

PERFIL DE PROYECTO (PP) BRASIL

I. DATOS BÁSICOS

Nombre del Proyecto:	Pró-Energía RS Generación y Transmisión		
Número del Proyecto:	BR-L1303		
Equipo de Proyecto:	Sylvia Larrea (INE/ENE) y Natacha Marzolf (INE/ENE), Co-Jefes de Equipo; Jorge Mercado (INE/ENE); Marco Castro (ENE/CBR); Virginia Snyder (INE/ENE); José Felix Filho (VPS/ESG); Cristina Celeste (LEG/SGO); Carlos Lago (FMP/CBR); Mónica Merlo (FMP/CBR); Valentina Sequi (SCF/INF) bajo la supervisión de Leandro Alves, Jefe de la División de Energía (INE/ENE) y Juan Carlos de la Hoz (CSC/CBR).		
Prestatario:	Companhia Estadual de Geração e Transmissão de Energia Elétrica (CEEE-GT)		
Garante:	República Federativa de Brasil		
Organismo Ejecutor:	CEEE-GT		
Plan Financiero:	BID (CO)	US\$88,7 millones	
	Contrapartida local	<u>US\$59,1 millones</u>	
	Total	US\$147,8 millones	
Salvuardas:	Políticas identificadas: B.5, B.6, B.7, B.9, B.11, B.12. Clasificación: Categoría “B”		

II. JUSTIFICACIÓN GENERAL Y OBJETIVOS

A. Antecedentes

- 2.1 En setiembre del 2010, el Banco Inter-Americano de Desarrollo (BID) aprobó bajo la ventanilla del sector privado (SCF/INF) la elegibilidad del proyecto Pro-Energía RS Generación y Transmisión, el cual consistía en el financiamiento del *Programa de Modernización y Expansión del Sistema de Generación y Transmisión Eléctrica de la CEEE-GT* (Pró-Energía RS Generación y Transmisión, o el Programa) que comprende: (i) ampliación/construcción de la Pequeña Central Hidroeléctrica (PCH) *Ijuizinho II*; (ii) rehabilitación y modernización de las Centrales Hidroeléctricas (CH) *Itaúba* (500 Megawatts - MW) y CH *Passo Real* (158 MW)); y (iii) expansión de la red de transmisión. El comité de Revisión Ambiental aprobó la Estrategia Ambiental y Social en setiembre del 2010, la cual fue publicada, conjuntamente con el Documento de Análisis Ambiental preparado por CEEE-GT, en el Centro de Información Pública del BID. La estructura de la operación presentada fue sin garantía soberana.
- 2.2 A partir de la aprobación de la elegibilidad del Programa, el BID avanzó con los estudios (técnicos, legales, de mercado, entre otros) necesarios para la estructuración de la operación. A fines del 2011, dada la importancia de las obras de infraestructura eléctrica para Brasil, y en particular para el Estado de Rio Grande do Sul (RS), que incluye la región metropolitana de *Porto Alegre* donde se espera un fuerte incremento de la demanda eléctrica ya que será una de las ciudades sede del Mundial de Fútbol 2014, la

CEEE-GT recibió el apoyo del Gobierno de Brasil (GBR) para financiar la operación con una con garantía soberana.

B. Contexto General

- 2.3 La CEEE-GT¹ es una empresa de economía mixta perteneciente al Grupo CEEE que opera como concesionaria en las áreas de generación, transmisión y comercialización de energía eléctrica en el Estado de RS.
- 2.4 **Generación.** La CEEE-GT tiene 15 CHs en el Estado de RS, con una capacidad instalada de 910 MW. Adicionalmente, la CEEE-GT tiene participación minoritaria en varias otras CHs (*Machadinho, Dona Francisca y Campos Novos*, entre otros)² agregando cerca de 342 MW adicionales de capacidad de generación, para un total de 1.252 MW. La energía producida representa cerca del 30% de la demanda exigida por el Estado de RS.
- 2.5 La CH *Passo Real* y la CH *Itaúba*, localizadas en el Río *Jacuí* Estado de RS, representan el 72% de la capacidad instalada de la CEEE-GT y están en operación hace más de 30 años, con lo cual ha completado su vida útil. Esto hace necesario la rehabilitación y modernización de dichas hidroeléctricas con el objetivo de restituir los rendimientos originales de potencia de las CHs mediante la reforma y substitución de equipos, para mantener sus estándares de calidad y confiabilidad y extender sus vidas útiles.
- 2.6 La mejora de las condiciones de operación de las CHs *Itaúba* y *Passo Real* es de vital importancia para garantizar su suministro de energía y la conservación de dichas fuentes renovables. Los bajos costos de inversión y altos retornos, hacen que la rehabilitación de CHs sea considerado como una de las mejores inversiones para mantener el suministro en el sector. Asimismo, al asegurar la disponibilidad y eficiencia de las plantas, se desplaza el consumo de combustible fósil para la generación de electricidad.
- 2.7 Considerando que Brasil tiene un mercado donde aproximadamente 70% de la generación eléctrica proviene de hidroeléctricas, y donde se estima que la demanda de energía eléctrica entre 2010 y 2018 presentará un aumento medio del 5,2% anual³, ha llevado a las concesionarias y productores de energía a optimizar la operación de sus plantas hidroeléctricas más antiguas en búsqueda de reducción de paradas no programadas que ocasionan pérdidas de ingresos e indisponibilidad para el sistema.
- 2.8 Por otro lado, el plan estratégico de la CEEE-GT busca expandir la generación basada en fuentes renovables. Como tal, el proyecto PCH *Ijuizinho II* busca la ampliación en el mismo lugar de una PCH de 1 MW, construida hace más de 50 años, a una PCH de 15 MW. Este incremento en la capacidad instalada permitirá aprovechar en mayor escala el potencial hidroeléctrico que existe actualmente.
- 2.9 **Transmisión.** la CEEE-GT es responsable por la mayoría de las instalaciones que componen la red básica de transmisión del Estado de RS, viabilizando el transporte y suministro de energía a las 3 concesionarias de distribución que operan en RS: (i) *Companhia Estadual de Distribuição de Energia Eletrica* (CEEE-D); (ii) AES Sul Distribuidora de Energia S/A; y (iii) Rio Grande Energia S.A, y a potenciales

¹ Los principales accionistas de la CEEE-GT son: (i) el Gobierno del Estado de RS con 65,92%; y (ii) Eletrobras con 32,59%. El restante (1,49%) corresponde a accionistas minoritarios.

² El BID participó en el financiamiento de la CH *Dona Francisca* y la CH *Campos Novos*.

³ Datos divulgados por la *Empresa de Pesquisa Energética*.

consumidores libres e productores independientes de energía eléctrica. El sistema de transmisión cumple un papel estratégico conectando las plantas generadoras en RS al Sistema Interconectado Nacional (SIN).

