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**Brazil**

**Energy Infrastructure Investment Program – CELESC-D**

**(BR-L1491)**

**Analysis of Compliance with the Public Utilities Policy**

(PUP)

This document was elaborated by: IDB project team.

**Energy Infrastructure Investment Program – CELESC-D**

**BR-L1491**

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**(GN-2716-6)**

1. **OBJECTIVES**

This document presents an analysis of the Energy Infrastructure Investment Program for the CELESC (BR-L1491) regarding the objectives, principles and conditions of the Public Utilities Policy (GN-2716-6).

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| **Policy objectives**  **(GN-2716-6)** | **Description** | **Comments** |
| **Objective:** The promotion of access to and the increased efficiency and quality of public utilities will require that the Bank’s actions aim to: | | |
| **Promote access to the service by the entire population** | Promote Access to the Service by the entire population, including the most disadvantaged communities and groups, in both urban and rural areas. | Brazil has 99.6% of the population attended with electricity service and specific legislations to expand access to electricity to all groups (one of the most recent ones is decree 8.387/2014 that created “Luz para Todos” program). Each distribution company has a target for universal access; most of them have met their targets, including CELESC-D. The State of Santa Catarina has achieved universal access (100%).  The Program will contribute to increment the distribution network capacity, ensuring the supply of electricity to meet future demand growth and to improve the quality of the service. Hence, it will help to ensure that universal access is maintained. |
| **Deliver a reliable, quality Service** | Ensuring that the service provided to the user meets minimum quality and reliability standards that are viable and consistent with a cost-benefit or cost-efficiency analysis, in keeping with the nature of the service and the supply conditions. | The electric sector in Brazil is regulated. Normative Resolution Number 414 of September 9, 2010 presents the general rules for the supply of electricity and defines the responsibilities of the distribution companies and the consumer. The distribution service is a regulated public service, which is performed by private and public companies, under a concession agreement.  The regulator, Agencia Nacional de Energia Electrica (ANEEL) was created to regulate the Brazilian electricity sector, through Law Number 9,427 / 1996 and Decree Number 2,335 / 1997, and it works as an independent authority, under supervision of the Ministry of Mines and Energy.  ANEEL sets annual targets of technical and financial indicators for each of the 64 distribution companies. These parameters include quality indicators, such as technical losses, reliability of service (frequency and duration of service interruptions), and requirements of financial return.  Under the concession agreements, distribution companies have the obligation to improve the technical indicators. Investments are recognized in the tariff, if the distribution company demonstrates they are cost effective and respond to an optimal expansion plan.  Moreover, each distribution company has the obligation to invest 0,5% of the tariff income in Research and Development, and another 0,5% of the tariff income in Energy Efficiency Programs.  The Program will support CELESC-D to realize the investments needed to achieve the technical and financial targets under the concession contract. |
| **Deliver a service efficiently** | Deliver a service efficiently in terms of supply, while seeking to deliver the service at the least possible cost. | Distribution tariffs are regulated, and include two parts: (a) non-manageable costs ("A-parcel"), which are not under the control of the distribution concessionaire and include: energy purchase costs, costs for use of transmission networks and sector charges; and (b) manageable costs ("parcel B"), which are under the control of the distribution concessionaire and include: operating and maintenance costs, capital costs, depreciation and taxes.  The costs of parcel A are transferred entirely to consumers (as these are not under the control of the distribution company). Nonetheless, all generation and transmission contracts are awarded by public auction biddings, to the lowest bid, hence guaranteeing the least possible cost in the Generation and Transmission segments.  Costs of parcel B are transferred to the consumer the extent that they meet the efficient costs of a reference firm. That is: For parcel B, distribution concessions have regulated tariffs, with incentives for technical quality. Electricity rates are designed to reflect the costs of the distribution service, but have a price-cap. The price-cap tariff, applied in Brazil, establishes limits to the average prices of the firm (determined based on an ideal reference firm), and requires distribution companies to improve their indicators. The general adjustment formula is: DCP = RPI-X + Y, where DCP is the rate of adjustment of the price-cap, RPI is the Retail Price Index, X is the productivity improvement factor and Y a variable that considers the pass-through of unexpected costs to consumers (for example in dry years).  Furthermore, the Program will support CELESC’s expansion and modernization of its distribution assets to deliver the services efficiently and in a cost-effective manner. |
| **Create suitable incentives for service demand** | Create suitable incentives for service demand, so users make use of the services in a manner consistent with their economic, financial, and environmental sustainability | The distribution tariff includes a component of cross-subsidy (Conta de Desenvolvimento Energetico) which allows to reduce the tariff of low income families, foster universal access to electricity, provide electricity in isolated systems and to incentivize the connection of renewable energy from wind and solar energy.  Furthermore, the Program will also support CELESC’s installation and modernization of its electricity metering devices that will help reduce non-technical electricity losses. |
| **Objective:** The scope of the sustainability of the public utilities will be promoted based on three pillars: | | |
| **Financial sustainability** | Ensuring that there are sufficient revenues from provision of the service to the user, with the community contributions and direct contributions from the government, to cover the efficient costs of service delivery. | The electricity regulation in Brazil states that the cost of electricity shall be governed by the principle of efficiency requiring the optimal allocation and use of resources in the supply of electricity at a minimum cost.  To ensure reasonable tariffs, the prices for final consumers reflect the cost of electricity, plus charges and taxes. Tariff costs include generation, transmission and distribution costs. Generation and transmission costs are based on prices and amounts of energy resulting from public competitive bids. Distribution costs are regulated, and subject to a price cap, as explained.  The financial analysis performed for the loan shows that the income received from the tariff is sufficient to cover for the provision of the service. |
| **Environmental sustainability**: | Helping ensure that the selection, execution, operation, and maintenance of the service delivery projects comply with the Bank’s environmental safeguards and contribute to the development of resilient infrastructure, considering viable alternatives to mitigate climate change. | The Program was categorized as category B, with local impacts of short duration, that can be mitigated and managed.  The IDB will define an Environmental and Social Management System (ESMS) that will enable the identification of potential impacts and risks and ensure that the beneficiaries of the financing will implement environmental and social assessment, prevention, mitigation and management measures consistent with IDB safeguard policies. IDB Safeguard policies will apply for relevant projects. |
| **Social sustainability**: | Helping increase access to the service and providing mechanisms to consult with the community on pertinent aspects of service delivery. | The Environmental and Social Management Report (ESMR) will have a dedicated strategy to manage environmental and social risks. The Bank will ensure that proper consultation with the community on pertinent aspects of service delivery takes place for every project.  Moreover, CELESC-D has already in place several social responsibility programs, including internships for young people, which the program will support. |

