



# The Unbearable Lightness of the "Tortoises"

The Impacts of the Eletrobras  
Privatization on the Brazilian  
Electricity Sector

# The Unbearable Lightness of the "Tortoises": The Impacts of the Eletrobras Privatization on the Brazilian Electricity Sector

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# The weight of the "tortoises"

In the jargon of the Legislature, "tortoises" (*jabutis*) are parliamentary amendments that, despite having no direct relationship with the subject at hand, are introduced into the texts of temporary measures and bills as a counterpart in order to prevent their processing from being blocked.

See below which "tortoises" found their way into Law 14,182, which defines the terms of privatization of Eletrobras.

## 8 mil megawatts

In natural gas thermoelectric plants

## Predetermined regions and quantities

North (2,500 MW), Northeast (1,000 MW), Midwest (2,500 MW) and Southeast (2,000 MW)

## 70% inflexibility

Plants will have to operate 70% of the time

## Market reserve for SHPs

Destination in Auctions A-5 and A-6 by 2026 of 50% of distributors' declared demand for contracting Small Hydroelectric Plants (SHPs)

## Manaus-Boa Vista Line

Authorization for the works immediately after the conclusion of the Basic Environmental Plan-Indigenous Component (Plano Básico Ambiental-Componente Indígena - PBA-CI)

## Granting of new generation concessions for 30 years

Benefits the hydroelectric plants of Tucurui (PA) and Mascarenhas de Moraes (MG), as well as other hydroelectric plants whose operations have been extended under the quota regime of Law 12,783/2013, and which will be able to negotiate energy already amortized for a higher value, with an impact of 14 % on final consumer tariffs.

## Extension of Proinfa

For 20 years, at the ceiling price of the 2019 A-6 Auction, corrected by the Extended National Consumer Price Index (Índice Nacional de Preços ao Consumidor Amplo - IPCA)



# Introduction

The privatization of Eletrobras, which had been under discussion since 2017, was finally authorized by Brazil's National Congress this past July, with the conversion of Provisional Measure (PM) 1,031/2021 into Law 14,182/2021. The proposal to capitalize the state-owned company through a provisional measure raised alarms in the market. Despite being favorable to the process, agents in the electricity sector expressed concern that the short period for converting the PM into law – 120 days – could generate distortions and overshadow the main objective of the privatization: to provide Eletrobras with investment capacity and to further diversify the electricity sector, increasing competition and reducing tariffs.

In fact, what was feared ended up happening. In return for approving the process, lawmakers included in the legal text several amendments, most of them bearing no direct relationship to the process – the so-called "tortoises" (in Portuguese, jabutis – a type of tortoise whose name is also invoked to refer to changes made by lawmakers to a bill that are not related to its original intent). These alterations benefited different interests in the elec-

tricity sector. Some of those measures have the potential to impact not only the country's energy planning, but above all the tariffs paid by consumers, the national electricity matrix, and even Brazilian greenhouse gas (GHG) emissions. They could even affect emissions reduction commitments made by the Brazilian government.

**Instituto Escolhas developed a study to assess the effects of these amendments in greater detail. The analysis focuses on the "tortoises" that have greater implications for the energy sector: the mandatory contracting of natural gas-fired thermoelectric plants in specific regions; flexibilities for the construction of the Tucurí Line; new concessions for hydroelectric plants included in the quota regime; a market reserve for Small Hydroelectric Plants (SHPs); and an extension of the Incentive Program for Alternative Sources of Electric Energy (known as Proinfa).**

In addition to comparing, in a concrete manner, the implications of Law 14,182/2021 in the medium and long-term energy planning in Brazil, the survey highlights the perverse effects that these "tortoises" can

cause in the electricity sector as a whole, from the generator to the consumer.

The study is based on the review of official documents on energy planning, so as to identify points of convergence and divergence. Laws that interact with these points were also evaluated, as were documents related to cross-cutting issues, such as PM 1,055/2021, issued to address the imminent risk of a new blackout in the country. The study also draws on scientific articles and expert opinions issued on the measure.

The main finding is that the arbitrariness of the "tortoises" goes against the grain of how the Brazilian electricity sector was structured, and the interference in future energy auctions hinder the performance of investors in allocating their capital efficiently, according to the peculiarities and availability of energy sources in each region. In other words, using a legislative path to implement market reserves and, above all, define prices and the location of projects will only aggravate the inefficiencies in the electricity sector that the privatization of Eletrobras promised to correct.