- 2.10 El sistema de transmisión de la CEEE-GT incluye 62 subestaciones con 8.237 Megavoltio Amperios (MVA) de capacidad de transformación instalada y 6.056 kilómetros (km) de líneas de transmisión que operan en tensiones de 230, 138 y 69 kilovoltios (kV), abarcando casi la totalidad del territorio del Estado de RS.
- 2.11 La demanda de energía eléctrica en el Estado de RS, muestra un crecimiento promedio de aproximadamente 4,2% por año en los últimos años y las proyecciones de aumento de carga y demanda hechas por el Operador Nacional del Sistema (ONS) corrobora que dicha tendencia continuará en los próximos años. Este constante incremento en la demanda ha llevado a que los transformadores y las líneas de transmisión operen con factores de carga elevados y en algunos casos con porcentajes por encima de su capacidad nominal o sobrecarga de forma continua. Esto genera caídas de tensión que tiene un impacto en la confiabilidad del suministro de energía eléctrica y produce también un incremento en las pérdidas técnicas.
- 2.12 La optimización y ampliación de la red de transmisión de la CEEE-GT mejoraría los factores de carga existentes, a la vez que agregaría capacidad de transporte de energía suficiente para atender el crecimiento de la demanda; además, reduciría las pérdidas técnicas y corregiría los problemas de tensión en las líneas de transmisión.
- 2.13 Con base a lo anterior, el sistema de generación y transmisión de la CEEE-GT requiere aumentar y mejorar su capacidad para cumplir con la demanda y con los niveles de confiabilidad y calidad exigidos por la Agencia Nacional de Energía Eléctrica (ANEEL). Es dentro de este contexto que surge el Programa⁴.
- 2.14 Renovación de los contratos de concesión de generación y transmisión. Varios contratos de concesión de la CEEE-GT expirarán en el 2015. Se considera que el riesgo de no renovación de los contratos de concesión es bajo ya que la CEEE-GT tiene un buen historial en el manejo de sus activos de generación y transmisión. De no ser renovados los contratos de concesión dichos activos revertirían al Gobierno de Brasil y la CEEE-GT recibiría en compensación el valor de los activos no amortizados, el cual debería ser suficiente para pagar todo el pasivo de CEEE-GT. Por otro lado, la ejecución del Programa se completará durante la vigencia de la actual concesión lo que permitirá realizar las inversiones previstas bajo el Programa con anterioridad a la finalización de la concesión. Durante la preparación de la operación será revisado el status de la renovación de los contratos de concesión.

C. Objetivos

- 2.15 El objetivo general del Programa es ampliar, rehabilitar y modernizar la infraestructura de generación y transmisión de la CEEE-GT, que incluye la región metropolitana de *Porto Alegre* en el Estado de RS, para reforzar la infraestructura del sector y atender la demanda creciente de energía eléctrica. Asimismo, este Programa de inversiones es importante para garantizar la construcción de la infraestructura eléctrica necesaria para

⁴ Ver las referencias en el Anexo IV. Trabajo sectorial.

soportar el fuerte incremento de demanda que se espera tendrá *Porto Alegre*, una de las ciudades sede del Mundial de Fútbol 2014.

- 2.16 El Programa tiene como objetivos específicos: (i) atender la demanda actual y futura mediante el aumento y mejora de la capacidad instalada de generación y de transmisión; y (ii) mejorar los indicadores de confiabilidad y calidad de prestación del servicio.
- 2.17 El Programa se enmarca dentro de las metas de la Novena Reposición de Capital del Banco (CGI-9) bajo el pilar de Cambio Climático, Energía Sostenible y Renovable. A su vez, el Programa es consistente con las prioridades establecidas en la Estrategia del Banco con Brasil 2012 -2014 (GN-2662-1), específicamente con los objetivos sectoriales de contribuir, ampliar, recuperar y conservar la capacidad de generación y la expansión del sistema de transmisión de energía eléctrica.

III. ASPECTOS DE DISEÑO Y CONOCIMIENTO DEL SECTOR

- 3.1 El costo total del Programa es de US\$147,8 millones a ser financiado por: (i) BID, a través de un préstamo de inversión bajo La Facilidad de Financiamiento Flexible (FFF) de US\$88,7 millones (60%), con garantía del Estado de Rio Grande do Sul; y (ii) recursos provenientes de un préstamo de la Agencia Francesa de Desarrollo (AFD) por US\$59,1 millones (40%), el cual fue aprobado por su Directorio en Abril 2012.
- 3.2 **Esquema de Ejecución.** La ejecución del Programa estará a cargo de la CEEE-GT, que será responsable por la administración, monitoreo y evaluación del Programa. La implementación del Programa se hará a través de un Grupo Coordinador del Programa (GCP) dentro de la CEEE-GT. En términos institucionales y fiduciarios, dada la experiencia de la CEEE-GT, no se anticipan problemas mayores.
- 3.3 Para lograr los objetivos del Programa, el BID financiará los siguientes componentes:
- 3.4 **Componente I:** Ampliación de la PCH *Ijuizinho* II. El componente incluye: (i) ejecución de las obras civiles, las cuales permitirían crear un embalse de 61 km² e incrementar el salto neto de la presa a 27 metros; (ii) instalación del equipamiento electromecánico, tres turbinas tipo Francis de 5 MW cada una; y (iii) construcción de la subestación y la línea de transmisión para evacuar la energía producida por la nueva central.
- 3.5 **Componente II:** Rehabilitación y modernización de las Centrales Hidroeléctricas (CH) *Itaúba* (500 MW) y CH *Passo Real* (158MW). Este componente incluye: (i) reparación de la Unidad Generadora (UG) 4 de la CH *Itaúba*, y de la UG 2 de la CH *Passo Real*, para mejorar la disponibilidad de la unidades; (ii) modernización de los sistemas de control para reducir mantenimientos y mejorar la coordinación de protección de las UG con la de las líneas (sustitución de los relés de protección electromecánicos por relés digitales y remplazo de los reguladores de velocidad y tensión); y (iii) sustitución de las paletas *Kaplan* de acero al carbono por paletas de acero inoxidable (CH *Passo Real*).
- 3.6 **Componente III:** Expansión de la red de transmisión. Este componente tiene como objetivo mejorar la confiabilidad y los índices de calidad del servicio a través de la instalación de elementos de control y automatización de operaciones en la red e incluye: (i) adecuación de 13 subestaciones transformadoras AT/MT, para independizar equipos que hoy se encuentran conectados en forma directa, para aumentar la confiabilidad de las redes; (ii) recableado de líneas 138 kV y 230 kV, para ampliar la capacidad de esos

subsistemas y rehabilitar las líneas cuyos conductores han sobrepasado sus vidas útiles; y (iii) instalación de equipos de control de tensión para solucionar problemas de baja tensión locales (capacitores) o sobretensiones del sistema (reactor).

- 3.7 **Componente VI:** Ingeniería y administración. Este componente apoyará la adecuada ejecución del Programa mediante recursos para realizar la supervisión del Programa, incluyendo el monitoreo socio-ambiental, así como auditoría y evaluación.

