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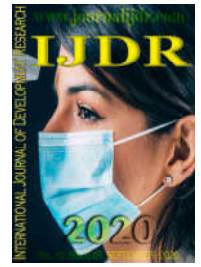
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A PROVISIONAL ASSESSMENT OF THE NACIONALIZATION OF THE ELECTRICITY SECTOR IN BOLIVIA (2010-2019)

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ABSTRACT

This article analyzes the nationalization process of the electrical sector in Bolivia from 2010 to 2019, bringing some results through the capacity of electrical energy in the Bolivian departments, compared to the period in which the sector was privatized in the 1990's. The analysis and the results were obtained from demographic censuses and Energy Ministry's official documents. After Evo Morales resigned as the Bolivian president in 2019, a new government took over bringing a neoliberal agenda similar to that of the 1990's. Based on the available data, the article sustains that nationalization brought positive results to the electric sector and that a privatization could lead to a paralysis of the sector or even to a setback from the achieved goals.

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INTRODUCTION

Supreme Decree No. 493, promulgated by President Evo Morales in 2010, in the fourth year of his first term in government, announced the beginning of the nationalization of the electric energy sector in Bolivia, a policy adopted with the aim of restoring the state's role in the electricity generation and distribution in order to boost the country's economic and social development and to universalize Bolivians' access to energy services. Later, other decrees and the re-founding of Empresa Nacional de Electricidad (ENDE) would make real this topic of the government program presented by Morales at the time of his presidential candidacy in 2005, when he defended the nationalization of economic sectors identified as strategic, with prominence for hydrocarbons (natural gas and oil), which occurred on May 1, 2006. In the electricity sector, also seen as strategic, the process occurred more slowly. In the first four years of Morales' government, a series of initiatives were implemented, such as the creation of the program that set goals to universalize the service, the reduction of fares and the increase in the generation capacity and coverage in the

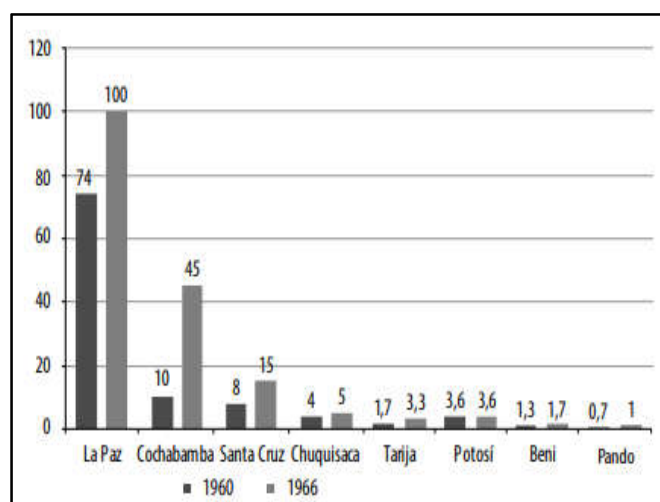
transmission of electricity, but it was only in 2010 that nationalization actually took place. This set of actions aimed to give back to the State the conduct of this public service, which from the late 1980s and throughout the 1990s and early 2000s went through a wide privatization process, within the framework of the neoliberal agenda of the previous governments, which reduced state participation in the Bolivian economy to almost zero - a policy adopted by a majority of Latin American countries at that time. The understanding adopted by the Bolivian authorities after Morales's accession to the presidency of the country - which, with the new Constitution of 2009, came to be called the Plurinational State of Bolivia - is that neoliberal policies represented a huge setback from the economic and social development point of view, weakening the national economy and aggravating the historical problems of social inequality and external dependence, two negative legacies of the colonial period. In the specific case of the industry and the supply of electricity services, privatization, in fact, caused serious problems for economic activity and for the well-being of the majority of the population disadvantaged, with the increase in fares, the stagnation in the capacity of electricity generation and a

