IN-DEPTH

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In-Depth: Energy Regulation and Markets (formerly The Energy Regulation and Markets Review) offers an insightful survey of the key features of energy regulatory regimes worldwide, along with analysis of their impact on commercial practice. Focusing on the most consequential recent developments in the electricity, oil, natural gas and renewable energy sectors, the review covers (among many other things) the major licensing requirements, market access restrictions, distribution regulations and regulatory enforcement activities.

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Brazil

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Summary

Introduction

The Brazilian electricity sector, which operates under an integrated and hydrothermal system and with a strongly established free market, is founded on a regulatory framework that provides investors with considerable safety. The market underwent a major restructuring process in the 1990s, when it was opened for private investment and was submitted to further regulatory reform in 2004. Security of supply, regulatory stability and competitiveness provide the basis for the regulatory framework.

The main power source used in Brazil is hydropower (51.42 per cent of the installed capacity, excluding small plants),[2] while thermal power plants have an important role in complementing the mix and assuring the security of supply (22.99 per cent of the installed capacity).[3] In addition, alternative power sources, notably wind, biomass and solar, have gradually increased their share and gained additional importance in the electricity portfolio. Renewable energy has been encouraged by special tariff discounts (although since 2 March 2022 these no longer apply to new projects) and has become more competitive during the past few years, as evidenced by the latest power auctions.

The electricity system is connected by transmission facilities that enable electricity produced in the remote areas of a continent-sized country such as Brazil to be transported to major consumers' markets, mainly located in the south-east. The grid has its operation centrally coordinated and controlled, to reduce global costs and enhance the security of supply, especially during dry seasons.

Regulation

i The regulators

The federal government is empowered by the Constitution to provide services and facilities within the power sector. Private companies are entitled to enter the market through government delegation by concession, permission or authorisation.

The main government body responsible for formulating public policies within the energy and mines sectors is the Ministry of Mines and Energy (MME). There are currently other arms of the federal government that have an important role in this sector, namely the National Council on Energy Policy, which is the presidential cabinet for energy policy affairs created by Law No. 9,478/1997, and the Committee for Monitoring of the Electricity Sector, which is part of the MME that was created mainly as a response to the rationing in 2001 (by Law No. 10,848/2004) and is responsible for monitoring security of supply and suggesting correction measures.

Since the market's liberalisation, the industry's participants have been regulated by the National Electric Energy Agency (ANEEL),[4] which has been granted autonomy by central government but nevertheless comes within the remit of the MME. ANEEL, created by Law No. 9,427/1996, regulates and oversees power generation, transmission, distribution and trading activities to ensure the correct balance between the interests of companies and consumers.

The agency is responsible for implementing the policies and guidelines outlined by the MME and for monitoring the activities developed in the sector by verifying compliance with its rules and regulations and supervising contract performance. Some of ANEEL's activities are undertaken by delegation from the MME, such as the carrying out of power auctions and the granting of certain regulatory licences. It is important to note that the performance of complementary supervision activities may be decentralised to state regulatory authorities, under the terms established by law.

ANEEL is managed by an executive board composed of a managing officer and four other officers, is organised into technical divisions and is charged with performance of administrative functions in various areas, such as economic regulation, market studies, supervision, mediation and the granting of concessions and authorisations.

The restructuring processes undergone by the power sector has involved the creation of new institutional authorities. The National Electric System Operator (ONS) was created by Law No. 9,648/1998 as a non-profit association to coordinate and control the operations of the electrical grid; its governance system was granted even more independence as part of reforms in 2004. Under the previous regulatory framework, an operational institution was created to manage the wholesale market, which was succeeded by the Electricity Trading Chamber (CCEE) following 2004's regulatory reform. Established by Law No. 10,848/2004, the CCEE is mainly responsible for the registration of power purchase agreements (PPAs), and for the measurement, accounting and financial settlement of electricity trading operations. The 2004 reform introduced another new institutional entity: the Energy Research Company (EPE), a publicly held company responsible for studies and research into the energy industry with a view to enabling planning within the sector, pursuant to Law No. 10,847/2004.

ii Regulated activities

Since the federal government has the authority to provide electricity services and facilities, private companies need government approval to enter the market. The regulatory licence required for entrepreneurs to operate in the power sector depends mainly on the segment to be joined, whether generation, transmission, distribution or trading, and the extent to which regulation is exercised in each of these. Under the provisions of the legislation currently in force, the MME is the granting authority and may delegate its powers to ANEEL.

Power generation may be undertaken through a concession for use of public assets, a public service concession, an authorisation or even a communication. The regulatory licence required, and the applicable regime depend on the plant's installed capacity, the power source and the size of the reservoir (a requirement for hydropower plants). Given that regulation of the power sector is constantly evolving, there are several legal frameworks in existence, each dating from different points in time. As a result, the rules relevant to one power plant may not apply to others, even though they fall under the same regime. The applicable legislative provisions must always be assessed on a case-by-case basis, alongside the provisions of the specific concession agreement.