# Eletrobras in numbers

| Share capital of  
R\$ **39.057** billion (2020)

| **48** hydroelectric plants,  
**14** thermoelectric plants, **2** nuclear power plants, **43** wind power plants and **1** solar power plant

| **76.128 km** of transmission lines

| **7** subsidiary companies, 6 of which are operational

| **1** Electric Energy Research Center – Cepel

| **1** Eletropar (holding company)

| **50%** stake in Itaipu Binacional

# Eletrobras: from founding to capitalization

Eletrobras, created in 1962, played a fundamental role in the expansion of the country's electricity supply, with studies and projects related to energy generation, transmission, and distribution. The federal government is the majority shareholder in this mixed-economy holding company, which is the largest company in the sector in Latin America. In Brazil, Eletrobras holds around 30% of the total installed generation capacity and almost half of all transmission lines.

The company's privatization proposal gained momentum in 2017, during the government of Michel Temer. The following year, Bill 9.463/2018 was sent to Congress. It argued that Eletrobras was undergoing financial difficulties and that its inefficiency generated great losses and reduced the company's role in the expansion of the energy supply.

The bill did not move ahead, and the discussion was only resumed during the government of Jair Bolsonaro, first with a new bill (5.877/2019) and then with Provisional Measure 1,031, from 2021. Although provisional measures are meant for relevant situations and urgently, the mechanism was applied



President João Goulart speaks at the Eletrobras opening ceremony, held in Rio de Janeiro in 1962. Source: Agência Senado

as an alternative way to unlock and accelerate the privatization of Eletrobras.

Between February, when the PM was launched, and June, more than 500 proposals to amend the initial text – among them, the so-called "tortoises" – were put forth by deputies and senators. And the approval of the final text, with few vetoes, took place on the eve of the measure's expiration date.

The privatization of Eletrobras will follow the capitalization format, with the issuance of new primary shares. As a result, the government's share of the company's capital stock will be diluted. The funds obtained from the sale, estimated at R\$ 60 billion, will enter the company's cash flow.

# The weight of the "tortoises"



## Tortoise 1

**8,000 megawatts**

In natural gas thermoelectric plants.

### Predetermined regions and quantities

**North** (2,500 MW),

**Northeast** (1,000 MW),

**Midwest** (2,500 MW) and

**Southeast** (2,000 MW).

### 70% inflexibility

Plants will have to operate 70% of the time.

The Ten-Year Energy Plan (Plano Decenal de Energia - PDE) 2030, prepared by the Energy Research Company (Empresa de Pesquisa Energética - EPE), includes the contracting of 10,355 MW of natural gas-fired thermal power plants, in addition to the 4,703 MW already contracted, which

begin operating by 2030. As for Law 14,182/2021, it requires the contracting, via reserve auction, of 8,000 MW thermoelectric natural gas in specific regions, with 70% inflexibility and entry into operation from 2026 to 2030.

The choice of regions for installing these plants and the inflexibility of 70% – that is, the plants will be dispatched 70% of the time, without considering the cost of energy – are not consistent with the planning and current operation of the electricity sector. Thus, its consequences for the country are unknown and potentially negative.

In addition, Law 14,182/2021 prioritizes a specific source. The requirement disregards the cost of natural gas, which should be made available by some transport mechanism (mainly pipelines) and, depending on the location, will have a higher or lower final price.

Brazil does not have an extensive transport pipeline infrastructure – currently, there are only 9,409 km implemented. Some of the regions chosen for these thermal plants are far from gas supply

sources, concentrated offshore (in the sea) and in the Southeast region.

Thus, substantial investments in infrastructure will be necessary, which will no doubt affect the energy cost of these projects, since they will need to incorporate payments for the resources invested in gas transport. In addition, with the evolution of the energy transition and the replacement of fossil fuels with renewable energy sources, this infrastructure could become obsolete in a short period of time.

The “tortoise” also ignored the multiple use of water resources. In the Northeast, conflicts over water use have already taken place between the thermoelectric sector and other sectors. And, since climate change has significantly altered the rainfall regime, disputes over water resources in Brazil tend to intensify.<sup>1</sup>

Finally, the expansion of the use of fossil fuel-based thermal plants to the detriment of contracting renewable sources tends to increase greenhouse gas (GHG) emissions from the electricity sector. Instituto Escolhas estimates that the contracting of 8,000 MW will lead to an increase of 33% in such emissions in the coming years.