IV. SALVAGUARDIAS Y ASPECTOS FIDUCIARIOS

- 4.1 Las obras contempladas en el Programa serán ejecutadas de manera dispersa en el tiempo en el área del Estado de RS e individualmente no serán de elevada magnitud. Para ninguno de los componentes se prevé la necesidad de hacer reasentamientos ni se afectarán comunidades indígenas. Los principales impactos negativos potenciales estarán asociados al Componente I, por la expansión del embalse y potenciales impactos en el flujo de aguas, así como por la vegetación que necesita ser removida en el área del futuro embalse. La CEEE-GT prevé la adopción de medidas y procedimientos para manejar o compensar estos impactos. Por otro lado, el proyecto de ampliación de la PCH *Ijuizinho* II tendrá un efecto positivo en la reducción de las emisiones de gases del efecto invernadero y la CEEE-GT ya empezó un proceso para evaluar las posibilidades de obtener créditos de carbono.
- 4.2 También podrán haber posibles pasivos ambientales y sociales asociados a otras actividades y operaciones de la PCH y de las dos CHs existentes, así como a otros proyectos y actividades de la CEEE-GT que podrán representar riesgos de reputación para el BID. Por lo anterior y de acuerdo a la Política de Medio Ambiente y Cumplimiento de Salvaguardias (GN-2208-20 y OP-703) del BID, se propone que la presente operación sea catalogada como Categoría “B”. El Anexo III presenta información más detallada de la “Estrategia Ambiental y Social”.
- 4.3 Ya se ejecutó una diligencia ambiental y social (ver párrafo 2.1) para: (i) confirmar las medidas apropiadas de mitigación y monitoreo para controlar los impactos ambientales y sociales, de salud y seguridad asociados con el Programa; (ii) revisar las principales actividades de la CEEE-GT y sus instalaciones relevantes para determinar posibles pasivos ambientales y sociales, de salud y de seguridad; y (iii) confirmar el compromiso y la capacidad de la CEEE-GT de abordar estos temas, de acuerdo con las Políticas del BID.

V. RECURSOS Y CRONOGRAMA

- 5.1 En el Anexo V se detalla el cronograma de la operación que permitirá que la Propuesta para el Desarrollo de la Operación sea presentada al Comité de Control de Calidad (QRR) en Mayo del 2012. El mismo anexo especifica los costos de preparación de esta operación, los cuales ascienden a US\$138,280 incluyendo la ejecución de 3 misiones.

ANEXO I - CONFIDENCIAL

SAFEGUARD POLICY FILTER REPORT

This Report provides guidance for project teams on safeguard policy triggers and should be attached as an annex to the PP or PCD (or equivalent) together with the Safeguard Screening Form, and sent to ESR.

1. Save as a Word document. 2. Enter additional information in the spaces provided, where applicable. 3. Save new changes.

PROJECT DETAILS	IDB Sector	[Not Set]
	Type of Operation	Investment Loan
	Additional Operation Details	
	Investment Checklist	Power Hydro
	Team Leader	[Not Set]
	Project Title	Pro-Energy RS Generation and Transmission
	Project Number	[Temporary Project]
	Safeguard Specialist(s)	Felix-Filho, Jose Antonio (JOSEF@iadb.org)
	Assessment Date	2010-08-16
	Additional Comments	

SAFEGUARD POLICY FILTER RESULTS	Type of Operation	[Not Set]	
	Safeguard Policy Items Identified (Yes)	The Bank will make available to the public the relevant Project documents.	Disclosure of Information Policy (B.01)
		The operation is in compliance with environmental laws and regulations of the country where the operation is being implemented (including national obligations established under ratified Multilateral Environmental Agreements).	(B.02)
		The operation (including associated facilities) will be screened and classified according to their potential environmental impacts.	(B.03)

		An Environmental Assessment is required.	(B.05)
		Consultations with affected parties will be performed and considerations of their views will be taken into account.	(B.06)
		The Bank will monitor the executing agency/borrower's compliance with all safeguard requirements stipulated in the loan agreement and project operating or credit regulations.	(B.07)
		The operation has the potential to pollute the environment (e.g. air, soil, water, greenhouse gases...).	(B.11)
		The operation is already under construction by the Executing Agency or the Borrower.	(B.12)
	Potential Safeguard Policy Items(?)	No potential issues identified	
	Recommended Action:	Operation has triggered 1 or more Policy Directives; please refer to appropriate Directive(s). Complete Project Classification Tool. Submit Safeguard Policy Filter Report, PCD (or equivalent) and Safeguard Screening Form to ESR.	
	Additional Comments:		

ASSESSOR DETAILS	Name of person who completed screening:	Felix-Filho, Jose Antonio (JOSEF@iadb.org)
	Title:	
	Date:	2010-08-16

SAFEGUARD SCREENING FORM

This Report provides a summary of the project classification process and is consistent with Safeguard Screening Form requirements. The printed Report should be attached as an annex to the PP or PCD (or equivalent) and sent to ESR.

1. Save as a Word document. 2. Enter additional information in the spaces provided, where applicable. 3. Save new changes.

PROJECT DETAILS	IDB Sector	[Not Set]
	Type of Operation	Investment Loan
	Additional Operation Details	
	Country	
	Project Status	
	Investment Checklist	Power Hydro
	Team Leader	[Not Set]
	Project Title	Pro-Energy RS Generation and Transmission
	Project Number	[Temporary Project]
	Safeguard Specialist(s)	Felix-Filho, Jose Antonio (JOSEF@iadb.org)
	Assessment Date	2010-08-16
	Additional Comments	

PROJECT CLASSIFICATION SUMMARY	Project Category: B	Override Rating:	Override Justification:
			Comments:
	Conditions/Recommendations	<ul style="list-style-type: none"> Category "B" operations require an environmental analysis (see Environment Policy Guideline: Directive B.5 for Environmental Analysis requirements). The Project Team must send to ESR the PP or PCD (or equivalent) containing the Environmental and Social Strategy (the requirements for an ESS are described in the Environment Policy Guideline: Directive B.3) as well as the Safeguard Policy Filter and Safeguard Screening Form Reports. These operations will normally require an environmental and/or social impact analysis, according to, and focusing on, the specific issues identified in the screening process, 	

		and an environmental and social management plan (ESMP). However, these operations should also establish safeguard, or monitoring requirements to address environmental and other risks (social, disaster, cultural, health and safety etc.) where necessary.
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SUMMARY OF IMPACTS/RISKS AND POTENTIAL SOLUTIONS	Identified Impacts/Risks	Potential Solutions
	Generation of solid waste (such as mined rocks, construction waste) is moderate in volume, does not include hazardous materials and follows standards recognized by multilateral development banks.	Solid Waste Management: The borrower should monitor and report on waste reduction, management and disposal and may also need to develop a Waste Management Plan (which could be included in the ESMP). Effort should be placed on reducing and re-cycling solid wastes. Specifically (if applicable) in the case that national legislations have no provisions for the disposal and destruction of hazardous materials, the applicable procedures established within the Rotterdam Convention, the Stockholm Convention, the Basel Convention, the WHO List on Banned Pesticides, and the Pollution Prevention and Abatement Handbook (PPAH), should be taken into consideration.
	Likely to have minor to moderate emission or discharges that would negatively affect ambient environmental conditions (potentially from dust and water table and water quality changes and changes in sediment flow).	Management of Ambient Environmental Conditions: The borrower should be required to prepare an action plan (and include it in the ESMP) that indicates how risks and impacts to ambient environmental conditions can be managed and mitigated consistent with relevant national requirements and international standards and guidelines such as the IFC Hydro Power Guidelines (as appropriate). The borrower should (a) consider a number of factors, including the finite assimilative capacity of the environment, existing and future land use, existing ambient conditions, the project's proximity to ecologically sensitive or protected areas, and the potential for cumulative impacts with uncertain and irreversible consequences; and (b) promote strategies that avoid or, where avoidance is not feasible, minimize or reduce the release of pollutants, including strategies that contribute to the improvement of ambient conditions when the project has the potential to constitute a significant source of emissions in an already degraded area. The plan should be subject to review by qualified independent experts. Depending on the financial product, this information should be referenced in appropriate legal documentation (covenants, conditions of disbursement, etc.).
	Project construction activities are likely to lead to localized and temporary impacts (such as dust, noise, traffic etc) that will	Construction: The borrower should demonstrate how the construction impacts will be mitigated. Appropriate management plans and procedures should be incorporated into the ESMP. Review of implementation as well as reporting on the plan should be part of the legal documentation (covenants, conditions of

