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Celtins Investment and Refinancing Program
Companhia de Energia Elétrica do Estado do Tocantins
(BR-L1070)

ENVIRONMENTAL AND SOCIAL MANAGEMENT REPORT (ESMR)

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LIST OF ACRONYMS

ANVISA - National Sanitary Surveillance Agency
APA – Environmental Protection Area
ANEEL – National Electric Energy Regulatory Agency
CELG – *Centrais Elétricas de Goiás*
CELPA - *Centrais Elétricas do Pará*
CELTINS - *Companhia de Energia Elétrica do Estado do Tocantins*
CEMAT – *Centrais Elétricas Matogrossenses*
CIPA - Internal Commission for Accident Prevention
COEMA – Tocantins State Environmental Council
CONAMA – National Environmental Council
CP.- Contingency Plan
CRS - Celtins' Regional Service Center
DEC - Equivalent Duration of Interruptions per Consumer
EA - Environmental Analysis
EAR – Environmental Analysis Report
EHSAP - environmental, health and safety action plan
EIS – Environmental Impact Study
ESCR - Environmental and Social Compliance Report
ESDD – Environmental and Social Due Diligence
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
LI – Installation Environmental License
LO – Operating Environmental License
LP – Preliminary Environmental License
MW - Megawatt
NATURATINS – Tocantins State Environmental Agency
NGO – Non-Governmental Organization
OHSAS 18001 - International Standard for Health and Safety Management Systems
PA - Environmental Project
PCA – Environmental Control Plan
PCB – Polychlorinated Biphenyl
PCH – Small Hydroelectric Power Plants
PPE - Personal Protective Equipment
PPRA – Environmental Risk Prevention Program
RCA – Simplified Environmental Impact Study
ROW – Right-of-Way
SE – Electric Substation
SEPLAN – Tocantins State Planning and Environment Department
SIN - National Interconnected System
ZEE - Ecologic-Economic Zoning Plan

I INTRODUCTION

1.1 Celtins, *Companhia de Energia Elétrica do Estado do Tocantins* (the Company), was created in March 1989 and was privatized in September of that same year through a public bidding process won by *Grupo Rede* (Rede Group). Celtins is the electric energy distribution concessionaire for the State of *Tocantins* (the "Concession Area") **(see Figures 1 and 2)**. This state, located in Brazil's North Region, was created in 1988 through division of the State of *Goiás*. Previously, Celg - *Centrais Elétricas de Goiás* distributed the electric energy in the area. The total area of the state is approximately 278,420 square kilometers, current population is estimated at approximately 1,306,000 inhabitants (2005), and the capital city is Palmas with about 190,000 inhabitants.

1.2 The Company is dedicated exclusively to electric energy distribution which, according to Brazilian energy sector regulations, comprises 138 kV, 69 kV, 34.5 kV and 13.8 kV distribution lines, urban and rural networks which also include 220 V, 380 V and 440 V lines, and associated substations. Substations that reduce tensions from 230 kV or higher to 138 kV or lower are an asset and operational responsibility of electric energy transmission concessionaires and are thus not a part of Celtins' distribution system.

1.3 As of 2005, the Company's workforce totaled about 700 employees. The Company provides service to all 139 municipalities in the state, servicing 316,664 consumer units, and distributing around 932 GWh per year. Of the energy provided by Celtins, approximately 37 percent is used by residential consumers, 21 percent commercial, 12 percent industrial, and others (government, municipalities, street lighting, etc.) make up 30 percent.

1.4 To increase service coverage and quality under their Concession contract, Celtins is seeking financing for their 2006-2010 Investment and Refinancing Program. The Investment and Refinancing Program (the Project) aims to expand and modernize Celtins' electrical network allowing the Company to: (i) provide electricity to new customers in urban and rural areas; and (ii) improve the quality and reliability of their electric network.

1.5 Celtins Investment and Refinancing Program is comprised of the following components: (a) distribution network expansion and upgrade; (b) rural electrification expansion ("*Luz Para Todos*" or Light for All Program); (c) urban networks expansion; and (d) distribution system quality improvement. Total investment is estimated at approximately 240 million dollars and the largest component is rural electrification expansion, which will require almost 53 percent of that total. Distribution network expansion and upgrade is also a major component requiring about 38 percent of total investment.

II PROJECT DESCRIPTION

A. Existing Operations and Facilities

2.1 Celtins' activities are exclusively geared towards electric energy distribution. All of the energy distributed by Celtins comes from the National Interconnected System (SIN) and a minor part comes from independent generators operating 11 small hydroelectric power plants (PCHs) within the state. It is worth noting that the State of Tocantins is a net exporter of energy and currently consumes only about 20 percent of the energy generated within their territory (exclusively from hydroelectric plants).

2.2 Until 2005 Celtins owned and operated 8 small hydro plants with total capacity of 48.7 MW. However, Article 20 of the unbundling (deverticalization) Law (ANEEL Law N^{o} 10.848/04) required distribution companies in Brazil to split up generation and distribution assets. In order to accomplish this, Celtins spun off all their generation assets in November 2005 and is now a Company devoted exclusively to electric energy distribution.

2.3 As of December 2005, Celtins' electric energy distribution network comprised the following main components **(see Figure 3)**: (i) 2,220 km of 138 kV and 69 kV lines, (ii) 6,170 km of urban distribution networks, (iii) 29,090 km of rural distribution networks, (iv) 83 electric substations; and (v) 17,850 transformers. Approximately 1,400 km of 138 kV and 69 kV lines have been built after the Company's privatization in 1989.

2.4 Further to the aforementioned distribution system, Celtins' infrastructure includes administrative headquarters, a central warehouse (which is currently being relocated and will be operated by a specialized outsourced company), and a maintenance shop, all located in the capital city of Palmas.

B. Investment and Refinancing Program Proposed Components

2.5 The Celtins Investment and Refinancing Program comprises the following main components:

(a) Distribution network expansion and upgrade: (i) construction and/or improvement of 585,5 km of 138 kV voltage distribution lines, including 386.5 km of new lines, 44 km of second circuit installation on an existing line and 155 km of conductor substitutions **(see Figure 4)**; (ii) construction and/or upgrade of 16 substations between 13.8 kV and 138 kV; (iii) automation of 36 existing substations; (iv) acquisition of a mobile substation for emergency back-up; (v) upgrade of 6,589 km of distribution networks between 13.8 kV and 34.5 kV voltage, including replacement of outdated material such as electricity poles and crossbars; (vi) distribution system quality improvement, including installation of 103 reconnectors, 46 regulators, 71 capacitors, 306 reconnector switches, 291 feeder expansion transformers and 69 three pole switches; and (vi) installation of 138 kV voltage regulators.

- *Projected results include:* (i) expansion of Celtins' distribution capacity in regions where demand requires distribution at higher voltages; (ii) improvement of distribution system quality and reliability, reducing power spikes, surges and voltage quality problems, with corresponding improvement of DEC and FEC indicators (Equivalent Duration and Frequency of Interruptions per Consumer) to meet the regulatory agency's (ANEEL) requirements; and (iii) contribute to increase in distribution coverage reaching new consumers in both urban and rural areas.

(b) Rural electrification expansion (Light for All Program): (i) construction of 15,049 km of rural distribution lines at 13.8/34.5 kV voltage and of 2,594 km of 220 V, 380 V and 440 V lines; and (ii) installation of 25,631 rural distribution transformers.

- *Projected results include:* (i) electrification of 40,000 rural residences throughout Tocantins State; (ii) improvement in quality of life of benefited residents; and (iii) substitution of diesel thermal plants currently operating in rural industries for clean electric energy.

(c) Urban networks expansion: (i) construction of 348 km of distribution networks at 220/380 V, (ii) construction of 108 km of distribution networks at 13.8 kV and 34.5 kV, and (iii) installation of 308 urban distribution transformers.
- *Projected results include:* (i) 11,434 new connections in urban areas; and (ii) expansion of the capacity to deliver energy to service industrial and commercial clients throughout the state.

(d) Distribution system quality improvements: installation single phase and three phase digital measuring devices, balance measuring devices, rooters and transformer kits and software of digital sets of low and high-voltage measuring devices.
- *Projected results include:* reduction of power spikes and surges, reduction of technical losses and revenue recovery.

2.6 The activities involved in the implementation of component (d) - Distribution system quality improvements - will not represent significant risks in terms of associated potential negative environmental and social impacts. Components (b) and (c) projects, namely the ones integrated in the Light for All Program and urban networks expansion, 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 component (a) - Distribution network expansion and upgrade - 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.

2.7 The major construction activities comprised in the implementation of the projects foreseen in the Investment and Refinancing 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 15m or 30m wide strip of land); localized excavation for concrete pole installation (excavation for the poles is limited to a 2.5 to 2.8 meter deep hole less than 1 meter in diameter; the fixation of most poles require no concrete, as compacted soil refill is sufficient); assembly of composite crossbar; placement of power conductor cables and other components (insulators, grounding devices, etc.). Sometimes construction of new accesses to the poles 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; 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 for pole placement, usually in public roads or other corridors (in rural or urban areas); installation of concrete poles and composite crossbars; 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 are a of equipment yards at substations, and expansion in the total floor area of substation control rooms.

C. Project Workforce

2.8 Presently, 60 contractors are engaged in the Light for All Program in the state. They employ approximately 1000 workers. This level of construction employment is likely to increase to over 1600 workers when other Investment and Refinancing Program components begin to be built, in particular the first component (Distribution network expansion and upgrade). Celtins has a policy of favoring local contractors and local workforce and thus it can be expected that the majority of the construction workforce will be hired locally.

D. Project Alternative Analysis

2.9 In planning and designing lines and other relevant infrastructure, Celtins 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, an analysis 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, etc.). The analysis is performed with the assistance of Celtins' Environmental Unit, which helps to address appropriately the environmental aspects in the evaluation of the alternatives.

2.10 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.

2.11 When electing plots of land for implementation of new substations, Celtins always prioritizes areas with little or no native vegetation and relatively isolated from urban areas. 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.

2.12 In urban areas, the distribution lines are often designed and constructed in established corridors and other public places. Therefore, there is usually no need to study alternative routes.

III ENVIRONMENTAL LICENSING COMPLIANCE

3.1 Per the IDB OP-703 Environment and Safeguards Compliance Policy, the Project has been classified as a Category B operation.

3.2 All components of the Investment and Refinancing Program are being planned and developed according to the Concession Contract, legal and technical requirements applicable to the electric energy sector and goals established in the Light for All Program.

3.3 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 Celtins' Investment and Refinancing 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. Thus, the State of Tocantins environmental authority can establish simplified licensing procedures applicable to the projects in Celtins Investment and Refinancing Program.

3.4 Nevertheless, IDB has requested Celtins to perform an Environmental Analysis (EA) of the Investment and Refinancing 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) has been publicly disclosed according to Bank's OP-102 Disclosure of Information Policy, in all eight of Celtins' Regional Service Centers in the State of Tocantins, at IDB's Public Information Center in Washington, DC, and Country Representative Office, and at the Bank's web site (http://www.iadb.org/exr/pic/environmental/proposed.cfm).

3.5 NATURATINS is the Tocantins State Environmental Agency and is integrated in SEPLAN, which is the State Planning and Environment Department. State Law No 29 created NATURATINS in April 1989. The state's environmental policy was instituted through Decree N^{o} 1024/90. The State Environmental Council (COEMA) is responsible for the development of environmental regulations and procedures (including those relative to permitting), supervision of implementation of the state environmental policy and deliberation about key environmental issues. State Decrees No 1757/2003 and 2181/2004 established COEMA's operational framework.

3.6 State Law N^{o} 261/91 and State Decree N^{o} 10459/94, established the basic ground rules for environmental permitting procedures in the State of Tocantins. COEMA Resolution N^{o} 07 dated August 9, 2005, alters environmental permitting procedures in the state, including specific rules applicable to the electric sector.

3.7 NATURATINS is the agency responsible for environmental licensing of all infrastructure projects within the State of Tocantins, with the exception of projects at state boundaries or that generate impacts in the territory of other states as well, in which case the Federal Environmental Agency (IBAMA) is responsible for licensing. It should be noted that none of the projects in Celtins' Investment and Refinancing Program is expected to be subject to licensing by IBAMA.

3.8 Clearing of natural vegetation protected by federal legislation is in principle a Federal Environmental Agency (IBAMA) responsibility. However, delegation of authority to the state environmental agency is generally agreed upon with regard to this type of permitting and, in the case of the State of Tocantins, an operational agreement between IBAMA and NATURATINS in this regard became operational in 2006.

