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**THE PUBLIC PRIVATE PARTNERSHIP (PPP) IN THE DISTRIBUTION COMPANIES OF  
THE BRAZILIAN ISOLATED ELECTRIC SYSTEM**

by MARIA STELLA FRANÇOLIN MACHADO DA SILVA  
stella@aneel.gov.br

Advisor: Prof. John Forrer

# **THE PUBLIC PRIVATE PARTNERSHIP (PPP) IN THE DISTRIBUTION COMPANIES OF THE BRAZILIAN ISOLATED ELECTRIC SYSTEM**

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## 1. Introduction

The Brazilian electric system is divided, basically, into two blocks. The first, named National Grid - SIN, is composed of the regions South, Southeast, Center-West, Northeast and part of the North. This system, that occupies 65% of the national territory, attends to, approximately, 97% of the Brazilian population and the same percentage of the total electric load.

The other, named Isolated Systems is predominantly thermal and predominantly located and dispersed in Brazil's Northern region. They attend to the remaining 45% of the territory where just about 3 % of the national population lives or, in other words, about 1.2 million consumers.

One of the most important differences between both systems refers to the economic situation of the region in which these systems are locating. While the region where the SIN is located is responsible for 95% of the Gross Domestic Product – GDP, the area of the Isolated Systems is one of the most precarious in Brazil.

Thus, the responsible companies for the electric power supply to this northern market come across a very complex situation. They have to render a good quality service in a poor region, with low demographic density, with a high cost of generation, besides other inherent specific problems to the region.

These problems, over the course of many years, are responsible for the critical situation, in which the local companies of distribution are, where it is observed, among the main aspects, the following:

- ? cash generation difficulty;
- ? economic-financier unbalance;
- ? high level of insolvency;

- ? elevated levels of debts;
- ? elevated levels of default ;
- ? high level of electric losses; and
- ? elevated expenses with energy purchase.

In the face of this situation, it has been hard for the responsible administrators of these companies to find a solution that allows its economic-financier recuperation. Several attempts were already made, including the federalization of some of these companies in this region, but the problems persist.

The truth is that the resources generated by them, are not enough to make a stand against the generated expenses. The low economic level of the local population does not allow tariff charges adequate to remunerate the costs with the energy acquisition, the maintenance of the electric systems and the necessary investments for the concession maintenance.

The Public Private Partnerships (PPP) application, therefore, is a possible solution to this situation and would attract resources for the revitalization of these companies, besides allowing a more satisfactory administration for the same.

Having in mind the problem which the Northern distributors have faced, this work is going to present the main issues about the subject PPP and a case study accomplished with one of the distributors of the isolated system.

Firstly will be briefly present the main characteristics of the Brazilian Electric System, in terms of generation, transmission and distribution. It will present the two parts into which the Electrical System is divided: the National Grid and the Isolated System, and how different has been the regulatory interest of the government: the movements toward a consolidation of an institutional model for the National Grid and the lack of regulatory model for the Isolated System.

The purpose of the next section is to show the characteristics of the Isolated System, its inherent problems and why the economic and financial situation of the electricity distributing companies is so precarious nowadays.

The fourth section will present the concepts of Public Private Partnership – PPP, its origins and how it has been used around the world and in Brazil. In the sub section 4.6, specifically, will be presented the differences between the alternatives and why the PPP was considered, in this study, the best one for the Isolated System.

The fifth section will present the company “D”, as an example of an electricity distributing company. Despite its name, “D” is a real distribution company in the Isolated System. Its outcomes will be presented for recent years which made “D” become insolvent.

Finally, will propose the main aspects which need to be considered in order to use PPP as a possible solution to “D” and the other distribution companies in the Isolated System, in attempts to finish or, at least, to reduce, the already mentioned problems and, consequently, to improve the regional development caused by the expansion of the electric systems of these companies.

In the conclusion it will be showed that using PPP in the companies of the isolated systems located in the Brazil’s Northern region, more than a solution for a financial problem, will permit the rendering of the services to the final costumer with a best level of efficiency in both the rendering of those services and the uses of the public resources.

## 2. The Brazilian Electric System

### 2.1. Overview

Brazil occupies an area of 8,514,215.3 Km<sup>2</sup>, with an estimated population, in March 2007, of 188,444,794 inhabitants<sup>1</sup>. In 2005, the checked GDP belonged to R\$ 1,937,598 million, with a per capita income of R\$ 10,520.

To attend this population, Brazil has a very developed electrical system with size and characteristics that differentiate it world-wide. The main characteristic is that almost 80% of the installed generation capacity is hydraulic – in terms of effective production, this proportion achieves, in average, 90%. That is due to the existence of big reservoirs with multi-annual regularization capacity.

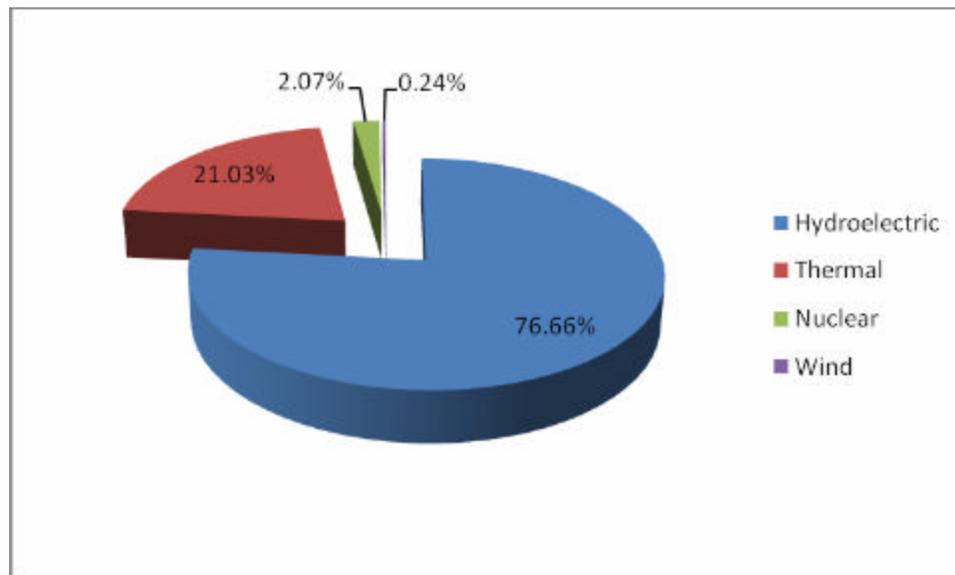


Illustration 1: Generation Capacity in Brazil by Source – Jan 2007  
Source: ANEEL

The Brazilian power generator, owned by private companies and by the government, owns an installed capacity of 96.97 GW, being 76.7% of hydraulic source. The thermal power plants -

<sup>1</sup> Source: IBGE – Obtained as <http://www.ibge.gov.br>, in March 2007.

oil, natural gas and coal - represent 21.03% of the production, followed by the nuclear with 2.07% and wind with 0.24% (Illustration 1). In the SIN, to minimize the operational costs of the generator park, the power plants are centrally dispatched, by the National Operator of the System – ONS.

Another peculiarity of the Brazilian electrical system says respect to the widespread grid of transmission needful to interlink the production to the consumption. The basic grid of transmission, with tensions varying from 230 kV to 750 kV, reached in December 2005 an extension of 83.049 km, including 851 transmission circuits. The transmission installation are run by a collegiate of private and government agents but they are managed and operated by the ONS, according to procedures approved by the Brazilian Electricity Regulatory Agency - ANEEL.

The electric power distribution market is attended by 64 dealerships of public services, stated-owned companies or private ones, which embrace the whole Country. The stated-owned dealerships are under the federal, state or municipal governments' control. In many of these private companies it verifies the presence, in their control groups, of several national, North American, Spanish and Portuguese companies. They supply about 47 million consuming units, of which 85% are residential consuming, in more than 99% of the Brazilian municipal districts.

The electric power market grows about 4.5% for year and should reach a 100 GW in 2008. The government medium term planning foresees the investments needful of approximately R\$ 6 to 7 billion/year for expansion of the Brazilian energetic matrix, in assistance to demand of the consuming market.

Over the past two decades, the growth of the electric power consumption was greater than the growth of GDP. This resulted from the population growth of urban zones, the energy offer increase effort and the modernization of economy.

