

**Renewing or Rebidding Concessions: Issues and Perspective in  
The New Brazilian Model**

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# 1. Introduction

Approximately ninety-five concessions to generation of electric energy in small, medium and large hydroelectric power plants, that sums an installed power of about 28,000 MW, will have their respective final terms until 2015. So, the Brazilian Government, through the Brazilian National Electricity Regulatory Agency (ANEEL), will have to decide whether or not to renew these concessions.

In view of the various changes that occurred since the period of the grant of these concessions the decision on renewal should be examined taking into account the various aspects relating to the Brazilian electric energy market models in order to search the public interest, translated in the quality of services with lower tariffs.

The objective of this work is to make a review of the renewal of concessions for the generation of electrical energy, specifically those granted for public service purposes and before the establishment of the Law # 9,074, from July 7th, 1995.

In the first chapter of this work a historic review of the concessions of generation of electrical energy was made. It will describe the changes that occurred in the model of the Brazilian electrical sector with the end of the tariff based on the cost and the guaranteed remuneration. It will also describe the changes that occurred later with the introduction of the new model when the auctions for the sale of energy in the Free and Regulated Contracting Environments were

established, and its implications on existing concessions, especially on aspects of the energy marketing.

Later, in the second chapter, a review of the legal provisions concerning the renewal of concessions for generation of electrical energy is made, with the description of the changes that occurred over time since the assignment of the concessions studied in this work up until today.

In the third chapter a description of recent study cases of renewing concessions is made by means in which began a discussion about what is the best criterion or criteria to be adopted in the decision of renewing or rebidding a concession. In this chapter an analysis of the similarities and differences between systems of grants and extension of concessions in the United States and France are made in relation to the Brazilian system.

From the analysis of specific past cases, and the Brazilian legislation applied, a review of the advantages and disadvantages of the two decisions, renew or rebid is made, taking into account economic and regulatory aspects.

Finally, a review is made of how the evaluation of the reversible assets that are used to provide public services of electrical energy can be done. Although, these assets are owned by the concessionaire and will be reverted to the government at the end of the concession. This chapter also presents how the government could establish the length of the new concession since it influences the amortization of investments by the concessionaire.

## 2. Overview of electrical generation concessions in Brazil

The configuration of the operation of services of electricity in Brazil went through several legal and institutional changes over the years.

The first electricity concession was granted in 19th century, with the holding of the service of public lighting granted by Emperor D. Pedro II to Thomas Edison. In 1930, the amount of energy generated by all power plants in Brazil was approximately 350 MW. These were mostly hydroelectric plants due to the vocation of Brazil for hydroelectricity, and were mainly operated by municipalities and industries.

The first body created to oversee the energy sector in Brazil was the National Council of Water and Energy, later replaced by the National Department of Water and Power (DNAEE).

By the end of the decade 40 private companies dominated the generation of electric energy in Brazil. Due to the inability of the private sector to sustain the growing demand for electrical power the government began to nationalize the industry in 1945, and consolidated the investment in 1960. Later, in 1970, the services for the distribution of electricity were transferred to state enterprises and public enterprises were created to invest in generation and transmission of electric energy.

The nationalization generated benefits for the Brazilian electric sector because it allowed for the development of technical and material expertise that is still used to maintain the service. The

nationalization model began to lose strength and in the 80s because the government started to fix the tariff of the electric energy of the public enterprises from indices always below the cost with the purpose of inflation control, thus creating indirect subsidies, which ultimately create a deficit of about \$ 26 billion, paid later with resources of the National Treasury.

Beginning in 1980 the public sector was unable to maintain the quality of services due to the lack of investments and in 1995, the national government started up a movement to restructure the sector so that private investment could be reattracted. This began the process of privatization, with the transfer of economic activities operated by the public sector to the private sector. In this period an entire legal framework was created, starting with the creation and the enactment of Law # 8,987, on February 13th, 1995, which was known as the law of public service concessions. It was followed on Law # 9,074, from July 7th, 1995, and which was more specific to the electric industry.

From there the figure of the independent producer<sup>1</sup> in the generation of electricity has been created and the tariff regulation was maintained only in the transmission and distribution of electricity. The new concessions for electricity generation had to take part in a bidding process and tariffs would no longer be established by the cost of production and could not be regulated by the government.

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<sup>1</sup> Independent Producer: companies receiving grants or authorizations to produce electric energy, all or part of which will be traded at their own risk.

The National Electricity Regulatory Agency (ANEEL) was established to allow for the balance of the interests of the private sector, the government and the consumers. The tasks of the Agency were to regulate and supervise the industry. Because privatization occurred before the creation of ANEEL there were difficulties in restructuring the industry. The last law published during this period was Law # 9,648, on May 27th, 1998, which separated the activities of generation, transmission, distribution and marketing, as well as created the National Operator of the Electrical System (ONS) and the Market Wholesaler of Electricity (MAE), and set all the rules of transition to the new competitive environment.

Later, in 2002, the MAE was extinguished and a new market for wholesale electricity was created with the same name. The privatizations were halted in the face of strong political pressure and the functioning of MAE was paralyzed. In 2003 there was a strong intervention by ANEEL, that ended in an agreement to settle the accounts of the market and the entire operation of the market was remodeled.

From the Law # 10,848, on March 15th, 2004 the program of privatization of the Brazilian electric sector ended and various rules for the marketing of energy were introduced. There were a number of things that were established by this law including the creation of the Free Contracts Environment – FCE, the creation of the Regulated Contracts Environment - RCE, the need to auction for contracts to sell energy generated from new<sup>2</sup> and existing power plants<sup>3</sup>, and the

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<sup>2</sup> New power plant: those plants that do not have a concession, permit or authorization, or are part of an existing plant which will undergo an extension of its capacity. One of these conditions only must exist until the bidding process in order for it be considered a new power plant.

<sup>3</sup> Existing power plant: those plants that have a concession, permit or authorization at the beginning of the bidding process.

requirement for distribution companies to purchase all their energy demands on ACR, as well as other changes.

The Law # 10,848 also created the Electric Power Trading Chamber (CCEE), a civil association, subject to the regulation of ANEEL, with the aim of promoting the marketing of electric power through auctions conducted in regulated and free environments, thus giving continuity to the activities of extinct MAE.

### 3. Applicable legislation to concessions renewal

Prior to editing of Law # 9,074, all concessions were granted in the scheme of public service or for the purpose of self consumption. In the case of concessions of public service, tariffs were established on the basis of cost and guaranteed by the government. Later, in 1995 the system of independent production of electric energy was set.

At that time the treatment for concessions that will expire after the publication of Law # 9,074 was different from the treatment for concessions that have expired before the publication of that Law. For companies whose existing concessions have expired at the time of publication of the Law, as well as those with indefinite period of concession, the treatment in the Law # 9,074, and in the Decree # 1,717, on November 24th, 1995, that regulated that Law, was as follows:

*“Art 19. The government can renew the concessions to generate electricity (established by Art. 42 of the Law # 8,987)<sup>4</sup> to ensure the quality of service for consumers at low cost, for a period of up to twenty years. The government could make this extension provided that the requested extension by the concessionaire, observed the provisions of Art. 25 of this Law.*

*§ 1 Applications for renewal should be submitted in one year following the date of publication of this Law.*

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<sup>4</sup> “Art. 42 - The concessions to public service granted prior to the entry into force of this Act is deemed to be valid by the deadline stipulated in the contract or in the concession act as noted in the provisions of Art. 43 of this Law.”