1. **PRINCIPLES**

The Policy is based on the following principles that will guide the design and supervision of the Bank’s Operations.

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| **Policy principles**  **(GN-2716-6)** | **Description** | **Comments** |
| **Supporting the countries to address basic access needs** | The expansion of access to public utilities at affordable prices is necessary in the region, especially in less developed countries and rural areas in all countries. Access to public utilities is essential to contribute to poverty reduction and promote inclusive development. The Bank will support the development of sustainable systems that use the combination of cost-efficiency and the most appropriate technology solutions, given the characteristics of the demand and the public utility, to address the access needs of the population, both urban and rural. | The State of Santa Catarina has achieved universal access (100%).  The Program will contribute to increment the distribution network capacity, ensuring the supply of electricity to meet the demand growth and to improve the quality of the service.  The electricity regulation in Brazil states that the cost of electricity shall be governed by the principle of efficiency requiring the optimal allocation and use of resources in the supply of electricity at a minimum cost. |
| **Promoting integrity, transparency, and accountability.** | Bank-financed operations will drive basic institutional arrangements so the region’s countries adopt measures that promote integrity and increase transparency in the delivery of public utilities services, in order to improve accountability and strengthen the observance of users’ rights. To this end, the Bank will make greater efforts to have its operations contribute to the development of good governance systems among public and private stakeholders. Moreover, this Policy recognizes that the weakness of public statistical data and the scarcity of private statistical data are factors that often hinder adequate responses to basic questions on infrastructure investment needs, service provider performance, and rate structure and evolution. Therefore, the Bank will promote targeted transparency, considering users’ information needs, the most effective way in which information should be made available, and the best channels for its distribution. | Generation, transmission and distribution are governed by principles of transparency, efficiency and quality. The Brazilian law guarantees good governance of the sector through an appropriate institutional structure a clear definition of functions and accountability.  ANEEL provides through its website a section to answer questions, submit complaints, help resolve problems with the final objective to promote accountability and quality of service to the end users among others.  Additionally ANEEL provides information on its website to the end users, such as: (i) how the tariffs are set up in order to fulfill its commitment to provide electrical power quality and how the distributor’s cost has to be included in the tariffs; (ii) ranking continuity: each year ANEEL publishes the ranking of all the distributors, and how they were ranked compared to each other; (iii) performance of the electricity distributors, key indicators about the performance of the distributor are published regularly.  ABRADEE, the Brazilian Association of Electricity Distributors publishes information about the distribution companies to promote transparency in the electricity sector, it also provides a good overview of how the electricity distribution sector is structured in the country in terms of the nature of corporate control.  CELESC-D publishes information regarding the electricity service, quality indicators, tariffs, and it also provides means for the public to contact the company online or in person. |
| **Analyzing the characteristics and impacts of subsidies**. | The operation and financing of the services addressed by this Policy should efficiently recover service delivery costs through rates charged to users. However, this Policy acknowledges that, occasionally, financial sustainability can be achieved by supplementing the revenues earned through rates charged to users for the service with contributions from the community and direct government contributions. Where subsidies are granted, the Bank will promote both their transparent allocation and use, subject to frequent, effective accountability mechanisms. Such mechanisms will include: (i) identification and analysis of sources and beneficiaries of the subsidies; (ii) analysis of the distributive incidence of the subsidies; and (iii) quantification of the subsidy relative to macroeconomic indicators (for example, gross domestic product, total public sector expenditures) used by the Bank or by the level of government granting the subsidies to report on their fiscal sustainability. In cases where rate subsidies are granted, the Bank will promote their targeting toward the most vulnerable and lowest-income groups. In addition, to the extent possible, the Bank will help countries replace rate subsidies for public utilities with income transfer mechanisms that are more direct and targeted toward the lowest-income population segments. | Electricity services are based in a tariff structure that aims to recover all the costs, including distribution, transmission and generation costs. Tariffs are reviewed on a yearly basis, in order to take into account changes in the costs structure, as well as new investments and transmission and generation costs.  The market is based on a regulated market where captive consumers (small residential, commercial, industrial and other consumers of distribution companies) have their demand ensured by means of long term generation contracts issued by the distribution companies, and a parallel free market of contracts for larger consumers.  The distribution tariff includes a component of cross-subsidy (Conta de Desenvolvimento Energetico) which allows to reduce the tariff of low income families, foster universal access to electricity, provide electricity in isolated systems, and incentivize the connection of renewable energy from wind and solar energy. To strengthen the transparency and accountability of the CDE account, ANEEL makes available online the balances and uses of this account (as well as its historical values). |