3.9 The works involved in the Investment and Refinancing Program are presently at different stages of their planning and implementation but it is very likely that most of the projects involved will only need to go through simplified licensing procedures, foreseen under state law, and require a vegetation-clearing permit. Based on consultation with key NATURATINS officials during the due diligence process, the following licensing rules and procedures can be considered to apply in the case of Celtins Investment and Refinancing Program:

(a) New 138 kV distribution lines will need to undergo a simplified process, but that involves the three stage permitting cycle established in federal and state legislation, including the Preliminary License (LP) at planning stage, Installation License (LI) to initiate construction and Operating License (LO) authorizing operation of the facility.
(b) Issuance of LPs for the new 138 kV lines will be based on submittal of a Simplified Environmental Impact Study (RCA). This will probably be the case of the 46 km 138 kV line between Palmas IV and Paraíso II substations, which includes a 1 km crossing over the Lajeado reservoir, as well as of the Colinas-Goiatins 149 km line, the Almas-Natividade 65 km line and the Colinas-Arapoema 109 km line, all at 138 kV.
(c) Renovation of existing 138 kV lines does not require an environmental license.
(d) Issuance of LIs will require submittal of an Environmental Control Plan (PCA) and any other complementary documentation requested during the LP phase.
(e) New 34.5 kV and 13.8 kV distribution lines in consolidated urban areas do not require an environmental permit and NATURATINS has agreed to issue a letter to Celtins confirming this.
(f) New 34.5 kV and 13.8 kV distribution lines in rural areas will also need to undergo the LP, LI and LO cycle, but may obtain them on the basis of a much simpler study (PA, or Environmental Project) foreseen in the state law. Specific Terms of Reference will be issued by NATURATINS to this effect.
(g) All clearing of natural vegetation requires submittal of a specific request indicating quantities and types of vegetation to be affected. This will result in issuance of a Vegetation Clearance Authorization, which is a prerequisite to issuance of the LI.
(h) On projects assessed on the basis of a PA that do not involve clearing of natural vegetation, NATURATINS will issue the LP, LI and LO simultaneously.
(i) Consistent with federal legislation relative to protection of cultural heritage, in case of new corridors NATURATINS will require an archeological assessment as part of the permitting procedure. When pertinent, due to potential risk of interference with archeological remains, this will involve consultation and/or approval by the National Historic and Artistic Heritage Institute (IPHAN).
(j) In cases where the alignment of a distribution line comes within 10 km of the boundary of an Indigenous Reserve, NATURATINS will consult with the National Indian Foundation (FUNAI).
(k) In the case of the Light for All Program, a single RCA was submitted to NATURATINS in June 2000. This resulted in issuance of Installation License N^{o} 79/2002, which is being renewed, as needed.
(l) In cases of implementation of the Light for All Program inside Indigenous Reserves, a special procedure has been agreed between the Ministry of Energy and Mines, IBAMA and FUNAI.

3.10 Relative to existing lines that may require license regularization, NATURATINS has signaled that Environmental Projects (PAs) will need to be submitted and that in the regularization of

existing lines, the LP, LI and LO will be issued simultaneously. NATURATINS has indicated that it will prepare specific Terms of Reference for PA for regularization purposes.

3.11 Further to regularization requirements, it is worth noting that periodic clearing of vegetation within distribution line ROW may require Vegetation Clearance Authorizations depending on the characteristics of vegetation growth. As a maintenance procedure, Celtins generally conducts clearing of areas of the right-of-way every three years. Guidelines on when a formal permit is necessary are obtained from NATURATINS. There is no evidence to indicate that clearing to date is irregular.

3.12 In consolidated urban areas, tree trimming is necessary to avoid power interruption problems. As a maintenance activity, Celtins conducts periodic tree trimming with the knowledge of the municipal authority.

3.13 Monitoring of compliance with permitting conditions and requirements is a NATURATINS responsibility. Inspection and monitoring procedures were verified during the due diligence process and are summarized as follows: (i) NATURATINS will inspect project alignments prior to issuance of LI; (ii) NATURATINS will inspected concluded lines prior to issuance of the LO; and (iii) NATURATINS is gradually implementing a decentralized system of regional offices that are responsible for supervision of compliance with environmental legislation and will conduct periodic inspections covering their respective territories.

3.14 Finally, it should be pointed out that throughout the due diligence process Celtins' good standing with environmental and other state and municipal authorities have been confirmed. The Company has established a good working relationship with FUNAI, NATURATINS and SEPLAN and Celtins standing with municipal authorities, as verified during due diligence consultations, has been found to be fully satisfactory.

IV ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS

4.1 The projects integrated in the Investment and Refinancing 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 and Refinancing Program will be related to the first two components i.e. high-voltage distribution expansion and rural electrification expansion. It should be pointed out, however, that the projects and actions involved in Celtins' proposed Investment and Refinancing 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) Celtins 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 **(compare Figures 3 and 5)**; 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 Considering the nature of the works involved and the procedures adopted by the Company to avoid or minimize environmental and social impacts and risks, it is possible to anticipate that the Project will not: (i) convert or degrade critical natural habitats or damage critical cultural sites; (ii) significantly convert or degrade natural habitats; (iii) raise any significantly negative indigenous issues; (iv) generate resettlement issues; or (v) have associated any transboundary issue. Also, there is no risk related to associated facilities.

4.4 The implementation of the projects included in Celtins' 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 may benefit from some of the projects integrated in the Light for All Program, after approval by the National and State Management Committees for the Light for All Program and by FUNAI.

4.5 Similarly, none of the projects is expected to have any significant impact on archeological remains or other cultural heritage. Since minimum excavation or other interference on natural terrain is necessary, probability of interference is minimal and it is always possible and not difficult to relocate concrete poles.

A. Construction Phase

A.1 Environmental Impacts and Risks

4.6 *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 nearby water bodies. The areas most susceptible to erosion are the steepest slopes, and the river margins. However, it should be pointed out that Celtins 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. Thus, the extent of vegetation clearing likely to occur during distribution line implementation is very limited. Most of the new 138 kV lines planned will follow existing road easements and will intercept regions where significant clearing has already taken place. This is also the case of the Light for All Program distribution lines. Furthermore, where remaining relevant fragments may be affected, clearing is limited to the essential, which is generally a strip narrower than the established right-of-way (ROW). It is important to note also that the Company uses in general single-based concrete poles, as opposed to the traditional four-based towers; these single-based poles require a very small amount of soil movement during their installation. Risk of erosion will be more relevant during construction of the 1 km crossing of the Lajeado reservoir by the 138 kV Palmas IV-Paraíso II line. This will require some metal structure towers with foundations requiring excavation near the reservoir margins. Some small magnitude erosion is expected during construction of substations, mainly due to opening of ditches for installation of the grounding grid.

4.7 *Habitat fragmentation:* This risk is very limited on projects in Celtins' Investment and Refinancing Program since all new distribution lines are planed, as much as possible, in order not to intercept forested fragments. Where interception of forest fragments is inevitable, the Company adopts special procedures in order to reduce disturbance to a minimum. This may include the use of higher poles as well as clearing limited to the essential, which is generally a strip narrower than the established ROW.

4.8 *Fauna disturbance:* Construction activities may cause disturbance to fauna due to noise generation, vehicle movement, clearing of native vegetation and presence of workers. These disturbances are temporary in nature and can generally be assumed to be reversible. Nonetheless, it is important that workers be instructed not to hunt or collect animals or eggs. Thus, the major negative impacts will be associated with the suppression of native vegetation within the ROW, which may chase away individuals and species, cause habitat fragmentation, and destroy nesting sites. However, impacts on fauna are likely to be of some significance 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. This type of impact is likely to be more relevant in the case of the new Palmas IV-Paraíso II 138 kV line.

4.9 *Disturbances on environmentally protected areas:* Of all projects in Celtins' Investment and Refinancing Program, only the Palmas IV-Paraíso II 138 kV line will interfere with environmentally protected areas, specifically the Lajeado State Park and the Serra do Lajeado Environmental Protection Area (APA). Furthermore, some of the projects in the Light for All Program may be within other Environmental Protection Areas. However, impacts within these protected areas can de expected to be of low magnitude and are basically those associated with clearing of vegetation and habitat fragmentation already described above.

4.10 *Soil and groundwater contamination:* The risk of soil and groundwater contamination during the implementation of the Investment and Refinancing 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 potentially 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.

4.11 *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 non-paved roadways used on a localized and temporary manner. Furthermore, traffic of construction vehicles as well operation of construction machinery and equipment will generate combustion gases and particulate material. However, these impacts will be restricted to the construction phase and will be localized and of low magnitude since the intensity of construction activity will be relatively low and 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

4.12 *Disturbances on third party property*: In the case of Celtins, the process for establishing distribution line rights-of-way or easements, as well as the purchase of land for the new substations usually involves amicable negotiations with owners and includes compensation for loss of arable areas. Legal expropriation proceedings are used only when unavoidable. Population density is low in the State of Tocantins, including in most urban areas; and the Company adopts environmental criteria in determining line alignments. Therefore, Involuntary resettlement is not likely and not expected on any of the projects in Celtins' Investment and Refinancing Program.

4.13 *Consideration of indigenous areas and peoples*:

(a) Demarcation status of Indigenous Reserves

Federal Law No 6001/73 and Federal Decree No 1775/96 establish the procedure for demarcation of Indigenous Reserves. This requires that registered anthropologists execute ethnographic studies as well as a survey of all properties that may be affected by the proposed perimeter. Once these studies are reviewed and approved by the National Indian Foundation (FUNAI), a summary is publicly disclosed (through the Federal Register) and there is a 90-day period for reception of comments from affected states, municipalities and/or property owners. Once this step is concluded, FUNAI forwards the studies and all comments received to the Ministry of Justice that will either approve the proposed perimeter or return the documentation to FUNAI for modification. In cases of approval, the demarcation is ratified by a federal decree.

As summarized in the following table, all but one of the seven Indigenous Reserves in the State of Tocantins have their demarcation ratified by federal decree:

Indigenous Reserves in the State of Tocantins

Indigenous Reserve Name	Indigenous Peoples	Area (ha)	Population	Status
Apinayé	Apinayé	141,904	964	Demarcation ratified
Xambioá	Karajá and Guarani	3326	226	Demarcation ratified
Kraholândia	Kraho	302,533	1402	Demarcation ratified
Xerente	Xerente	167,542	1362	Demarcation ratified
Funil (adjacent to Xerente)	Xerente	15,704	190	Demarcation ratified
Inãwebohonã (adjacent to Parque do Araguaia and inside the Araguaia National Park)	Javaé, Karajá and Avá-Canoeiro	376,545	98	Demarcation in progress
Parque do Araguaia	Javaé, Karajá, Avá-Canoeiro and Tapirapé	1,358,499	1801	Demarcation ratified

Figure 5 shows the location of the main demarcated Indigenous Reserves in the State of Tocantins.

FUNAI is also responsible for assuring the protection of Indigenous Reserves and peoples against any risk that may represent a threat to the preservation and life of these peoples, as well as to their rights. No major problems of Indigenous Reserve invasions are reported in the State of Tocantins.

(b) Consideration of indigenous areas in project design and implementation

As can be seen by inspection of **Figures 3 and 5**, rural distribution line alignments are planned by Celtins to avoid interference with Indigenous Reserves. This is not a difficult task since there are only seven Reserves in the State of Tocantins covering 7.2 percent of the state's territory. With only one exception, these Reserves are located at or very near

state boundaries and in regions of relative low-density of occupation and economic activity. Thus, there is no technical or economic reason to interfere with these areas.

Nevertheless, Indigenous Reserves may be serviced under the Light for All Program. However, this will only take place if requested by the indigenous peoples and/or communities, and approved by the National and State Management Committees of the Light for all Program and by FUNAI. Thus far, three indigenous clusters in two Reserves (Xerente and Kraho) have requested inclusion in the Light for All Program and these requests are currently being analyzed. As already reported, in the case of Light for All Program electrification projects within Indigenous Reserves, a special permitting procedure has been agreed upon, involving the Ministry of Energy and Mines, Federal Environmental Authority (IBAMA), FUNAI and other pertinent authorities. This indicates specific requirements and obligations both for Celtins and FUNAI, considering all aspects related to rural electrification in indigenous areas, including construction procedures, operation of the networks and charging of the services.

It is also worth noting in this regard, that the National and State Management Committees for the Light for All Program take decisions about which Light for All Program components will receive priority in each state. These committees include representatives from the Ministry of Energy and Mines, ANEEL, State Government, local authorities, civil society, rural consumers and electric energy distribution companies.