growing deficit in the capacity to supply electricity to the regions of Bolivia that are farthest from large cities and/or with precarious transport infrastructure. This article will analyze the nationalization process of the electric sector in Bolivia. It has, also, the aim to discuss some results that such restructuring obtained from 2010 to the end of Morales' government. Bolivia is a country rich in hydrocarbons, and precisely because of this plenty, its main source of electricity is the thermoelectric plants supplied by natural gas. So far, the country's rich hydroelectric potential remains at low levels of exploitation. Such characteristics lead the Andean country to the center of a debate that involves not only a review of Morales' policies in his almost fourteen years as president - period ended in late 2019 through his forced resignation, in a context of political intervention by the Armed Forces and the police system to bring about a change of government outside the constitutional framework - but it also brings to the agenda the debates on South American regional energy integration and the relationship between the State and private companies in the exploitation of natural resources and in the essential public services, such as energy. The effort of research and reflection on the nationalization of the Bolivian electric sector is justified in view of the scarce academic production available on this topic and, in particular, by the dispute that is already outlined over the policies to be adopted in the immediate future for the exploration of a set of strategic natural resources abundant in Bolivia. On the one hand, supporters of the deposed government rearticulate themselves as the objective of regaining control of the executive branch through the electoral process and of preserving, as much as possible, the policies implemented in Morales' presidential mandates. On the other hand, the Bolivian interim government has already announced its intention to privatize some of these resources, in particular lithium, a mineral that has recently been explored and is of immense importance for the production of batteries for electric vehicles in the context of the global energy transition. In a current situation marked by political uncertainty, Bolivia may be on the verge of returning to neoliberal policies in force at the end of the 20th century.

THE HISTORICAL PATH OF THE BOLIVIAN ELECTRICITY SECTOR

The Bolivian electric sector, from the beginning of its formation at the end of the 19th century until the present, has always been faced with arrangements of economic liberalism, due to the most varied arguments or conditions, despite permanently maintaining the State's decisions as guidelines of investments to expand electrical infrastructure across the country. In the end of the 19th century, driven by the so-called Second Industrial Revolution, the world witnessed the rise of electric energy as its main innovation. In Latin America, the search for electricity technology took place in different ways. In Brazil, for instance, the state governments themselves took charge of supplying public lighting and public transportation. In countries such as Bolivia and Peru, the service started to be provided by the owners of the mining companies, the main economic agent until then, with a means of increasing production. Between the 1890s and 1910s, the countries that mastered the technology, basically the United States and Germany, through the multinationals GE and Siemens, saw their internal expansion capacity saturate, which led them to invest in underdeveloped countries to supply materials or technical support. In Latin America, the control of the sector by foreign capital meant that national companies did not

develop and depended on investments by transnational companies (MAGALHÃES, 2000). In Bolivia, until 1925, private energy companies – all of them foreign - were responsible for supplying electricity to all department capitals. However, the lack of legislation and regulation on the part of the State meant that there was no standard for the provision of the service, with different frequencies and voltage levels. Until the 1960s, the electric service remained controlled by private companies and it was basically intended to supply energy, generated in hydroelectric and thermoelectric plants, mining production, lighting and public buildings. Nevertheless, the inefficiency of the service meant that the State took responsibility for itself and administered the sector, laying down rules, drafting legislation and creating a model for the sector. Thereby the Dirección Nacional de Electricidad (DINE) was created, within the Ministry of Public Works, with the aim of regulating, supervising and coordinating the sector's activities. The Electricity Code also came into force in 1962, with the rules of the electricity sector, including fares and concessions. Finally, the National Institute of Rural Electrification (INER) was created, with the objective of promoting electricity in rural areas. Through the Supreme Decree No. 5,999, of February 9, 1962, the Empresa Nacional de Electricidad de Sociedad Anónima (ENDE) was created, with the exclusive participation of the State, which was responsible for the generation, transmission and commercialization of the service. ENDE was also responsible for building a plan for the electrical connection and drawing up a National Electricity Plan. The importance of the creation of ENDE was due to the fact that the State could, from then on, boost the necessary development to guarantee the growth of the sector and to articulate the production of electric energy in all Bolivian departments. According to Graph 1, until the creation of ENDE there was a deficit in the generation of electricity in the departments to supply the demand in each region.



Source: Rivera (2018, p. 34) apud. Morales (2011, p. 28).

Graph 1. Situation and progress of the Bolivian electricity sector in 1960 and 1966

The first decade of ENDE had as notorious facts the creation of transmission lines connecting the municipalities of Coran, Cochabamba and Catavi and the construction of the Corani hydroelectric plant with 27,000 kW of installed power (ENDE, 2019). The 1970s were marked by studies of generation plants and construction of hydroelectric plants, such as Santa Isabel in Cochabamba, Cahua in La Paz and thermoelectric plants in

Sucre and Santa Cruz. In the 1980s, the National Interconnected System (SIN - Sistema Interconectado Nacional) was implemented, which unified isolated systems to a common electricity transmission network, ensuring a more stable operation, optimized resources and increasing the strength of its electrical matrix. The growth of the sector and, more precisely, of ENDE took place throughout the 1980s and early 1990s, overcoming economic crises and changes in government, being marked by system regulation, an accelerated expansion of generation and transmission, incorporating new plants and extending existing ones. Support was given to the expansion of hydroenergetic and geenergetic resources, as well as the integration of generation centers with the most notable cargo centers, always ensuring attention to isolated systems.