In general terms, for new large hydropower plants (HPPs) with an installed capacity in excess of 50MW, entrepreneurs must participate in power auctions to be granted a concession to operate new generation projects (new project auctions) of this kind, and they are required to sell a minimum percentage of the plant's output on the regulated market (the

remainder may be sold on the free market). The winning bidder is selected by lowest price criteria and is entitled not only to operate the new project through the grant of a concession for use of a public asset but also to sell electricity to the distribution companies participating in the auction. Companies with hydropower plants in operation may participate in power auctions conducted specifically for purchasing electricity from existing projects (existing project auctions) or may sell their output on the free market.

However, authorisation is required for companies willing to operate small hydropower plants (SHPPs), which have an installed capacity of up to 30MW and a small reservoir. Although the granting of authorisation does not require an auction, the existence of more than one interested company in the same hydroelectric potential triggers a competitive process by which ANEEL selects the entrepreneur, under the provisions of ANEEL's regulations.

Other energy sources, such as thermal, wind and solar, are subject to an authorisation regime, for which the process is conducted by ANEEL. All these, including hydropower plants subject to authorisation, may participate in power auctions (either new project, existing project or backup energy auctions) to sell their production on the regulated market or may sell it in the free market.

In view of their reduced impact on the system, small plants do not need authorisation but require a communication from ANEEL. Small plants are those with an installed capacity of up to 5MW for thermal and renewable energy, including hydropower plants.

Except for new hydropower concessions, which are currently only operated by independent producers, the regulatory licences mentioned can be granted either under an independent power production regime or under a self-production regime.[5] The table below gives a general summary of the regulatory licences required by private investors to enter the Brazilian power generation segment.

Regulatory licences needed by power generation companies

Power source	Installed capacity	Regulatory licence
Hydropower	Greater than 50MW	Concession for use of public asset (preceded by a public auction)
Greater than 5MW but not greater than 50MW	Authorisation	
Up to 5MW	Communication	
Thermal power plants and renewable energy (except hydropower)	Greater than 5MW	Authorisation
Up to 5MW	Communication	

There are currently discussions on whether private investors can participate in nuclear power plants in the country. It has long been understood that private participation is forbidden on account of the federal government's monopoly in this area, enshrined in the Constitution. For that purpose, Eletronuclear, which operates the two currently active

nuclear power plants, is currently controlled by Empresa Brasileira de Participações em Energia Nuclear e Binacional (ENBPar), a state-owned company created by Decree No. 10,791 of 10 September 2021. However, it has been argued recently that the constitutionally established monopoly covers only limited parts of the supply chain (such as research, extraction, enrichment, reprocessing, manufacturing and trading of nuclear metals, and mining), which would be reserved to the federal government, and that private partners could participate as, for example, partners with Eletronuclear. Furthermore, Law No. 14,120 of 1 March 2021 provides for a change in relation to grants for thermonuclear exploration (Angra 3), which are subject to authorisation from the National Energy Policy Council. The Law provides for a 50-year concession period for Angra 3, extendable for another 20 years, and stipulates that a power purchase agreement with duration of 40 years will be executed for backup energy with costs shared among all energy consumers.

Power transmission and distribution activities are considered natural monopolies, given their dependence on the electrical grid. Therefore, most Brazilian power distribution consumers are still legally locked into purchasing energy from only one intermediary: the local distribution companies to which they are connected. In addition, considering their importance, their operation requires a public service concession, preceded by a mandatory public bid.

Power trading companies wishing to operate in the power market need authorisation under the provisions established by ANEEL's regulations.

All high-voltage consumers (Group A) are eligible to participate in the free market for electricity. The minimum load required in the past years was gradually reduced by Article 160 of ANEEL Normative Resolution No. 1,000/2021 and, since 1 January 2024, there is no lower load limit, as long as the consumer is part of Group A. Consumers who cannot or have not migrated to the free market are required to purchase energy from their local power distribution company and are referred to as 'captive consumers'.

iii Ownership and market access restrictions

The Constitution establishes that hydropower generation activities must be carried out by Brazilian citizens or companies organised under Brazilian laws, with headquarters and managing offices located in Brazil. The electricity auction bidding rules do not usually forbid the participation of foreign companies but normally require the following: for the grant of a regulatory licence, foreign companies must organise a special purpose company under Brazilian law; and if foreign companies bid jointly with a Brazilian company in a consortium, the leadership must always be exercised by the Brazilian company.

In addition, the bid notice usually establishes that foreign companies shall have a legal representative in Brazil with powers to receive service of process and provide answers in the judicial and administrative spheres, as well as represent them in all phases of the proceedings.