4.14 *Induced population and/or economic growth around Indigenous Reserves or environmentally sensitive areas:* Induced economic development is one of the expected benefits of Celtins' Investment and Refinancing Program. However, such development could produce negative side effects if it could contribute to intensification of economic activity and population growth in areas surrounding Indigenous Reserves or environmentally sensitive areas. In general, this can be a risk particularly in regions that are still undergoing a colonization process, where the arrival of electricity may act as an inductor for further occupation and industrialization. This aspect has been closely scrutinized during the due diligence process and specifically discussed in meetings with FUNAI, State Environmental Agency (NATURATINS), State Planning and Environment Department (SEPLAN), Association of Mayors of the State of Tocantins, mayors of selected municipalities and with Company officials. The main conclusion that was extracted from the several discussions held is that induced population and/or economic growth in areas surrounding Reserves or environmentally vulnerable areas in the State of Tocantins should not be a relevant issue in the case of Celtins' Investment and Refinancing Program, as explained below:

(a) The first component of Celtins' Investment and Refinancing Program (distribution network expansion and upgrade) has been designed in order to better service existing demands. Thus, it will mainly increase system reliability and quality of power supply. Only in the case of the Industrial District of Araguaína and the cities of Arapoema, Goiatins and Dianópolis will there be an increase in the availability of energy.

(b) However, none of these four cities is in close proximity to Indigenous Reserves. The closest one, Goiatins, is approximately 30 km distant from the northern tip of the Kraholândia Indigenous Reserve.

(c) In no case, except in isolated rural clusters that will be serviced by the Light for All Program, will power be taken to cities or towns that are not currently served by Celtins'

network. The 40,000 new connections foreseen in the Light for All component of Celtins' Program represent an unmet demand and only a little over 10 percent of the approximately 320,000 consumer units presently serviced by Celtins. Furthermore, these new connections will be dispersed over a vast area of Tocantins (the State area is approximately 278,420 square kilometers). Therefore, Celtins' Investment and Refinancing Program will not represent a significant contributor to population growth.

(d) Rural electrification under the Light for All Program is expected to significantly improve the quality of life of the rural poor, making irrigation and industrialization of agricultural products feasible. As a result, one of the expected impacts of the program is a reduction of the intensity of rural-urban migration patterns and hence, of urban growth. Another possible benefit is an increase in productivity causing a reduction in pressure to occupy additional land. Irrigation of pastures and other crops will become feasible, increasing productivity and reducing pressure to expand occupied land. In many regions dedicated to cattle rearing, the current practice of burning pastures in order to induce regeneration during the dry season will no longer be necessary.

(e) Whereas energy is a necessary pre-condition for industrialization and economic development, it is not the only factor and it certainly is not the triggering factor in less developed regions. Accessibility and transportation infrastructure is clearly more important. It is worth noting that since distribution line alignments generally follow existing road alignments, no new services roads of significant length are to be built and hence there will be no significant impact on current accessibility patterns.

(f) SEPLAN officials indicated that the most significant factor that can induce economic development in the state in coming years is the conclusion of the North-South Railway (*Ferrovia Norte-Sul*) that is expected to reach Araguaína, located in the North of Tocantins, in 2007. This will integrate the State of Tocantins into an "export corridor" linking it to the Port of Itaqui (Maranhão), which is the Brazilian port closest to Europe. Major agro-industrial development is expected as a result and high hopes are being placed on bio-fuel production for export.

(g) Another possible factor that has been referred to is the Araguaia-Tocantins waterway, which is also expected to induce significant development throughout the state, though in this case the implementation schedule is less certain.

(h) Furthermore, there are several large irrigation projects in planning stages and these shall bring significant development to several regions. However, these projects are foreseen mainly in areas already devoted to the practice of agriculture.

(i) SEPLAN officials also indicated that the State's Agro-Ecologic Zoning Plan has been concluded (at 1:500,000 scale) as well as the Ecologic-Economic Zoning Plan (ZEE) of the Northern Region of the state (1:250,000). Of the four cities that will benefit from increased energy supply as a result of Celtins' Investment and Refinancing Program, only Dianópolis is within a region considered of some significance for conservation purposes (but which is not considered as an APA or Environmental Protected Area).

(j) Based on the above, it seems clear that there are other more relevant factors that can influence the population growth and economic development of the State of Tocantins and that the potential influence of Celtins' Investment and Refinancing Program on population

and economic growth is extremely limited. Furthermore, none of the four cities that will benefit from additional energy supply are in close proximity to Indigenous Reserves and only one (Dianópolis) is within a region considered to be of some significance for conservation purposes. However, it should be pointed out that public sector planning is already focusing on critical regions and some degree of constraint on development of those regions is likely to be applied in the future.

(k) Finally, it is important to remember in this context, that as per the Concession Contract and Brazilian energy sector regulations, Celtins is contractually obligated to meet the demand, targets, and schedule established by the Federal and State Governments for the Light for All Program, which is targeting the national and state goals of universalization of access to electricity.

4.15 *Consideration of quilombola communities*: There are 15 *quilombos* (communities of former African slave descendants, known individually as *quilombolas*, and the communities as *quilombos*) dispersed throughout the State of Tocantins that are registered in the *Palmares* Cultural Foundation of the Ministry of Culture. Similarly to the case with indigenous peoples, some of the *quilombola* communities will benefit by connection to Celtins' network to be serviced by electric energy. They are not protected by legally established perimeters (i.e. like Reserves) and there is no specific legal restriction affecting implementation of distribution networks within a *quilombo*. The Company tries to implement these connections with minimum disturbance.

4.16 *Risk of disturbance of archaeological and historic heritage elements:* The likelihood of interference with archeological remains is minimal since excavations in the projects integrated in the Investment and Refinancing Program are extremely limited in space. In the case of distribution lines, the only interference with the natural terrain is during excavation for fixation of poles. In addition, poles can be easily relocated.

4.17 *Increase in noise and vibration levels:* There will be an increase in noise and vibration levels at construction sites, and this can constitute an impact if there are potential receptors, such as residents or users of educational and health institutions, 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.

4.18 *Impacts associated with construction traffic:* The implementation and/or upgrading of substations and distribution lines will generate traffic of vehicles and equipment at construction sites. Roads most directly affected will be those providing access to construction fronts. Urban roads with more intense traffic are likely to be more adversely affected, due to circulation of trucks and other heavy vehicles. However, due to the low magnitude and nature of the works associated with the projects in the Investment and Refinancing Program this is not likely to cause traffic slowness and congestion in any case. Nevertheless, pavement deterioration of some local roads may occur. In rural areas, this impact is not likely to be significant. In all cases, disturbance due to construction traffic will be of low magnitude, spatially restricted and temporary.

4.19 *Risk of disturbance on other infrastructure networks:* Underground lines are not proposed as part of the projects included in the Investment and Refinancing Program. Thus, excavations for implementation of new aerial networks will have associated very limited risk of

interference with other infrastructure, such as water, sewerage and other underground utility networks. Nonetheless, in consolidated urban areas this may represent a risk, particularly since most cities in Tocantins lack as-built drawings of such networks.

4.20 *Disturbance of pedestrian and vehicle circulation patterns, and commercial activities:* In urban areas, planned improvements of distribution networks (replacement of poles, conductors, transformers, and other electric components) in public places may cause brief interruptions (usually partial) of the flow of pedestrians on affected sidewalks as well as may temporarily restrict the access of vehicles to homes and commercial establishments. 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.

4.21 *Risks of accidents involving persons:* The construction and/or upgrading of Celtins facilities will increase the risk of accidents involving the population in general, such as fall of persons into 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. However, these are temporary risks and easily prevented by the adoption of safety measures at construction sites.

A.3 Health and Safety Impacts and Risks

4.22 *Risk of falls involving workers:* Work at high places will be a common activity for the great part of employees involved in the construction and/or upgrade of Celtins electric distribution installations. Clearance of vegetation in future rights-of-way, installation of concrete poles and crossbars, installation and/or substitution of conductors and other electric components in poles, are the activities that have associated higher risk of accidents involving workers. There are also risk of falls associated with trenches and holes at construction sites. However, Celtins has specific guidelines to prevent accidents of this nature and detailed safe work procedures are being developed jointly with *Grupo Rede* to be applied equally on all electric energy distribution concessionaires owned by the group.

4.23 *Risk of electric shock involving workers*: The construction or upgrade of substations and distribution lines will involve some activities that are executed in energized equipment and networks. The risk of electric shocks is a constant consideration during performance of these tasks by contractors and their employees. Therefore, workers involved in this type of work are generally specialized and adopt safety procedures regarding personal protection equipment and safe work practices.

4.24 *Risk of exposure to health-hazardous environmental conditions (noise, dust, and combustion gases)*: The activities associated with expansion of Celtins network will comprise minor risks related to exposure to health-hazardous conditions that are usually associated with civil works, such as exposure to high levels of noise and concentration of dust and other air pollutants. However, such exposure will be much more limited in intensity and duration than in other types of civil works (roads, buildings, large industrial facilities, etc.).

4.25 *Risk of explosions and fire:* The risk of occurring explosions or fires will be very limited on the projects included in the Investment and Refinancing Program. There will be no underground distribution lines, enclosed excavations or other circumstances that can favor

concentration of gases and lead to explosion. There will only be limited use of fuels, oils and other inflammable liquids and no significant volumes of these will need to be stored at the construction sites.

4.26 *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.). Celtins' employees and contractors are usually instructed not do disturb wild fauna. They also receive personal protective equipment (PPE) that reduces this risk.

4.27 *Accidents during work in water bodies:* The crossing of a 1 km wide section of the Lajeado reservoir as part of the 138 kV Palmas IV-Paraíso II line, will not involve installation of towers within the reservoir. However, some activities will require navigation support, especially during conductor installation. In this regard, all health and safety associated to navigation need to be considered, including drowning. There will be no other river or reservoir crossing requiring navigation support. In view of the fact that Celtins does not foresee any underwater crossing in the scope of the Investment and Refinancing Program, there will be no risk of accidents with divers, which are normally deployed in placement of aquatic cables at the bottom of water bodies.

B. Operation Phase

B.1 Environmental Impacts and Risks

4.28 *Suppression of regenerated native vegetation along distribution line ROWs:* As mentioned, Celtins makes, as much as possible, use of non-forested areas for the installation of power lines and/or substations. However, along segments where clearance is necessary and where forested areas remain adjacent to the ROW, native vegetation can rapidly regenerate. Some regeneration occurs in segments surrounded by pasture as well, even though with less intensity. Periodic maintenance of distribution line ROWs is executed by Celtins at three-year intervals. This will frequently involve clearing of regenerated vegetation within the ROW and trimming of branches of large trees adjacent to the ROW. Where removal of tree-sized vegetation is required, an authorization for clearance of vegetation may be necessary. This authorization is issued by NATURATINS under the terms of a recent agreement with the Federal Environmental Authority (IBAMA). Replacement of conductors may also require removal of vegetation from ROWs.

4.29 *Pruning and tree branch trimming in urban areas:* In urban areas, safety trimming of vegetation, performed to ensure reliability of power supply, is routinely executed by Celtins with the knowledge of municipal authorities. More extensive pruning, performed to guide tree growth and maintain urban landscaping, is a municipal responsibility.

4.30 *Induced erosion processes:* The periodic removal of vegetation from ROWs, performed for maintenance purposes, may induce localized erosion processes, especially on sloped terrain and in areas where soils are particularly erosion prone. To control this type of impact, Celtins periodically inspects all rural distribution lines and any erosive process within the ROW is corrected as soon as possible. In these inspections, erosion in properties adjacent to the ROW is sometimes identified and when this is considered a risk, corrective action will be requested from the owner. In the absence of response, Celtins may propose to help in stabilization efforts or, where this is not feasible, may notify the responsible environmental authority.

4.31 *Fauna disturbance:* During operation of distribution systems, 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 significant in rural areas or near environmentally sensitive regions with presence of significant native forest fragments and other wild animal habitats. In the past, at smaller equipment in some substations, where the distance between energized cables reaching the equipment is small enough to be bridged by the wingspan of some birds or by the body of large lizards, Celtins has experienced some instances that resulted in death of fauna and power failures. To prevent this type of accidents to happen, Celtins installed insulating plastic tubes around conductors as they leave the equipment. This simple measure has successfully eliminated the problem.

