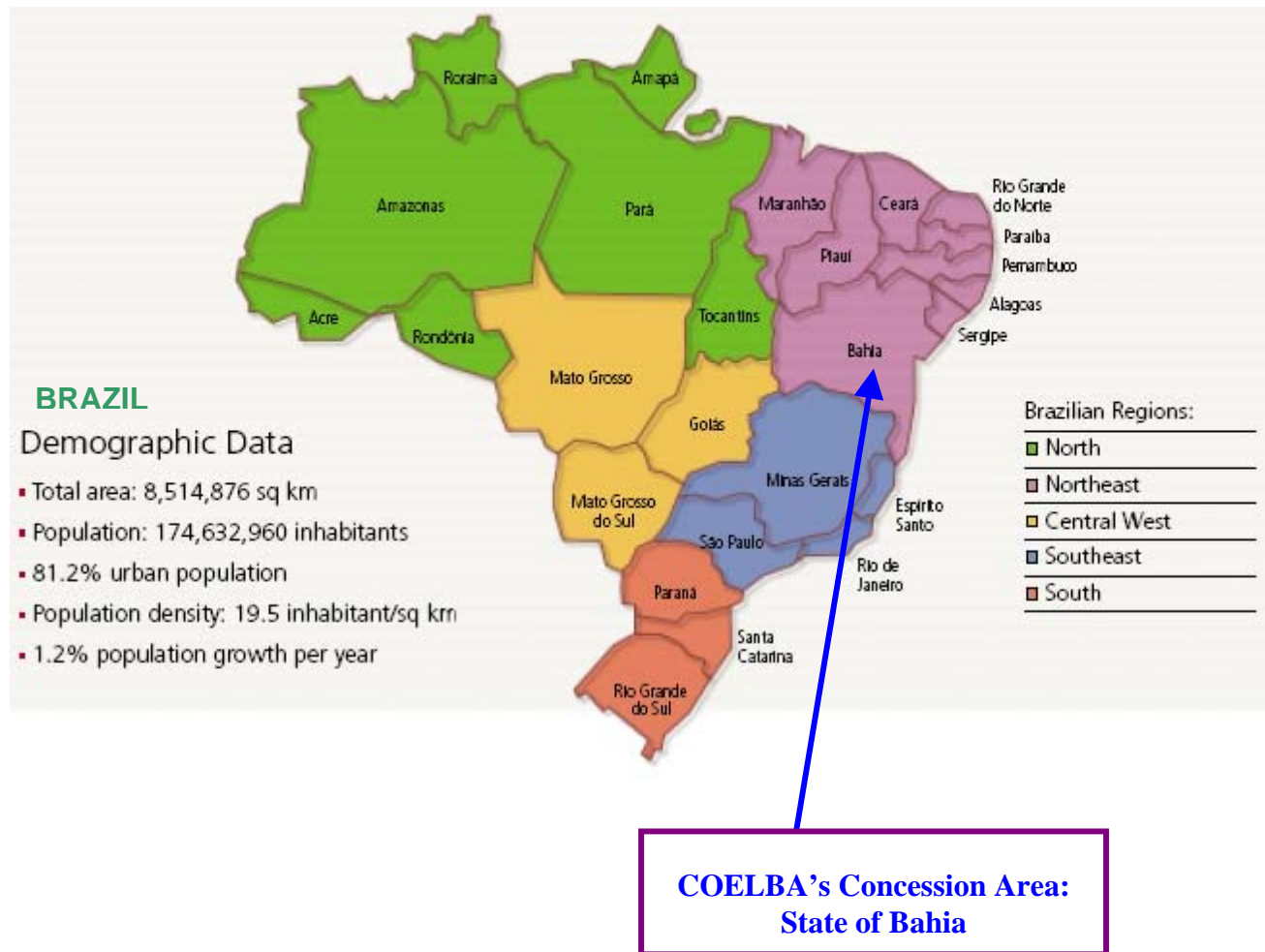


FIGURE 2

COELBA's Concession Area

State of Bahia