Bolivia is rich and promising in its capacity to generate electricity, in addition to natural gas, today the main fuel for generating electricity by thermoelectric plants. The untapped capacity of its rivers is, even today, a bet limited to the sector's goals plan and where the effort to better take advantage of this resource can be seen. From the second half of the 1980s, many countries in Latin America adopted neoliberal policies. In this new context, the State was denied the management of essential public services to the population that were delegated to the private sector through the sale of public companies and services. Thus, the market was given the solution to all the historical needs that the continent carried with it since the colonial period. This wave of deregulation and privatization was guided by the Washington Consensus, with the effective exercise of decision-making power handed over to the World Bank, the International Monetary Fund (IMF) and the United States Department of the Treasury (KLACHKO; ARKONADA; 2017, p. 40).

During the last government of Victor Paz Estenssoro (1985–1989), conditions were created for the adoption of a new political and economic model in Bolivia. The legal instrument for this change in historical dimensions was Supreme Decree No. 21.060, of August 29, 1985, which removed State protection from national companies, allowed the sale of state-owned companies (privatization) and transferred strategic sectors of the Bolivian economy to the owned by foreign private companies, as was the case in the electricity sector (FUSER, 2016, p. 27). Regarding the electricity sector, the first stage of the sector's privatization took place between 1989 and 1993, when the transfer of assets and shares of 34 companies in the sector took place through public tenders. However, in that period, ENDE was still the main manager of the system in the areas of generation, distribution and transmission. The argument for this change was the same as that used throughout Latin America - that public companies were inefficient and would not be able to meet the demand for expanding services within the framework of macroeconomic growth that was expected by those responsible for public economic planning and private. In this political environment, the project for the full sale of Bolivian public companies, including ENDE and the entire electricity sector in Bolivia, was set in motion. Rivera (2018, p. 63) presents the period from 1993 to 1997, which corresponds to Gonzalo Sánchez de Lozada's first presidential term, as a second moment in the sector's privatization process, with a more elaborate model, through the full sale of companies. In this new stage of application of neoliberal policies, the decisive political instrument was Law No. 1.544, of March 21, 1994, known as

the Capitalization Law, approved with the objective of reducing the State's participation in the economy. Under this law, public companies were authorized to convert to mixed-capital companies under the control of private shareholders. This occurred not only in the electricity segment, but in the entire energy sector, including the strategic area of hydrocarbons, also in transport and telecommunications.

This opened the Bolivian economy to foreign companies, initially hired for consultancy and advisory services, charged with the purpose of reorganizing the companies that would be managed, no longer by the State, but by economic groups and investment funds external to the country. In the electric sector, an English company was hired to design the new capitalization model, from the change to a new management and with the adoption of new rules, along the lines of neoliberal logic.

The next step in this transition process governed by foreign companies was the enactment of Law No. 1.604, known as the Electricity Law, on December 21, 1994, which had as its main topics:

- The vertical disintegration of activities in the electricity sector - generation, transmission and distribution - in such a way that companies in the sector or any of its shareholders could only participate in one of the activities. This device, which excluded isolated systems, was adopted in order to avoid unfair competition.
- The division of ENDE into three generation companies and one transmission company;
- The restriction of participation in the electricity sector only to companies registered under the Commercial Code - in other words, private companies.
- The creation of the Electricity Superintendence, an entity responsible for regulating and promoting competition, ensuring compliance with anti-monopoly consumer protection provisions and approving prices and fares, in addition to granting concessions and licenses. This independent entity was financed with fees paid by the electricity companies themselves.
- The creation of the National Cargo Dispatching Committee (CNDC - Comité Nacional de Despacho de Carga), responsible for the operation of the interconnected capitalization and privatization process in Bolivia, with a structure composed of unregulated representatives of the generation, transmission and distribution companies and a representative of the Superintendence of Electricity. Its operation was financed by the electricity companies;
- The State's responsibility, through a donations scheme and support for international cooperation, in electrification aimed at smaller populations and rural areas that could not be served by private companies, because it is not a profitable activity, there by releasing distribution companies from such obligations.