4.32 *Soil and groundwater contamination:* Oil spills may occur during the operation of substations, such as mineral oil that may spill from transformers. Most existing Celtins substations do not have a secondary containment pit under each transformer to control this impact. However, this has become a standard design feature particularly in the case of the larger substations. Also, in cases where the substation site is not connected to a public sewer collection system, it is possible that septic tanks may spill. However, this impact is considered of very low magnitude, since most Celtins substations are unmanned and remotely controlled. Activities at the maintenance shop and at the recently relocated (and outsourced) central warehouse in Palmas offer the highest soil contamination risks, since there may be generation of materials and effluents contaminated with diesel, mineral oil or lubricants. Celtins will adopt the necessary technical measures to reduce these risks. At the old Palmas maintenance shop some evidence of minor spills was identified. Furthermore, no oil/water separation tanks for containment of oily effluents are in place. Whereas this is unlikely to have generated a contamination problem, a preventive baseline investigation is warranted. At the old central warehouse site that is currently being decommissioned, no evidence of spills was identified and storage procedures were carried out in general compliance with good environmental practice.

4.33 *Solid waste generation:* The solid wastes that will be generated during operation will mainly be related to operation of the central warehouse, the maintenance shop, substations and offices, and may involve wastes characterized as domestic and/or office wastes, and others categorized as industrial. The Company has some procedures to deal with the wastes generated at their facilities, but these need to be improved, organized and complemented to properly address this issue during implementation and operation of the Investment and Refinancing Program.

B.2 Social Impacts and Risks

4.34 *Risk of illegal settlements within distribution line ROWs:* Illegal settlements within distribution line ROWs are not uncommon in large Brazilian cities, despite legislation and land use control mechanisms enforced sometimes by municipal governments. Celtins understands that this is a potential social problem that must be solved in agreement and with support of public authorities. However, this has not been a problem thus far in the State of Tocantins. The only situations with irregular occupation of ROWs that have been verified on Celtins' system date back to before the Concession Contract and involve a total of 16 to 18 residences in the towns of Porto Franco and Palmeiras do Tocantins. (See Section C on Existing Operations and Facilities). In the case of projects included in the Investment and Refinancing Program, the risk of encroachment in the ROW is considered to be minimal due to the low density of adjacent land use along the ROW segments that are close to urban areas.

4.35 *Increase in noise levels:* This impact might be associated with the operation of substations foreseen in the Investment and Refinancing Program. However, Celtins effectively adopts environmental site selection criteria and sites acquired for substation installation are usually relatively distant from urbanized areas and large enough to allow significant attenuation between noise generating equipment and site boundaries. Thus, the risk that noise generated at substations may disturb human receptors and sensitive areas can be considered to be minimal in this case.

4.36 *Risk of accidents involving persons (electric shock):* This risk is associated to accidents with the energized network involving third parties. There may be accidental contacts with the network in normal conditions (by negligence or misinformation about the risk), in exceptional conditions (fall of energized cables caused by vehicle-hit poles or by faulty network maintenance), and during fraud attempts (energy theft). Celtins 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.

4.37 *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

4.38 *Risk of falls involving workers*: Work performed at high places during operation, such as the maintenance and renovation of distribution lines and trimming of tree branches, expose employees to the risk of falls. However, Celtins adopts specific technical specifications and procedures to minimize the frequency and consequences of this type of accident. Furthermore, workers are required to use appropriate personal protective equipment (PPE) when working in high places.

4.39 *Risk of electric shock*: Similarly, the very same above-referenced services, together with activities related to maintenance and automation of substations, will bring risks to employees. Some maintenance activities in distribution lines and substations are executed in energized systems and pose greater risks. In addition, sharing of poles by electricity and telephone systems is very common in Brazil and is adopted by Celtins. Thus, there are also electric shock risks linked to installation of telephone cables at electric poles. However, Celtins adopts specific technical specifications and procedures to minimize the occurrence and consequences of this type of accident. Furthermore, workers are required to use appropriate personal protective equipment (PPE) to reduce this risk.

4.40 *Generation of Electromagnetic Fields*: (see Section C – Existing Operations and Facilities).

C. Existing Operations and Facilities

4.41 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 Celtins' existing operations and facilities.

4.42 Most of the impacts previously described with regards to projects in the Investment and Refinancing Program are also applicable to existing operations and facilities. However, the Investment and Refinancing Program does not include some types of facilities that are

currently operated by Celtins, such as warehouses and maintenance shops. Similarly, some impacts such as soil contamination are unlikely to occur in new substations of the Investment and Refinancing 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.

4.43 *Soil and groundwater contamination:* The following aspects shall be considered concerning potential liabilities associated with soil and groundwater contamination at existing facilities:

(a) Occasional mineral oil spills: Occasional mineral oil spills may occur during operation of substations. Mineral oil may spill from transformers and other equipment, but the use of secondary containment pits under each transformer can effectively control this risk. It is possible that substation's septic tanks may spill, but this impact has very low magnitude, since most of Celtins' substations are unmanned and remotely controlled.
(b) Maintenance activities: Maintenance activities and maintenance shops offer potential soil contamination risks since they generate materials and effluents contaminated with diesel, mineral oil or lubricants. This risk can be controlled, on the field, with the use of portable contention units during maintenance activities. Maintenance shops shall be paved, with impermeable flooring and provided with proper drainage and effluent and solid waste collection. Oil/water separators shall be used to collect run-off from work areas. During site visits, minor signs of possible soil contamination were observed at the maintenance shop in Palmas and this will be the subject of some of the IDB's recommendations.
(c) Equipment and materials storage: Warehouse operations also constitute a potential risk with regards to soil contamination. New equipment (mainly transformers) contains mineral oil and, although not very likely, spills may occur during storage. Other materials and consumables may pose some contamination risk and require specific storage conditions.

4.44 *Solid waste generation and disposal:* replacement of damaged or obsolete electric equipment, components, and materials at Celtins' 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 spent batteries containing acid, discharged lamps, used oil, etc. According to procedures adopted by the Company, most of the industrial wastes are sent to Celtins' warehouse in Palmas, 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. Used lubricating oil and any oil recovered which is generated at Celtins' maintenance shop or during maintenance activities at other facilities is collected and sent for recovery and reuse by specialized companies. Celtins vehicle fleet is entirely outsourced and this includes all vehicle maintenance activities. Transformer mineral oil recovery is also outsourced to specialized firms and thus no waste results from this activity. Maintenance of public street lighting is a municipal authority responsibility and thus discharged street lamps are not included in Celtins' wastes. However, the Company does not have an inventory of the wastes generated at their facilities. Currently, most wastes are either sold to recyclers or disposed of at municipal landfill sites. Therefore, in general, Celtins should improve their solid waste management practices in order to avoid potential liabilities associated with inappropriate disposal and potential soil and ground and surface water contamination, this will also be a subject of IDB's recommendations.

4.45 *Polychlorinated Biphenyls (PCBs):* Celtins does not have PCB-containing equipment since 1995, when all stored PCB and PCB-containing equipment (capacitors) were sent for provisional storage at *Caiuá Serviços de Eletricidade* in São Paulo, another distribution concessionaire that belongs to *Grupo Rede*. Subsequently, all these materials were incinerated at an appropriate and authorized processor and a certificate to this effect was issued on December 28, 1998. Since 1995, Celtins has used exclusively equipment containing mineral dielectric fluid. Therefore, in the case of Celtins no potential liabilities are expected in relation to PCBs.

4.46 *Air emissions:* Air emissions are not a significant environmental issue with regard to Celtins existing operations and facilities, since no thermal generation takes place. Dust emissions may result from some maintenance activities, mainly periodic clearing of distribution line ROW. On the other hand, implementation of rural electrification under the Light for All Program is resulting in substitution of diesel generators by clean electric energy at some rural industries.

4.47 *Risk of illegal settlements within ROW areas:* Illegal settlements within distribution line ROWs are not uncommon in large Brazilian cities, despite legislation and land use control mechanisms enforced sometimes by municipal governments. Celtins understands that this is a potential social problem that must be solved in agreement and with support of public authorities. However, this has not been a problem thus far in the State of Tocantins. There are only two minor situations involving irregular occupation of Celtins ROWs, both date back to before the Concession Contract, involve a total of 16 to 18 residences, and affect the same distribution line, one is in Porto Franco and the other in Palmeiras do Tocantins. In both cases the origin of the problem is not precisely a deliberate act of invasion on the part of the individuals. It seems that Celtins' predecessor (Celg) established the line's ROW but postponed installation for some time. Local municipalities did not take this into account when approving new subdivisions and thus part of the urban fabric was established in conflict with the line's alignment. This affects only one or two city blocks at each location, and total number of plots with buildings within the ROW is approximately 16 to 18. Most of these residents were already in place when Celtins assumed the system. These buildings are residential in nature and are of a standard equivalent to that of other modest residential construction in the towns. Besides the plots with buildings, some empty plots are also inside the ROW. Celtins informed that the total number of affected properties is 24 and that legal procedures to recover possession of the occupied ROW areas were initiated some time ago. Furthermore, it was reported that periodic inspections of the distribution system's ROW are routinely conducted and any new occupant is warned of the risks involved in occupying areas bellow high-voltage lines, and asked in an amicably way to vacate the area prior to engagement of pertinent authorities.

4.48 *Disturbance to consumers as a result of power interruption:* Interruption of power supply can cause some stress to residential consumers and may result in relevant economic costs for industrial and commercial consumers. Interruptions may be caused by natural phenomena (e.g., electric discharges during storms), deficient operation and/or maintenance procedures and by overloaded distribution networks. Celtins' distribution system is particularly vulnerable since the State of Tocantins has the second highest rate of electric discharges in the country (12 discharges per km^2/year). The most significant problem in this regard is with wooden crossbars that have been severely deteriorated by the effects of weather and insects (termites and other). The Investment and Refinancing Program contemplates substitution of most wooden crossbars and remaining wooden poles; thus, will contribute to strengthen the

system. New crossbars to be installed are made of recycled plastic with pressed sugar cane bagasse, which is much more durable and is not attacked by insects. The energy sector's regulatory agency (ANEEL) permanently verifies the reliability of energy distribution services provided by Celtins. This is based on regulated indicators, such as the "Equivalent Duration of Interruptions per Consumer" (DEC) and the "Equivalent Frequency of Interruptions per Consumer" (FEC), among others. In 2005, Celtins' DEC indicator was high enough to represent a concern. However, based on measured results on lines that have already been renovated, Celtins estimates that power interruptions may be reduced by as much as 50% on some distribution lines. Furthermore, some of the projects integrated in the Investment and Refinancing Program will contribute to improve and strengthen Celtins' systems and network and reduce the instances and duration of power interruptions.

4.49 *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.), and are particularly critical in overloaded distribution networks. Celtins has specific procedures to deal with these situations, in view of minimizing occurrences and duration, and attenuating consequences. The energy sector's regulatory agency (ANEEL) requires that all claims of equipment damage be investigated according to procedures set forth in ANEEL Resolution N^{o} 61/2004. This requires that damaged equipment be inspected and that other possible causes not linked to the power supply (i.e. improper operation) be verified. A 60-day time limit is established for the investigation. Furthermore, as per ANEEL Resolution N^{o} 138/2000, distribution concessionaires are required to institute an Electric Energy Consumer Council. This includes representatives of each consumer class (residential, industrial, commercial and rural), of a consumer defense entity, of a public sector entity and of Celtins. Thus, transparency and correct handling of consumer complaints and losses is further guaranteed.

4.50 *Generation of Electromagnetic Fields*: The generation of electromagnetic fields along the lines and substations is another aspect related to the operation of Celtins' 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 Celtins, are not significant. On the other hand, for transmission lines operating at voltages above 500 kV (which is not the case of any of Celtins' 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 agency (ANEEL) does not verify radiation levels, nor is any measurement or other form of monitoring conducted.

D. Positive Impacts / Benefits

4.51 Electric energy is a relevant factor for economic and social development, and human well-being. Distribution companies, such as Celtins, 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 and Refinancing Program have the potential to benefit several areas and communities throughout the State of Tocantins, by improving quality and reliability of electric supply and by reaching new consumers in urban areas and particularly in rural areas

through implementation of the Light for All Program. These improvements may induce significant beneficial impacts on social conditions of served communities. The major positive impacts associated with the implementation of Celtins' Investment and Refinancing Program are described in more detail below.

4.52 *Improved quality and reliability of electric power supply:* Projects in the Investment and Refinancing Program were selected on the basis of an assessment of current system deficiencies. Thus, new and upgraded 138 kV distribution lines will substitute overloaded lines at lower voltages, particularly for long distance transmission. These lower tension lines will then be used to better service local demand centers. Throughout the state, renovation of 34.5 kV and 13.8 kV distribution lines will significantly reduce frequency and duration of power outages (DEC and FEC). Improved system reliability will benefit residential consumers in general and favor competitiveness of commercial and industrial consumers.

4.53 *Expanded coverage of electric energy distribution services*: The projects included in the Investment and Refinancing Program will allow further expansion of electric energy coverage, including: (i) connection of 11,434 new consumers distributed in several urban areas throughout the state and (ii) electrification of 40,000 rural residences.