| **Separating institutional roles to improve sector governance.** | Experience shows that the most effective organization for the sectors to achieve this Policy’s objective is the separation of the roles of policy-maker, regulator, and service provider. In this context, the sector authority retains responsibility for policy-making and planning, the public agencies determine and oversee compliance with the regulatory system, and public or private entities are assigned responsibility for providing the service. This Policy recognizes, nonetheless, that the institutional organization cannot follow a single model, but must be adapted to the specific features of each sector and country. In several of the region’s countries, responsibility for policy-making, regulation, and delivery of public utilities is based at the local (provincial or municipal) level. In these cases, where it is not necessarily optimal to separate the roles of policy-making and regulation, the Bank will promote homogeneous regulation, with adequate minimum quality parameters, rate-setting principles supervision and control mechanisms. It will also help develop institutional mechanisms that strengthen appropriate management in the framework of local legislation. | Brazil has a sophisticated and well-defined institutional framework in the energy sector, with policy-setting government authorities, regulatory agencies, state-owned enterprises, and private sector companies all operating in a dynamic market. Most of the existing energy laws and policies were put in place, following the larger economic reforms introduced by the federal government in the 1990s and 2000s.  The National Council for Energy Policy (CNPE) is the highest-level body in charge of setting energy policy in Brazil. The Ministry of Mines and Energy (MME) has the overall policy-making responsibility for the electricity sector while ANEEL is responsible for regulating and controlling electricity generation, transmission and distribution in compliance with existing legislation.  After the market reform in Brazil, there is an Independent Regulatory Agency (ANEEL), an Independent System Operator (ONS) and an Independent Clearing House of wholesale power transactions (CCEE). There is also a separated planning agency, in charge of producing the indicative plans and studies for the sector (EPE). There is competition on generation, independent power producers and free commercialization and pricing for electricity. Transmission and distribution tariffs are regulated. There are also public companies, which operate under the rules of the market. |
| **Establishing the most appropriate sector structure given the characteristics of the Service and the objective of the Policy.** | Experience in reform processes and management changes in Latin America and the Caribbean shows that good or bad performance by public utilities providers is not necessarily explained by the type of ownership (public or private), or by the sector’s structure (monopoly or competitive). For that reason, and considering the heterogeneity of markets and services in the region, this Policy does not promote a single sector industrial organization for the delivery of public utilities, and emphasizes that regardless of the management model used, there must be good governance practices and a clear, predictable, stable regulatory framework that encourages efficiency and investment. | The Brazilian electricity sector is based on a competitive market in the generation segment, where generation contracts are awarded by yearly bids, based on projected demand. The transmission sector is based also on concessions awarded also by bids. The distribution sector is a regulated monopoly, with the participation of 64 companies, which have their tariffs regulated by ANEEL. There is separation of the generation, transmission and distribution segments. While there is public and private participation, public companies operate under the same set of rules and conditions than private companies.  The current regulatory framework was established in the 90’s, and was improved following the electricity sector crisis of 2001. As such, it can be considered a stable regulatory framework that provides clear, predictable, and stable rules to encourage efficiency and investment. This regulatory framework also includes management rules applied during temporary limited power supply situations. |
| **The role of economic regulation in creating incentives for efficient, investment, and protection of users’ rights.** | The adoption of an effective regulatory system tailored to the specific conditions of each sector in each country is a key factor for achieving the Policy’s objectives. A regulatory system should help reduce the capital cost of service providers, encourage investment, set service quality standards, and allow service providers to obtain sufficient revenues to be financially sustainable. The selection of the most appropriate institutional instrument for the specific conditions of the country and the service is of the utmost importance for the effectiveness and sustainability of the regulatory process. This instrument may take various forms, from regulation by contract to more complex methods that require the creation of a multisector regulatory body or even a specific one for each service. The probability that economic regulation will contribute to achieving the Policy’s objectives increases with the degree of independence, autonomy, and transparency of the regulatory institutions and processes.  The promotion of users’ rights should be a core objective of the service regulation process. Thus, regulation should ensure that the efficiency gains achieved over time by the service providers are passed on to the users through rate reductions or improvements in service quality. For this to happen, it is essential to prevent the abuse of dominant market power by the provider and strictly apply the standards for quality of service. Regardless of the sector structure and institutional regulation model selected by each country, the Bank will provide assistance in developing information systems that show policy-makers and users the structure and cost and rate levels at all stages of service production. | ANEEL main tasks include: (i) regulate generation (production), transmission, distribution and sale of electricity; (ii) oversee, directly or through agreements with state agencies, concessions, permissions and electricity services; (iii) implement policies and guidelines of the federal government regarding the exploitation of electricity and the use of hydraulic potential; (iv) establishes tariffs; (v) settle disagreements at the administrative level, between agents and between these agents and consumers; and (vi) promote the activities of granting concession, permission and authorization of projects and electricity services, as delegated by the Federal Government.  In addition, ANEEL has a well-established consultation process with the public on matters related to electricity services, development of its regulatory agenda, and education materials regarding users’ rights. |