Legislation does not prohibit electricity companies organised under Brazilian laws from being controlled by foreign companies or private equity investment funds that are organised under foreign legislation (except for nuclear power plants). However, ANEEL does require that these companies have a legal representative in Brazil, duly vested with powers to receive service of process and provide answers in the judicial and administrative spheres.

There are also specific restrictions on the activities of power distribution companies. When the market was restructured in the 1990s and later reformed in 2004, the law imposed limits on these companies' participation in other activities within the supply chain, to avoid conflicts of interest. As such, generation and distribution companies operating in the interconnected system are required to be maintained as separate legal entities with individual accounting, although they may be part of the same corporate group or share infrastructure and human resources when authorised by ANEEL.

iv Transfers of control and assignments

As a rule, the transfer of a regulatory licence or of a controlling interest[6] in an industry participant is subject to ANEEL's prior consent, primarily for compliance with the bidding process and the principle of transparency.

The regulation currently in force, ANEEL Resolution No. 948/21, stipulates that prior consent from the regulatory agency is required for transfers of controlling interests in public service providers, hydropower companies and nuclear-fuelled energy companies. Consent is also required in the case of a transaction involving any company (regardless of the power source) whereby the prospective controlling company would itself become the holder of 'a significant share of the power generation market that affects the security of the regulated market'[7] or would otherwise constitute a corporate group with a holding of this kind. The definition of this concept, and criteria and for determining such a significant share, have yet to be established by the regulatory agency. Some transactions are exempt from consent, under the terms established by ANEEL's regulations. Nonetheless, an exempt party must inform ANEEL of the implemented transaction within a deadline and may also be required to maintain a dossier and make it available for inspection.

According to Article 35 of Schedule III of ANEEL Resolution No. 948/2021, until the regulatory agency issues a definitive regulation determining what constitutes 'a significant share of the power generation market that affects the security of the regulated market', any assumption of prior consent or exemption is suspended.

Transmission/transportation & distribution services

i Vertical integration and unbundling

Segregation of the different levels of the production chain was implemented mainly to promote efficiency and competitiveness, after it had been proven that the vertically integrated industry was unable to provide services efficiently. The unbundling between power generation, transmission and distribution was formally adopted by the restructuring undertaken in the 1990s and further enhanced under the 2004 regulatory framework.

The primary purpose of the unbundling in the sector was to encourage competition in the generation and trading segments (which may be provided under competitive regimes), whereas transmission and distribution segments remain natural monopolies. Since the restructuring during the 1990s, separation of the contracting of access to the grid and the purchase of electricity had already been adopted as an unbundling measure.

The current regulatory framework also requires that distribution activities be undertaken by separate legal entities of transmission and generation activities, with specific restrictions on the corporate structure of their economic groups (see Section II.iii).

Currently, there is no legislation in respect of unbundling between the generation and transmission segments, nor any that restricts economic groups from having companies in several segments. Furthermore, distribution companies still have a monopoly in both electricity transport and electricity trading in respect of those consumers designated captive consumers in the distribution companies' concession area.

A different kind of unbundling has been under discussion recently with regard to future expansion of the free power purchase market, namely the unbundling of distribution services thereby limiting the distribution monopoly solely to electricity transport in the relevant concession area. Based on current timelines, this unbundling will not take place until 2024.

ii Transmission/transportation and distribution access

Distribution and transmission companies are subject to regulation of access to their respective grids to avoid discrimination and eliminate barriers to entry. The regulatory framework requires that network companies share and provide access to 'essential facilities' to segregate the service provision from the corresponding infrastructure management. For this reason, the electricity sector is governed by the principle of open access to the electricity grid, upon reimbursement of the cost incurred with reinforcement works needed for the connection and payment of the electricity grid use tariff. Despite the open access regulation, there is currently limited availability of connection points for new generation projects, although the transmission grid is always expanding as a result of the annual auctions conducted by the government. ANEEL Normative Resolution No. 1,030, dated 26 July 2022, later modified by ANEEL Normative Resolution No. 1,073, dated 12 September 2023, sets forth procedures and criteria for calculation and payment for the constrained operation, due to conditions external to the plants, of (1) centrally dispatched wind power plants or wind plants considered on ONS's programming, as from October 2021; and (2) centrally dispatched solar plants or solar plants considered on ONS's programming, as from April 2024. To qualify for reimbursement, external unavailability must exceed 78 hours, for wind plants, and 30 hours and 30 minutes, for solar plants, per year (as a five-year moving average, to be updated in the future by the ONS). Curtailment situations occurred until October 2021 or April 2024, as applicable, and related to reserve energy PPAs (known as CERs) and PPAs in the regulated market (known as CCEARs). CCEE has issued a trading rule that sets forth the specific formula for calculating the compensation for power constraints arising from combinations of external conditions and electric power system reliability requirements, concerning wind plants.

iii Rates

Power transmission and distribution companies are subject to price regulation and thus have their revenues calculated by ANEEL, which aims to set prices to promote economic efficiency as if the segments were competitive rather than characterised as natural monopolies.