*§ 2 In cases in which the remaining term of the concession is more than one year, the request for extension should be made six months prior to the advent of their final term.”*

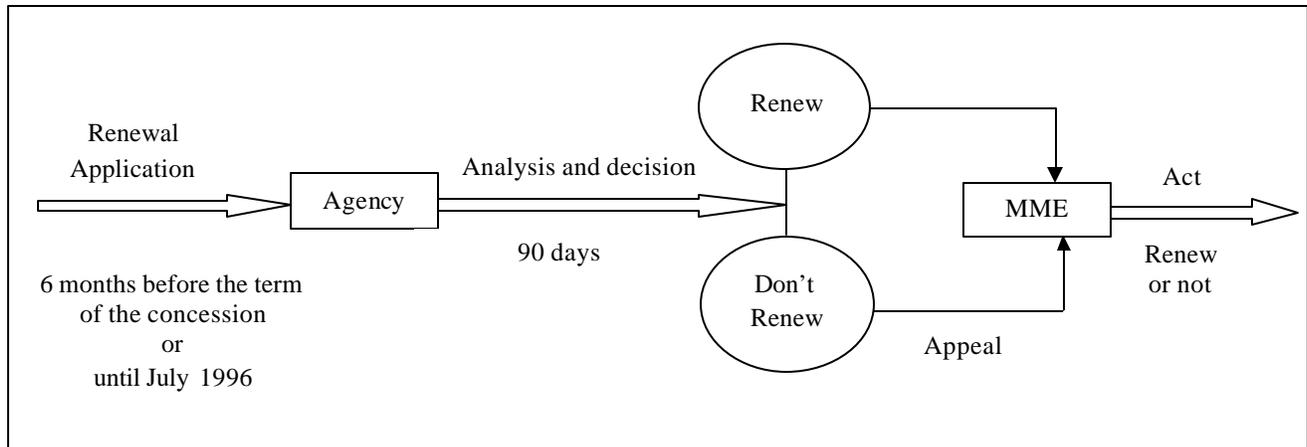
*“Art 2° The request for extension should be made to the National Department of Water and Electricity (DNAEE), followed by documents of the legal, technical, financial and administrative regularity by the party concerned, as well as the regularity of their burdens with public agencies, tax obligations, contractual commitments entered into with organs and entities of the Federal Public Administration and obligations of operating the service of power, including the payment of financial compensation for the exploitation of water resources.*

*§ 1 The application for extension of the period under review in this article, concerning the ended concessions, will be presented in up to six months before the advent of their final term, observed the provisions of single paragraph of the preceding article, provided its submission until July 8th 1996.*

*§ 2 When the concession has a precarious character, with time expired, or that is in force for indefinite period, and recognized the right of holding public service of electricity, the request for extension should be submitted by July 8th 1996.”*

The extension of the concessions at the time was considered by DNAEE, which had 90 days to review the request for extension and accept or reject it. There was also the possibility of appeal to the Ministry of Mines and Energy. This process is displayed in Figure 1.

Figure 1 – Renewing process for concessions granted before the issue of Law # 9,074/95<sup>5</sup>



At the time of issue of Law # 9,074 the concessionaire should present their costs for each power plant along with the corresponding tariff proposal and their request for extension of the concession. In the case of delayed or paralyzed building, at the time of the application for extension, the concessionaire should also submit a proposal justifying the time required for repayment of the investment.

For the concessions granted after the issue of Law # 9,074 the process to renew concessions was included in the art. 4 of the Law, which is transcript below and shown in Figure 2.

*“§ 2 The concessions for generating electricity, contracted from this Law, shall have the time needed to recoup the investment but limited to thirty-five years following the*

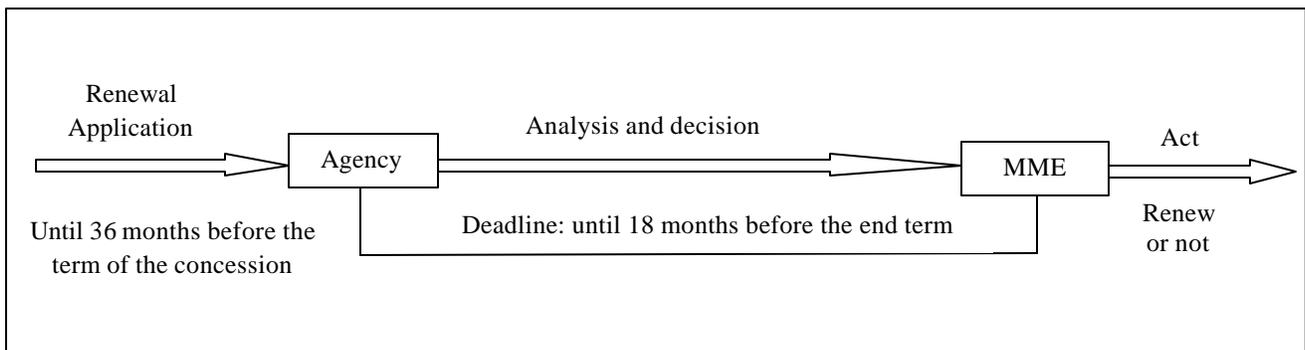
<sup>5</sup>Batista, 2006

*date of signing the essential contract and can be extended for a maximum of equal time at the discretion of the grantor, under the conditions established in the contract.*

(...)

*§ 4 The extensions mentioned in this article should be required by the holder within a period of up to thirty-six months prior to the end date of their contract and the grantor can manifest himself on the application until eighteen months before that date.”*

Figure 2 - Renewing process for concessions granted after the issue of Law # 9,074<sup>6</sup>