| **Creating the proper conditions so private participation in public utilities service delivery is a viable option.** | This Policy recognizes that competition has the potential to increase productive efficiency and quality of service. In markets where production technology does not exhibit characteristics specific to natural monopolies, market competition can be generated by allowing several companies to offer services simultaneously. When the markets are natural monopolies, competition for market can produce the same results as competition in the market, as long as the process of selection and regulation of the company providing the service is open and effective. The Policy also recognizes that private participation (in any of its manifestations, including management contracts, concessions, or mixed-ownership enterprises) is a key tool for closing gaps in the quantity and quality of utilities in the region. Attracting private participation to the services covered under this Policy and maximizing its impact on efficiency gains in service management depends on the existence of a macroeconomic context that favors investment and credit, a clear, stable institutional and regulatory framework, and economic conditions that reduce capital cost and allow for reasonable returns on investment. In those cases where the countries consider that competition and implementation of public-private partnerships are suitable mechanisms for promoting the expansion of the supply and enhancing the quality and efficiency of public utilities services, the Bank will provide assistance in strengthening the institutional and legal framework and in developing rules and mechanisms that encourage the participation of enterprises under equal conditions. | The Brazilian power sector has a regulatory framework that encourages private participation in all three segments (generation, transmission and distribution). Generation is a competitive segment, where contracts are allocated based on public offers. Likewise, transmission concessions are allocated by public bidding. In the distribution sector, which is a natural monopoly, 48 companies are private, 3 are municipal, 7 are state owned, and 6 are owned by the federal government. Nonetheless, all 64 companies are regulated by the same rules, and must comply with the same set of rules, which includes provision to guarantee a cost-efficient service. |
| **Strengthening the management of infrastructure used for public utilities service delivery** | Increasing the supply of infrastructure is not always the most efficient solution in response to growing demand for public utilities. Diagnostics often encourage building more infrastructure over promoting optimal use and management of existing assets, in order to increase the supply and quality of public utilities services, thus avoiding sub-optimal investments. The most pertinent spheres of action for optimizing infrastructure management are: (i) encouraging efficiency in business management; (ii) developing and implementing appropriate, stable asset maintenance policies; and (iii) optimizing the use of the infrastructure through incentives for demand. Policies to drive demand through the setting of standards or the establishment of price incentives (including congestion charges and peak and off-peak rates) have the potential to change consumption patterns while increasing the availability of infrastructure services. Optimization of infrastructure use through price mechanisms not only allows cost savings, but can also contribute to environmental sustainability by creating incentives to conserve, and therefore reduce emissions and adverse impacts on ecosystems. When establishing price incentives and changing rates, it is highly advisable to rigorously analyze their distributive incidence among the various types of users, in order to report on possible impacts on social inclusion. | The tariff structure applied in Brazil encourages distribution companies to avoid over-investments, as investments must be justified to be able to be included in the tariff structure. Hence, normally distribution companies pursue the application of a prudent investment plan.  The Program will finance both the renewal of old equipment, for modern equipment, and the installation of new lines and substations. The renewal of equipment will allow for a better management of the network, reducing outages. On the other hand, the new projects, have been determined by an optimal expansion plan to provide additional distribution capacity for the supply of future demand increases. CELESC-D also finances energy efficiency projects, which will help to optimize the use of infrastructure. |
| **Promoting innovation to foster efficiency, access, and environmental sustainability** | Technological advances make it increasingly possible to design targeted solutions to meet the demand for infrastructure services. Photovoltaic power generation, micro-hydroelectric generators, and waste separation plants for recycling are examples where technology fulfills the dual role of increasing the supply of services and contributing to environmental sustainability through the development of a lower-emissions offering. The adoption of the latest technologies can also help reduce service delivery costs, for example, through technical and nontechnical loss detection in water and power distribution. Moreover, technological innovations such as smart meters, have the potential to reduce utilities consumption during periods of high demand. This Policy highlights the role of technology for increasing access with cost-effective solutions, reducing maintenance costs, and managing consumption, while avoiding unnecessary investments in increased capacity. The Policy recognizes that the Bank will help disseminate information on the adoption, financing, and systems for management of the most appropriate technology solutions for each particular combination of public utility and demand characteristics. . | By Law, CELESC-D has the obligation to invest 0,5% of the tariff income in Research and Development, and another 0,5% of the tariff income in Energy Efficiency Programs. Under the Research and Development Program, CELESC-D has been financing solar distributed generation, and research on electric vehicle charging stations and smart grids.  The Program will to help to ensure that the distribution networks have the conditions to allow for these innovations to be implemented, and hence, contributing to the impact of these energy efficiency measures. |