For the future, some alterations must occur in the investments structure in energy, including the installation of thermal power plants using natural gas, which demand

implementation terms and investments smaller than the hydroelectric. On the other hand, should be enlarged both the energy imports from Argentina, Venezuela and Bolivia, and the electric interconnection between Brazil's South and North, which means larger investments in transmission grid.

## **2.2. The Regulatory Framework**

The Brazilian electric sector, like in other countries, was constituted by concessionaires vertically integrated. Usually, the generation and the transmission in long distance and extra-high tension were concentrated on federal and state owned companies, being the distribution and the commercialization concentrated on state owned companies.

Until recently, the generation in the Isolated Systems had a certain legal framework, although unsatisfactory. The change in this legislation, during the privatization process, revoked items, that has resulted in the current situation of a complete legal vacuum, contributing to the agents' destabilization and insolvency, the unbalance acceleration and the obsolescence of the generator park.

The reform of the model then in force started to be implanted in 1995, with the promulgation of the Federal Law n. 9,074, of July 7, 1995. With this law, the first steps were given in the direction of introducing the competition in the generation and in the commercialization. In December 1996, the Federal Law n. 9,427 created the ANEEL, established as an autarchy of special regime, with administrative and financial autonomy and having as main goals to regulate and to control the sectorial activities, still acting like the Federal Government. ANEEL's effective installation, however, didn't happen until December 1997.

In May, 1998, it was promulgated the Federal Law n. 9,648, that established important determinations in the direction of stimulating the competition in the generation and in the commercialization, besides introducing the competitive purchase of energy by the distributors and free consumers and creating a new kind of agent – the traders.

By this law were created, also, the Wholesale Market of Energy – MAE, responsible by commercialization of energy and the ONS, whose goal was optimize the electric-energetic system operation and to minimize therefore deriving costs, with an independent performance of agents' commercial interests.

It should be stressed that all changes introduced by that law were specific for SIN, not being applied to the isolated systems.

Between June, 2001 and February, 2002, the electric power consumption was subjected to a huge black-out. Although the rainfalls in the summer of 2001 were lower than the long term average none can attribute only to this circumstance the rationing imposed to the population. In fact, there was an investments inadequacy in the generation expansion and of the transmission that was attributed to a failure in the model in force.

Thus, after the government's change occurred in year of 2003, was published the Federal Law n. 10,848, of March 15, 2004, that introduced the new regulatory model for the Brazilian electrical sector. This law created two separated environments for the purchase and sale of energy: the Regulated Contracting Environment – ACR and the Free Contracting Environment – ACL.

In the ACL, all electricity agents, except the distributors, would be allowed to freely negotiate power purchase agreements – PPAS. In the ACR, the distribution concessionaries would purchase, at public auctions, the totality of the electricity that they have to acquire in order to meet the needs of the consumers.

This law created the successor of the MAE: the Electric Commercialization Chamber – CCEE, it is responsible for managing the power commercialization in the ACR and ACL environments.

Once again, the Isolated Systems were not contemplated in the regulatory framework.

Thus, the combination of the effects as the revocation of the regulatory framework which use to exist before the Federal Law n. 9,648 and the lack of a model that contemplated the issues of the Isolated Systems resulted in a legal vacuum extremely harmful to the agents who act in these systems and, consequently, to the consumers attended by them.

### **3. The Brazilian Isolated Electric Systems**

#### **3.1. Characterization of the Isolated Electric Systems**

There was, in the beginning of 2003, 292 isolated systems in operation authorized by the ANEEL. Its physical distribution was the following:

- ? In the Northern Region: 256;
- ? In Mato Grosso State: 32; and
- ? In the States of Pernambuco, Bahia, Maranhão and Mato Grosso do Sul: 4.

Altogether, these systems cover almost 50% of the national territory, consume about 2% of the electric energy used in the country and represent the same GDP proportion. It's important to stress that, besides the 292 authorized isolated systems, there are hundreds of isolated systems in operation without ANEEL authorization, even though they belong to companies, and many other places without assistance.

The most important isolated systems, by the view of the consumption dimension, are the ones that attend to the capitals of the Northern Region (Manaus, Porto Velho, Macapá, Rio Branco and Boa Vista), which represents about 80% of the total load of the isolated systems. Belém is the only Northern Region capital which is integrated in the national grid.

In Manaus, Porto Velho and Macapá, the system of generation results from hydro and thermal plants. In Rio Branco, the assistance was purely thermal, but at the end of 2002, it was interconnected to the Porto Velho's system in 230 kV. The system that attends Boa Vista and part of the Roraima's countryside started to be supplied, beginning in July 2001, by imported energy

from Venezuela, by means of the interconnection to the hydroelectric system of Guri, in 230 kV, in that neighboring country.

The great majority of the systems in the countryside of the state of the Northern Region are supplied by small electric units that use diesel oil. However, there exists, as well, a hydroelectric park composed by a lot of Little Hydroelectric Plants (PCH), totaling about 42 MW of installed power, in 22 plants in States of Rondônia, Roraima and Mato Grosso. This park was expected to be expanded with the installation, at the end of 2006, with 14 new PCH's, adding more 110 MW to the power of these systems.

The main agents who operate in the isolated electric systems in the country are Eletrobrás and Eletronorte with their respective subsidiaries, the state governments of Amapá and Roraima, the private companies CELPA and CEMAT from Rede Group, and some independent producers.

Eletronorte is the controller of the subsidiaries Manaus Energy (MESA) and Boa Vista Energy (Bovesa). Manaus Energy is responsible for 89.5% of the energy distributed in the State of Amazonas (the great majority in the capital, Manaus) and owner of the hydroelectric plant (UHE) Balbina and the thermal power plants (UTES) Mauá, Aparecida and Electron. Boa Vista Energy provides 84% of the energy distributed in State of Roraima (essentially in the capital, Boa Vista).

Eletronorte is also the supply of the capitals of: (i) Amapá, through UHE Coaracy Nunes and UTE Santana; (ii) Roraima, through the electrical energy import from the Edelca, a Venezuelan company, and UTE Forest; (iii) Acre, through UTES Rio Branco and Rio Acre, and (iv) Rondônia, through UHE Samuel and UTE Rio Madeira.

Eletrobrás is the controller of Eletronorte and of the distribution concessionaires' owner by the federal government that operate in the isolated systems: Energetic Company of Amazonas (CEAM), Electric Centrals of Rondônia (CERON) and Acre Electricity Company (Eletroacre). CEAM is supplied partially by MESA and owns a few thermal power plants (PCTs). CERON owns PCHs and PCTs.

The governments of the state of Amapá and Roraima are controllers of Electricity Company of Amapá (CEA) and Electricity Company of Roraima (CER), respectively. CER is supplied partially by Bovesa.

The main Independent Producers of Energy (PIEs)<sup>2</sup> that supply the isolated systems own the following plants:

- ? UTEs El Paso Amazonas, El Paso Rio Negro and BK, in Amazonas;
- ? UTEs Termonorte I and II (consortium CS Participações/El Paso), in Rondônia;
- ? UTE Barro Vermelho (SoEnergy), in the Acre;
- ? CELPA: 38 systems with 75 MW installed,
- ? CEMAT: 34 systems with 87 MW installed, and
- ? SoEnergy: 55 systems with 77 MW.

In the States of Rondônia and Mato Grosso there are, yet, several independent producers which own PCH'S.

Unfortunately, all these companies that form the isolated systems have a point in common. All of them, in larger or smaller degree, present serious structural problems, including:

- a. Economic-financier unbalance in the largest part of the concessions;
- b. Insolvency by the largest part of the concessionaires;
- c. Elevated levels of debts;
- d. Elevated levels of default;
- e. Elevated costs of generation, operation and maintenance;
- f. Elevated level of technical and commercial losses of electric energy;
- g. Elevated expenses with the energy purchase;
- h. Local distortions in the electric power taxation; and

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<sup>2</sup> Independent Power Producer (PIE) – defined by the Federal Law n. 9,074 – July 7, 1995

i. Obsolescence of the generator park.

In a general way, in all distributor concessionaires of the isolated electric systems the tariffs charged from the local consumers, that propitiate the operational revenue of these companies, are not sufficient to cover their operational expenses or then for their needs for investments.