Supreme Decree No. 24.043 (of July 28, 1995) regulated concession contracts, the delivery of licenses, the use of public domain goods and the establishment of easements, the quality of the electricity distribution service, infractions and penalties. Based on this regulatory framework, the Bolivian State transferred the assets of the electricity sector to the private

market. All of these changes, considered abrupt in relation to the short times in which they were built and implemented, generated significant impacts for final consumers, such as the fare increase. Contrary to what was promised, the system did not undergo technological development, but entered a scenario of paralysis in the sectors of generation, transmission and distribution.

THE PRE-NATIONALIZATION PROCESS OF THE ELECTRICITY SECTOR (2006 – 2010)

The application of the aforementioned neoliberal measures faced growing resistance in important sectors of Bolivian society, culminating, in the beginning of the 21st century, with vigorous popular mobilizations against the privatization of natural resources, especially the so-called Water War, which occurred in 2000 in Cochabamba, and, later, the Gas War, in 2003, which resulted in the resignation of President Gonzalo Sánchez de Lozada, one year after his election to a new mandate (FUSER, 2015, p. 146-152). These mobilizations laid the foundations for a new development model, as opposed to the one adopted in previous decades, originating a program born of popular demands, known as the October Agenda (KLACHKO; ARKONADA; 2017; p.159), which presented as priority demands the nationalization of natural resources and the convening of a Constituent Assembly to “re-found” the country on new bases, presented as more just and egalitarian, reflecting a change in the balance of forces in favor of the disadvantaged majority, to the detriment of the Bolivian economic elites and interests of foreign investors and the international institutions associated with them, such as the World Bank and the IMF. With the election of Evo Morales Ayma for the Presidency of the Republic, in December 2005, the rules originating from the Washington Consensus started to be challenged and reversed under the command of the Executive Branch. Hence, successive decrees referring to the ownership and governance of natural resources follow, not necessarily confiscating the assets of private companies, but adopted with a focus on reviewing contracts based on criteria that prioritized the interests of the majority of the population and the development of the national economy, according to the understanding of the new authorities.

In contrast to the radical revision of the legal rules for the hydrocarbon sector, with the nationalization decree in May 2006 and the subsequent renegotiation of contracts with foreign companies (FUSER, 2015, p. 207), in the electricity sector the main measure adopted by the government in this initial period involved the prices charged for these services. It was the Tarifa Dignidad, adopted by means of Supreme Decree n° 28.653, of March 21, 2006. Tarifa Dignidad aimed to provide access to the public electricity service for families with lower economic resources. It consisted of a 25% discount on the fare in force for home consumers. The consumption limit was 70 kWh/month for consumers served by distribution companies connected to the National Interconnected System (SIN)¹ and operating in the Mercado Eléctrico Mayorista²; while for consumers who were served by companies outside

that market or by isolated systems, the ceiling for household consumption would be 30 kWh/month. This measure became necessary to ensure that urban and rural populations had the minimum conditions to have access to the public electricity service, since the level of poverty was extremely high at that time - according to data from the Economic Commission for Latin America and the Caribbean, a United Nations body, 63.9% of the Bolivian population lived in conditions of poverty in 2004 (ECLAC, 2014). Also in 2006, with the formulation of the National Development Plan “Dignified, Sovereign, Productive and Democratic Bolivia” - Strategic Guidelines 2006-2011, the electricity sector started to play a strategic role from the point of view of the State, which highlighted the need to planning of the energy sector as a whole, giving the line for a true economic and social development of the sector. The state actors involved in this change tried to overcome the limit established in the Electricity Law No. 1,604, of December 21, 1994, which, according to the neoliberal paradigm that started to structure the Bolivian economy in that period, only allowed the presence of private companies in the activity of the electric sector, excluding the State from the constitution of new companies in the sector, by means of article 65. In order to reverse this limitation, Law No. 3.783, of November 23, 2007, was enacted, which modified the Electricity Law, allowing public and state-owned companies to participate in the sector.