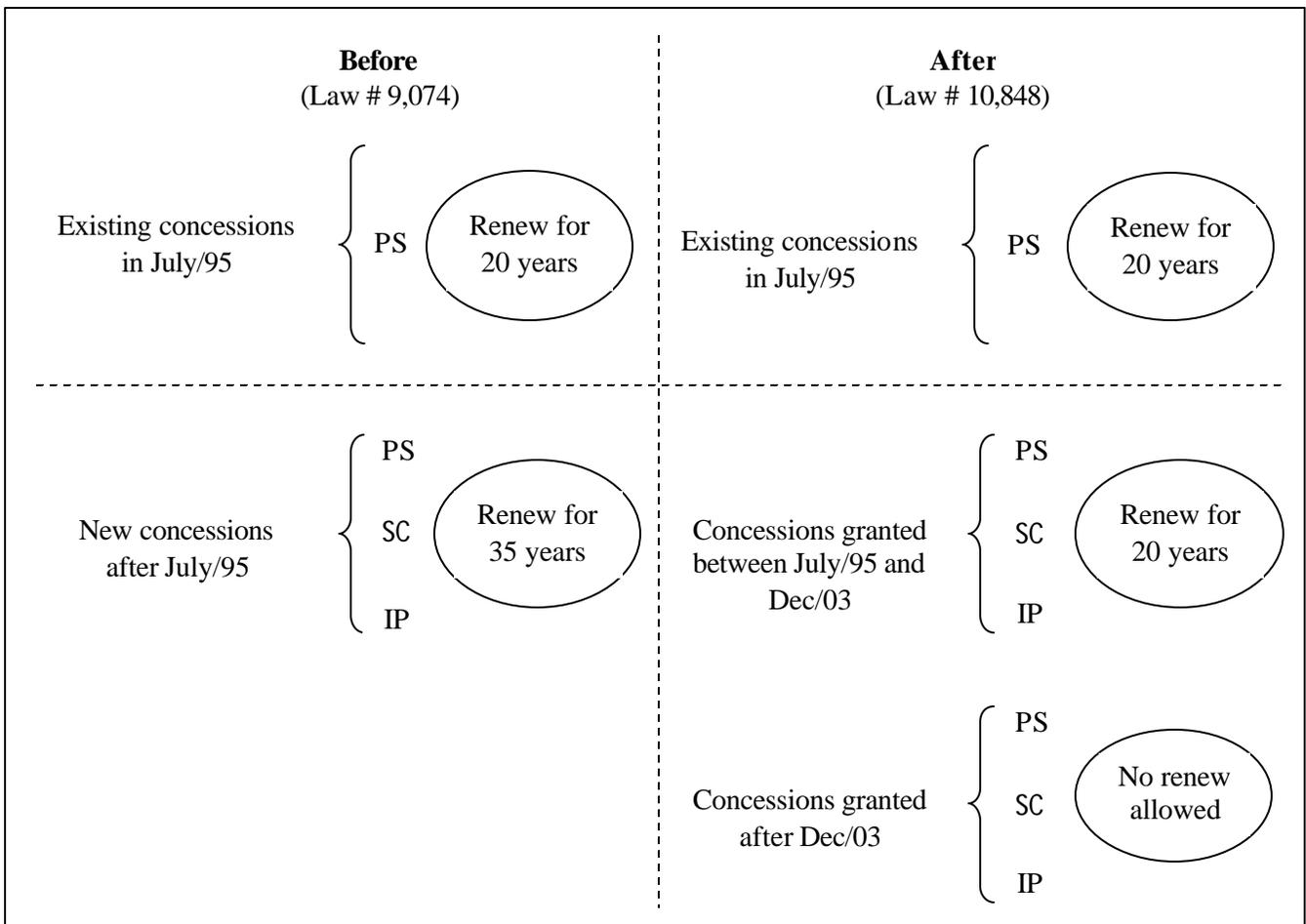
With the issue of Law # 10,848, which established the new model of the electrical sector, three different ways to treat the renewal of concessions were created. The first is the treatment being given to concessions granted before the enactment of Law # 9,074, in regard that those plants with the purpose of public service or self consumption can be extended for up to twenty years. The decision would be granted by the government.

The concessions granted from Law # 9,074/95 and prior to December 11, 2003 (date of issuance of the Bill # 144, which originated Law # 10,848), also can be extended for up to twenty years. The concessionaire from during this period can already be an independent energy producer<sup>7</sup>.

<sup>6</sup> Batista, 2006

For the concessions granted on the basis of Law # 10,848 however, the possibility of extension was extinguished, and the assets revert to the government from the concession's final term. Figure 3 shows a scheme which illustrates the three options currently used for extension of the concessions for generating electrical energy.

Figure 3 – Changes in the new model – Law # 10,848<sup>8</sup>



PS: Public Service; SC: Self Consumption; IP: Independent Producer

<sup>7</sup> Independent Producer: companies receiving grants or authorizations to produce electric energy, all or part of which will be traded at their own risk

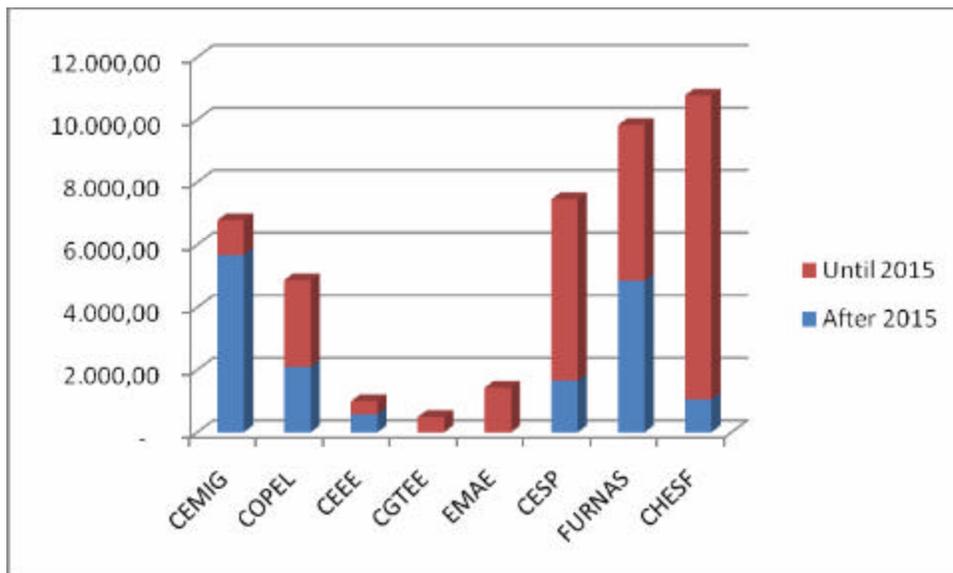
<sup>8</sup> Batista, 2006

## 4. Concessions renewal study Cases

Over time various cases of renewal of concessions were analyzed and various other concessions of public service will end until 2015. The concessions of public service for generation of energy that will end until 2015 total 96, producing approximately 28,000 MW of power. Part of these concessions have been extended, and according to the existing legal order, can no longer be extended.

In the case of the decision that the extension of concessions is not possible, some companies, mostly public, will be strongly affected, experiencing great impact on their ability to generate electricity. This issue is illustrated in Figure 4 below.

Figure 4 – Amount of installed power from concessions that will end until 2015 and after 2015 per concessionaire (kW)<sup>9</sup>



<sup>9</sup> Brazilian National Electricity Regulatory Agency - ANEEL

The process of decision on the extension of concessions has been modified and there isn't currently a consensus on what would be the most appropriate process to insure lower tariffs without a very large impact on the balance of the concessionaires.

The following recent cases show how ANEEL is analyzing and the government deciding the extension of concessions. Later, there is a description of other countries experience in the extension of concessions and comparisons with the Brazilian case.

#### **4.1 Itupararanga Hydroelectric Power Plant Study Case**

The granting of Itupararanga hydroelectric power plant was amended by Decree # 73,682 on February 19th, 1974, to the concessionaire for self consumption over a period of thirty years.

With the expiration of the concession of the Itupararanga Hydroelectric Power Plant, ANEEL examined the requirements for qualification of the company as well as the possible recovery of a value for the use of a public good. This value is established in Law # 9,074 which provides a payment for the extension of concessions when using the water.