In the Isolated Systems the Tax on Goods and Services Circulation (ICMS) doesn't apply to the energy supply. However, it is applied to the fuel purchase for the electric power generation, on the electricity purchase produced by self generators and independent producers of energy and on the revenue to the final consumer of electricity. According to valid federal legislation, there should be an ICMS' compensation on the fuels purchase in the withdrawal on the electric power supply; but, due to the local legislations, today this just occurs in some of the state in the Amazonian region and not in the others.

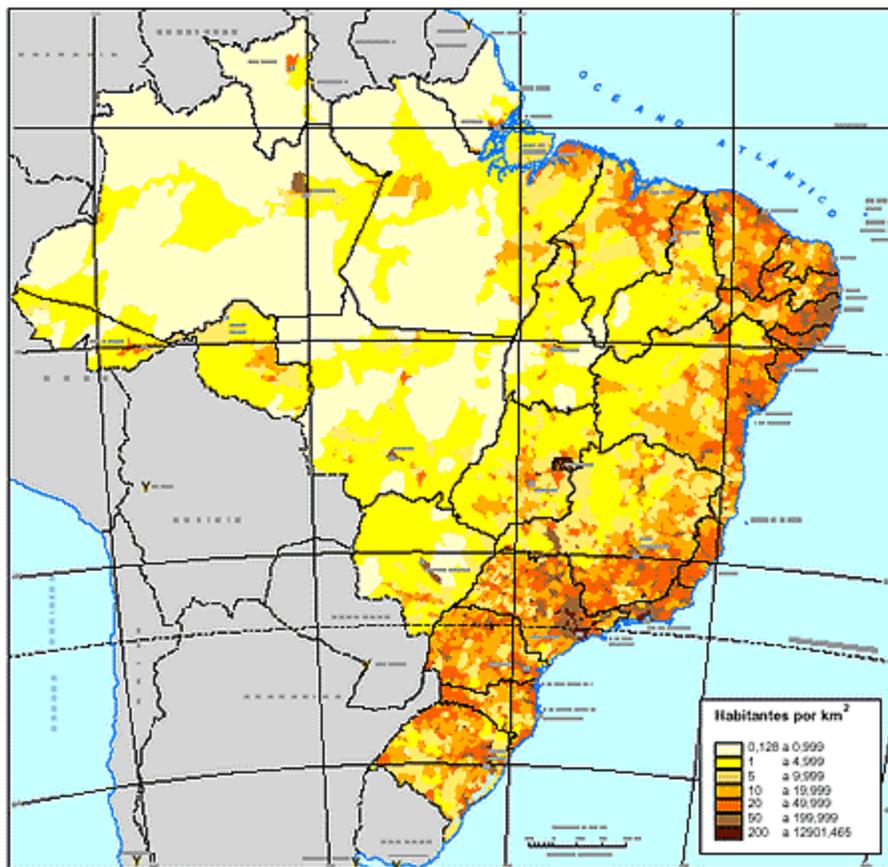
It is fundamental to highlight the importance of having a good electric power supply in the Isolated Systems, in terms of the life regional development – economic growth and quality perspectives, and of the territorial occupation - national safety.

### **3.2. National Grid versus Isolated Systems**

The Brazilian electric system, as already said, is constituted of two great blocks: the National Grid – SIN and the Isolated Systems. These two systems reflect exactly Brazil's socio-economic situation. The high economic level of the regions belonging to SIN demanded, over the years, more attention to dispose of the input electric energy. Moreover, in these regions are located the great Brazilian hydraulic potentials.

On the other hand, Brazil's Northern region, where almost the entirety of the Isolated Systems is located, is a region with low demographic density and with economic activity much lower than the other regions.

In terms of physical distribution of the Brazilian population, there is a great concentration in the Southeast and South regions. According to census accomplished in 2000, almost half the Brazilian population lives in just 244 of the 5.561 existing municipal districts. The demographic density of the country belongs to 19.84 inhabit/Km<sup>2</sup>. However, its distribution is extremely uneven. At the same time in which there are municipal districts in Amazonas with less than 1 inhabit/Km<sup>2</sup>, there is another, like Rio de Janeiro, with 12,897.8 inhabit/Km<sup>2</sup>.



Map 1: Demographic density

The main physical and economical Brazilian characteristics are showed in Table 1. The demographic distribution in the country is presented in Map 1.

Region	Population	Inhabit/Km <sup>2</sup>	GDP (R\$ million)	GDP/capita (R\$)
North	14,373,260	3.77	93,423	6,500
Northeast	50,427,274	32.00	248,445	4,927
Center-West	12,770,141	8.1	132,727	10,394
Southeast	77,374,720	84.88	970,245	12,540
South	26,635,629	47.02	321,781	12,081
<b>BRAZIL</b>	181,581,024	21.33	1,766,621	9,729

Table 1: Brazil macroeconomic dates – 2004  
Source: IBGE

As is showed in Table 1, the Southeast region owns 42.6% of the inhabitants in the country.

The industrialization and the economic development level follow, basically, the same distribution of the population. In this way, the Southeast region is the most important of the country, followed by the Southern and Northeast regions.

In the Southeast region are located the main Brazilian cities and industries and, consequently, this region also has the greatest national GDP (Table 2).

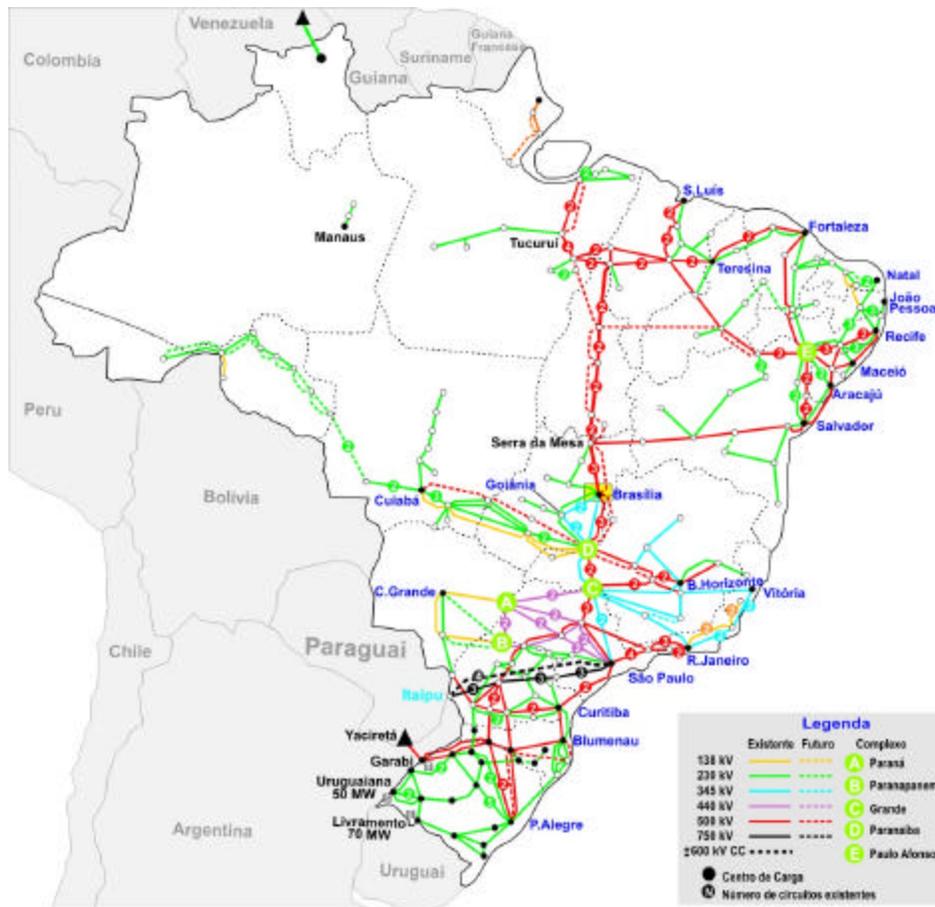
Region	1998	1999	2000	2001	2002	2003	2004
North	4.5	4.4	4.6	4.8	5.0	5.0	5.3
Northeast	13.1	13.1	13.1	13.1	13.5	13.8	14.1
Center-West	58.2	58.2	57.8	57.1	56.3	55.2	54.9
Southeast	17.5	17.7	17.6	17.8	17.7	18.6	18.2
South	6.8	6.4	7.0	7.2	7.4	7.5	7.5

Table 2: Participation in the Brazilian GDP (percentage) – 1998 to 2004  
Source: IBGE

The presented differences are reflected, in the same way, in the Brazilian electric system. While in the more developed regions it is all interlinked by a complex grid of transmission, in the isolated areas the social economic development is limited by the lack of electric energy (Table 3 and Map 2).