4.54 *Inducement of rural development and industrialization:* Rural electrification is expected to generate significant social, economic and environmental benefits in the rural hinterland of the State of Tocantins. Irrigation of pastures and other crops will become feasible, increasing productivity and reducing pressure to expand occupied land. In many regions dedicated to cattle rearing, the current practice of burning pastures in order to induce regeneration during the dry season will no longer be necessary. Milk producers will be able to refrigerate their production prior to transport, as required by recent regulations issued by the National Sanitary Surveillance Agency (ANVISA). Many other forms of primary processing of agricultural produce will become economically feasible. Furthermore, diesel generation at existing rural industries will be substituted by clean electric power.

4.55 *Enhancement of economic development potential in urban centers:* Modernization of distribution systems will create conditions for improvements in agricultural, industrial, and commercial activities throughout the State of Tocantins. Currently, limited availability of electric power supply represents an obstacle to new industrial and commercial ventures in many parts of the state. Celtins reports that it has not been able to service requests for energy from various agribusinesses and industrial concerns. These requests are generally under 2 MW each. Through the Investment and Refinancing Program, additional power will be made available mainly at the Araguaína Industrial District and in the cities of Arapoema, Goiatins and Dianópolis, which is where insufficient capacity has been felt most. Increased availability of energy supply in these cities may facilitate economic expansion and contribute to business location decisions. Therefore, implementation of the projects integrated in the Investment and Refinancing Program may benefit communities and also allow for the development of local micro and small enterprises.

4.56 *Direct and indirect creation of jobs:* During implementation of the Celtins Investment and Refinancing Program a significant number of direct and indirect jobs will be created. Currently, 60 contractors are engaged in the Light for All Program in the State. They employ approximately 1000 workers. This level of construction employment is likely to increase to over 1600 workers when other Investment and Refinancing Program components begin to be built, in particular the first component (Distribution network expansion and upgrade). Celtins

has a policy of favoring local contractors and local workforce and thus it can be expected that the majority of the construction workforce will be hired locally.

4.57 *Expansion of low-income population access to electric energy*: This is perhaps one of the most noteworthy positive impacts associated with the expansion of Celtins' distribution networks. A significant percentage of the Company's residential customers are in the low-income bracket. Furthermore, most of the new urban and rural consumers to be serviced by the distribution system (including the Light for All program) are also in this bracket.

4.58 *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.

4.59 *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 Celtins to mitigate environmental and social impacts. These measures are currently adopted by Celtins during planning, construction and operation of their facilities, and will also apply to projects included in the Investment and Refinancing Program.

A.1 Planning and Construction Phases

5.2 *Analysis of alignment alternatives:* Definition of distribution line alignments is a responsibility of Celtins Engineering Division, with support of the Environmental Unit. Preliminary alignment planning will result in establishment of a basic alignment, which will generally follow existing highways, roads or other established corridors. Use of this aspect as the main alignment selection criteria is essentially correct since environmental impacts associated with service road construction could be far more significant than those associated with the distribution lines themselves. When alternatives may interfere with Conservation Units or Indigenous Reserves, the Environmental Unit will be engaged during alignment definition. Otherwise, the Environmental Unit becomes involved after the basic aligment is established, and will assist in the alignment adjustment process, as necessary, to avoid disturbances on remaining native vegetation, fragile ecosystems, existing land use and occupied areas. Satellite imagery is used to assist with alignment decisions.

5.3 *Site-selection procedures for substations:* Location of substations is also subject to a site selection procedure. Selected sites are generally already cleared and relatively flat areas. Since substations are generally located at or near the outskirts of urban centers, but relatively distant from urbanized areas, it is generally possible to find sites with no significant

environmental restriction. The Environmental Unit will be involved mostly when restriction-free sites are not available.

5.4 *Preparation of environmental impact studies:* State legislation requires Simplified Environmental Impact Studies (RCA) mainly for 138 kV and 69 kV distribution line licensing processes, and will require only a simpler Environmental Project (PA) for 34.5 kV and 13.8 kV line processes. In case of interference with Environmental Conservation Units, Indigenous Reserves or other sensitive regions, which is not the case of the projects integrated in Celtins' Investment and Refinancing Program, a fully detailed and documented Environmental Impact Study (EIS) may be requested. Celtins has a proactive attitude and carries preliminary discussions with environmental, indigenous and cultural heritage authorities, as applicable, to define the criteria and specifications to be adopted in developing the necessary studies. The Company contracts with consulting firms the preparation of the environmental studies necessary for permitting purposes. 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 community concerns, archeologists, biologists, etc.).

5.5 *Environmental, social and health and safety instructions for contractors:* Most construction and maintenance services are outsourced by Celtins. This includes tendered construction services as well as indefinite quantity contracts that are awarded on a territorial basis for fixed periods of time. Standard contracts for such services include adequate provisions regarding health and safety regulations as well as the prohibition of the use of child labor. Celtins also reports that, whenever pertinent, environmental specifications will be annexed to contracts. This will be the case, for instance, on distribution lines whose permitting procedures resulted in specific requirements to be observed during construction.

5.6 *Special technical solutions used in distribution line projects:* Due to the limited impact of distribution lines in Celtins' system and to the characteristics of the landscape in which most are installed, impact mitigation measures other than alignment adjustments are usually not necessary. Nevertheless, the following measures are applied by Celtins as necessary and deserve to be mentioned: (i) reduction of the right-of-way strip that needs to be cleared, to diminish amount of vegetation to be removed; (ii) use of single-based poles, as opposed to the traditional four-based towers (the single-based poles require a very small amount of soil movement during its installation); (iii) use of higher poles, which will require suppression and trimming only of the highest vegetation individuals and/or branches; (iv) no use of wood poles or crossbars (the Company uses concrete poles and crossbars made of a composite integrating recycled natural materials and plastic) ; and (v) use as much as possible of existing ROW, corridors, roads and rural pathways to install the distribution lines, to avoid construction of new accesses (temporary or permanent) and new ROWs.

5.7 *Spill containment devices in substations:* Projects for the larger new substations include concrete containment devices under the transformer's mineral oil tanks as well as under other equipment with tanks, in order to control soil contamination by spills. However, this is not the case of small substations recently built or of most of the substations in the existing system (83). Furthermore, special drainage designed to convey spills to oil/water separation sumps is not in place. These aspects will also be subject of IDB's recommendations for improvements.

5.8 *Procedures for expropriation and third-party compensation:* Celtins has internal guidelines for estimation of real estate indemnification value where purchase of property is necessary. In

the case of ROW establishment, there is compensation for loss of arable area and/or land use potential. In most of the cases, Celtins has reached amicable agreements with affected property owners. Expropriation procedures based on eminent domain, which are a legal option where negotiation is not feasible, have been resorted to only on a very exceptional basis by Celtins. Involuntary resettlement has not been necessary for installation of any of Celtins' existing system and is not expected to be required for implementation of the Investment and Refinancing Program. Celtins has no formal policy or procedure for cases of involuntary resettlement. Thus, 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 Celtins to comply with IDB Policy OP-710 on Involuntary Resettlement, when applicable.

5.9 *Protection from risk of electric shock:* Celtins adopts and requires their contractors to adopt all technical standards related to safety in electric installations as applicable to design, construction and operation stages. Furthermore, the Company uses electromechanical and digital protection systems that identify failures and disconnect the defective circuits immediately.

A.2 Operation Phase

5.10 *Fauna protection:* Celtins has invested in the prevention of accidents with fauna at substations. Where the distance between energized cables reaching smaller equipment is small enough to be bridged by the wingspan of some birds or by the body of large lizards, Celtins has experienced some instances that resulted in death of fauna and power failures. To prevent this type of accidents to happen, Celtins installed insulating plastic tubes around conductors as they leave the equipment. This simple measure has successfully eliminated the problem and will be adopted as necessary. Problems with birds or other species in distribution lines are reported to be very rare and no specific measures are adopted in this regard.

5.11 *Solid waste management:* Although Celtins does not have a formal solid waste management system, nor an inventory of the wastes generated at their facilities, with few exceptions, the Company adopts appropriate measures to deal with the most relevant wastes. The items bellow, present some comments on the waste management measures currently adopted by Celtins.

(a) Polychlorinated Biphenyls (PCBs): Since 1995 all equipment containing PCB has been replaced by equipment that uses mineral dielectric fluid. All the PCB-containing equipment was sent for incineration at an authorized processor in 1998.
(b) Mineral oil: Transformer and capacitor mineral oil is regenerated by outsourced specialized companies. Any unrecoverable oil is delivered to an authorized processor for treatment and possible reuse for other purposes.
(c) Used oil ad lubricants: Used oil and lubricants from the maintenance shop is also sent to authorized recycler.
(d) Batteries: Celtins uses sealed batteries at substations. These do not leak and do not require maintenance. At the end of their life cycle, they are sold to recyclers.
(e) Lamps: Maintenance of public street lighting is a municipal authority responsibility and thus discharged street lamps are not included in Celtins' wastes. For other type of discharged lamps generated at their facilities, the Company is presently assessing possible options for adequate disposal.
(f) Organic and domestic waste and other wastes are sent to public landfills.

(g) Recyclable materials such as paper, plastic, cardboard, wood, copper and other scrap metals are sold to local recyclers.
(h) Wastes generated at vehicle maintenance: all vehicle maintenance is performed by outsourced workshops.

5.12 *Soil and groundwater contamination prevention:* The risk of soil and groundwater contamination associated to Celtins' operations exists mostly at the maintenance shop and to a lesser extent at the central warehouse and some old substations. Adequate spill containment dikes, drainage collection devices and oil/water separation sumps are planned at the new central warehouse. These devices are not fully in place at the maintenance shop. Projects for the larger new substations include concrete containment devices under the transformer's mineral oil tanks as well as under other equipment with tanks, in order to control soil contamination by spills. Sanitary waste effluents are sent to septic tanks in some substations that are not linked to the public sewer collection grid. The risk of contamination in this case is very limited since most substations are unmanned operations.

B. Environmental and Social Monitoring Programs

5.13 Formal monitoring procedures are better structured to deal with occupational health and safety issues. There is no Environmental and Social, or Health and Safety Management System, and contractors are structured mostly with regard to occupational health and safety. There is no formal monitoring and assessment system for the environmental and social performance of the numerous Company departments or contractors.

5.14 It should be pointed out that Celtins is integrated in the *Grupo Rede*, which is very well organized and professionally managed, have specific environmental and health and safety policies, procedures and standards at corporate level and is presently undergoing a process of enhancing the environmental and social, and health and safety management systems of two of their other companies similar to Celtins (Celpa in the State of Pará, and Cemat in the State of Mato Grosso), in operations supported, assisted and supervised by IDB. The knowledge and experience acquired in these two other operations will be used to the benefit of the Celtins operation, including in the improvement of management procedures and systems, as necessary.

B.1 Construction Phase

5.15 *Monitoring of construction:* The Company's Environmental Unit inspects some construction works on a selective basis. However, there is no formal rule establishing frequency of inspections and type of works to be inspected. Environmental inspections are conducted informally and usually no structured inspection reports are produced as a result.

B.2 Operation Phase

5.16 *Monitoring of operation and maintenance:* Likewise, no formal environmental monitoring procedure is in place to monitor operation and maintenance activities.

5.17 *Monitoring of ROWs:* All distribution line ROWs are routinely monitored by the respective Regional Service Center (CRS). This monitoring will include verification of erosion problems, irregular waste disposal, illegal occupation and construction, vegetation regeneration and other aspects.

C. Health and Safety Measures

5.18 Planning and design of Celtins' facilities has taken into account all applicable health and safety legal requirements established in federal and state regulations.

5.19 Regarding other occupational health and safety aspects, it is worth noting that Celtins has adequate provisions in all their standard contracts with contractors and other service providers. These provisions include all applicable legal standards and procedures, including use of personal protection equipment (PPE), Internal Commission for Accident Prevention (CIPA), and others.

5.20 The Health and Safety Unit regularly conducts health and safety inspections of all contractors. It was reported that this procedure takes place every two months. Inspections are formal and guided by a compliance checklist. Formal inspection reports are produced in all cases and in cases of serious non-compliance, the suspension of activities may be requested. The Health and Safety Unit is preparing a complementary procedure that will consist of a more thorough environmental audit of contractors to be conducted every six months.

5.21 Celtins is participating in a *Grupo Rede* corporate level initiative to produce a complete and detailed set of safe work instructions for all activities relative to construction, operation and maintenance of distribution systems. Some of these instructions are already in use and include a training manual.