The concessionaire was properly qualified in accordance with the legislation to extend the concessions of public service in light of the lack of a legal device to set the criteria for an extension of concessions for self consumers.

The value adopted for the payment for the use of public good has been calculated as 1% of the plant's annual revenue. In this case the annual revenue was calculated by the product of the productivity of the plant times the Normative Value (VN), which currently is called Annual Value of Reference (VR).

Prior to the editing of Law # 10,848 there was no legal forecast for the extension of concessions for self consumption, such as Itupararanga Hydroelectric power plant. In the conclusion of the analysis of this case ANEEL propose to the MME an amendment of Law # 9,074 to allow its extension, which was upheld by the MME and allowed the extension of the above concession.

#### **4.2 CESP Study Case**

In the 2004 analysis of the extension of concessions for four plants owned by Companhia Energética de São Paulo – CESP started to assess the possibility of not extending the concessions. Previously, ANEEL examined the process taking into account only if the company meets the criteria for legal, technical, financial and administrative qualification. When the company was qualified ANEEL recommended the extension of the concession to the Ministry of Mines and Energy - MME.

In the case of CESP, ANEEL proposed the extension of the concessions, but determined that the competent technical areas of ANEEL make a proposition of precise criteria for extension of concessions, listing cases and situations in which they allow the extension. Furthermore, ANEEL proposed an alternative solution, an extension only until the end of the term of the contracts for

the purchase and sale of energy in the ACR in view that it was not possible the participation in the energy auctions of the concessions that will end until December 31, 2014.

At the time of the resolution of the CESP case in the public meeting of the Board of Directors of ANEEL, one of them voted against the extension of concessions. He argue that in the former regime by the cost of service the extension of the concessions is natural, but with the change of the institutional landscape, the extension of concessions could mean a waiver of a benefit that should be distributed to consumers of the electric industry who paid by the reversion of the assets, in view that most plants are almost fully depreciated and depreciated.

The Directors of ANEEL also suggested the drafting of proposals by ANEEL's technical areas to modify Decree # 1,717 and Order DNAEE # 91, on April 10th, 1996, which regulates the extension of concessions. These modifications will be made in order to tailor them to the new model, through the incorporation of new requirements and methodologies for assessing applications for extension of concessions to generation of energy.

MME decided to extend the concessions for twenty years from their end date based on the proposals of ANEEL, but changed the Decree # 5,163, the first version of which presented a barrier for participation to concessionaires in the aforementioned auctions.

A new discussion on concessions for generation of electricity owned by CESP recently emerged. The privatization auction of CESP was scheduled for March 26, 2008 and the investors were uncertain about the bidding because many CESP's concessions will end until 2015.

The concession of one of the plants owned by CESP was extended on March 18, 2008, eight days before the auction of privatization, because its assets were not amortized yet which was mostly due to the delay in the entry into operation of the plant.

However, the concessions of two more plants that end in 2015 had already been extended once, and should therefore not be renewed. Prior to the CESP's auction, the Minister of Mines and Energy said that it would not change the law to allow a further extension of the concessions.

The result of all this events was that the auction of CESP failed for lack of interest. This probably was due to the fact that there are uncertainties about the company's concessions. The uncertainties are that the investors are not sure whether or not the concessions can be renewed in the future.

The Research Group for the Electrical Industry of Federal University of Rio de Janeiro will examine the end of concessions of assets of the energy sector in the coming years, with a focus on legal and economic aspects of the issue. The group will see the consequences of not extending any such concessions in the industry itself and in the country.

### **4.3 CEMIG Study Case**

In view of the issues raised in the CESP case ANEEL Board of Directors has decided to propose, to the Minas Gerais Energetic Company (CEMIG) case, a set of alternatives for decision by the

MME. This included an evaluation of investments already amortized and the corresponding aspects of the market involved.

The Director that analyzed the case proposed three alternatives to be sent to MME, which were based on a report from several technical areas of ANEEL, the Federal Prosecutor in ANEEL and Batista (2006). She proposes the following alternatives:

I. Approve requests for extension of the concessions of CEMIG, for a period of 20 years, from the date of expiration of their concessions without distinction. This proposal was already implemented for other hydroelectric plants to public services;

II. Approve requests for extension of the concessions of CEMIG for the period estimated to depreciate the assets, which is limited to 20 years;

III. Reject requests with the consequent reversal of the assets for the government and subsequent implementation of bidding for grants by the government for the power plants' concessions. In that case, the government could extend concessions by the minimum period necessary to do the procedures of the bidding. The procedures of the bidding, as well as the criteria for the reversal and form of compensation for goods reversible, are recommended in item 4.4 of the "*Model of Institutional Electrical Industry*"<sup>10</sup>.

The opinions of the other directors were not necessarily the same and they therefore chosen to propose alternative suggestions, bringing to light other issues, as explained below.

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<sup>10</sup> [www.mme.gov.br](http://www.mme.gov.br)

One of the directors concluded by proposing an alternative for extending the concessions by the time estimated for the depreciation of assets that remains reversible. The extension is limited to a maximum of 20 years. He also proposed that the energy generated by CEMIG's plants should be sold in the ACR, which, according to him, provides the service with fare tariffs. The results of his proposal could be similar to the results of a new bidding.

Another director followed the proposal of the director that analyzed the case, but had several considerations about a real advantage in bidding for the concessions of the plants in question. After this analysis he concluded that, from the point of view of economic and regulatory issues, no new suit or any advantage, that enables the Agency to proceed differently from what they did before, was raised. He also suggested that MME should impose the obligation of selling the total energy of the object plants in the ACR.

Furthermore, the third director recommended to the government extension of all the concessions until December 31, 2007 and recommended that at the end of this period the government should determine the completion of the bidding of concessions based on the guidelines adopted by CNPE<sup>11</sup>. The guidelines are given in the document "*Model of Institutional Electrical Industry*"<sup>12</sup>. His proposal was based on the fact that CEMIG is satisfactorily fulfilling its obligations as a public service concessionaire, and the fact that consumers will benefit from the auction with a price ceiling, because the new owner would have to sell energy in the ACR and would have to maintain existing contracts.

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<sup>11</sup> CNPE – National Council for Energy Policy - is the advisory body of the President to formulate policies and guidelines for energy.

<sup>12</sup> [www.mme.gov.br](http://www.mme.gov.br)

The process of extension of the CEMIG concessions was referred to MME which decided that the extension term for all concessions would be 20 years counted from the respective dates of the beginning of the concession, adopting the same procedure for other concessions previously renewed. MME did not adopt the proposition of two directors of ANEEL to establish the obligation of energy sales from power plants in the ACR.

#### **4.4 The French Model**

In France the production of electricity in hydroelectric power plants contributes about 10% to the total domestic production of energy and represents more than 90% of the total production of electricity from renewable sources in the country, according Leteurtois *et al.* (2006).

The responsibility to conduct the operations of renewal of concessions was entrusted to the administrator of the Department of Electrical Production. The length of concessions for hydroelectric power plants is generally 75 years, and one company, Electricité de France (EDF), operates 80% of those installations.