	Installed Power (MW)	Load (GWh)	Transmission Line (Km)
GRID	84,176.7	415,864	83,049
Isolated Systems	3,542.0	12,086	-

Table 3: Electrical Systems - Basic Dates



Map 2 Brazilian Electric Systems

### 3.3. Overview of the electricity distributing companies

Until at the beginning of the 1990s, the Brazilian electric sector was primordially constituted by a state monopoly where the operation and the system planning were owned by several companies. They were all owned by the Federal and State government (Illustration 2) which allowed cooperation among there, generation, transmission and distributing companies,

despite their different sizes and distinct characteristics. The tariffs were defined by the cost of the available product.

In this scenario, there were no incentive mechanisms to the efficiency and to the expansion of the electric system which was defined by political criteria. Cuts in the stated-owned companies' investment budgets were frequent, meaning in a delay in the implantation chronograms and in the works costs elevation. Nevertheless, the electric power sector evolved significantly until the financing capacity of stated-owned company was exhausted.

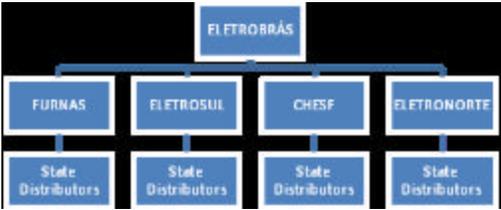


Illustration 2: Eletrobras Group

In this model, where almost all the electric power companies were owned by state, there was a financial flow among them in the several country regions. That allowed the tariff practiced all over the country to be the same and, due to a criterion called guaranteed remuneration, all the companies, regardless of their productivity or profitability, had, because of this financial flow among regions, a remuneration that allowed them to manage their business, with a certain margin of "profit". As part of this guaranteed remuneration criterion, the companies with surplus transferred part to the deficient companies.

However, the edition of the Federal Law n. 8,631 - March, 4, 1993, changed that situation. By means of this law, the tariff equalization was instituted and the intra-regional financial flows were ended. Thus, at the same time in which it reinforced the location signals and created new stimulus for managerial efficiency, it eliminated, however, important sources of resources for the distribution concessionaires that attend to the needier regions of the country and, particularly for the Northern region, that assume elevated costs to assist Isolated Systems. It generates big financial difficulties for these companies which act in these regions.

Since this law was passed, the Northern region distribution companies began accumulating debts with their supplier, in this case, Eletronorte.

In the middle of 1995, was initiated the reformulation sectorial process proposed in the scope of the Restructuring Project of the Brazilian Electric Sector – RESEB, which aimed at the implantation of a desverticalized model for the national electric power industry, with competition in the generation and commercialization segments and strong regulation in the transmission and distribution segments.

That reformulation process was initiated, but was not ended. About 80% of the electric power distribution, that before belonged to state governments, passed to the private owners' hands, however, about 80 % of the installed generation capacity remained under the control of the federal stated-owned companies.

However, that reformulation process of the electric sector, that somehow allowed the new investments ingress in the sector, did not reach the Isolated Systems.

The edition of the Federal Law n. 10,848, in March 15, 2004, initiated a second reformulation cycle of the electric sector. The proposed model in this law had as its goal the electric power demand assistance of reliable form, with rationality and economic sustainability, observed the following principles:

- ? Prevalence of the public service concept;
- ? Equilibrium of tariff;
- ? Mitigation of the systemic risks;
- ? Universalization of the access and the use of the electricity services; and
- ? Transparency – Contestation process.

Once again, the isolated systems were not considered in the new model. These systems continued to observe the Federal Law n. 8.631, of 1993. In other words, the supply tariffs levels must correspond to the necessary values to the service cost coverage of each concessionary

distributor, according to its specific characteristics, as a way to guarantee adequate services. The same law extinguished the regime of guaranteed remuneration.

The assistance cost in these systems is high, if compared to the assistance cost in SIN, as result of the specific characteristics of the region, such as the lower physical distribution and the generation which is basically starting from fossil fuel. That would demand the collecting of a higher tariff, which would be difficult in a demographic and economically deficient region.

That situation had consequences that can be observed today: a high degree of insolvency, a lack of resources for investments, and, finally, all the problems already mentioned of the companies which work at the Isolated Systems.

ANEEL created, for use in its tariff process, the Reference Company (ER) concept. By means of this concept is drawn a fictitious distributor company which attends their consumers with the maximum possible efficiency, considering the conditions offered by their region. In fact, the real company competes with the fake ER and has an incentive to achieve costs values less than the ER costs.

Using this concept it is possible to establish a standard cost to the distributor companies in the Isolated System, calculated considering the maximum efficiency level. The comparison between this standard cost and the revenue of this standard company will be the real debt that the government would subsidize.

Is important to have in mind, however, that these real companies attempt to deal with big difficulties in facing the losses and the default, whose roots are not only in a history of managerial difficulties, but also in structural problems because of the physical context and of the socioeconomic situation of these regions.

## **4. Public Private Partnership – PPP**

### **4.1. Conceptual aspects**

The Public Private Partnership – PPP designates a form of cooperation between the public authorities and the economic agents, whose goal is to guarantee the financing, the construction, the renewal, the administration or the maintenance of an infrastructure or by doing a service. The public authorities appeal to PPP's operations to accomplish infrastructure projects, in particular in the sectors of transport, social welfare, health, education, public safety, administration of residues and water and energy distribution.

PPP's operations are characterized by the following elements:

- ? The relatively long duration of the relation between public partner and the private;
- ? The way of the project financing, this is guaranteed in part by the private sector;
- ? The risks division between public partner and the private, to which are transferred the risks habitually supported just by the public sector;
- ? The important role of economic operator, that takes part in the elaboration stages, accomplishment, project execution and financing;
- ? The public partner concentrates essentially to define the goals that have to reach regarding public interest, proposed services quality and prices policy, at the same time in which it guarantees the accomplishment control of these objective.

PPP's development registers in the role evolution of the State in the economic sphere, when passing from the direct operator to the organizer, regulator and controller. Different factors explain the use more and more frequently to this kind of operation.

Having in account the budgetary restrictions which the State has to face, this phenomenon answers to the private financing need of the public sector. It is necessary still to highlight the efficiency gain, in the public sector, due to the utilization of knowledge and

methods from the private sector operation. Another advantage is the fact that PPP implies a saving, in the measure in which it integrates all the phases of a project, since its conception until its exploration. In general, the PPP also contributes to the community debate about the services of general interest.

## **4.2. Origins and International Experience**

PPP's, in the restricted concept, had origin in England, in front of the forms search of fomenting investments without pledging scarce public resources. In the Anglo-Saxon inheritance countries, they were seen as an intermediary apprenticeship between Concession of Public Services and Privatization. The success of this experience made it spread to different countries all over the world.

Ireland, Portugal, Hungary, Slovenia, Czech Republic and France are examples of countries that have used PPP's models for investments in infrastructure. In Latin America, Chile, Argentina, Peru and Mexico have already used PPP with different results, due to the historical need to contend the government expenses, to restrain the budget because of the agreements with the International Monetary Fund – IMF and to restrain the State investment capacity because the domestic laws of fiscal responsibility.

On the other hand, in some countries the PPP was never stimulated, due to the understanding of the States' role. In the Scandinavian countries, for example, it is considered that the investments in infrastructure should be only performed by the public sector, supported by taxation and political participation of the affected communities, which define the priority works.

In several countries, as in the case of Mexico and Southern Africa, the State created a central organ to care for the PPP's structure (federal, state or municipal). This centralized politics is similar the Brazilian experience of the National Program of Desestatization (PND).

Also, in several countries, PPP's definition embraces what it is already regulated in Brazil as concession and, in another, is associated to a privatized bidding process through consultancies.

It is seen differently in countries where the applications choice of public resources is decided in councils or legislative and where the payments are done through the executive power, exclusively. This means, international comparisons should be seen with wariness because of the legislation and of the culture of the cited country.

### **4.3. Brazilian PPP model**

Behind the initial PPP can be the answer to the shortage of the states' resources so necessary to the development of the precarious Brazilian infrastructure. The term partnership, designating associations between public administration and private, is already spread, having earned importance with the decentralization of the state-owned companies action since the 90s.