5.22 All Celtins employees undergo pre-employment health and safety training as well as periodic on the job training. All new contractors and their employees are also trained on health and safety aspects prior to the beginning of their activities.

5.23 Accident investigation procedures are conducted according to legally applicable standards and are centralized by the Health and Safety Unit. Most common accidents in Celtins' operation are transportation accidents involving motorcycles, since many employees use this type of vehicle during work.

D. Contingency Plans

5.24 In Brazil, in general, the risk of natural disasters is relatively low. Major emergency situations associated with natural events and involving Celtins electric facilities are related to the effects of rainstorms on distribution networks, such as the fall of trees and branches, and electric discharges that may also cause short circuits and interruptions in power supply. Vehicular collisions with poles and property fires that ultimately involve the distribution networks are the most important potential non-natural events.

5.25 Any person may report to Celtins an accident involving the system by calling the Company's toll free Call Center line. The Company responds to emergencies occurring on their electric system through 8 CRSs (Regional Service Centers) which are responsible for solving daily and occasional energy problems occurring in their specific service areas.

5.26 All Celtins facilities feature well positioned and distributed fire extinguishers and proper signaling to identify equipment that may offer risk of electric shock and fire. Three

outsourced specialized companies are responsible for maintenance and refill control of all Celtins' fire extinguishers.

5.27 Celtins does not have a formal contingency plan to deal with specific environmental emergencies. In case of fire, local employees are trained, as a fire brigade, to deal with it or call for the nearest fire department support.

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

5.28 In terms of environmental, social, health and safety management tools, the Company has: (i) a Socio-Environmental Responsibility Policy and a Health and Safety Policy; (ii) an Environmental Unit reporting directly to the Vice-President of Operations; (iii) a Health and Safety Unit within the Human Resources Division in the Company's Administrative Department; and (iv) several specific procedures, standards and guidelines, mostly relative to health and safety issues, but including some to address environmental and social guidelines as well. However, Celtins' procedures, standards, and guidelines as well as other resources available to address these issues and aspects are not organized and structured into Environmental and Social, and Health and Safety Management Systems.

E.1 Environmental and Social Management System

5.29 Celtins has an Environmental Unit that reports directly to the Vice-President of Operations and may support several of the Company's Divisions. However, it interacts mostly with the Engineering Division. It is currently staffed with two full-time members (the Environmental Manager and an Environmental Assistant), 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. However, there are some tasks relative mainly to environmental monitoring and supervision of construction, operation and maintenance activities and regularization of the permitting status, that are not currently performed by the Unit on a systematic basis. Inclusion of these activities in the Unit's standard procedures, as necessary to comply with the requirements of an appropriate Environmental and Social Management System, will very likely require additional staff.

5.30 The Environmental Unit effectively participates in the integration of environmental and social criteria and concerns into project design, particularly at the 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 in the case of distribution lines, than in evaluating locations for substations. The process of siting Celtins' 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. Similarly, Celtins' environmental management results will benefit by a more substantial integration of the Environmental Unit in the Company's activities, initiatives and decisions.

5.31 Celtins' Environmental Unit has built a good relationship with state and federal authorities responsible for environmental protection and permitting, indigenous peoples and cultural heritage. This is the result of constant consultation and a proactive attitude that has sought to

discuss openly with each agency on the criteria, specifications and requirements; and to obtain a prior agreement on the studies, procedures and measures necessary to comply with them.

5.32 However, there is not an organized and structured Environmental and Social Management System, and procedures 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. Management of the environmental and social aspects related to the activities at the Regional Service Centers, environmental monitoring and control of contractors and other outsourced service providers, control of legal compliance of all facilities in particular with regard to environmental permitting, and waste management practices, are among the aspects in need of improvement through design and implementation of formal procedures, standards and guidelines.

5.33 I it is important to note in this regard that *Grupo Rede* is currently developing an Environmental and Social Management System (ESMS), a Health and Safety Management System (HSMS) and Contingency Plan (CP), as necessary, to two other of their companies that are similar to Celtins (Celpa and Cemat), to meet IDB requirements established during the analysis of both operations that are currently supported, assisted and supervised by the Bank. The knowledge and experience acquired in these two other operations will be used to the benefit of the Celtins operation, including in the improvement of management procedures and systems, as necessary.

E.2 Health and Safety Management System

5.34 Celtins has a Health and Safety Unit that reports to the Human Resources Division in the Company's Administrative Department. This Unit is currently staffed with a Health and Safety Engineer, five Health and Safety Inspectors, an Occupational Health Doctor (half-time) and an Administrative Assistant. Three of the inspectors are centered at the capital city of Palmas, one at Gurupi and one at Araguaína.

5.35 Celtins has several procedures and standards to specifically address health and safety issues relating to Company's as well as contractors activities. These procedures and standards are being condensed in a document called "Consented Labor Safety Rules". This is a corporate document produced by *Grupo Rede* with participation of Celtins' health and safety staff and will be used in all of the group's companies. Thus far, it includes the following main procedures:

- NC-SS 01.01 – Health and Safety Engineering Policy
- NC-SS 01.02 - Subcontractors Occupational Safety Rules
- NC-SS 01.03 - Subcontractors Audits
- NC-SS 01.04 - Technical Report on Electric Installations
- NC-SS 01.05 - Office services
- NC-SS 01.06 –Accident Prevention
- NC-SS 01.07 – Protection Equipment Use
- NC-SS 01.08 – Fire Combat and Prevention
- NC-SS 01.09 – Rubber Gloves for Electricity Workers

5.36 NC-SS 01.01 is the Health and Safety Engineering Policy and establishes basic principles, rights and duties in relation to the Company, the employees, unions, contractors and other outsourced service providers, and the community. The internal standards define the general

conditions for prevention of occupational accidents and diseases. They include detailed safe work procedures for most construction, operation and maintenance activities and are fully compliant with all Brazilian Health and Safety Regulations (*Normas Regulamentadoras*).

5.37 Celtins is aware of the occupational risks relating to their activities, which are mainly related to work on high places, fall of structures and materials and electric shocks. These risks are properly identified in the PPRA (Environmental Risk Prevention Program) and are monitored by the health and safety staff.

5.38 Celtins properly monitors health and safety aspects of their contractors and outsourced service providers. This takes place through periodic inspections (every two months), which result in detailed compliance lists and a scoring system for assessment of performance. Accident investigation procedures are also adequate, as is health and safety training, at least with regard to Celtins' employees, which undergo pre-employment and periodic on-the-job training.

5.39 However, health and safety measures and procedures are not organized into a structured Health and Safety Management System. Although many operational procedures are in place, some of them are not formally written, nor are the correspondent monitoring or follow-up procedures. Furthermore, the Company would benefit by improvements in the supervision of health and safety aspects of outsourced construction and maintenance work, including training requirements and use of continuous performance assessments as a basis for corrective action and continuous improvement. Again, the use of a similar approach as for the cases of Celpa and Cemat can help bridge these gaps.

E.3 Environmental and Social Responsibility

5.40 Celtins has a Social Responsibility Unit currently integrated into the Social Communications Advisory Division. This Unit is responsible for a variety of social responsibility projects, including educational programs (safe use of energy, defensive driving), cultural projects (restoration of historic buildings, promotion of regional poetry), and others. Another successful program that has been implemented involves the promotion of water sports competitions in the Lajeado and other reservoirs in the state. This has significant impact on community understanding of the importance of reservoir water quality and shore protection. Celtins also fosters voluntary social action by their employees and has a structured program in this regard.

5.41 Some social responsibility actions are jointly undertaken with *Fundação Aquarela*, which is *Grupo Rede*'s social foundation that develops several social and educational programs throughout the states where the group is active.

5.42 Celtins has issued yearly Social Balances since 1999. and a draft of *Grupo Rede*'s first integrated Social and Environmental Responsibility Report has been recently circulated on an internal basis. Plans are to formally issue this more complete report for public distribution starting in 2007.

VI PUBLIC CONSULTATION

6.1 Federal environmental laws and regulations include requirements that public consultations, and in some cases hearings, be performed in the realm of the environmental licensing process. Energy sector regulations (ANEEL Resolution N^{o} 259/03) establish also the need to hold a public meeting in processes involving the establishment of rights-of-way, when amicable negotiations fail and decrees of eminent domain leading to expropriation are required.

6.2 State of Tocantins environmental laws closely follow federal regulations relative to public consultation requirements and require public consultation in the case of projects that need to submit a thorough Environmental Impact Study (EIS). Projects undergoing simplified procedures such as the Simplified Environmental Impact Study (RCA), which is required for some of Celtins distribution lines, are not required to undergo public hearings or any other similar consultation procedure. Nonetheless, legislation requires that each stage of the licensing cycle (LP, LI, LO) be published in the media, with indication of the project being licensed, the type of study submitted and the license obtained or requested.

6.3 Celtins has not yet been asked by any competent authority to perform public consultations relative to projects included in the Investment and Refinancing Program. RCAs have thus far been submitted on only two previous 138 kV lines and the main events of the licensing cycle were disclosed as per publication requirements described above. However, no public consultation has been required.

6.4 Similarly, all of the distribution lines in Celtins' system, which were implemented after ANEEL Resolution N^{o} 259/03, had their ROW established exclusively on an amicable basis and public meetings with affected property owners were not required.

6.5 In cases involving extension of services to indigenous areas and peoples (which are planned to occur under the Light for All Program), 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 these communities, including the involvement of FUNAI staff familiar with the specific indigenous community. The Company is aware and complies with these requirements.

6.6 Nevertheless, IDB has requested Celtins to perform an Environmental Analysis (EA) of the Investment and Refinancing 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) has been publicly disclosed according to Bank's OP-102 Disclosure of Information Policy, in all eight of Celtins' Regional Service Centers in the State of Tocantins, at IDB's Public Information Center in Washington, DC, and Country Representative Office, and at the Bank's web site (http://www.iadb.org/exr/pic/environmental/proposed.cfm).

6.7 There are two main channels through which Celtins receives complaints and comments regarding the Company, their staff, and the services provided. One is the Call Center, or a toll-free consumer service for reception of requests and complaints regarding the services provided. The other is the energy sector regulatory agency (ANEEL), that receives complaints directly through its website and retransmits them to Celtins, requiring subsequent

demonstration of compliance with regulations relative to grievance response and management. Complaints can also be received through Celtins and/or Grupo Rede website, as well as through standard mail.

6.8 Most complaints registered at Celtins' Call Center are about billing procedures or other commercial issues and are, as much as possible, handled directly by Call Center operators. Other types of complaints involving more complex issues are directed to Celtins' Ombudsman (*Ouvidoria*), which is prepared to receive and process all requests and complaints relative to the Company and their employees, or outsourced contractors. As per ANEEL regulations, all complaints need to be responded within 10 days. In some cases, this response may describe the status of an ongoing investigation and need not indicate the Company's final position.

6.9 The Company has also a Social Communications Program coordinated by the Social Communications Advisory Division. This program aims to inform population and Celtins 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 directed not only to consumers but also to farmers next to distribution lines, contractors of urban buildings and others. Some of these booklets deal with the risks associated to energy use and to execution of specific activities next to energized distribution lines and electric equipment, as well as with preventive measures that should be adopted.

6.10 Finally, it should also be pointed out that in line with good practice standards relative to public participation and disclosure of information, IDB and the Environmental and Social Consultant held several meetings with local, state and federal authorities during the ESDD process, such as FUNAI, SEPLAN, NATURATINS, President of the Tocantins State Association of Mayors, mayors of selected municipalities, etc, as well as with non-governmental organizations (NGOs), to assess concerns and suggestions regarding the proposed Investment and Refinancing Program and quality of services provided by Celtins.

VII CONCLUSIONS

7.1 The main conclusions reached by the Environmental and Social Due Diligence (ESDD) performed by IDB with the support of the Environmental and Social Consultant (*JGP, Consultoria e Participações, Ltda.*), with regard to the environmental, social, health and safety aspects pertinent to the Investment and Refinancing Program, as well as to Celtins' existing facilities and operations, are described below.

7.2 Based on the work performed in the ESDD, the Project Team confirmed that the Company has in place procedures and control measures to manage the environmental, social, health and safety impacts and risks associated with the Investment and Refinancing Program. Therefore, the Team considers the Project to be viable/feasible and have not identified any risk factor that can represent a risk to the environmental sustainability of the operation with IDB.