From then on, ENDE, which had undergone a drastic reduction in its functions and activities in the sector's capitalization and privatization process, began to appear as an actor who would again be the protagonist for the development of the electricity sector in Bolivia. In 2007, the state-owned company took over the operation of the electric service in the departmental capitals of Trinidad and Cobija, in addition to the northern region of the city of La Paz (RIVERA, 2018, p. 45). An important fact in this beginning of restructuring came to be the agreement signed with the Bolivarian Republic of Venezuela for the creation of ENDE Andina SAM, a company with a majority stake in Bolivia in which the first state-owned electricity generation plant was built in the 21st century. Located in the municipality of Entre Rios, this new thermoelectric plant, with an installed capacity of 110 MW (ENDE, 2019), ended a period of more than a decade of total control of the sector by foreign private companies. In this way, the government of President Evo Morales started to consolidate a strategic plan for the development of the sector based on social benefit criteria. It was from this movement to place the State as a protagonist in the development of the country's electric energy that it was created in 2008, through Supreme Decree n° 29.635, of July 9, 2008, the *Electricidad Para Vivir Con Dignidad* Program (PEVD). This new program, which can be compared to the Brazilian program *Luz para Todos*, under the government of President Luiz Inácio Lula da Silva, established the objective of reaching, by 2025, the coverage and universalization of the electricity service for the entire Bolivian population, mainly in the rural area, as part of a whole set of social policies aimed at overcoming poverty. The PEVD was set up for the development and execution of electrification projects in the rural area, articulating the work of different levels by the State, seeking to improve the quality of life, reduce poverty, generate jobs, promote trade - in other words, the consolidation of a productive, social and economic structure for all Bolivians. In this specific program, the established objective was to eradicate electrical exclusion in rural and urban communities. In defense of this new energy

1 The National Interconnected System – SIN (Sistema Interligado Nacional) covers electricity generation, transmission and distribution companies in the departments of Bolivia.

2 Mercado Eléctrico Mayorista are the agents that carry out the purchase, sale and transport of electricity in the National Interconnected System. It is administered by the National Cargo Dispatching Committee (CNDC - Comité Nacional de Despacho de Carga) which plans the operations of SIN.

policy goal, Mediondo (2014) argues that development is not just the appropriation of technologies, but a process that refers to a wide range of cultural, social and technological aspects.

In the midst of a wide range of social public policy strategies, the PEVD became one of the main large-scale government programs, taking into account that Bolivia, at the beginning of the program, had a severe picture of rural electrical exclusion. In 2003, Bolivia's total electrical coverage area was only 62.71%, below the average for Latin American countries. In Brazil, for example, this coverage in the same year was 96.71% (OLADE, 2012). In 2006, Bolivia had 327 municipalities, of which 122 had less than 22% electrical coverage. To meet the objectives defined by the central government, the PEVD was structured with the extension of the distribution networks, extension of the transmission networks and support for installations from alternative sources, such as photovoltaic panels. This electric inclusion program has contributed, since its creation, to the improvement of living conditions, the reduction of poverty, the generation of decent jobs and the consolidation of a productive, economic and social structure for a large number of Bolivians. After many efforts, over the two years that preceded, in 2008 Supreme Decree No. 29.644, of July 16, was approved, which promotes the re-founding of ENDE, an initiative from which the government established and pushed for a complete change in the national electric sector, once again giving ENDE a leading role and a strategic role in the country's development, configuring it as a public, national, strategic and corporative company.

As explained by Rivera (2018, p. 59), the new ENDE takes as the foundations of its performance the following premises:

- The development of the national industry, which is its fundamental input;
- Ownership of natural, renewable and non-renewable resources, usable as sources of electricity;
- Basic electricity service, understood as a right for every citizen.

The refounding of ENDE in general terms meant that the company, acting on behalf of the State, would carry out operations throughout the electricity sector chain, with the capacity to create companies and being the only one authorized to export surplus electricity. For this to materialize, it would be necessary for the State to take charge of making decisions about the operation of the sector, which by the Electricity Law was in the hands of the private companies that made up the National Cargo Dispatching Committee (CNDC) which, according to Rivera (2018, p. 67), brought together mostly foreign companies. CNDC, as the system's general operator, is responsible for the entire electric chain, from planning the SIN, dispatching the load, determining the power of the generation system and calculating prices at the SIN, together with all the technical information that strategically serves to manage any electrical system, in the image and similarity of what you think and plan in development plans or in other cases aiming at profit through your assets. Therefore, in order to put into practice the sector's development plan conceived from 2006, with Supreme Decree n° 29.624, of July 2, 2008, which shapes the CNDC so that the interests that the government considers to be the interests prevail of the country, it is established that the president of the CNDC is the highest authority of the committee and that he will be appointed by the Ministry of Energy, that is, it will no longer be the companies

that will lead the management of the agency. In addition, the Committee is composed of representatives of the generating, transmission and non-regulated consumers³. Despite the changes made, the projects developed, the companies created and the definition of a plan, until that moment there was clearly no nationalization of the sector. The existing situation, until then, was an informal dismantling of the scenario of privatization of the electricity sector, in which private companies, when realizing the meaning of the changes in the sector, on their own have abdicated to renew their concessions.