The partnerships between public sector and the private have several forms and have been common in the economic and social investments in Brazil's history. Since 2001, Brazil has discussed a modality of financial engineering, which has, by generic characteristic, the work or service contract by the public or private sector.

Private investments for projects traditionally delegated to the government, are attracted by means of project finance principles, whose condition for the success is the capacity of the project to generate revenues that assure repayment of the financing with an acceptable return for the sponsors.

Lots of infrastructure projects in Brazil are using these principles, but they have been limited to a few sectors, like energy, telecommunications and transport. These projects obey the concession regime of public service as, for example, highways and electricity distribution, or of use of public goods, as is the case of the hydroelectric generation and of the petroleum exploration. Or still to the authorization regime, as thermoelectric generation and cellular telephony.

Such regimes presuppose that the investment be amortized by the collecting of the tariffs from the final consumers and, then, they haven't been able to attract investments for unprofitable projects or if they have a high market risk.

Also, the State can contract the private initiative only for the work execution in a bidding regime. In this case, the State pays the work price in the course of its execution or, at most, in terms not superior to five years.

It is in this context that arise the Public Private Partnership as an alternative to the concession, authorization and bidding. In the PPP, the government guarantees, regardless of tariffs, the revenues to the private diluted in the long term, but they still need to accomplish some goals which were previously agreed upon.

#### **4.4. The Brazilian Regulatory Mark**

The Federal Law n. 11.079, by December 30, 2004, institutes general rules for bidding and PPP's contract, in the scope of Union, State, Federal District and Municipal Districts' Power. Its main goal in the current national conjuncture is to attract investments in the infrastructure area. The purpose of this instrument is to bring to the Public Power the private initiative expertise, through a more focused control of the performance of the party under contract.

This law instituted the PPP as a juridical agreement celebrated between public administration and private entities for the implementation or administration, in the whole or in a part, of services, enterprises and activities of public interest in general, by means of private investments. In remuneration of the service, like in general rule, the private entity "will explore" the enterprise for self reimbursement and to remunerate what it invested, or it will rely on the financial complementation of the public entity to guarantee the revenue from those projects that are not shown self sustainable.

According to some scholar, this form of recoupment and remuneration to the companies' partners, only after the investment accomplishment, either by means of payment by the public

power or by services or enterprises exploration, is one of the important factors of the new regulation. It enables the State to execute works and to offer public services in general, although it does not have financial properties and operational resources available for such.

In this way, it is possible to say that the government is responsible for determining the goal, as, for example, the creation of a highway system needs to support a certain number of vehicles per hour, without a decrease in average speed. It is then the responsibility of the private partner, considering the specifications defined by the Administration, to apply his knowledge to reach the foreseen goal.

This scenario is very different from current contracts of public work, in which all the aspects of its execution are foreseen, like the used materials, for example, and the payment is done through the measurement of the executed services. In PPP, as occurs in a concession, the private partner is responsible to do the initial investment, which will be afterwards amortized in a long period of time, through monthly payments. Besides, it is allowed to remunerate the private partner according to his performance, following criteria previously established in the proclamation. This is one more way to have "purpose control" for the government.

The law linked the PPP's and concession' concept, as elaborated in the Federal Law n. 8,987, by 1995. With this, it clearly defined the application scope of each one of them.

The common concession from the Federal Law 8,987, by 1995, is not embraced by the new law. This new law would be applicable only to the patronized and administrative concessions. The first would be concessions whose services would be used directly by the private agent, through tariffs, for example, but with addition of a pecuniary reimbursement paid by the Public Power. It would be a tariff complementation hypothesis to be used with criterion when the value charged by the users doesn't allow their access to the service.

Using this system, the administrative concessions would be those in which the Public Power is the indirect or direct user of the rendered service. It would be the case, for example, of the construction and maintenance of a building to shelter a public department.

The main foreseen restrictions for PPP's application consist in the establishment of a minimum value for the project (twenty million Reais) and the limit of 1% of the net current revenue of the State, Municipal Districts and Federal District for partnership projects. This limitation was included to avoid the fast debts that successive PPP contracts could generate, besides pledging the whole investment budget for a long period (since the contract can last up to 35 years). The fact is that such conditions, while carrying the fiscal responsibility, removed the possibility of the use of this tool from several municipal districts. Even for entities with a big investment budget, the limits are very pressed.

PPP's bidding also follows an innovative procedure. There is a possibility of phases' inversion (prices dispute before the technical qualification) and the offering of verbal throws in the price dispute (both already occur in the bidding "cry" modality). These dispositions try to apply a formula that already revealed very efficient and economic for the Administration, as one can see by the results obtained with the "cry" adoption.

In the Brazilian model, a great preoccupation is the warranty of private investments. PPP's federal law enabled the existence of several warranty forms, some already foreseen in the legislation of some States, like the constitution of a company owned by a state whose object is to render warranty to the contracts (option from São Paulo), or the creation of a warrantor fund (union Option). This allows that the private investors recover their debt from attention the Public Power without the judgment bureaucracy delay.

Another point that deserves attention is the arbitration use forecast to solve the controversies concerning the contracts. This removes PPP of the Judiciary slowness. It is expected that several scholars will be opposed to this forecast, having in mind that the majority of the doctrine, in the Administrative Right, defends the impossibility of arbitration use, because of, among others reasons, the unavailability of the public interest.

The PPP's great innovations are, therefore, the focus on the long term; the assumption by the particular of goals and obligations of result; and the remuneration assured by the State as compensation to the benefits propitiated by the project.

PPP's regime has potential to attract investments for areas where the concession and the bidding cannot, for example, in hospitals, prison, public schools, sanitation, environment and others.

Although, with a good dose of creativity, some association options with the State already can be adopted, the resource to PPP in all its potential finds restrictions in the biddings and concessions laws, as well as budgetary laws, which hamper the State from proposing a budget for more than five years.

PPPs' success still depends of the existence of a clear and stable regulatory environment which warranties that the financial commitments assumed by the State will be honored.

#### **4.5. Experience in Brazil**

At the moment, only São Paulo State has instituted, through the publication of State Law n. 11.688, by May 19, 2004, terms for PPP's application for government's state works. It is esteemed that it will be able to attract up to R\$ 7.5 billion from private resources to be invested under projects and services defined for the period from 2004 to 2007. The value represents a quarter from the total of foreseen expenses for that period.

According to this law, the companies execute projects and are reimbursed by the State in a maximum term of 35 years. For the government from São Paulo, the success of the highways and the distribution of natural gas concessions created a very favorable environment for the implementation of public-private partnerships in the State. The Imigrantes Highway was constructed in 32 months, without a cent of public money. And, in the energy sector, the investments come allowing the consumption enlargement of natural gas in several municipal districts, passing from 3 million cubic meters a day to 11.5 million.

According to government, among the projects that can be made possible by this new model, are: the Expressed Airport, between São Paulo's downtown and Cumbica Airport; Guarulhos' Train, the Line 4 by Subway; the Export Aisle Campinas - Valley of the Paraíba - Porto de São Sebastião; the Ferroanel, the Metropolitan Aisle Northwest (Metropolitan Area of Campinas) and the Metropolitan Aisle Guarulhos - Tucuruvi (Metropolitan Area of São Paulo).

In order to supply warranties to the private sector that contractual commitments assumed in PPP's contracts will be met guarantee that the payment, the Government of State of São Paulo created the Company from São Paulo of Partnerships (CPP), which is entailed to the Revenue Secretariat of the State and has assets to support the warranties system of the State Program of PPP.

#### **4.6. PPP x Privatization x Concession**

The basic difference between PPP and the privatization refers to the property of the assets. Although resultant of the same reform and modernizations process of the State, the privatizations imply the alienation of public assets to the private sector, while in the PPPs the inverse occurs: at the end of the contract, the implemented infrastructure is transferred to the public sector.

Although the Brazilian law frames PPPs as a concession form, they differentiate from the traditional with regard to the remuneration sources of the private partner. In the traditional concessions, the tariff collecting is enough to remunerate the investment. On the other hand, in the PPPs, it opens space for a revenues complementation by the public sector, so as to turn the enterprise viable.

PPP's application in sectors of public utility, whose remuneration would not attract private entrepreneurs by privatization, because the impossibility of the adequate return, arise as an option to make possible the necessary investments. This is because PPP makes it possible to anticipate an economic benefit that only would be possible in the long term, besides bringing for

the public service the efficiency in the service installment and in the resources administration, which is a characteristic of the private companies.