	affect local communities and workers but these are minor to moderate in nature.	disbursement, etc).
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ASSESS OR DETAILS	Name of person who completed screening:	Felix-Filho, Jose Antonio (JOSEF@iadb.org)
	Title:	
	Date:	2010-08-16

BRAZIL:
PRO-ENERGY RS GENERATION AND TRANSMISSION
ENVIRONMENTAL AND SOCIAL STRATEGY

A. Program and Company Overview

1. CEEE-GT (“Company” or “Concessionaire”) has its origin in 1943, has been restructured in 2006 and since then is one of the main concessionaires of electric energy generation and transmission in the State of Rio Grande do Sul, an area that includes the Metropolitan Region of Porto Alegre, the capital of the state.
2. CEEE-GT’s generation and transmission infrastructure is composed of: (i) 4 own hydroelectric power plants (“UHEs” or *Usinas Hidrelétricas*) and 11 own small hydroelectric power plants (“PCHs” or *Pequenas Centrais Hidrelétricas*), with a total installed capacity of around 911 MW and generation of an equivalent to 36% of the total electric energy generated in the State of Rio Grande do Sul; (ii) minority participation in other hydroelectric power plant projects (including in Campos Novos and Dona Francisca projects, which have been financed and are supervised by IDB); (iii) 15 transmission lines (“LTs” or *Linhas de Transmissão*) at 69 kV extending for about 233 km, 15 LTs at 138 kV extending for about 760 km and 75 LTs at 230 kV extending for about 5000 km; and (iv) 59 electric substations (“SEs” or *Subestações Elétricas*). The Company has a total workforce of approximately 1560 employees.
3. The Company has devised an investment program for the 2010 to 2015 period with a view to improve quality of services and guarantee the electric generation and transmission infrastructure needed to satisfy the increased demand expected in the foreseeable future, by expanding, rehabilitating and/or modernizing some of their existing generation and transmission facilities.
4. The investment program will result in overall gains in system capacity and efficiency through improvements in quality and reliability of the system. The Program is consistent with IDB’s Sustainable Energy and Climate Change Initiative (“SECCT”), as it promotes renewable energy projects, energy efficiency and reduction in the generation of greenhouse gas (“GHG”) emissions.
5. The Company approached IDB to seek support for part of the 2010-2015 investment program. The total cost of this part of the investment program is estimated at US\$134.3 million (“Program”). IDB’s financing is estimated at US\$30 million and B-Loan (other banks) around US\$50 million. The components to be financed are described in the following paragraphs (see locations in Figures 1 and 2).
6. *Component I – Expansion of the PCH Ijuizinho I to Ijuizinho II:* This component involves the expansion of the installed capacity of the existing plant from 1 MW to 15 MW. The Ijuizinho I plant has been constructed more than 50 years ago and is located in the

Ijuizinho River. The main characteristics of the projects before and after the expansion are indicated in **Table 1**.

Table 1: Main characteristics of PCH project before (Ijuizinho I) and after expansion (Ijuizinho II)

	Ijuizinho I	Ijuizinho II
Dam:		
Length at crest	130 m	250 m
Height	5 m	13 m
Reservoir:		
Area (at normal maximum level)	6 ha (0.06 km ²)	61 ha (0.61 km ²)
Volume (at normal maximum level)	0.056 million m ³	1.38 million m ³
Level (normal maximum)	234.4 m	240 m
Length (distance from dam to backwater zone)	1460 m	10,640 m
Average depth	0.93 m	2.26 m
Maximum depth	7.4 m	14 m
Average residence time	0.01 day	0.32 day
Powerhouse:		
Turbines	1 Francis with nominal capacity of 1119 kW	3 Francis with nominal capacity of 5208 kW each
Annual generation	4.4 GWh	76 GWh

7. *Component II – Rehabilitation and Modernization of Hydroelectric Power Plants UHE Passo Real (158 MW) and UHE Itauba (500 MW):* This component involves the rehabilitation and modernization of two of CEEE-GT's existing hydroelectric power plants, by renewing obsolete equipment and switchyards, with the objective of recovering their generation capacity and increase their reliability and operational flexibility. These two UHEs located in the Jacui River have been built and started operating more than 30 years ago. The main objectives of the modernization are: recuperation of the energy generation capacity; reliability increase and operational flexibility; increase of the useful life, ensure reliable equipment operation for the second service life; technological update; and reduction of the maintenance period. The Program under analysis comprises essentially renovation and modernization of existing equipment and systems. No changes in dam or reservoir characteristics are foreseen.

8. *Component III – Expanding and Making Adequate the Transmission System:* To satisfy the increased demand for electric power expected in the foreseeable future and comply with reliability and quality of services requirements established by national regulators, this component involves expanding or making adequate 19 existing electric substations and increasing the transportation capacity of three existing transmission lines of the CEEE-GT's system. This component involves only existing facilities and no new SE or LT segment will be required. The works have already started in a few of the substations included in the Program.
9. *Component IV – Modernization of Corporate Management System:* Involves the implementation of new information technology tools and an integrated management system to improve the information flow between the different sectors of the Company and enhance supervision and control of the process involved.
10. *Workforce:* The implementation of the works involved in the Program is estimated to require a direct workforce of approximately 1500 people, part of which will be hired locally, and generate around 3000 indirect jobs.
11. *Environmental and Social, and Health and Safety Management:* In terms of environmental, social, health and safety management tools, the Company has: (i) Environmental Units or Departments and a Health and Safety Unit in its organizational structure, staffed with full-time specialists to coordinate all respective activities in relation to the Company as well as to the competent authorities; (ii) an environmental policy and a health and safety policy; and (iii) some specific procedures and standards to address environmental and social issues, as well as health and safety aspects, including in relation to contractors. Some of the units of the Company are certified according to the international standard for environmental management systems (ISO-14001). In addition, the Company embarked in a program to develop and implement an Integrated Management System contemplating the international standards for quality, environmental, health and safety and social management systems (respectively ISO-9001, ISO-14001, OHSAS-18001 and AS-8000).