As can be verified, the French system is quite distinct from the Brazilian system with regard to generation of electrical energy. In Brazil, the concessions are distributed in the hands of several companies and the term of concessions is currently set at 35 years.

The French legislation establishes that the delegations of public service are subject, by the government, to a transparent procedure that allows the proposal of several competing offers. This device is similar to what is established in the Art. 175 of the Constitution of the Federative Republic of Brazil, transcript of which is below.

*“Art 175. It is the responsibility of the public power to provide public services, directly, or in the form of the law grant concessions and permissions through bidding.”*

According Leteutrois *et al.* (2006), in the process of renewal of hydroelectric concessions for energy generation in France, the current concessionaire had the preference but he had to accept some conditions. The European Commission, however, removed the concessionaires' right of preference and established compulsory competition between companies at the time of the renewal of hydroelectric concessions.

The law that deals with renewal of concessions in France clearly chooses not to renew the concessions when a concession expires. The process of renewal is almost identical of the first concession.

The issues involved are different in view that the economic conditions of exploitation of the plant are known at the time of renewal because 75 years of experience, while they were only estimated at the time of the initial concession.

The process of renewal of concessions in France starts with the application, through a letter of intent of the current concessionaire, before the 11st year preceding the end date of the concession.

Subsequently, the government decides, five years before the expiration of the concession, in extinguish the concession or establish a new concession starting from its end date. The government publishes his intention to renew the concession during the 6th year before the end of the concession. The concessionaire should provide a dossier two years before the end of the concession.

As you can see, the period of time necessary for renewal concessions in France are quite different from the deadlines established in Brazil. This is due, among other factors, the duration of the concession that in France is 75 years and in Brazil is only 35. For example, the request for renewal of concessions in Brazil must be done up to 36 months, 3 years before the expiration of the concession, while in France this term is 10 years.

Following Leteutrois et al. (2006) the process of selecting a new concessionaire in France is basically as follows: publicity of the procedures of choice (6th year), letter of intent from other companies, choice of qualified companies to submit a proposal, submission of a dossier by candidates enabled, choice of the candidate able to submit the request for granting to the administrative authority, the forwarding of the request by qualified companies and, finally, the granting of the concession.

The criteria used to choose among the proponents are very discreet and the competent authority has a large margin of discretion in the choice of the concessionaire.

As can be seen, the renewal of concessions in France is a process identical to that provided for the construction of a first plant and is not a simple administrative formality, but a difficult and complex operation, which is not occurring very well in several cases. According Leteutrois *et al.*

(2006) the renewal of concessions in France should not be made by a simplified procedure, but by a process which provides a discussion as to the consistency or the existence of the power plant, but with a flexibility of the modalities of implementation.

The main features of the procedures for renewal of concessions in Brazil and France are in Table 1 below.

Table 1 – Procedures of renewing concessions in Brazil and France

PROCEDURE	BRAZIL	FRANCE
Concession deadline	35 years	75 years
Deadline for application for renewal by the current concessionaire	3 years	11 years
Deadline for government decision	1,5 years	5 years
Duration of the bidding process	1 year*	6 years
Delivery of termination dossier for the concession by the concessionaire	There is no delivery of dossier. Data is provided by the concessionaire when the application for renewal of the concession	2 years

\* Period used currently for new concessions

#### 4.5 The USA Model

In the United States of America the hydroelectric generation of electric energy is regulated by the Federal Energy Regulatory Commission (FERC) which has the responsibility, among others, for regulating non-federal hydroelectric power projects that affect navigable waters.

According to FERC<sup>13</sup>, hydroelectric power regulation was the first work undertaken by the Federal Power Commission, after Congress passed the Federal Water Power Act of 1920. The Commission regulates hydroelectric power projects.

In the USA model the exploitation of the hydroelectric power plants is made by a license, differing from Brazil that adopts the concession, with the establishment of concession contracts, for big hydroelectric plants<sup>14</sup>. Regarding Kerf *et al.* (1998), *“regulation can be implemented through contract or license. Generally, contracts are implemented by franchising or concession agreements for generation projects, and specific transmission or distribution service areas. In this case, the State transfers some of its powers or attributes to the private sector, regulated by the terms of the contract. The contract specify, among other things, duration, conditions to renew it, price setting formula and constraints, obligations to serve the demand in the concession area, investment obligations, minimum level for quality and reliability of service and conditions for termination”*.

According to Kerf *et al.* (1998), *“regulation by license is implemented through a secondary legislation which establishes the general rules, rights and obligations to carry out an activity like generation, transmission, distribution or supply. The regulator has the ability to force modifications in the conditions of the license to take into account changing conditions, but subject to statutory rules established by law”*.

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<sup>13</sup> [www.ferc.gov](http://www.ferc.gov)

<sup>14</sup> Big Hydroelectric Power Plants – Plants with installed power bigger than 30 MW.

The FERC regulates hydroelectric power projects under some statutes. The Federal Power Act established in June 10, 1920, provides for federal regulation and development of water power and resources, authorizing the FERC to issue licenses for hydroelectric project works, including dams, reservoirs and other works to develop and improve navigation and to develop and use power.

Licenses are issued for a term of between 30 to 50 years, and exemptions are granted in perpetuity. Licenses may be revoked only for the reasons and in the manner prescribed under the provisions of the Act, and may be altered or surrendered only upon mutual agreement between the licensee and the Commission after thirty days' public notice.

Whenever, after notice and opportunity for hearing, the Commission determines that the United States should exercise its right upon or after the expiration of any license to take over any project or projects for public purposes. The Commission shall not issue a new license to the original licensee or to a new licensee but shall submit its recommendation to Congress together with such information as it may consider appropriate.

In Brazil, the related assets of plants whose concession finished are reversed for the Federal government, which has the option to operate and maintain these assets. But currently there is no case of hydroelectric power plant being operated directly by the Federal Government.

If the United States does not, at the expiration of the existing license, exercise its right to take over, maintain, and operate any project or projects of the licensee, the commission is authorized to issue a new license to the existing licensee upon such terms and conditions. The license may

be authorized or required under the existing laws and regulations, or to issue a new license under said terms and conditions to a new licensee, which license may cover any project or projects covered by the existing license, and shall be issued on the condition that the new licensee shall, before taking possession of such project or projects, pay such amount, and assume such contracts as the United States is required to do.

Each existing licensee shall notify the Commission whether the licensee intends to file an application for a new license or not. Such notice shall be submitted at least 5 years before the expiration of the existing license.

At the time notice is provided, the existing licensee shall make each of the following reasonably available to the public for inspection at the offices of such licensee: current maps, drawings, data, and such other information as the Commission shall, by rule, require regarding the construction and operation of the licensed project.

Promptly following receipt of notice, the Commission shall provide public notice of whether an existing licensee intends to file or not to file an application for a new license. Each application for a new license shall be filed with the Commission at least 24 months before the expiration of the term of the existing license.

The model adopted by the United States for the operation of hydroelectric power plants by the private sector is quite simple compared with the Brazilian model. When certain license finished the government may choose to operate the plant, renew the license to the company that was

already operating the plant or renew the license for a new company. This choice did not go through a bidding process and is made by the Commission itself.