7.3 Nevertheless, this ESMR points a few deficiencies regarding Celtins' environmental management capacity, which the Team does not consider to be a risk to the environmental sustainability of the operation with IDB. Furthermore, these few deficiencies can be resolved with the assistance of the Bank. To help improve the environmental management capabilities of Celtins, the Bank is asking the Company to address these deficiencies. In addition, in the

preparation of the operation the Team is developing efforts to introduce added value in terms of environmental sustainability by incorporating additional requirements that addresses matters beyond Project level. These additional requirements will be reflected in the environmental, health and safety action plan **(see Paragraph 8.2)**.

7.4 It should be pointed out that Celtins is integrated in the *Grupo Rede*, which is very well organized and professionally managed, have specific environmental and health and safety policies, procedures and standards at corporate level and is presently undergoing a process of enhancing the environmental and social, and health and safety management systems of two of their other companies similar to Celtins (Celpa in the State of Pará, and Cemat in the State of Mato Grosso), in operations supported, assisted and supervised by IDB. The knowledge and experience acquired in these two other operations will be used to the benefit of the Celtins operation, including in the improvement of management procedures and systems, as necessary.

7.5 Celtins shall continue to clarify and show evidence of compliance with all relevant environmental licensing legislation applicable to the Investment and Refinancing Program as well as to existing facilities and operations.

7.6 Celtins shall further develop their 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.

7.7 The Company shall perform adequate risk analysis activities and studies, and, if necessary, develop and implement the applicable corrective action plans to appropriately address potential environmental liabilities associated with existing facilities, such as relevant substations, warehouses, maintenance center and mechanical shops.

7.8 Celtins shall develop and implement a solid waste management program covering all wastes generated at their facilities, particularly those that can be considered hazardous. This program should include an inventory of the wastes generated as well as the specific procedures to handle and ensure adequate treatment and final disposal.

7.9 Similarly the Company shall continue to improve their procedures to properly and systematically address cases of illegal occupation of the ROW areas, through development and implementation of a specific program.

7.10 The process of siting Celtins' 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.

7.11 Celtins' 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 shall be strengthen to better address the multiple tasks and responsibilities involved in association with the Investment and Refinancing Program, as well as for systematic monitoring and supervision of environmental and social, and health and safety aspects pertaining to Regional Service Centers and contractor's activities.

7.12 Celtins' Investment and Refinancing Program shall also integrate adequate 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) environmental programs, 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 The Bank (IDB) will require as part of the Loan Agreement that Celtins, *Companhia de Energia Elétrica do Estado do Tocantins* (or "Company"), and all portions of the Investment and Refinancing 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 and all applicable IDB's environmental and social Policy and requirements.
2. All requirements associated with any environmental, health and safety related permits, authorizations, or licenses that apply to the Investment and Refinancing Program or the Company.
3. All environmental, health and safety requirements of the Investment and Refinancing Program contracts, and any subsequent modifications.
4. All aspects and components of all of the Investment and Refinancing 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 and Refinancing 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 and Refinancing 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 (EHSAP), in form and substance satisfactory to IDB, properly addressing the recommendations indicated in **Paragraphs 7.5** to **7.12** 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 shall 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) as well as any pertinent contingency plan (CP).
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 and Refinancing 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 and Refinancing 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 EHSAP, whose due dates are referenced as prior to First Disbursement, including documents pertaining to: (i) plan to describe the environmental and social management system; (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 and Refinancing 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 and Refinancing Program.

8.6 During the life of the Loan Agreement, the Company shall prepare and submit Environmental and Social Compliance Reports (ESCR), in form, substance and frequency satisfactory to IDB.

8.7 The Bank will monitor the Investment and Refinancing 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 and Social 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: TOCANTINS AND NORTH REGION OF BRAZIL

Celtins Concession Area:
State of Tocantins
(2004 numbers)

Concession Area: 278,421 km^2
Served Municipalities: 139
Consumer Units: 308,004
Population Served: 986,176