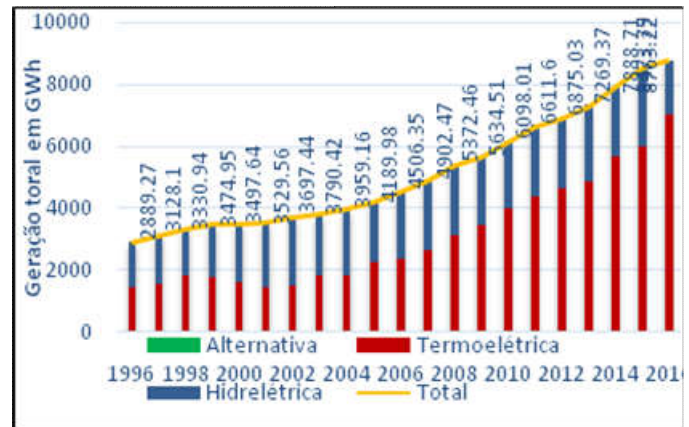
THE NATIONALIZATION OF THE ELECTRICITY SECTOR AND SOME RESULTS

Here for the analysis of the facts that occurred since 2006 and mentioned above, it is important to highlight that the economic policy implemented by the government of Evo Morales provided Bolivia with a remarkable economic growth (TWB, 2020), which, in turn, provided an increase demand for electricity in the country (VMEEA, 2014). This increase in demand is due to a set of factors that are based on the greater participation of Bolivians in the country's economy, especially with the advances in electrification of households through the LDPE, the increase in family income with income distribution programs and, consequently, the expansion of the productive sector. The reality at the beginning of Evo's management meant that, as already mentioned, the authorities considered another conception for the electricity sector. The numbers point to an insignificance of the private companies that operated the sector, not engaged in the Bolivian social development, as well as in the technological development of the sector, since the numbers of generation increase were extremely low in the years when the electric sector was in the hands of private capital. It was a comfortable situation for electricity companies, since, until then, without investment in the electricity sector, the population still did not have electricity in their homes.

Governments showed no commitment to raising the population's income levels and the country's productive sector remained stagnant. Therefore, these companies only controlled the power that was already generated since they took over the sector, in order to meet the load that was demanded from urban centers that already had the transmission and distribution service, so that in the end they add the electric fares of the consumers in values that went to private groups, mostly from outside the country. It was at that moment when the sector was paralyzed, even with the profitability of private companies, that the government came to understand that the generation companies should be under state management. On May 1, 2010, with the Supreme Decree No. 493, which nationalized the electricity sector in Bolivia, the Armed Forces took possession of three electricity generation plants and an electricity distribution company. The generation plants were the Guaracachi thermoelectric plant, then the largest generator of electricity in the country, which from the "capitalization" (in practice, privatization) of public companies in the neoliberal period belonged to a British company, Rurelec PLC; the Corani hydroelectric plant, controlled by the French company GDF Suez, including the participation of the French government; and the Valle Hermoso thermoelectric plant,

³Unregulated consumers are agents in the SIN that have a power demand greater than 1.0 MW, so they can contract their electricity through a generator or distributor independently.