1. **CONDITIONS**

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| **Policy conditions**  **(GN-2716-6)** | **Description** | **Comments** |
| **Financial sustainability** | For each operation, it will be verified that the relevant service will generate or receive sufficient funds to meet its financial commitments and cover the operating and maintenance costs of the systems related to the operation.  When a Bank operation involves contributions of budgetary funds to subsidize the provision of a public utility service, it will be verified that:   1. the budgetary allocation of such contributions is transparent; and 2. its purpose corresponds with one of the following objectives: i. Expansion of capacity to provide greater access; ii. Increase in the quality of the existing services; iii. Improvement in process administration and adoption of technology for the services to contribute to climate change mitigation or to the management of natural disaster risks.   When the budgetary funds represent rate subsidies, it will be confirmed that progress is made on the design and implementation of the subsidy targeting instruments that grant priority to the most vulnerable and lowest-income groups. | All the projects to be funded by the program are expected to be financially sustainable, since the program will be operated through public financial institution that will require that sub-projects are financially viable, which in turn also rely on a set of regulations on tariffs that ensure investments’ returns.  No specific subsidies to the beneficiaries of the program will be provided, and the tariff to be applied shall be those already in place by the regulatory framework.  The selection of the portfolio of projects to be financed by this operation will go through a rigorous analysis of the economic-financial and technical viability of them to determine their sustainability, and a sensitivity analysis of their economic returns to changes in main parameters. |
| **Economic evaluation** | Public utilities projects will be economically viable in accordance with the cost-benefit and cost-effectiveness evaluation methodologies used and accepted by the Bank. | The Program has a cost-benefit economic evaluation, following the bank’s procedures that shows that it is viable, from an economic point of view. Sensitivity analyses for the main parameters used in the evaluation indicates that 20% variations on them does not affect significantly Program’s economic attractiveness. |