## 5. The process for renewing concessions and its criteria

The Brazilian legislation regarding specific concessions to the electric industry, Law # 9,074, states as follows:

*“Art 19. The government can renew the concessions to generate electricity (established by Art. 42 of the Law # 8,987)<sup>15</sup> to ensure the quality of service for consumers at low cost, for a period of up to twenty years. The government could make this extension provided that the requested extension by the concessionaire, observed the provisions of Art. 25 of this Law.” (my emphasis)*

This article applies only to concessions for public service, which is the type of concessions studied in this work. That Act also requires that the concessionaire meet the qualification requirements for legal, technical, financial and administrative regularity.

It is evident in this legal device that the extension of the concessions requires a clear motive from the government, who should examine not only the fulfillment of requirements for qualification by the concessionaire, but also the guarantee of quality of the service with a minimum tariff.

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<sup>15</sup> “Art. 42 - The concessions to public service granted prior to the entry into force of this Act is deemed to be valid by the deadline stipulated in the contract or in the concession act as noted in the provisions of Art. 43 of this Law.”

In order to carry out the Law # 9,074 with regard to extensions of concessions, the Decree # 1,717 has been edited, but has not established the set of criteria that would be assessed by the government in the decision of extension of concessions, merely those criteria of qualification for the concessionaire.

With the change of the Brazilian energy sector legislation and the introduction of auctions for the selling of energy in free and regulated contracting markets, which aim for lower tariffs, it is clear that an analysis of objective criteria for renewing concessions must be made. This must be done to ensure that the above legal goals of quality of services with low tariffs are reached on the occasion of the extension of concessions. Upon renewal the government should also consider that at the time of the granting of concessions for hydroelectric power plants, which will last until 2015, there was a system of tariff based on the cost.

As can be seen, the extension of concessions should be made while taking into account economic and regulatory aspects, and analyze for each specific case the advantages and disadvantages in renewing concessions. Below are some of the advantages of renewing or not a concession, in light of the new legislation for the energy industry.

### **5.1 The decision not to renew the concessions**

The renewal of concessions to generate electricity in Brazil had been virtually automatic until the new legislation for the energy industry, established in 2004. The concessionaire had only to fulfill the requirements of legal, technical, financial and administrative regularity.

With the new legislation arose the need to establish objective criteria to be used by the government for the acceptance or rejection of extension of concessions. The goal to be pursued continues to be the quality of service at appropriate prices, always in the preservation of the public interest as established by the Law # 9,074. The government must demonstrate a clear motive when deciding whether or not to renew concessions.

The idea expressed in the preceding paragraph is agreed upon by the various technicians and lawyers who have reviewed this matter. What is not agreed upon is if not extending concessions and instead allowing them to be rebid on might benefit society more. Some argue about the legality of an extension of concessions in view that this might be seen as a new concession, and therefore is dependent on bidding.

The analysis of the extension of concessions must be made for each specific case, taking into consideration the characteristics of the regulatory environment at the time of renewal and the real benefit to society of each decision.

The decision not to extend the concession must be based on analysis of the depreciation of investments made by the concessionaire over the concession and, where appropriate, the time required to amortize them. Some experts believe that in the free price system, it would be desirable to renew concessions when the concession's assets have not yet been fully depreciated, because the economic benefit of reduce tariffs would not occur if the government decides to bid the concession.

This is the opinion of Prof. Marçal Justen Filho<sup>16</sup> regarding the automatic extension of the concessions, as can be seen from the text below:

*“The validity of the extension depends, therefore, on the certainty of the government that the grant will ensure quality of service to consumers. Therefore, objective data must be collected. The government must determine the amount of investment that will be made by the concessionaire, the attendance to users’ interests with lower tariffs, etc. Finally, we must ensure the concessionaire’s compliance with those same requirements as a result of bidding. Furthermore, the extension will have to ensure at least the same benefits that would be obtained through bidding.”*

But the consensus is that the extension of the concessions is an exception to the general rule of bidding, established in the Federal Constitution, and the decision should be based on legal certainty while attending the public interest. Therefore, the government should always demonstrate a motive for its decision.

The constant change in the regulatory scenario in the energy sector is a factor that should always be considered, due to its impact on the possible profits of concessionaires. In the model in which the tariff takes cost into account, the extension of the concessions would be automatic, and the government needs only to consider the concessionaire’s compliance with the legal provisions and the contract.

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<sup>16</sup> Justen Filho, Marçal, *apud* Nota Técnica n. 140/2004-SFF/SRE/SEM/ANEEL, October 14th, 2004.

When the establishment of the tariff takes cost into account, considering that at the end of the concession period some assets could be not depreciated, a fund called Global Reversion Reserve (RGR) was created to promote complementary payments in the case that the decision is to not extend a concession. So far there has been no case of reversal of generation assets for the government in Brazil, and therefore RGR has never been used to do these payments.

With the end of guaranteed remuneration, the extension of concessions has to be regarded as automatic because the prices would not be a result of production costs, but instead a result of the free trading market. The extension in this case could create benefits, which should then be distributed to consumers who paid for the reversion of the property.

Upon the establishment of the new energy model in Brazil - with negotiations held in the regulated contracting market, where the parameter of the bidding is the lowest tariff offered and the government establishes a price cap - the bidding has become an alternative to non-extension of the concessions. This decision should be assessed case by case, taking into account the legal and regulatory aspects at the time of bidding.

Overall, the proposal for not extending the concessions and subsequent bidding, with the indemnification of the assets that have not depreciated or amortized, has the following advantages:

- ? promotes competition which therefore contributes to the reduction of tariffs, provided that the price cap is set correctly;

- ? results in a distribution of the benefits of the low cost of energy production to the consumers, assuming that the assets are almost amortized;
  
- ? Provides equality among bidders, which is ensured through the dispute.

There is no risk for the quality of energy generation services, so that a new concessionaire will have to prove its qualifications in accordance with the procurement guidelines of the auction and meet all requirements of the concession contract.

## **5.2 The decision to renew concessions**

The renewal of concessions is always controversial due to the complex decision making process. There are those who support the renewal and those who advocate the bidding of expired concessions.

If the government decides to extend concessions for energy generation, there will be a need for identification of the assets that have not been depreciated already. Measuring the value of these assets is a complex analysis which should be completed well before the publication of the auction's procurement guidelines. The existing methods of evaluation of these assets and their respective advantages and disadvantages are explained in the next chapter.

The existence of assets fully depreciated and amortized is one of the justifications given for not granting an extension of the concession, so that the benefits of operations low costs would reach consumers and instead the concessionaire would profit.

Another fact to be considered is that the estimated gain of bidding is not always clear. Each case should be reviewed as it occurs and as the law and regulatory environment changes over time.

An alternative treatment for this issue is to extend the concession for a period necessary to the depreciation of remaining reversible assets, limited to twenty years, but with the compulsory sale of energy in the ACR. This alternative has the advantage to amortize the investment not yet depreciated and allow consumers to make economic gains.

The price of energy has no exclusive relationship with the accounting costs, but relies on conditions of the market when the bidding occurs.