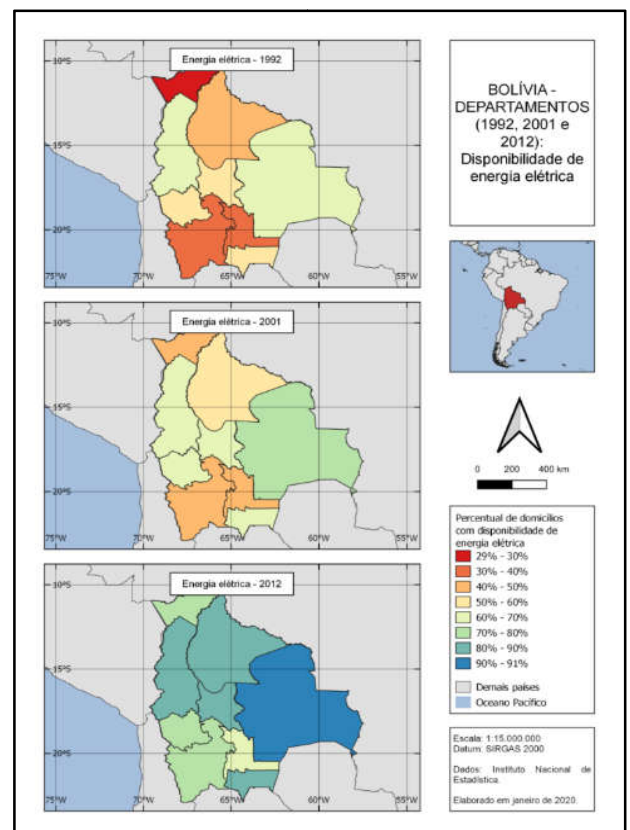
privatized in favor of a Bolivian business group, Panamerican Investments. The power distribution company affected by the DS 493 was Empresa de Luz e Fuerza Eléctrica Cochabamba - ELFEC, also controlled by Bolivian businessmen. Two years later, in 2012, due to the stagnation of private investments that negatively affected the expansion of the country's transmission system (ENDE, 2019), also on an International Labor Day, President Evo Morales issued Supreme Decree n° 1.214, which attributed to ENDE's management Transportadora de Electricidad (TDE), which had been under the control of the Spanish company RED Eléctrica since 1994. Such a decision can be seen as the most strategic among the measures adopted so far by the Morales government in the electricity sector, since TDE controlled all electricity supply and demand in the SIN. With these measures, fundamental to the results of the new conception of the Bolivian electric sector, the State started to manage, through ENDE, the main electricity generators in the country and 80% of the electricity distribution within the SIN. Finally, given the new demands that have emerged in the country, with an increasingly consolidated economy and apparently solid democratic institutions, the government of Evo Morales launched the Plan Eléctrico del Estado Plurinacional de Bolivia 2025 and the Agenda Patriótica del Bicentenario al 2015. These two initiatives defined a whole set of guidelines, among which, goals of achieving the universalization of the electric service by 2025, guaranteeing domestic demand and generating surplus electricity in conditions to be traded with neighboring countries and gradually replacing the use of fossil fuels in the energy matrix with alternative sources, such as hydroelectricity (VMEEA, 2014, p. 127). In order to supply domestic demand, which had been growing after the sector was nationalized, it was necessary to increase electricity generation in the country. To give an idea of this issue, Graph shows the installed power numbers between 1996 and 2016 in the scope of the SIN. In the years between 1996 to 2005, the period in which private companies were responsible for the development of the sector, the growth rate of gross generation in the SIN was 4.58%, well below the period from 2006 to 2016, a period in which the State it is who defined the growth strategy, becoming responsible for its development, which was 6.97%, a rate well above that achieved in the times of private sector governance. Such a comparison is important to understand that private companies were not aiming at the development and improvement of the electricity sector, which would somehow end up benefiting the population in need of this service, but rather using the system, built over many decades by ENDE investments with public money, and to profit from the electric demand, which was retracted. These figures demonstrate the inconsistency of the argument, used as a justification for the privatization of Bolivia's electricity sector in the 1990s, that for the country to move forward in electricity generation, it would be necessary to open up the sector to private and external capital. This graph also shows the predominance of thermoelectric sources in the system, despite the government's effort to increase the installed power from the hydroelectric plants, with the construction of large plants aimed at exploring the Bolivian hydrological potential, estimated at 40,000 MW of power (OLADE, 2013, p. 5), which would represent a significant change in the national energy matrix. Another factor that was submitted to analysis by this study was the availability of electricity in households, in order to elucidate the process in which the Bolivian electrical system developed, expanding the supply of electricity to its population.



Source: Own authorship, with adoption of AFCSE data (2018, p. 61-63).

Graph 2. Generation evolution in the period of 1996 – 2016

As already mentioned, the data were compiled according to what was presented in the available Demographic Censuses, enabling the analysis of three different moments of the Bolivian electrical system. In 1992, as it was presented, the system was administered by the government; in 2001, the Bolivian electric system had already been reformulated and privatized in favor of private and foreign companies and, finally, in 2012, President Evo Morales had already consolidated the current system, in which the State manages and operates the entire electric chain. To illustrate the results, Figure 1 shows the three scenarios, noting that the universal service had not yet been achieved in the year of the study. In this sense, it is important to point out that, in its goals for the year 2012, the PEVD Law did not place universal access to services in all geographical areas of the country as an achievable objective.