Another point to be considered is the risks allocation. In PPP's projects this allocation is made contractually, depending on the sector and on the service scope. According to the Brazilian law the public power is allowed to transfer to the private, risks that traditionally belong to responsibility of the public administration.

One of the key risks of a PPP's project, which is of backers' rigorous analysis, is the demand risk. On the other side of the common concession contracts, in which the demand risk is clearly of the concessionaire, in PPP's contracts it usually is shared. That means that, to make the enterprise viable, the public entity mitigates the demand risk, by means of a complementation of fixed revenue, or means of variable remuneration. In any case, the payment mechanism is conditioned to the availability of the service and can vary according to performance standards.

## **5. PPP applied to the distribution companies of the Isolated Systems**

### **5.1. Stylized facts**

Eletronorte is the state-owned company, of Eletrobrás group, which is responsible for the electric power generation and transmission activities in the Northern region. The distribution of this energy to the final consumers is made by the local distributors. Except for some places attended by their own generation or for PIEs contracted by them, the responsibility of production of all the electric power regularly consumed in the States of this region belongs to Eletronorte.

There are seven distribution concessionaires that attend to the Isolated Systems: CERON – Electric Centrals of Rondônia S.A; ELETROACRE – Acre Electricity Company; CEAM – Amazonas' Energetic Company, which attends to the places inside the Amazonas state; MESA – Manaus Energy S.A., which attends to the city of Manaus, capital of the Amazonas; CEA – Amapá's Energetic Company; CER – Roraima's Energetic Company S.A., which attends to the

places inside of Roraima's State; and Bovesa – Boa Vista Energy S.A., which attends to the city of Boa Vista, capital of Roraima.

Some of these companies finished by different processes became controlled by the Eletrobrás system, making part of the calls Federal Companies of Distribution - EFD, which today include: CEAM, CERON, ELETROACRE, Boa Vista Energy and Manaus Energy, being the last two an Eletronorte's integral subsidiaries. The other two, CEA and CER, are societies by stock of mixed economy, whose stockholders controllers are, respectively, the Government of Amapá and Roraima States.

All these companies, both the generation and the distribution, especially after the edition of the Federal Law n. 8,631, by 1993, come presenting, in larger or smaller degree, economic-financier balance problems derived from the situation of the region where they are inserted.

## **5.2. “D” overview**

For the effect of this work, one of the distributors of the isolated systems will be chosen, whose fictitious name will be “D,” and for which real data will be presented, in order to enable a truer analysis. “D” is a distribution concessionaire located in Brazil's Northern region, whose stockholder controller, with almost 100% of its working capital, is the state government.

Since 1998, when ANEEL began the concessionaire electric power distribution inspection process, it identified that the situation of “D” was extremely critical.

The first debit recognition documents of “D” with the supply Eletronorte are from 1995. From there onwards, the agreements for refinancing and debt payment will continue, without “D” accomplishing the payment, which made the debt grow every year. In December 2005, “D” owed to the supply the value of R\$ 9.2 million. The payment lack of this value and of the invoices of the subsequent years, added to the responsibilities, made the debt reach the value of R\$ 214 million in May 2005.

The reflexes did notice, right from the start, in the resources lack to invest under projects destined to the improvement of the operational condition of “D.” The fact of being defaulter, made “D” lose the access to the financings of institutional accounts as, for example, RGR, a benefit used only by concessionaires that aren’t in debt.

The first inspections reports accomplished by ANEEL already pointed the need to profound and urgent providences in the sense to revert the extreme gravity of the situation in which “D” was, trying to give the full assistance to their consumers, with quality and seeking the economic and financier balance of the concession.

In December 2005, “D” owned approximately 122.5 thousand final consumers, annual revenue of almost R\$ 118 million and an annual consumption of 558 MWh, distributed of the following form:

<b>Consumption Class</b>	<b>Consumers</b>	<b>Percentage</b>
<b>Residential</b>	109,418	<b>89.37 %</b>
<b>Commercial</b>	10,033	<b>8.19 %</b>
<b>Rural</b>	825	<b>0.67 %</b>
<b>Industrial</b>	551	<b>0.45 %</b>
<b>Government</b>	1,392	<b>1.14 %</b>
<b>Street Lightning</b>	92	<b>0.08 %</b>
<b>Public Services</b>	93	<b>0.08 %</b>
<b>Self-Consumption</b>	30	<b>0.02 %</b>
<b>TOTAL</b>	<b>122,434</b>	<b>100.00 %</b>

Table 4: Distribution of final consumers of “D”

In the period from November 2004 to October 2005, “D” acquired from its supplier, Eletronorte, about 806 GWh, which meant an expense with “Bought Energy” of R\$ 47.5 million. Moreover, the expenditure of “D” with the “Sectorial Responsibilities” belonged to R\$ 8.4

million. That means that the total costs of “D” were no manageable (energy purchase plus responsibilities) belonged to R\$ 51 million, in other words, 43.3% of the Annual Revenue verified at the same period, that was R\$ 117.8 million.

Regarding the energy, “D” bought 806.3 GWh and made money 558 GWh, while represents a loss of about 30%.

**5.3. Economic and Finance Situation of “D”**

“D” is a company that, since 1998 has presented negative operational results. During this period, the revenue generated with the company operations do not have been enough to keep the continuity of its activities. Moreover, its patrimonial situation has presented unbalance, motivated, mostly by the working capital inadequacy.

In December 2004, “D” attended to, about, 119 thousand customers, with 665 employees, in other words, 179 customers per employee.

The negative results of “D” are created by several factors, among which are the managerial administration and the of economic and financial nature problems, that will be presented.

**5.3.1. Elevated debts level**

The level of total debts of “D” represents 195% from the total of its activity and grew 149% in the last 5 years. That growth results, basically, due to the default related to the energy supplier, Eletronorte, and to the Government, in form of tributes and contributions.

Liabilities	2004	2000	% of the Total (2004)	% Growth (2004/2000)

Suppliers	204.284	50.848	55,4 %	302 %
Tributes/Contributions	133.504	80.181	36,2 %	67 %
Others	31.002	17.147	8,4 %	81 %
TOTAL	368.790	148.176	100,0 %	149 %

Table 5: Debts, in R\$ x a thousand, in Dec 31, 2004.

It points out that, from the total value due to the suppliers, 91% is regarding the energy supplier Eletronorte. This value has been updated with interest rate and responsibilities, raising, excessively, the financial costs of “D”.

Considering that the monthly Net Operational Revenue (ROL) of “D”, corresponds to about R\$ 10 million, the company will need more than 36 months to pay the accumulated debt.

### 5.3.2. High level of default

The default level grew 37% in the last 4 years, and this default is, predominantly, due to the Public Offices, who is responsible for 98% of the debts off date.

It needs to be stressed that “D” is responsible for the withdrawal of the incidents tributes on the made money values, including the money it didn’t receive, what produces significant impacts in its cash.

### 5.3.3. High levels of energy losses

The energy losses indices of “D” have been kept above 30% in the last few years, being one of the most elevated in the country. In 2006, that index reached the value of 37.0%, much superior to Brazil’s average and also to the average of the Northern region, that was, in 2006, 35.4%.

Losses (%)	2005	2006
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"D"	38.7%	37.0%
Northern Region	35.9%	35.4%
Brazil	17.2%	17.6%

Table 6: Energy Losses

### 5.3.4. Elevated costs and operational expenses

The operational net revenue of “D” has not been enough to face the operational expenses and the energy purchases, carrying in expressive net losses along the last years. These values, summed to the financial expenses, culminated in a net loss of R\$ 52 million in 2004, in other words, 43.40% of the ROL.

It is necessary to point out that the ROL growth in the period was due, basically, to the tariff readjusts conceded to “D”. (Table 7)

Description	2004	2003	2002	2001
ROL (R\$ x thousand)	120,157	96,870	74,562	63,510
Energy Purchased Cost (R\$ x thousand)	49,717	40,383	31,660	26,067
% ROL	41.4%	41.7%	42.5%	41.0%
Operational Expenses	93,846	56,161	137,060	50,506
% ROL	78.1%	58.0%	183.8%	79.5%
Operational Result	-23,406	326	-94,158	-13,063
% ROL	-19.5%	0.30%	-126.3%	-20.6%

Table 7: Costs and Operational Expenses of “D”

In Table 8 are presented, in more detail, the items that compose the operational expenses.