According to a director of ANEEL a company whose plant is fully depreciated does not always continue to sell in the energy auctions at high prices, but the price should fit the market conditions of the time. If there is a surplus of energy at the time of the auction, concessionaires tend to lower their price to facilitate the sale of energy from that plant, as happened in the case of the São Francisco River Hydroelectric Company (CHESF) and CESP.

Another issue raised by the director is that if a bid occurs, the price cap set by the government must take into account only the cost of operation and maintenance of the completely amortized

power plant. The price cap would be much less than the opportunity price of bidding, which could easily be challenged by the Court of Accounts of the Union and the Public Ministry.

The assets of the plants with terminated concessions, even after being depreciated, have the corresponding value determined by their capacity to produce revenue over time. Such revenue should be valued at the opportunity cost. In the case of plants with terminated concessions, it is only possible to sell the energy in auctions of old energy<sup>17</sup>, which has lower tariffs than the auctions of new energy<sup>18</sup>. This means that its ability to generate revenue is less than its accounting value.

In the case of concessions analyzed in this paper, the majority of which are still public, but were granted when tariffs were established according to costs, the balance of the concession should also be assessed. This is because the concessionaires have a “mix” of plants, some with fully depreciated assets and others not fully depreciated, and only thus can sell their energy at a competitive price in the market.

According to Kerf *et al.* (1998), *“the establishment of an end date to the concession helps the government to regulate, by permitting competition for the market to take place not just at the initial award of the concession but afterward as well. The scheduled termination allows the government to stage another competition for the market, every when the concessionaire has done nothing that is demonstrably wrong”*.

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<sup>17</sup> Auctions of old energy are made to sell the energy generated in the existing power plants (those plants that have a concession, permit or authorization at the beginning of the bidding process).

<sup>18</sup> Auctions of new energy are made to sell the energy generated in the new power plants (those plants that do not have a concession, permit or authorization, or are part of an existing plant which will undergo an extension of its capacity. One of these conditions only must exist until the bidding process in order for it be considered a new power plant).

The advantages of continuing competition for the market, however, come at a cost. Because the concessionaire risks losing the concession in the future, it may be less willing to make investments in assets that it will benefit from only if it keeps the concession. The effect is most evident in the period just before a concession ends, whether the end is early or according to schedule.

In order to summarize what has been reported above, some arguments against the premise that the bidding generate more benefits (for example, lower tariffs) than the extension of existing concessions are described below.

- ? The decision to not renew concessions needs an evaluation of the reversible assets, which demands time for analysis before the auction;
  
- ? The selling price of energy by the actual concessionaire has no exclusive relationship with its accounting costs, but relates rather to the condition of the market when bidding occurs;
  
- ? If there is a surplus in the energy market at the time of the auction of old energy<sup>19</sup>, the current concessionaire tends to lower its price to facilitate the sale of energy from that plant;

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<sup>19</sup> Auctions of old energy are made to sell the energy generated in the existing power plants (those plants that have a concession, permit or authorization at the beginning of the bidding process).

- ? If the new energy<sup>20</sup> auctions price cap value established by the government is too low, it may be questioned by TCU and MP, considering that this value may be less than the opportunity cost in the energy market at that time;
  
- ? The energy price is tied to the plant's ability to generate revenue. In the case of renewed concessions, the energy must be sold in auctions of old energy by lower tariffs;
  
- ? The non-renewal of concessions could generate the financial imbalance of companies, due to the use of a "mix" of power plants to generate revenue.
  
- ? The concessionaire risks losing the concession in the future, it may be less willing to make investments in assets that it will benefit from only if it keeps the concession.

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<sup>20</sup> Auctions of new energy are made to sell the energy generated in the new power plants (those plants that have a concession, permit or authorization, or are part of an existing plant which will undergo an extension of its capacity. One of these conditions only must exist until the bidding process in order for it be considered a new power plant).

## 6. Valuation of concessions assets

Assets reversible linked to provision of public services of electrical energy, although owned by concessionaire, will be reverted to the government at the end of the concession, even if later or concurrently be delivered to a new concessionaire. However, these assets represent a limited property, which are made unavailable by the concessionaire, as provided in Law # 9,427.

In many cases in the Brazilian electrical sector useful life of assets exceeds the term of the concession. In the case of the impossibility of extension of the concession, the reversion of goods are better than the disabling of the power plant and subsequent reconstruction by the new concessionaire, as it would be contrary to public interest since it would involve costs of disabling and reconstruction.

The compensation in cases of reversion can be given entirely by the bidding process, with the establishment of value to be paid by the winning bidder, or by the government, with existing resources for this purpose, as in the case of Global Reversal Reserve (RGR), previously defined. An auction where the criterion would be the highest price to be paid by the successful proposer for compensation of the investment can also be created. Bidders can bid any amount because they would not bid more than they think that the concession is worth.

In relation to investments made during the period of concession to ensure the continuity and freshness of the service, Law # 8,987 states that the reversion in the advent of the contractual term will be made with the repayment of investments tied to reversible goods.

These investments will be repaid provided that the following conditions occur: (a) if they are linked to the reversible goods, (b) if the assets to which they relate not have been depreciated, (c) if they have been made to ensure the continuity or the actuality of service.

The repayment for the goods not yet amortized in the end of the contract is not thoroughly addressed in the concession contracts in Brazil. In contracts for generation of electrical energy there is only a forecast for the occurrence of the compensation. The same occurs in contracts for transmission of electrical energy, analyzed by Barbosa *et al.* (2007), which among other measures proposed to forecast with greater precision the compensation in the contracts of concession, detailing the criteria of its calculation.

Until this moment there has been no case of reversal of a concession for generating electricity in Brazil. The methodology of evaluation of property for periodic review of the tariffs of utilities for distribution companies in Brazil is defined in Resolution ANEEL # 234 of October 31, 2006.

In the analysis of the processes of extension of concessions as of CEMIG study case, explained above, were used in the analysis of the feasibility of extending the concessions data provided by the concessionaire. These values have been updated in accordance with rates of depreciation defined in the Order DNAEE # 815, of November 30, 1994.

According to Kerf *et al.* (1998), when the government will take over the business at the end of the concession he will pay any compensation that is due. But when the government plans to put the concession out to bid again, there is no reason why the compensation should not come from the new bidder. The amount of this compensation could be determined through the bidding process or some methods can be used to determine the amount of compensation to be paid, as follows:

- ? Historical Cost – this is the traditional accounting method of valuation for the purposes of financial reporting. It takes the cost of the asset when it was purchased and depreciates it over a certain period of time. As a measure of current value, it can be misleading because it ignores inflation and thus tends to undervalue assets.
  
- ? Inflation-adjusted Historical Cost – historical cost can be adjusted to take inflation into account by increasing book value according to either a measure of the general inflation rate, such as the CPI, or a measure more closely related to the assets involved.
  
- ? Depreciated Replacement Cost – an alternative is to consider what it would cost to buy the equivalent asset now or, since similarly degraded second-hand assets may not be readily available, what it would cost to replicate the investment now, less an estimate of the asset's depreciation in value since investment. A problem with the historical cost and depreciated replacement cost is that they do not consider changes in the value of assets brought about by changes in technology.