FIGURE 2: STATE OF TOCANTINS – AREA OF CONCESSION OF CELTINS

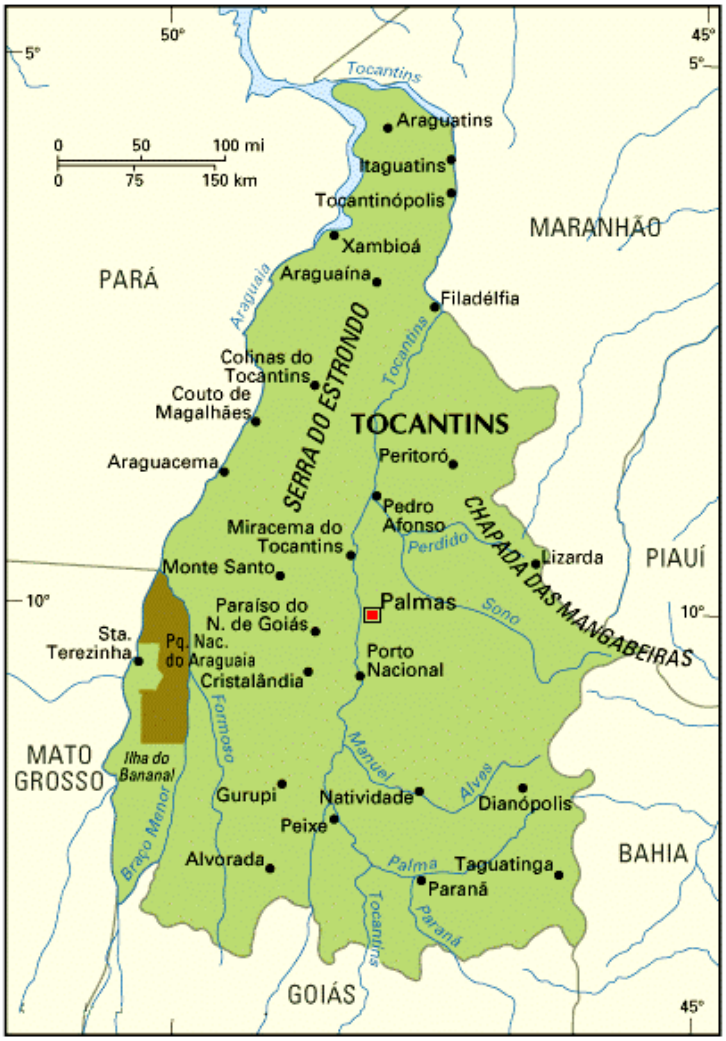


FIGURE 3: MAIN EXISTING CELTINS 138, 69, 34.5 AND 13.8 KV LINES

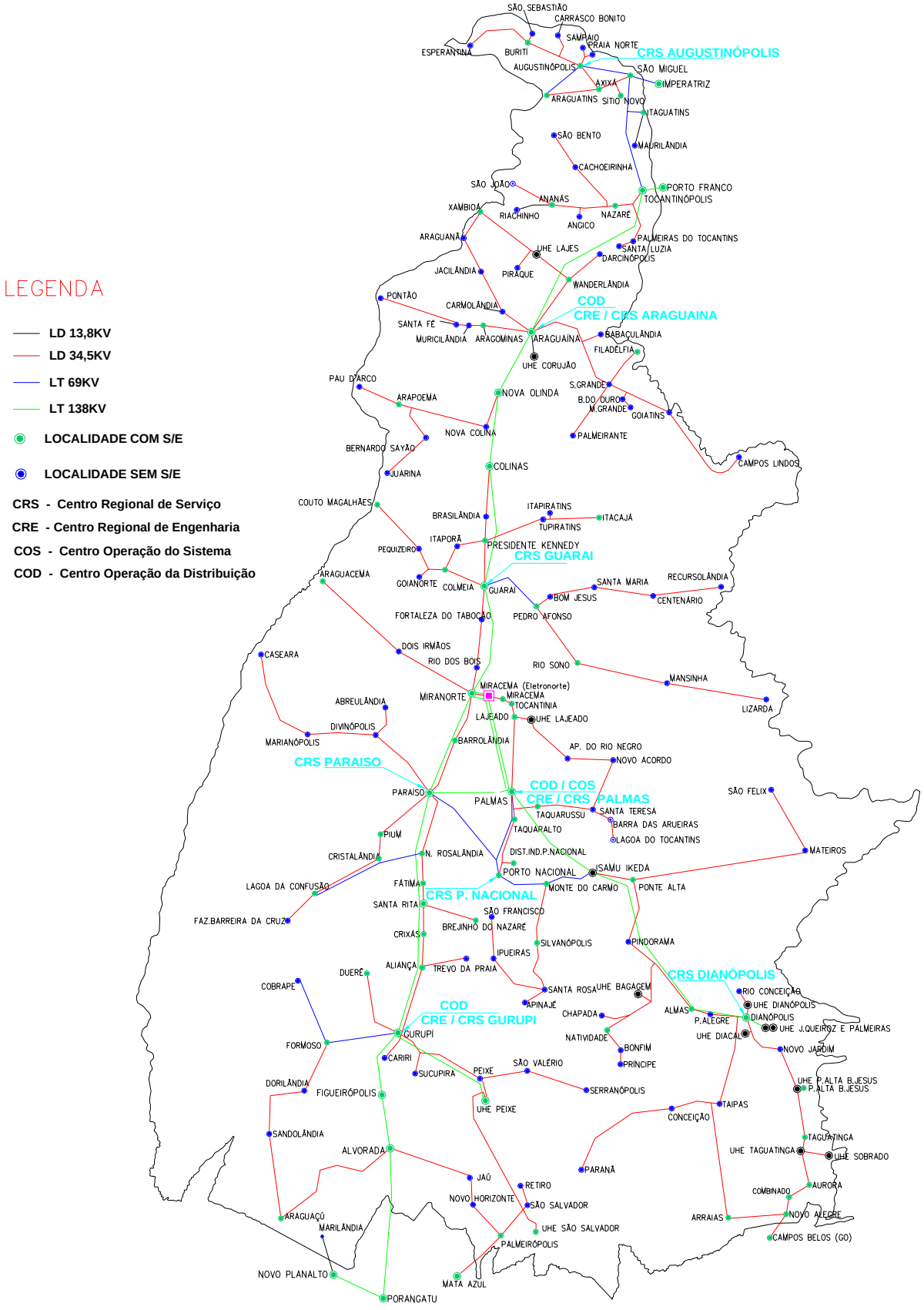


FIGURE 4: NEW 138 KV LINES PROPOSED BY CELTINS

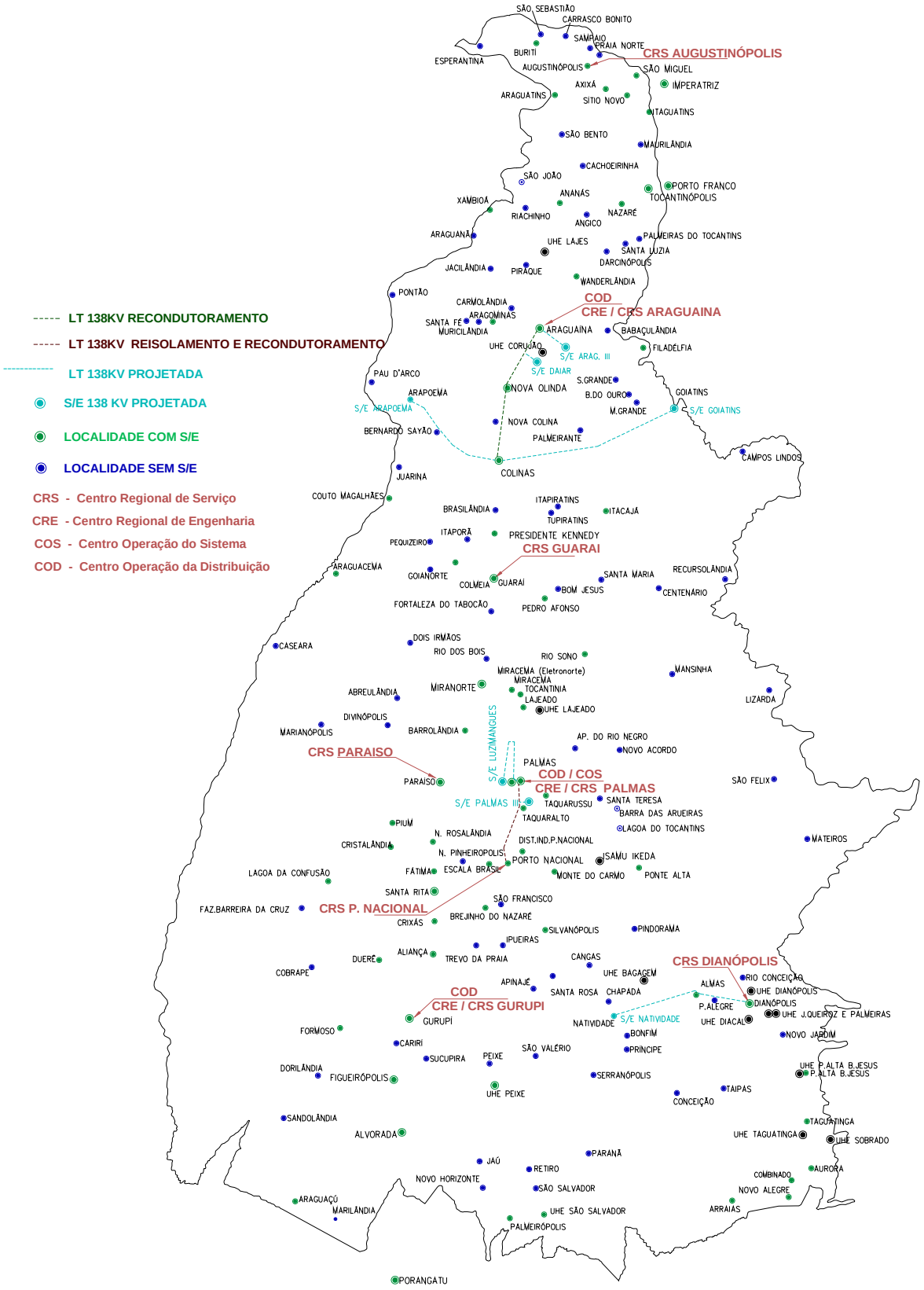
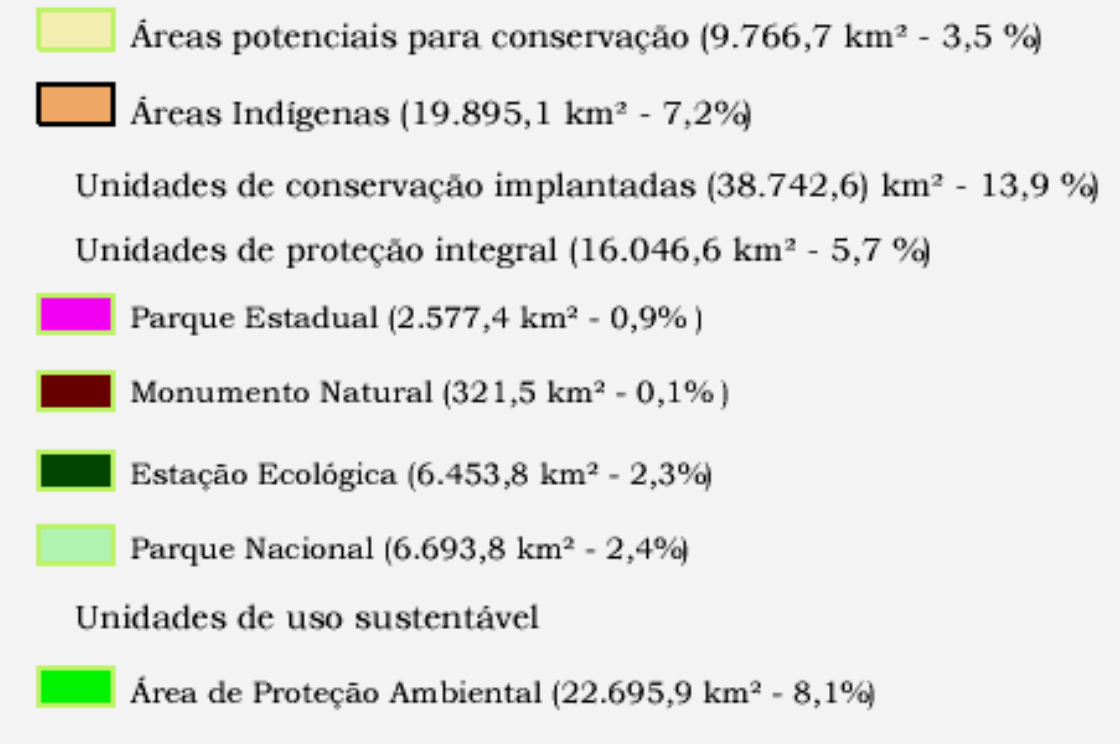


FIGURE 5: INDIGENOUS RESERVES AND CONSERVATION AREAS



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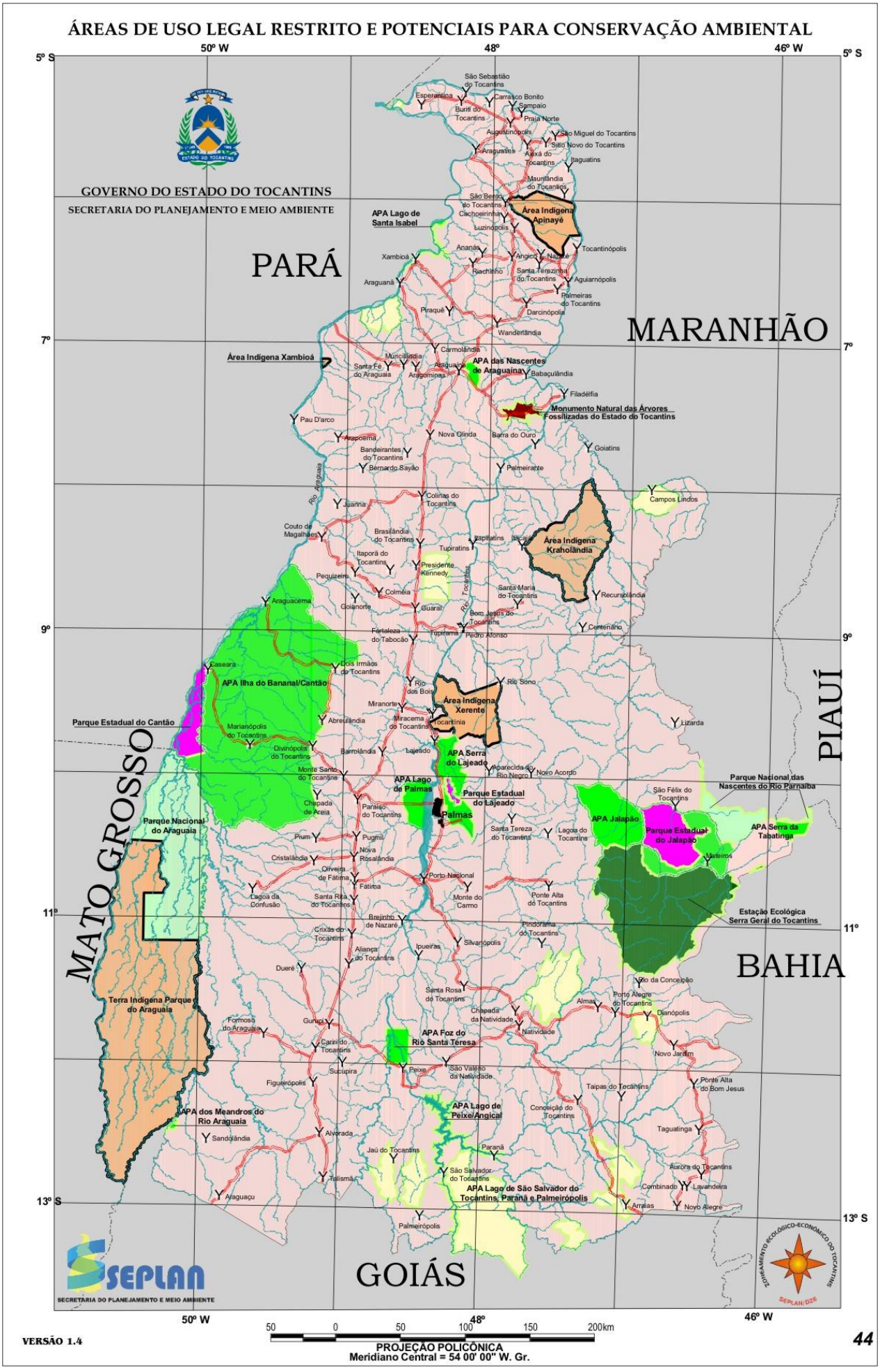
ÁREAS DE USO LEGAL RESTRITO E POTENCIAIS PARA CONSERVAÇÃO AMBIENTAL
GOVERNO DO ESTADO DO TOCANTINS
SECRETARIA DO PLANEJAMENTO E MEIO AMBIENTE
50º W
48º
46º W
5º S
7º
9º
11º
13º S
PARÁ
MARANHÃO
PIAUÍ
BAHIA
GOIÁS
MATO GROSSO
APA Lago de Santa Isabel
Área Indígena Apinayé
Área Indígena Xambioá
APA das Nascentes de Araguaina
Monumento Natural das Árvores Fossilizadas do Estado do Tocantins
Área Indígena Kraholândia
Área Indígena Xerente
APA Ilha do Bananal/Cantão
Parque Estadual do Cantão
APA Serra do Lajeado
APA Lago de Palmas
Parque Estadual do Lajeado
Palmas
Parque Nacional do Araguaia
Terra Indígena Parque do Araguaia
APA Jalapão
Parque Estadual do Jalapão
Parque Nacional das Nascentes do Rio Parnaíba
APA Serra da Tabatinga
Estação Ecológica Serra Geral do Tocantins
APA Foz do Rio Santa Teresa
APA Lago de Peixe/Angical
APA dos Meandros do Rio Araguaia
APA Lago de São Salvador do Tocantins, Paraná e Palmeirópolis
São Sebastião do Tocantins
Esperantina
Carrasco Bonito
Sampaio
Buriti do Tocantins
Praia Norte
Augustinópolis
São Miguel do Tocantins
Sítio Novo do Tocantins
Araguatins
Axixá do Tocantins
Itaguatins
Maurilândia do Tocantins
São Bento do Tocantins
Cachoeirinha
Luzinópolis
Ananás
Angico
Nazaré
Tocantinópolis
Xambioá
Riachinho
Santa Terezinha do Tocantins
Aguiarnópolis
Araguanã
Palmeiras do Tocantins
Piraquê
Darcinópolis
Wanderlândia
Carmolândia
Muricilândia
Santa Fé do Araguaia
Araguanã
Aragominas
Babaçulândia
Filadélfia
Pau D'arco
Arapoema
Nova Olinda
Barra do Ouro
Goiatins
Bandeirantes do Tocantins
Bernardo Sayão
Palmeirante
Rio Araguaia
Juarina
Colinas do Tocantins
Campos Lindos
Couto de Magalhães
Brasilândia do Tocantins
Tupiratins
Itapiratins
Itacajá
Itaporã do Tocantins
Presidente Kennedy
Rio Tocantins
Pequizeiro
Colméia
Santa Maria do Tocantins
Recursolândia
Araguacema
Goianorte
Guaraí
Bom Jesus do Tocantins
Centenário
Fortaleza do Tabocão
Tupirama
Pedro Afonso
Caseara
Dois Irmãos do Tocantins
Rio dos Bois
Rio Sono
Miranorte
Lizarda
Abreulândia
Miracema do Tocantins
Tocantínia
Marianópolis do Tocantins
Divinópolis do Tocantins
Barrolândia
Lajeado
Aparecida do Rio Negro
Novo Acordo
Monte Santo do Tocantins
Chapada de Areia
Paraíso do Tocantins
São Félix do Tocantins
Santa Tereza do Tocantins
Lagoa do Tocantins
Mateiros
Pium
Pugmil
Nova Rosalândia
Cristalândia
Oliveira de Fátima
Fátima
Porto Nacional
Lagoa da Confusão
Santa Rita do Tocantins
Monte do Carmo
Ponte Alta do Tocantins
Brejinho de Nazaré
Cruzeiro do Tocantins
Aliança do Tocantins
Pindorama do Tocantins
Silvanópolis
Dueré
Santa Rosa do Tocantins
Rio da Conceição
Almas
Ponte Alta do Tocantins
Dianópolis
Chapada da Natividade
Natividade
Formoso do Araguaia
Carrasco do Tocantins
Novo Jardim
Peixe
São Valério da Natividade
Figueirópolis
Taipas do Tocantins
Ponte Alta do Bom Jesus
Conceição do Tocantins
Sandolândia
Alvorada
Taguatinga
Jaú do Tocantins
Paraná
Aurora do Tocantins
São Salvador do Tocantins
Talismã
Combinado
Lavandeira
Araguaçu
Arraias
Novo Alegre
Palmeirópolis
SEPLAN
SECRETARIA DO PLANEJAMENTO E MEIO AMBIENTE
ZONEAMENTO ECOLÓGICO-ECONÔMICO DO TOCANTINS
SEPLAN/DZE
50 0 50 100 150 200km
VERSÃO 1.4
PROJEÇÃO POLICÔNICA
Meridiano Central = 54 00' 00" W. Gr.
44