B. Environmental and Social Compliance Status

12. In view of their somewhat distinct nature, the various components of the Program have different requirements in terms of environmental licensing. As Component IV does not involve any civil work, it is not subject to environmental licensing procedures.
13. The expansion of the PCH Ijuizinho requires a full environmental licensing process. Accordingly, Brazilian federal and state environmental legislation usually foresees three sequential environmental licenses for projects that are being planned to be installed in a new area, or involve new terrain and may have potentially significant negative impacts on the environment: (i) a Preliminary License at planning stage; (ii) an Installation License to initiate construction; and (iii) an Operating License authorizing operation of the

facility. Usually, an Environmental Impact Assessment Report (“EIA”) must be presented for review by the competent environmental authority to obtain the Preliminary License. In the case of the expansion of the PCH, the licensing process has already started and the respective environmental impact assessment reports are being prepared, in accordance with the Terms of Reference previously agreed with the competent environmental authority in the State of Rio Grande do Sul (FEPAM or *Fundação Estadual de Proteção Ambiental*). Once the EIA for the project is ready, it will be disclosed according to IDB’s Operational Policy OP-102 on Information Disclosure, at the Bank’s Public Information Centers in Washington and Country Office, and placed for public consultation locally.

14. In the case of the rehabilitation and modernization of the two UHEs, both of them have their respective Operating License in place and valid until 2012. As the works involved in this component of the Program implies mainly modernization of existing equipment and systems, and no relevant change in the characteristics of the projects are foreseen in relation to those established in the Operating Licenses, specific environmental licenses are not required.
15. The projects involved in the expansion and improvement in the transmission system component do not require a full licensing process. In many cases a General Authorization must be obtained either from the state or municipal authorities, in other cases an Operating License may be necessary from FEPAM. However, these authorizations or licenses are obtained through simplified procedures that do not require the preparation of an EIA. All the projects that have already been initiated have their respective authorization or license in place. The licensing procedures for other projects have already been initiated. The remaining projects, which will be implemented later, will have their processes started in due time and on a timely basis.
16. For all the projects included in the three Program components described in the previous paragraphs, where removal of vegetation is expected for the implementation of the projects, it is necessary to obtain prior authorization through a vegetation-clearing permit. In addition, operation and maintenance activities involving clearing and trimming of vegetation require prior authorization from the competent authority.
17. According to information provided by the Company, all projects in the Program that already started and that required environmental licensing are in compliance with the state legislation and obtained the necessary licenses and authorizations.
18. The Company has in place a system to identify the need for environmental licenses and permits, and to follow up licensing and permitting processes, as well as the implementation of associated requirements.
19. An analysis of the Project made under the applicable directives of IDB’s OP 703 Environment and Safeguards Compliance Policy have triggered the following: (B.5) An Environmental Assessment is going to be performed; (B.6) Consultations will be performed; (B.7) the Bank will supervise compliance during supervision; (B.11) Potential

to cause air, soil or water contamination; (B.12) Part of the investment is already under construction by the Executing Agency or the Borrower.

C Potential Impacts and Risks and Control Measures

20. There are some characteristics related to the projects involved in the Program that contribute to reduce the magnitude and significance of the environmental and social impacts associated with their implementation and operation. For the most part, the projects involve the rehabilitation, modernization, expansion or improvement of existing units or facilities. The works involved in the implementation of the projects will be dispersed in time and space throughout the State of Rio Grande do Sul area; therefore, no large concentration of workers or activities will be necessary. Most of the projects may be considered of being of limited to moderate magnitude, when analyzed individually. None of the projects are expected to require resettlement or produce adverse impacts on indigenous communities. Component IV does not involve any civil work or actions that could cause a negative environmental or social impact.

C.1 Component I – Expansion of the PCH Ijuizinho I to Ijuizinho II

21. *General Remarks:* In view of the relatively small magnitude of the project involved (see **Table 1**) and the fact that it relates to the expansion of an existing hydropower plant and reservoir that have been in operation for more than 50 years, most of the negative environmental and social impacts that are potentially relevant in a dam project that involves the creation of a new barrier in the river and a new reservoir, will have a different significance in this case, as for instance: (i) impacts associated with the construction of new access roads; (ii) change from lotic (running water) to lentic (lake) aquatic system; (iii) creation of a barrier to the movement of aquatic fauna; (iv) thermal stratification and deterioration of water quality upstream and downstream of the dam; (v) loss of habitats and biodiversity, and altered fish composition in particular downstream of dam; (vi) change in flow and increase in erosion downstream of the dam; and (vii) reduction of sediment flow downstream of the dam. Nevertheless, the nature and characteristics of these impacts shall be assessed during the due diligence, together with more information on the characteristics and configuration of the plant and further data on the operation scheme for the plant, expected flow variation downstream, and baseline conditions, particularly in regard to aquatic life.
22. *General Construction-Related Impacts:* The main potential negative environmental and social impacts associated with the implementation of the expansion will be those typically related to moderate-scale projects, as follows: (i) dust and noise emissions; (ii) solid wastes not properly managed; (iii) potential oil spills from vehicles, equipment and storage areas; (iv) interference in the day-to-day life of the local population in association with the increase in construction-related road traffic; and (v) construction work-related accidents. However, these impacts will be limited in scale and temporary, and can be mitigated with the standard construction environmental and social, and health

and safety management procedures established by the Company, including for contractors.

23. *Clearing of Vegetation and Associated Impacts:* Vegetation will need to be cleared in areas where the dam and powerhouse expansion will take place. Also, the new reservoir area will have to be cleared prior to filling to minimize water quality deterioration and other environmental impacts. Clearing of vegetation may increase run-off and soil erosion. In addition, some of the vegetation to be cleared is composed of native vegetation, particularly on the shores of the existing lake. Clearing of vegetation is unavoidable and the Company will have to adopt methods to control soil erosion and sedimentation in the existing reservoir. Furthermore, the Company, in agreement with the competent environmental authorities, is devising a Forest Revegetation Plan to revegetate areas adjacent to the new reservoir and compensate for the cleared native vegetation. It is recommended that the methods adopted by the Company to control erosion and the Forest Revegetation Plan be reviewed during due diligence.
24. *Acquisition of Land for New Reservoir:* No resettlement is expected to occur in relation with the expansion of the PCH Ijuizinho. Furthermore, the Company tries as much as possible to acquire new areas through amicable negotiations and avoid expropriations. It is important to point out that around 83% of the area needed for the new reservoir already belongs to the Company, and was acquired either in the realm of the process of creation of Ijuizinho I or through recent amicable negotiations. Therefore, the social impacts associated with land acquisition in the expansion are expected to be of low magnitude and significance. Nevertheless, it is recommended that the land acquisition process be reviewed during due diligence to confirm the nature and characteristics of associated social impacts.
25. *Operation-Related Impacts:* Relative to the operation phase, considering the relatively small size of the future reservoir, its operation scheme and very low residence time of water in the reservoir (average residence time of 0.32 day), minimal changes are expected in water quality downstream of the dam. Furthermore, the Company reports that from the Ijuizinho dam site up to the mouth of the Ijuizinho River there is only a small power plant operating in the river and there is no other relevant user. Relative to the impact on water flow downstream of the project, depending on the dam-powerhouse layout and operating scheme adopted for the new plant (e.g., on-peak hours vs. off-peak hours), particularly during the dry season, the new development might have an impact to the variation in water flow downstream of the project. Therefore, it is proposed that the nature and characteristics of the impacts on downstream flow and users, as well as the adequacy of the ecologic flow be assessed during due diligence.
26. *CO₂ Emissions and Carbon Credits:* Overall the project will have a beneficial effect in terms of reduction of CO₂ emissions, as it involves an increment in the generation of clean renewable energy. However, reservoirs are also known to emit, under certain circumstances, different amounts of CO₂, particularly during the initial years of the life of the reservoir. Nevertheless, in the case of the expansion of the PCH Ijuizinho, these emissions are expected to be not significant, in view of the limited dimensions of the