- ? Optimized Depreciated Replacement Cost (ODRC) or Modern-equivalent-asset (MEA) value – this is a refinement of depreciated replacement cost. It is the cost of replacing the asset with the cheapest asset that does the same job (the optimal asset). ODRC solves the problem of changing technology, but, like its predecessors, has the effect of compensating concessionaires according to some measure of the cost of investment. Concessionaires could thus be compensated even for making investments that were economically undesirable, that is, investments with benefits that fall short of their costs, even when the costs are as low as possible.
  
- ? Optimized Deprival Value (ODV) or market value – the method of optimized deprival value attempts to take into account value as well as cost: the ODV is the minimum of the ODRC and economic value, where economic value is the maximum of the net present value (NPV) of future earnings and disposal value, and disposal value is the amount the asset could be sold for. All together, this implies that:

$$\text{ODV} = \min [\text{ODRC}, \max (\text{NPV of future earnings}, \text{disposal value})]$$

Following Kerf *et al.* (1998), “*to avoid incentive problems, the estimate of future earnings must be based on an estimated future tariff that is independent of the bids made when the concession is re-awarded.*” According Kerf *et al.* (1998) “*in principle, ODV accounting may generate compensation payments that give concessionaires the right incentives. But determining the ODV of the concessionaire’s assets is difficult, requiring assessment of technology, the*

*concessionaire`s expected cash flows, and its cost of capital. The choice of accounting rule must of course take into account the practicality, as well as the theoretical advantages of the options”.*

If the government opt for no extension of the concession and its subsequent bidding, it is possible to establish in the bidding process that the firms will bid the amount of compensation they are willing to pay to take over the business. According to Kerf *et al.* (1998) this arrangement goes some way toward protecting the concessionaire to make long-term investments.

The length of the new concession is an important factor to be set by the government, since it influences the depreciation of investments by the concessionaire. In some cases the duration of the concession may be determined by the proposer in the auction, being one of the criteria by which the proposals are judged.

Following Guacsh, J. (2004) each approach has advantages and disadvantages. *“Short-term concessioning allows more frequent competition and, therefore, maximizes the incentive to increase efficiency. Shorter-term concession contracts coupled with competitive rollovers at the end of a contract can be a powerful efficiency-inducing device, as long as the firm is compensated for incurred investments”.*

*“Long-term concessioning, however, not only minimizes some of this incentive but also fosters a relationship that is more akin to that of regulator and regulated than a true business contract. Long-term concessioning, however, also maximizes the opportunities for shifting responsibility to the private sector. It encourages more innovation and cost-efficiency than a short-term contract.*

*Which of these factors will weigh more heavily with policymakers will depend on the specific local circumstances”.*

Alpaos *et al.* (2005) investigate the impact of concession length and investment timing flexibility on the “concession value”. Their results suggest that firstly, investment flexibility does not always increase the concession value. For example, under a short-term contract, the concessionaire’s ability to defer irreversible investments may not provide additional value, since it becomes optimal to invest immediately (the concession’s Extended Net Present Value coincides with to the conventional Net Present Value). Secondly, long-term contracts do not necessarily increase the concession value. Since the duration of the concession contract affects the optimal investment timing, if a concession contract is too long, the concessionaire may be forced to postpone investments in order to reduce the uncertainty over future returns. Again, this may result in a lower Extended Net Present Value.

## 7. Conclusions

Before the establishment of the new model of the energy sector, in 2004, the renewal of concessions for generation of electricity in Brazil was treated as an almost automatic process, in which there was no judgment about the advantages and disadvantages in the decision making concerning this issue.

With the change of the model, ANEEL began to consider that the decision on the renewing concessions should be more clearly motivated, in consonance with the legal order.

According to the legislation, that decision must take in account the goals of cheaper tariffs and warranty of the quality of service. However, the legislation is silent on objective criteria that must be observed in making the decision about the renewal of concessions.

This lack of concrete criteria has impacted some businesses, as the failure that occurred recently in the CESP's auction.

So, from the analysis made in this study about the benefits in the adoption of each of the possible alternatives (renew or not renew the concessions) it became clear that the measurement of the benefits that can be reverted to society is not an easy task. In other words, biddings of plants reverted to the government will not always result in the reduction of tariffs in order to benefit consumers.

In this sense, a number of aspects must be taken into account in assessing the best alternative in decision-making, such as:

- ? The value of energy to be sold by current concessionaire in the old energy<sup>21</sup> auctions will not always be greater than the value to be obtained in the auction for a new concession. If there is a surplus of energy in the market at the time of the old energy auction, the concessionaire tend to lower their price to facilitate the sale of energy from that plant;
- ? If the value of the price cap of the auction for a new concession established by the government is too low, taking into consideration that the plant is completely amortized, this value can be questioned by TCU, because it can be less than the market value at the time of the auction;
- ? Concessionaires which concessions have not renewed may have a decrease in their income because of the exclusion of certain plants from your portfolio, which could cause the company's bankruptcy;
- ? The possibility of non-renewal of the concession may generate disincentive to the concessionaire to make the investments necessary to the maintenance of the service.

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<sup>21</sup> Auctions of old energy are made to sell the energy generated in the existing power plants (those plants that have a concession, permit or authorization at the beginning of the bidding process).

So, the conduct of further investigation to establish more objective criteria to be considered by the government in decision-making is very important, which should be provided in specific legislation.

Another point to be studied is the best format of the auction of plants whose concessions are not extended and the method to be used for the evaluation of the assets and if the repayment will be made directly by the government or by the new concessionaire.

Moreover, it also highlights the need to study the formatting of the new concession contract, as well as the establishment of the term of the new concession, in order that it ensures the amortization of the concessions' assets.

The establishment of a specific legislation with criteria for making a decision is important because those concessions will continue to finish, especially in 2015, and to prevent cases such as the failure of the CESP's auction.

## 8. Bibliography

Alpaos, Chiara D.; Dosi, Cesari; and Moretto, Michele. Concession Length and Investment Timing Flexibility. Italy, 2005.

Barbosa, Frederico da Silveira; Anuatti Neto, Francisco; and Amorim, Cibelle. A Indenização pela Reversão de Bens no Advento do Termo dos Contratos de Concessão de Serviços Públicos de Transmissão de Energia Elétrica. Brasil, 2007.

Batista, Romário de Oliveira. Visão Geral Sobre o Processo de Prorrogação de Concessões de Geração no Setor Elétrico. Brasília, Brasil, 2006.

Guacsh, J. Granting and Renegotiating Infrastructure Concessions: Doing it Right. Washington, DC, U.S.A., 2004.

Kerf, Michel; Gray, R. David; Irwin, Timothy; Levesque, Celine; Taylor, Robert; and Klein, Michael. Concessions for infrastructure: a guide to their design and award. Washington, DC, U.S.A., 1998.

Leteurtrouis, Jean-Pierre; Ravard, Jean-Louis; Rozen, Georges; and Winter, Laurent. Relatório sobre a Renovação das Concessões Hidrelétricas. França, 2006.