Operational Expenses	2004	2003	2002	2001	2000
Staff and Administrators	13.334	11.998	12.590	9.632	8.268
Material	6.139	4.074	6.656	6.098	6.209

Services of Third	12.668	8.441	8.968	6.705	4.999
Combustible to produce energy	25.394	14.584	10.938	10.605	8.520
Depreciation and Amortization	5.751	6.166	6.065	5.668	5.237
Quota of CCC	4.890	2.992	1.833	1.203	888
Operational Provisions	10.625	-3.052	49.410	1.524	-
Others operational expenses	15.045	10.958	40.600	9.071	3.524
<b>TOTAL</b>	<b>93.846</b>	<b>56.161</b>	<b>137.060</b>	<b>50.506</b>	<b>37.645</b>

Table 8: Operational Expenses of “D” (thousands Reais)

### 5.3.5. Operations continuity and Investments

The operations continuity of “D” depends, essentially, on the need of working capital. It is evident that additional financial resources under the way to improve working capital and financings are necessary, as well as the lucrative operations in the future.

The total debts of “D” to the third party represent 4.17 times the property and rights to accomplish in the short and long term. This situation indicates that the company is, practically, in a bankruptcy situation.

The difficulty receiving the sales made and the lack of capital injection by the stockholder controller resulted in the presentation of a continuously and increasingly negative working capital.

The company operations in the last years did not generate enough resources to cover the costs and operational expenses. Besides the resources generation inadequacy, “D” is accumulating financial results since 1999, above all in the function of registration of interest rate and financial responsibilities on the debts off date and not paid.

As a result of the presented problems, “D” has been investing inexpressive amounts; lower than 15% of the net Operational Revenue, with the consequent deterioration of its electric system.

**5.3.6. Quality indicators**

As a consequence of the lower investment level in its electric system, the quality indices presented by "D" are very bad, if compared to the average of the six distributor concessionaires of the Northern and Northeast regions that present the worst quality level.

Table 9 presents the indices observed for “D” regarding the two main quality indicators established by ANEEL: Equivalent Duration of Interruption for Unit Consumer – DEC and Equivalent Frequency of Interruption for Unit Consumer – FEC, and the average value of the six companies of the Northern and Northeast regions with the worst indices.

2004	DEC	FEC
"D"	31	36
Average	28	32

Table 9

The conclusion that is achieved, is just that “D” presents a substantial inadequacy related to working capital, of such a form that the condition and continuity of its operations presupposes the adoption of urgent measures, such as the active accomplishment, debt negotiation with their creditors, costs and operational expenses reduction, energy losses reduction and obtainment of additional financial resources to invest in the improvement of its system.

Yet, it is indispensable that a total reform in the administrative methods used in the company’s administration, without which this company will have difficulty overcoming the problems that it carried prior to bankruptcy situation, and reach its goals as an electric energy Public Service Concessionaire.

#### **5.4. PPP model applied to a distribution concessionaire in the Isolated System**

Bearing in mind what has been presented, the application of the PPP's model to a concessionaire like "D" is a possible solution for its revitalization. Having in mind the legislation in force in Brazil, relative to PPPs, and the characteristics of the company, the main elements which need to be considered in order to make an agreement with a private agent who is interested in a distribution concessionaire in the Isolated System will be presented.

The patronized concession should be an object of a bidding process, which, then, will create a contract that is going to establish, among other things, the duration and value of the public participation that will be necessary to reach the concession goals. The bidding winner will be the responsible entrepreneur for the concession.

These contracts will be the instrument used to the application of a PPP. In other words, the concession of a public service in which, in addition to the tariff charged from the users, there is the pecuniary subsidy by the public partner.

It is important to have in mind the project will be successful only if it is able to attract the private investor. This investor interest has a direct relation with the knowledge about: a) the payment of the subsidy – what is the value, which is the source, who is the warrantor, how is the adjustment? and b) the risks allocation – what are all the possible risks in the project and who is the responsible for which one?

The PPP, therefore, should stimulate and involve other advantages, like the access to the new technologies. The evaluation of this improvement, via modernization and/or innovation, and of the associated benefits, ought to, somehow, be incorporated to the criterion of choice the bidding winner.

The procedures must be covered by the wider transparency and the judgment criterion should be as exempt of subjectivity as possible.

### **5.4.1. Bidding**

The agent's private contract should be made through bidding to be promoted by the public agent that, in this case, should be the federal or state government or ANEEL itself.

In the bidding process the juridical and fiscal exigencies of the private agent, as well as the technical specification of the bidden object should be established. In this case, the object is the concession for rendering of the electric power distribution service in the State.

According to the Law n. 11,079, of 2004, the proposals judgment might adopt as criteria, beyond already existing, the next: *i.* subsidy smaller value to be paid by the Public Administration, or *ii.* the best proposal in combination of the criterion reason of the smaller value to be paid with the one of the best techniques, according to the weights established in the proclamation.

### **5.4.2. Contracts**

The most important instruments in PPP's operation are the contracts elaborated between the parts, involving the most several technical aspects, according to project nature at is sue.

In PPP's case is used the administrative contract of patronized concession, that is going to establish, among other things, what will be the value of the public participation that will be necessary to reach the concession goals.

Among the foreseen essential clauses for PPP's contracts to be signed, must be consist the following items.

#### **5.4.2.1. Object**

In this specific case, the contract object is the concession patronized for distribution public service exploration of electric power. The concessionaire will be obligated to adopt, by installment of this service, adequate technology, and to use material, equipment, facilities and operative methods that attend the Brazilian technical rules. According to these rules the service must to guarantee regularity levels, continuity, efficiency, safety, actuality, generality, courtesy in the assistance, and equilibrium of the tariffs.

The concessionaire will be responsible, until the energy delivery point, by the operation and maintenance of its electric system, projects elaboration, and execution of the necessary works to the assistance of the consuming units located in the concession area that it will be the title-holder.

Moreover, the concessionaire will be obligated to provide the electric power current demand assistance and to implant new facilities, as well as to enlarge and to modify the existing ones to guarantee the future demand assistance of its market and electric power.

#### **5.4.2.2. Duration**

The contract period of validity, as established in the Law n. 11,079, of 2004, should be compatible with the amortization of the accomplished investments, and should be between five and thirty-five years.

#### **5.4.2.3. Penalties**

The contract must establish the applicable penalties to both the private partner and the Public Administration. In default case contractual, the penalties should be proportional to the gravity of the committed fault and to the assumed obligations.

#### **5.4.2.4. Risks allocation**

The determination and allocation of all the inherent risks of the contract are of fundamental importance. All the possible risks should be related, including the referring to fortuitous case, larger force, prince fact, as well as the loss probability concomitantly to the probability and profit, with the clear nomination of the responsible person for each one of them.

Thus, the plotting of the project risks cannot be done without an evaluation of actual and future situations of the sector in which it is inserted. The analysis of the sectorial segment should involve all the aspects entailed in the main identified risks. The risks identification must be associated to its causes, implications and mitigation measures definition. It is important to identify, contractually, the agents with the best affinity and responsibility to nullify the risks.

The risks repartition between public and private sectors can vary according to the exigencies of each case, without losing the previsibility, since the private partner knows and agrees previously with these parameters, established in the contract.

The Law recognizes that the risks allocation is one of the most important aspects of PPPs. Allocating risks to the part that can support them with the lowest cost generates big economies in both public and private sectors.

In the United Kingdom, for example, it is estimated that 60% of the economy obtained with PPPs is because of an efficient risks allocation in the contract. The efficient risks allocation can generate earnings for all the parts. But, for this to occur, it is essential that the contract be clear and objective.

#### **5.4.2.5. Remuneration forms and update of the contractual values**

The contract value between Public Administration and the private partner will be the corresponding present value from the exploration of the revenues which the Patronized Concession obtains at constant prices.

The remuneration the concessionaire will be composed by:

- ? Tariffs regarding the electric power delivered to the final consumers of its concession area;
- ? Subsidy, if it is due by the Union; and
- ? Additional revenues

#### a. Tariffs

The tariffs' value applied to the electric power supply to the final consumers attended by the concessionaire will be kept at their current values. In the same way, they will keep the readjustment and revision procedures of these tariffs established in ANEEL's Regulations.