reservoir, the very low residence time of the water and that the area of the reservoir is expected to be cleared (vegetation, detritus and other solid waste) prior to filling, which will greatly contribute to improve the water quality in the new reservoir. It should also be noted that the Company already started the process to evaluate the potential to obtain carbon credits associated with the expansion, under the Clean Development Mechanism of the United Nations Framework Convention on Climate Change.

27. *Potential Environmental and Social Liabilities Associated with Ijuizinho I:* Although the risks of persisting relevant unresolved environmental or social issues or major pending liabilities associated with the Ijuizinho I project are limited, in view of the small magnitude of the project and the fact that it has been in operation for more than 50 years, it is recommended that a brief assessment be made during due diligence to confirm that.

C.2 *Component II – Rehabilitation and Modernization of UHE Passo Real and UHE Itauba*

28. *General Remarks:* This component of the Program comprises essentially renovation and modernization of existing equipment and systems and no changes in dam or reservoir characteristics are foreseen. Therefore, the main potential negative environmental and social impacts will be associated with the construction, installation and assembling activities. The additional environmental and social impacts associated with the operation of the modernized equipment and facilities will be mainly positive, as more clean renewable energy will be generated on an annual basis.
29. *Construction-Related Impacts:* Regarding the construction and assembling activities, they will be performed essentially inside the fence, and mostly inside the powerhouses of the two UHEs, factor that greatly contributes to mitigate social and environmental impacts in areas outside the plant sites. Furthermore, only one generation unit in each plant will be subject to rehabilitation and modernization process, which reduces the magnitude of the construction and assembling activities as well as of the associated environmental and social impacts. Therefore, the main potential negative impacts related to the construction and assembling activities, construction yards and supply of construction materials and equipment associated with the implementation of this component of the Program will be those typically associated with moderate-scale projects, as follows: (i) limited clearing of vegetation and associated impacts, if it is the case; (ii) dust and noise emissions; (iii) interference in the day-to-day life of the local population in association with the increase in construction-related road traffic and influx of workers to the region; and (iv) construction work-related accidents. However, these impacts will be limited in scale and temporary, and can be mitigated with the standard construction environmental and social, and health and safety management procedures established by the Company.
30. *Potential Environmental and Social Liabilities Associated with other Facilities and Operations in the two UHEs:* Although the two UHEs included in the Program have been in operation for more than 30 years, potentially there is still the possibility of existing relevant unresolved environmental or social issues or major pending liabilities associated with the implementation and operation of the two UHE projects. These liabilities might

involve issues such as, for instance: (i) unresolved land acquisition processes; (ii) deteriorated water quality in the reservoirs; (iii) impacts on downstream water uses; and (iv) land use conflicts in areas adjacent to the reservoirs. However, these risks are expected to be of limited magnitude, as, based upon information provided, the Company has procedures and systems to manage these risks, such as: (i) pro-active attitude of the Company and apparent adequate capacity and commitment to address and manage environmental and social matters related to the UHEs; (ii) the Company has in place an environmental policy and have specific procedures and resources to address environmental and social impacts and risks; (iii) the Company undertakes also activities to monitor water quality and other limnological parameters, in the realm of monitoring plans developed taking into account requirements set for by environmental authorities and/or established by specific technical standards. Furthermore, the Company is developing for each plant, in conjunction with state and municipal authorities, local associations and non-governmental organizations, a Land Use and Occupation Plan for the Areas Surrounding the Reservoir. Nevertheless, it is recommended that a brief assessment be made during due diligence to confirm that the risks associated with possible environmental and social pending liabilities related to the processes of implementation and operation of these two UHEs are low.

C.3 Component III – Expanding and Making Adequate the Transmission System

31. *General Remarks:* This component involves only expansion or installation of new equipment or new cables in existing facilities or transmission lines; no new SE or LT segment will be required, factor that contributes to reduce magnitude and significance of associated environmental and social impacts. Also, concerning possible negative environmental and social impacts associated with work camps, sites and presence of workers, no significant impacts are expected, as the works will individually be of limited magnitude and dispersed in time and space throughout the State of Rio Grande do Sul area; therefore, the implementation of this component of the Program will not require concentration of workers, as crews will usually be composed of a limited number of workers at different sites.
32. *Construction-Related Impacts:* The main potential negative environmental and social impacts associated with this component of the Program will be those typically related to works of this nature, such as: (i) limited clearing of vegetation and associated impacts, if it is at all necessary; (ii) dust and noise emissions; (iii) solid wastes not properly managed; (iv) potential oil spills from vehicles or equipment; (v) interference in the day-to-day life of the local population in association with the increase in construction-related road traffic; and (vi) construction work-related accidents. However, these impacts will be limited in scale and temporary, and can be mitigated with the standard construction environmental and social, and health and safety management procedures established by the Company, including for contractors.
33. *Operation-Related Impacts:* No significant negative environmental, social, health and safety impacts and risks are expected in association with maintenance and operation of the facilities involved in the Program. In compliance with national regulations, the

Company no longer acquires equipment that contains PCBs, avoids the use of pesticides and adopts specific procedures for adequate removal and disposal of solid wastes generated at their facilities and buildings (e.g., used batteries, fluorescent lights, etc.). Furthermore, noise emitted by some substation equipment is typically perceived only at short distances from the source; thus, proper siting of these facilities and isolation of the source, if applicable, will adequately attenuate noise impacts. To reduce risks of accidents with power lines, the Company conducts periodical trimming of trees and suppression of vegetation in the right-of-way, and these activities are performed adopting appropriate procedures established by the Company, applicable also to contractors, and taking into account the safeguards included in the authorizations granted by the environmental authorities. Another possibility, particular in urban areas, is the risk of electric shock to members of the community by inadvertent or accidental contacts with the energized network (by negligence or misinformation about the risk); to prevent these situations the Company carries out various educational and safety awareness programs throughout the served communities.

34. *Impacts on Birds:* Another type of potential negative environmental impact associated with electric energy networks located in rural areas is the possibility of electrocution of animals, particularly birds that enter in contact with the energized lines. The Company has experience in addressing this issue and installs bird-warning devices in cables of line segments that cross critical areas.
35. *Electromagnetic Field Effects:* Relative to possible health effects associated with electromagnetic fields generated at high-voltage distribution lines, the current body of evidence from the international scientific community suggests that transmission lines operating at voltages such as those in the case of CEEE-GT (up to 230 kV) do not present a human health hazard. Nevertheless, the Company adopts the technical standards and regulations established by the Regulatory Authority (National Electric Energy Agency, or *Agência Nacional de Energia Elétrica* – ANEEL), which are consistent with the international standards and based on precautionary principles.