Source: Own authorship, with adoption of INE data.

Figure 1. Availability of electricity in households in the states of Bolivia in the years 1991, 2001 and 2012

The indexes start with 29% of access to households. In the first map, even before the sector's privatization and ENDE, the central regions showed higher rates of access to electricity, higher than the most remote states, such as Pando and Potosí. However, none of the nine states had a service reach greater than 70%. Pando was the state that most lacked the electricity service, with only 30% of households integrated into the electricity grid. In 2001, when private companies had already controlled the sector for seven years (and, for comparison, nine years after the first demonstration map), the evolution of electric power reach in the states showed a maximum of 10% increase in all regions, except in La Paz, which remained stable, and in Pando, which had a 20% increase in relation to 1992. Finally, the analysis turns to the situation in 2012, when six years had passed since the nationalization of the electricity sector. In comparison to the 2001 graph, referring to a period in which the State was not responsible for the development of the sector, it is noted that six of the nine states had an increase of 20% in access to electricity in their homes, with Beni advancing 30%, Oruro 10% and La Paz was the first state to reach the 91% mark, being the closest that year to achieving universal service. In terms of electricity access to households in the years signed here, it is shown that in the period in which the State resumed the conduct of the sector, this index had a better performance in relation to previous years, such as between 1991 and 2002.

The results achieved can be attributed, without any doubt, to the implementation of a government program adopted over the years in which Evo Morales led the Bolivian government. The uncertainty regarding the future evolution of the Bolivian electric sector arises from the new framework installed after the forced resignation of the president in November 2019, when, in a controversial way, the post of president of the Republic passed to the hands of the senator Jeanine Áñez Chávez, to exercise a provisional mandate until a new election is held. The government of Jeanine Áñez, although provisional, has been adopting measures that strongly contrast with the line adopted in the Morales government. This is the case of the intention to privatize lithium, reversing the policy until then in force, of state leadership. If similar changes are applied to the electricity sector, a return to the governance model that existed between 1985 and the early 2000s can be expected, with the risk of a reversal of the positive results achieved during Morales' presidential term.

Conclusion

The present work aimed to analyze some of the results obtained during the years 2010 and 2016, after the nationalization of the Bolivian electric sector by President Evo Morales through a series of measures adopted with the intention of giving the State back the leading role in this sector. Such results show that the population that seeks to rely on the electricity service is directly affected when the sector does not develop, that is, when there is no increase in generation in the electric matrix and the existing demand - be it the demand for household electricity use, whether industrial or commercial demand - remains unmet. It is true that, in the period prior to the privatization process started in 1985, the Bolivian electricity sector did not show satisfactory numbers, which strengthened the arguments that pointed to the need to capitalize the sector with private resources as the only way to leverage technological advancement and of the electricity sector. However, this option, put into practice by neoliberal

governments, has not had positive results. In the period in which the sector was in the hands of private actors, between 1996 and 2005, the availability of electricity in households was below that the one reached in the period between 2006 and 2016, when the State strongly intervened in the sector, reversing privatization and establishing goals for the universalization of electric energy. Another scenario analyzed was the injection of gross generation to the SIN, a parameter used in the present work to analyze the development of the sector in the periods mentioned. The data presented here show that the nationalization period provided an average increase of approximately 7% in the annual electricity supply, whereas in the period when the sector was privatized, the average growth did not exceed 5%. In our assessment, this comparison shows that the argument that it was necessary to sell public companies in the electricity sector to boost their development was unfounded. In the electrical plan implemented by the government of Evo Morales, there is also a search for the alteration of the Bolivian electric matrix, currently composed mainly of thermoelectric plants, moved by the natural gas found in the subsoil of the country, for a new model based on the construction of hydroelectric plants, exploring the rich hydropower potential of the country's large rivers. However, this objective is still far from being achieved, as the large plants with greater generation capacity are still in a feasibility study. With the political change that took place in Bolivia at the end of 2019, a period of uncertainty opens up that involves all political, economic and social life in that country, with direct implications for the electricity sector, discussed here. It is feared that, with the replacement of a governance model for natural economic resources established based on state leadership and the adoption of goals aimed at economic and social development by another model, neoliberal, in which the State withdraws from the scene in favor of a logic in which the predominance of private business interests takes effect, the positive results achieved are reversed, which will certainly represent a setback from the point of view of economic and social development in the neighboring country.

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