<sup>1</sup> On this topic, see the Instituto Escolhas study “Electric Sector: How to Price Water in a Scarcity Scenario.” Available at: <https://bit.ly/ES-WaterElectricSector>



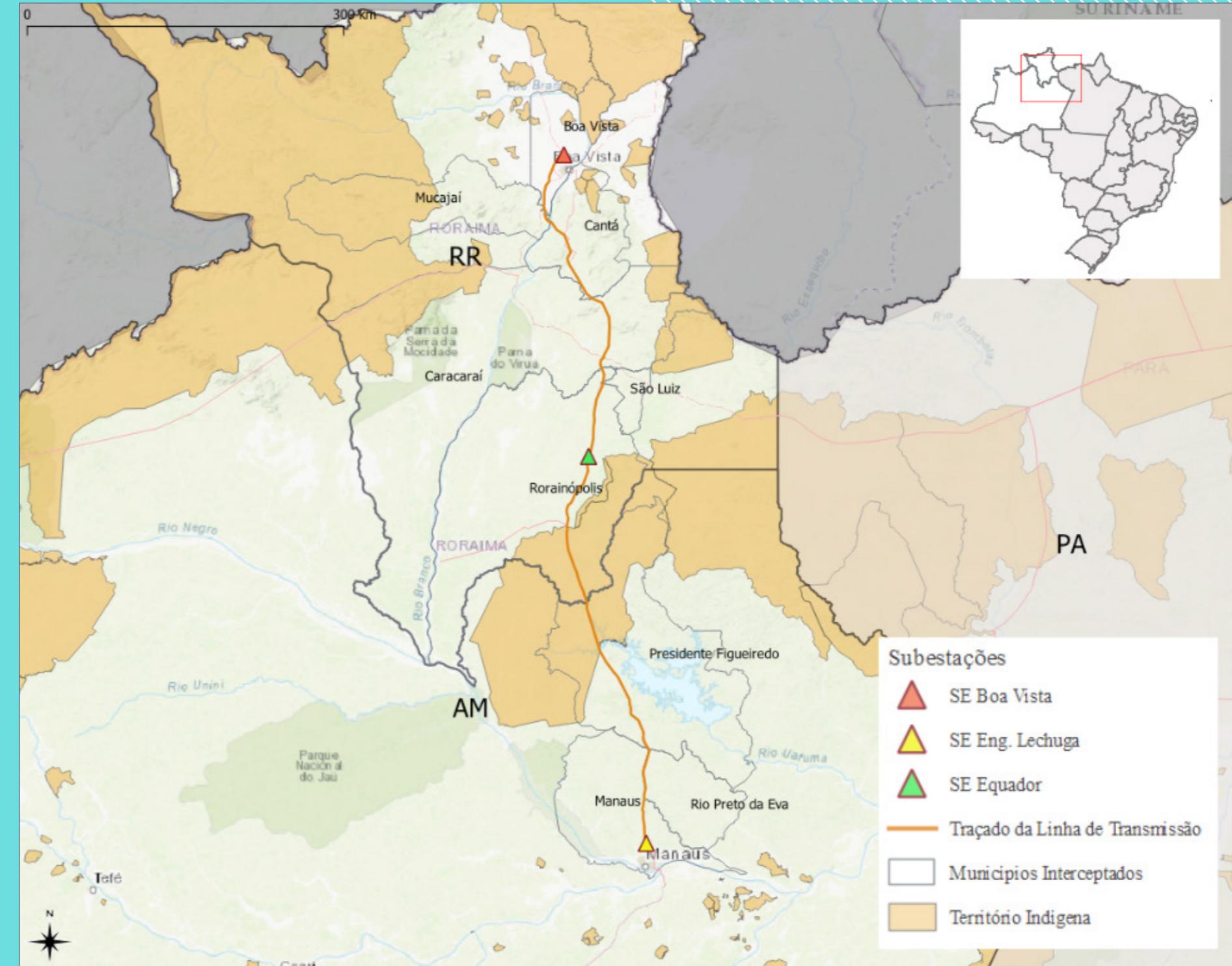
## Tortoise 2

### Manaus-Boa Vista Transmission Line

Authorization for the works immediately after the conclusion of the Basic Environmental Plan-Indigenous Component (PBA-CI).