The portion regarding the values paid by consumers will be the amount obtained from the product between sold energy and the applicable tariff for that consumer.

#### b. Subsidy

##### b.1. Payment calculation and form

The subsidy to be paid by the government will be the difference between necessary budget to the concessionaire to attend satisfactorily to his market and the revenue received by "D" in the assistance to its consumers, being both, budget and revenue calculated for the reference company, in the models established by ANEEL.

*Reference Company (ER)<sup>3</sup> - The reference company concept, adopted by ANEEL for the first cycle of tariff revisions, focus on the efficiency search for the distribution concessionaires. This way, it tried to guarantee the service installment economic viability with the practicable minor cost in function of determined quality level in the service installment, without advance of unnecessary or excessive responsibilities to the final consumers. The regulation is*

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<sup>3</sup> Note Technique n.166/2006 – SER/ANEEL, of May 19, 2006 – Prosecute N. 48500.001208/2006-37

*put as a form of replacing the market and assigns to it an incentives set and restrictions that allow it to simulate competitive terms, given to characteristic of distribution and transmission activities' natural monopoly.*

*The methodology adopted for reference company definition established the processes volume and necessary activities to maintain the useful life for inherent specific facilities to the distribution service, considering the extension of the electric network and the amount of specific activity. Besides the need for preventive and corrective maintenance of the network, generally called operation and maintenance processes (O&M) of the network, other parameters also are considered. The parameters are the number of attended final consumers and the particular geographical characteristics of the concession area, aspects that have repercussion on the necessary measurement for the commercial administration of the customers and also of the direction activities and inherent administration to all company.*

*Therefore, by the Reference Company methodology, it's tried to establish the efficient operational costs of an electric power distributor, to set a concession area, in terms that assure that the concessionaire will be able to reach the quality levels demanded by installment of the service. That concept (ER) is directly associated to three fundamental aspects: I. administration efficiency; II. consistency between regulatory treatment given for the operational costs and for the active evaluation and remuneration (regulatory remuneration's base determination and of the capital cost); and III. specific conditions of each concession area.*

This way, defined the reference company as a “mirror” of “D”, it is possible to establish what would be the revenue received by “D” for a performance in the efficient considered parameters and, in the same way, what would be the efficient cost associated to each one of the processes and inherent activities to the electric power distribution activity performed by “D”.

The difference between cost and the revenue, calculated according to the reference company methodology, would be the amount to be subsidized by the Public Administration.

The subsidy payment will be able to be done in two forms:

I. Fixed monthly payments, along the concession, which should be readjusted annually and subject to periodic revisions. The goal of the annual readjustments is the monetary update of the tariffs charged from the consumers while the goal of periodic revisions is the maintenance of concession financial-economic balance or, yet, the payments adjustment when the occurrence of unforeseen alterations in the outline terms. For example, if during the concession an unpredicted market growth occurs, there could be a reduction in the subsidy value paid by the Public Administration.

II. Monthly payments with decreasing value along the concession. In this case could be established a cash flow that allowed a larger value for the subsidy at the beginning of the concession, due to a larger need of investment, with programmed periodic reductions, which are equivalent to the decreasing amount of necessary investments.

The contract must foresee that the subsidy payment, if it is due to the concessionaire, as well as eventual penalties or deriving increases of its default, will be guaranteed by Warrantor Fund of Public-Private Partnerships - FGP, established according to the Law n. 11,079, of 2004.

#### c. Additional Revenues

The contract should allow the concessionaire to explore other services that provide additional revenues, since such services are compatible with the services rendered by the concessionaire. In this case, it should be foreseen when and how the amount of the additional revenues will be deducted from the subsidy owed by the Public Administration. If the subsidy is reduced to zero, it will be considered for tariff reduction ends.

#### **5.4.2.6. Objective criteria of performance evaluation of the private partner.**

The contract must foresee what will be the control items used to the subsidy accompaniment and payment. These control items will be able to establish the ideal situation for the concession at the end of a certain time period and, to reach these final goals, intermediary goals will be defined.

Some control items examples, could be:

- ? Zero debt;
- ? Insolvency levels, losses, cost, DEC and FEC compatible with the of the reference company;
- ? Annual investment in distribution chain, generation and expansion corresponding to a revenue prefixed percentile; and
- ? Others

#### **5.4.2.7. Sharing the results**

The contract must establish a way to share eventual effective economic earnings obtained by the concessionaire with the Government.

Besides the essentially clauses, mentioned from 5.4.2.1 to 5.4.2.7, the contract must include: *i.* mechanisms for the actuality preservation of the rendering of services; *ii.* the facts that characterize the partner's public pecuniary insolvency, the manners and the period of regularization and, when applicable, the warranty activation form; *iii.* the rending, by the private partner, of warranties that will meet and be compatible with the obligations and involved risks; and *iv.* To guarantee the accomplishment of the reversible goods, the public partner could retain the payments to the private partner, in the necessary value to repair the eventually detected irregularities.

In addition, the contracts should contain: *i.* the requisites and terms in which the public partner will authorize to transfer the control of a purpose specific partnership to its financiers, with the goal of promoting its financial restructuring and to assure the services installment continuity; *ii.* the possibility that the Public Administration will be force to give to the financiers a public document that will guarantee its pecuniary obligations; and *iii.* the financiers' legitimacy to receive compensations from the termination of the contract, as well as payments made by the funds and stated owned companies which are warranting the public-private partnerships.

Finally, the possibility of insolvent participants' substitution should be contemplated in the bidding proclamations, in the concession contracts and in the financing. New partners must have defined which are the obligations to be taken over due to enterprise maintenance and of the creditor's payment flow.

## **6. Conclusions**

The Brazilian electric system, in spite of presenting, in their greater part, characteristics that put it among the most developed in the world, also comprehends the Isolated Systems located in Brazil's Northern region. This part of the electric system, besides being extremely precarious, has been systematically relegated to a second plan in the Brazilian legal framework.

The responsible concessionaires for the electric power supply in this region, in spite of its administration, are under some aspects, inefficient. The electric power supply has faced serious structural problems, largely due to the socioeconomic conditions that are very unfavorable in the region where it is situated.

Due to its lower attractiveness, the privatization cannot be seen as a solution to raise the necessary resources, close to the private investor, for the revitalization of these companies. The need to partner's public participation guaranteeing and financing part of these investments is evident.

PPP's Programs have been broadly used in several countries, impelled, for one reason, from the need to give continuity to the investment state-owned companies in a context of fiscal restraint. The second reason is the search of the private larger efficiency in the rendering of public services. In Brazil, the adoption of this program is still in its initial phase, with few projects in operation.

PPP's Brazilian law incorporated, in its elaboration, elements considered in other countries as critical factors of success. Among them, is highlighted the framing to the existing legal system, the preoccupation with the fiscal discipline, the adequate risk partition among partners, the warranties to the private partner, and the need to institute a central organization to coordinate the implementation of the partnerships process.

Although the law disciplines the most important issues relative to PPP's projects should be defined in each contract, the resources for the financing by the public partner, the risks allocation, the incentive mechanisms, the goals, and the wished performance standards.

The maintenance of investments in projects whose viability is centered in the service exploration, and in the economic and financial equilibrium of the concession contract, increasingly demands the structure of the operations where the risks evaluation and management are considered the “key-part.”

The information relative to the distributor “D” shows clearly that it and other companies in the same situation had difficulty to manage their problems in order to solve them, and to reach a self sustainable condition, without strong external help. The financial demonstrations of “D” show that its operations in the last years did not generate the necessary resources to its operation and expansion. Thus, even considering an efficient administration, the need of a financial complementation is evident.

Therefore, the application of PPP's projects to the distributors of the Isolated Systems of the Northern region of Brazil, besides attracting the immediate and bulky necessary investments

for the full operation of these companies, would bring the expertise's private manager referred to the innovation and to the resources administration.

For these partnerships to reach the wished results it is fundamental that the responsible public institutions for its application identify clearly what are the project goals, in order to prevent PPP from causing improper earnings by the private investor. In the same way, the application instruments of PPP should present, accurately, the evaluation and the project risks administration.

Finally, it is possible to affirm that using PPP in the companies of the Isolated Systems, more than a solution for a financial problem, will permit the rendering of the services to the final customer with a high level of efficiency in both the rendering of those services, and the uses of the public resources.

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