C.4 *Risks Associated with other Existing Facilities and Operations of the Company*

36. Another type of concern that may be associated with this operation relates to potential pending relevant environmental or social issues associated with other activities or operations performed by the Company, or other of its facilities and that might represent a reputational risk for IDB. These liabilities might involve issues such as, for instance: (i) unresolved expropriation or resettlement processes; (ii) existing environmental, social, or health and safety relevant claims or material complaints associated with the Company; (iii) pending conflicts with local communities or authorities in relation to major unresolved environmental or social issues; and (iv) major contamination of soil and/or water by substantial oil spill. Therefore, it is recommended that an analysis be made during due diligence to ascertain if there are pending relevant environmental or social issues associated with the Company in general that might represent a reputational risk for IDB.

D. Environmental and Social Strategy

37. Taking into account the environmental and social aspects related to the Program and the requirements outlined in IDB's OP 703 Environment and Safeguards Compliance Policy, the Team proposes that the Program be classified as a Category B operation.
38. Although by national and state legislation an EIA is not required in the case of the Components II to IV of the Program, the Bank will require the Company to present an Environmental Analysis Report to address potential relevant environmental and social impacts, as well as the correspondent control measures (monitoring and mitigation) associated with these components of the Program. This Environmental Analysis Report and the EIA for Component I shall be disclosed to the public in accordance with IDB's Operational Policy OP-102 - Disclosure of Information, i.e. before the Bank conducts its analysis or due diligence mission.
39. The Project Team proposes to perform an environmental and social due diligence ("ESDD") in order to:
 - (i) confirm that appropriate mitigation and monitoring measures are adopted to control relevant environmental and social, and health and safety impacts associated with the Investment Program;
 - (ii) assess Program compliance with in-country national, state and municipal environmental, health and safety laws, and applicable IDB's environmental and social policies and guidelines;
 - (iii) review the nature and characteristics of impacts associated with the creation of the new reservoir for PCH Ijuizinho II, taking into account more information on the characteristics and configuration of the plant and further data on the operation scheme for the plant, expected flow variation downstream, and baseline conditions, particularly in regard to aquatic life;
 - (iv) assess methods adopted by the Company to control soil erosion and review the Forest Revegetation Plan for the PCH Ijuizinho II project;
 - (v) review the land acquisition process related to the PCH Ijuizinho II project to confirm the nature and characteristics of associated social impacts;
 - (vi) review the nature and characteristics of the impacts on downstream flow and users, as well as the adequacy of the ecologic flow in the case of the Ijuizinho II project, taking into account further information on dam-powerhouse layout and operating scheme adopted for the new plant (e.g., on-peak hours vs. off-peak hours), particularly during the dry season;

- (vii) perform a brief assessment of potential risks associated with possible relevant unresolved environmental and social issues or major pending liabilities associated with the Ijuizinho I project;
- (viii) perform a brief assessment to confirm that the risks associated with possible relevant environmental and social pending liabilities are low in relation to the processes of implementation and operation of the two UHE projects (Passo Real and Itaubá) that are being rehabilitated and modernized under the Program;
- (ix) perform an analysis of potentially relevant pending environmental or social issues associated with the Company in general that might represent a reputational risk for IDB;
- (x) evaluate Program-related information disclosure and public consultation activities that have been performed, and proposed future actions, to provide adequate ongoing information disclosure and public consultation with the local population.
- (xi) assess Company's procedures to manage wastes resulting from the implementation of the Program, as well as to prevent and control oil spills.
- (xii) evaluate potential Program-related impacts or risks on workers health and safety during construction and examine Company's health and safety procedures, to ensure that adequate measures are developed to avoid or mitigate potential Program-specific health and safety issues; and
- (xiii) assess Company's commitment, capacity, and systems to adequately manage environmental and social, and health and safety matters and comply with applicable regulatory and IDB's environmental and social, and health and safety requirements in relation to the Program;

Figure 1: Location of the PCH Ijuizinho, UHE Passo Real and UHE Itaúba sites in the State of Rio Grande do Sul (Brazil)