According to the text of Law 14,182/2021, "...once the Basic Environmental Plan-Indigenous Component (PBA-CI) is concluded, translated into the original language, and presented to the indigenous people, the Union is authorized to start the construction of the Tucuruí Transmission Line."

The PDE 2030 recommends that the line begin operating by 2027. However, out of the 721 km of the transmission line, 125 km pass through the Waimiri-Atroari Indigenous Land. According to data from the Instituto Socioambiental (ISA), more than 2,000 indigenous people live in the region.



The immediate start of the works after the conclusion of the PBA-CI ignores the need for environmental licensing provided for by law for projects of this nature and dimension — which have major potential for impact on the local population — as well as the listening and consensus of the indigenous people about the initiative.

Tucuruí Transmission Line, linking Manaus and Boa Vista.  
Source: [www.ppi.gov.br](http://www.ppi.gov.br)

# Tortoise 3

## The Granting of New Generation Concessions for 30 Years

Benefits the Tucuruí (PA) and Mascarenhas de Moraes (MG) hydroelectric plants and other hydroelectric plants that have been extended under the quota regime set forth in Law 12,783/2013.



Tucuruí's first sluice, on the Tocantins river, on the border between Pará and Tocantins.  
Photo: Public Domain (July 2008)

This decision is a condition for the privatization process. The R\$ 60 billion that the government expects to receive from capitalization comes from the bonus for granting new generation concessions to plants that have entered the quota system, or that would enter it within the next few years.

The change will allow these plants to stop trading electricity at the price set by the National Electric Energy Agency (Agência Nacional de Energia Elétrica - Aneel) and start trading it freely.

While, on the one hand, the change in the commercialization regime adds value to the concession contracts, it also leads to two potential

tariff impacts: the first one, related to the quota regime; and the second, to the risks of the operation, especially the hydrological risk.

According to forecasts by the Ministry of Mines and Energy (MME), the energy sold to distributors will increase from R\$ 93/MWh (considering the hydrological risk) to R\$ 155/MWh between 2022 and 2029, and to R\$ 167/MWh from 2030 to 2051.<sup>2</sup>

Calculations by the Association of Engineers and Technicians of the Eletrobras System show that, for

final consumers, the impact would be mitigated by the Energy Development Account (Conta de Desenvolvimento Energético - CDE). However, this would still represent an increase of 14%. In 2017, Aneel presented a tariff impact study indicating that the sale of energy from the state-owned plants could reach R\$ 250/MWh in scenarios with the greatest impact.

<sup>2</sup>Ministry of Mines and Energy. "Visão do MME sobre os impactos da capitalização da Eletrobras: Nota de Esclarecimento" [The MME's View of the Impacts of Eletrobras' Capitalization: Clarification Note]. Available at: <https://www.gov.br/mme/pt-br/assuntos/noticias/visao-do-mme-sobre-os-impactos-da-capitalizacao-da-eletrobras-1> (2021).

## Tortoise 4

### Market Reserve for SHPs

Destination in Auctions A-5 and A-6 by 2026 of 50% of the declared demand of distributors for contracting Small Hydroelectric Power Plants (SHPs).



It was established that the next A-5 and A-6 Auctions should allocate 50% of demand to the contracting of SHPs, until the level of 2,000 MW in installed capacity is reached. After this level, subsequent auctions, held until 2026, should reserve 40% of demand for these plants.

The contract term is twenty years, limited to that established for SHPs in Auction A-6 of 2019 – R\$ 285/MWh. As for location, the states with the highest number of projects will be prioritized, with no state being allowed to have more than 25% of the total contracted capacity.

The fact is that the economic feasibility of deploying SHPs is limited, since a large part of this expansion is in the Amazon and Tocantins-Araguaia basins, which are marked by high socio-environmental sensitivity. In addition, the decision does not take into account the effect of climate change on hydrological regimes.

Maintaining the ceiling price for the 2019 auctions, corrected by the IPCA, results in a maximum price of R\$ 314.55/MWh, which is 7.7% higher than that adopted for the 2021 auctions.

And SHPs are the most expensive renewable source among available sources.

## Tortoise 5

### The Extension of Proinfa

For 20 years, at the ceiling price of the 2019 A-6 Auction, corrected by the IPCA.



The privatization of Eletrobras makes it possible to extend the contracts signed by the Alternative Energy Sources Incentive Program (Proinfa) for twenty years after the current expiration date. If the entrepreneur agrees, the new contracts will adopt the 2019 Auction A-6 ceiling price, adjusted by the IPCA.