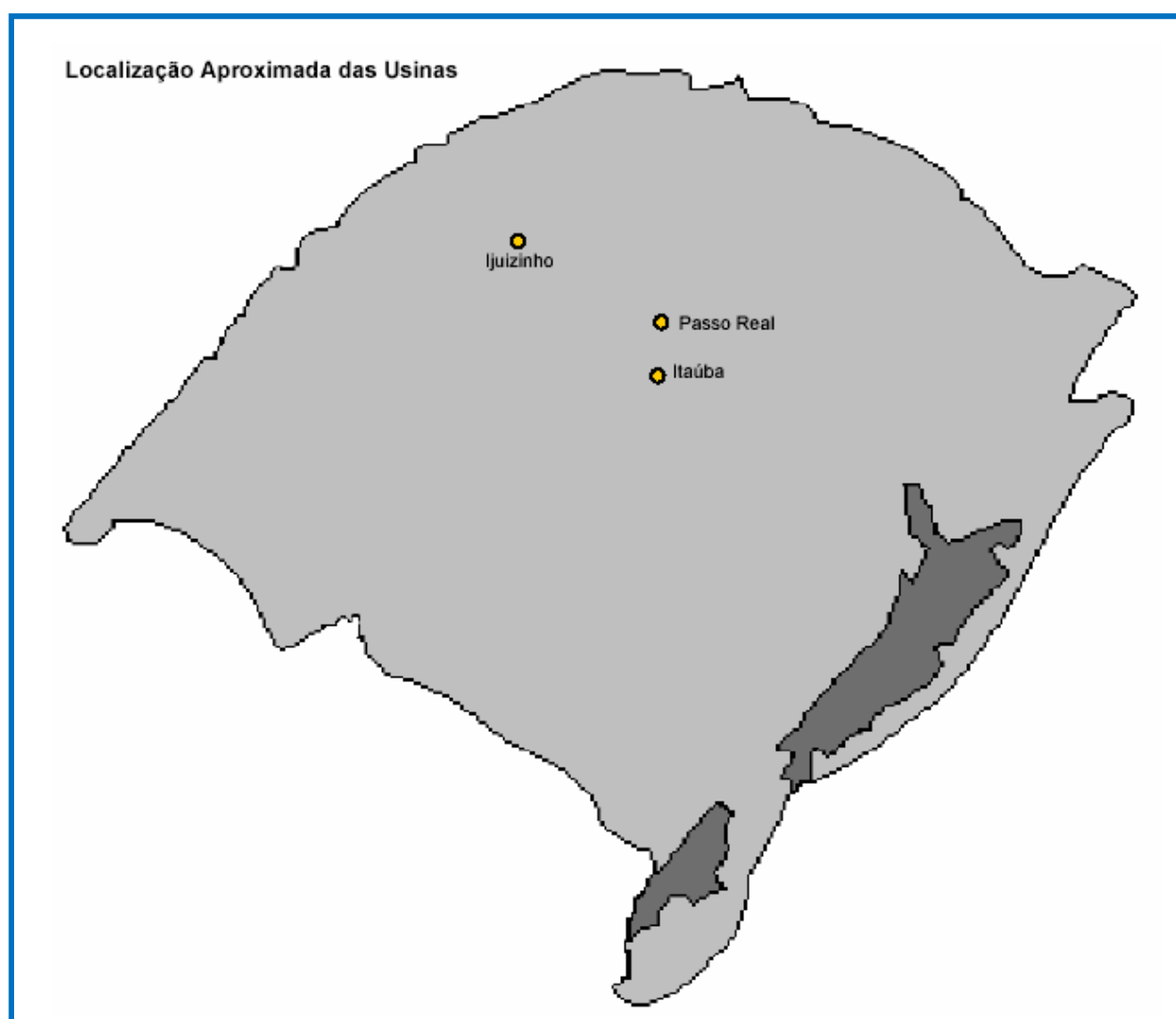
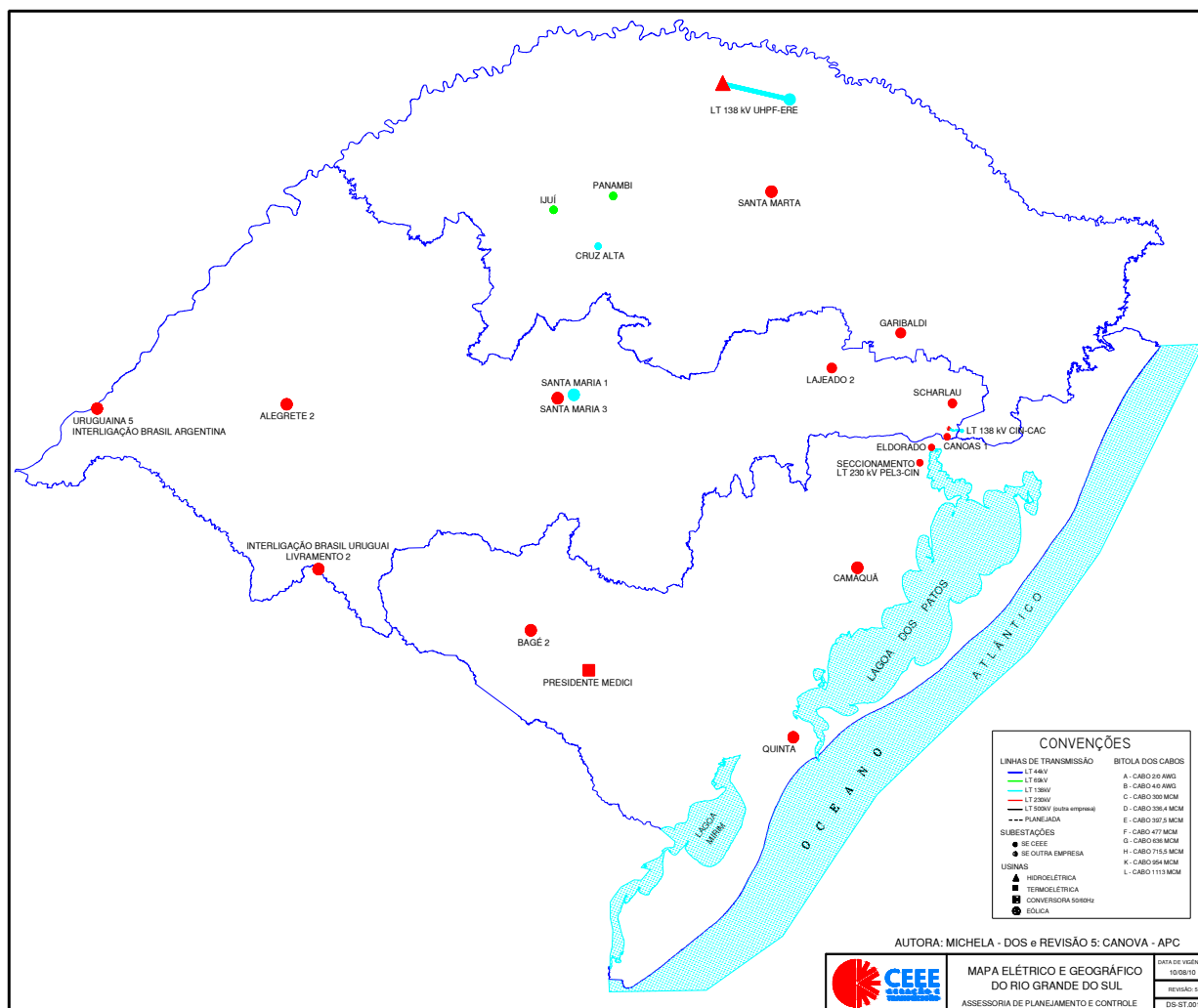


Figure 2: Location of the Electric Substations and Transmission Lines that will be expanded or made adequate by the implementation of the Program



Anexo IV
Pro-Energía RS Generación y Transmisión
(BR-L1303)
Índice de actividades y trabajo sectorial ejecutado y propuesto

Temas	Descripción	Fechas	Referencias y vínculos a archivos técnicos
Aspectos técnicos	Análisis Técnico del Programa de Inversiones de la CEEE-GT	Set 2011	IDBDOCS-#36764973-Informe Siglasul Programa de Inversiones de la CEEE Informe Final Generación 21_09_11 IDBDOCS-#36764979-Informe Siglasul Programa Inversiones de CEEE - Informe Final Transmisión 21_09_11
Aspectos de las inversiones, financieros y de adquisiciones	Programa de Expansión y Modernización del Sistema Eléctrico del Sistema Eléctrico de Generación y Transmisión del Estado de RS	Dec 2009	IDBDOCS-#36762115-Programa de Expansión y Modernización del Sistema Eléctrico del Sistema Eléctrico de Generación y Transmisión del Estado de RS
Análisis de la situación actual	Análisis de la infraestructura de las ciudades candidatas a la Copa del Mundo FIFA Brasil 2014	Jul 2011	IDBDOCS-#36764990-Síntese Gerencial das FT-Copa 2014
Adquisiciones	Revisión del proceso de adquisiciones de bienes y servicios dentro de las políticas de adquisiciones del BID – Misión FMP/CBR	Abr 2012	
Análisis ambiental	Análisis de los aspectos ambientales y sociales del Programa	Ago 2011	IDBDOCS-#36765019-CEEE-GT - Avaliacao Ambients e Social - ESDR-FINAL
Análisis legal	Análisis de los principales aspectos legales: marco regulatorio, y otros aspectos del sector eléctrico y sus implicancias para la CEEE-GT y para el Programa	Jul 2011	IDBDOCS-#36765555-Analisis legal MachadoMeyer CEEE-GT DD Report July 01 2011
Análisis de Mercado	Evaluación del Mercado de la CEEE-GT	Jul 2011	IDBDOCS-#36765575-PSR & MdE - BID CEEE-GT Evaluation 2011-07-07
Misiones	Misión de Orientación		
	Misión de Análisis	Abr 2012	
	Misión de Negociación		

ANEXO V - CONFIDENCIAL