Proinfa was in force between 2002 and 2011, entering into more than 140 contracts, which enabled the expansion of these sources by 3 GW – the program's objective. Yet circumstances are completely different in 2021 and are likely to continue changing.

Thus, the law will stop the Proinfa plants from competing in Existing Energy Auctions or supplying their energy in the free market, which would allow the offer of more competitive prices, given that the assets would already be amortized. In sum: new weight would be added to the tariff.

## PM 1.055: More “tortoises” on the way



Provisional Measure 1,055/2021 was designed to deal with the imminent risk of a blackout. It was introduced on June 28 under an emergency regime. By the end of July, it already featured 248 proposed amendments, on various topics.

The initial text of PM 1,055 proposed the creation of the Chamber of Exceptional Rules for Hydropower Management (Câmara de Regras Excepcionais para Gestão Hidroenergética - CREG), with the objective of creating emergency measures for optimizing the use of water resources and guaranteeing the continuity of the energy supply.

The PM also foresees that operating costs will be reimbursed by sector charges, and that capacity reserve contracts may take place through simplified competitive processes.

Emergency measures are important in times of crisis, but revisiting the inclusion of the variable “water resources” in planning is

essential. At present, there is no measurement, control, or inspection of the amount that is effectively removed from water bodies.

PM 1,055 brings other changes that deserve discussion. The establishment of limits for the use, storage, and flow of hydroelectric plants was already foreseen. However, according to the provisional measure, these attributions are now in the hands of the government only, even though the main body for water resource management in Brazil is the National Water Agency (Agência Nacional de Águas - ANA).

Changing this governance, even if on an emergency basis, may intensify conflicts over water use.

# Returning the "tortoises" to firm ground

**According to a popular saying, "A tortoise doesn't climb a tree; if it's there, it's because someone put it there." To minimize the "tortoises" in the electricity sector through Law 14,182/2021, it is possible to change paradigms for the expansion of supply and return the "tortoises" to their proper place – on solid ground:**

| With greater integration renewable sources such as wind, solar and the biomass can reach 128.4 GW in 2035 - a 44% stake in the energy matrix projected for the year, as confirmed by the Instituto Escolhas study<sup>3</sup>. And without appealing to a market reserve – as is being proposed now with the Proinfa plants –, but rather in an attractive and competitive way, with reasonable prices for the consumer.

| Instead of natural gas-fired thermoelectric plants as guarantors of "firm" energy, the expansion of generation based on renewable sources can be guaranteed by hydroelectric plants already implemented in the country. These large plants would thus function as the "batteries" of the national interconnected system – at a lower cost and without increasing greenhouse gas emissions.

| Instead of deploying large and costly infrastructure, such as gas pipelines, to take fossil fuel to distant regions, it is necessary to take advantage of local vocations for electricity generation. In the Amazon, for example, there is a potential production of 537 million cubic meters of biogas per year, enough to generate 1.1 terawatt-

hour (TWh) and supply 556 thousand homes in the region, benefiting more than 2 million people.<sup>4</sup>

| It is necessary to admit that climate change is a reality with no return, and that this directly influences water resources. It is therefore crucial to consider climate change in forecasting models, and to review data and measurement systems.

| For optimal control of water resources, it is necessary to price water according to the criticality level of the basins, charging tariffs from all users, including electricity generation. Only in this way will it be possible to ration its use and to avoid the shortage that costs the country so dearly.

| A robust integrated water resources management system also includes the reconstitution of river flow series; adequate rainfall monitoring; the installation of sufficient hydrometric stations and systematic data collection; the creation of an official database on the type of cooling system for each thermoelectric plant and its water consumption; and the survey and production of more accurate data on the consumption of irrigated areas by crop type.

<sup>3</sup> "Quais os reais custos e benefícios das fontes de geração elétrica no Brasil?". [What are the Real Costs and Benefits of Electric Power Generation Sources in Brazil?]. Available at: <https://bit.ly/ES-PowerGenerationSources>

<sup>4</sup> "According to the Instituto Escolhas study "Biogas: Clean Energy for the Amazon." Available at: <https://bit.ly/ES-BiogasCleanEnergy>



Photo: Beth Santos/Secretaria-Geral da PR

See the complete study, available in Portuguese at:

<http://escolhas/biblioteca/estudos-instituto-escolhas/>

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