Rates are based on a price-cap mechanism (revenue cap for transmission companies) and thus are subject to adjustment by an inflation rate. The initial rates or revenues are established in the concession contract resulting from either the competitive auction process (applicable to new transmission assets) or the privatisation process.

After the initial rates or revenues have been set, they are subject to annual adjustments for inflation, periodic reviews (every four or five years, depending on the concession contract) and possibly to further extraordinary reviews to restore the concession's balance upon ANEEL's approval.

Rates can be also adjusted to consider an 'X factor'. Under this regime, concessionaires are encouraged to be more efficient by reducing costs up to the following price review, when new pricing levels are defined by ANEEL. The price control review process essentially aims to set new efficiency standards for operational costs and investment returns, to ensure that private companies receive an adequate remuneration and that consumers pay a fair price for their electricity. The new standards established will be valid for the new period up to the following price review.

Energy markets

i Development of energy markets

The 2004 restructuring process that resulted in the current regulatory framework for the Brazilian power sector envisaged two markets in which participants are able to sell power: the regulated market and the free market.

Within the regulated market, generation companies sell power to distribution companies, which participate as buyers in public auctions conducted by the government. Generation companies compete against each other according to the rules of each auction by the lowest bid price[8] to sell power to the distribution companies. As mentioned above, new-energy auctions also involve the granting of concessions or authorisations to enable the winning bidders to operate new power plants.

The regulated market serves the captive consumers. In other words, the power bought by distribution companies in the auctions is purchased by captive consumers (those defined as not having any choice in selecting their power supplier) or potentially free consumers (those that have not yet migrated to the free market even though they meet the criteria). As a rule, distribution companies are obliged to buy power on the regulated market (apart from a few legal exceptions) and to ensure that 100 per cent of their consumers' demand is met.

There are three main types of auctions within the regulated market:

1. new energy auctions, conducted to promote power generation expansion sufficiently in advance to enable plant construction, to meet growth in market consumption;
2. existing energy auctions, conducted to contract power produced by existing projects, to reduce the financial risks for distribution companies in their demand projections; and
3. backup-energy auctions, conducted to increase security of power supply.

The auctions are known as 'A minus N', where A is the year in which the plant must enter operation and start delivering power to the grid. Auctions for new energy may include HPPs designated by the government, but companies usually also participate in their own projects (SHPPs, thermal, wind, biomass and solar projects, depending on the auction rules). Prior technical qualification, recognised by the EPE, is required for participation in the auctions. In auctions for existing energy, generation companies with projects in operation, as well as trading companies, may sell power within the regulated market. Finally, backup-energy auctions exist to ensure security of supply to the electricity system, and this energy is usually contracted from SHPPs, wind and biomass plants.

Within the free market, power is freely traded between those parties entitled to participate in it: generation and trading companies, and free and special consumers. As mentioned, free consumers are those whose demand is currently greater than 1MW and who may choose their power generation supplier. Pursuant to Article 160 of ANEEL Resolution No. 1,000/2021, this load requirement has been gradually reduced between 2019 and 2023. The first reduction occurred in July 2019, when free consumers were required to have demand greater than 2.5MW then, in January 2020, this dropped to 2MW, then to 1.5MW in January 2021, to 1MW in January 2022, and to 500kW in January 2023. Since January 2024, all Group A consumers, regardless of a load amount requirement, are able to qualify as free-market consumers.

ii Energy market rules and regulations

Sector participants that carry out power trading transactions are obliged to comply with the sector's rules and regulations. As a result of the 2004 regulatory reform, participants must prove that 100 per cent of the power sold under PPAs is associated with their own generation plants or those belonging to third parties (by means of purchases from them through PPAs), according to the terms set by Decree No. 5,163/2004. Distribution companies have to serve 100 per cent of their market's demand; sellers have to produce or purchase the same amount as is sold under PPAs; and consumers have to purchase the same amount as the amount consumed.

If they are not able to produce or purchase the total amount of power traded or consumed, participants will be subject to exposure on the spot market to cover their original PPAs, in proportion to the amount not produced or purchased. Financially exposed participants are:

1. obliged to pay the amount equivalent to the difference between the power contracted and the power delivered or consumed (not covered in additional PPAs), multiplied by the difference settlement price (PLD), which is hourly defined by the CCEE;[9] and
2. may be subject to penalties imposed by the CCEE.[10]

The amount of power allocated to each generation plant is determined by its assured capacity, defined as the maximum amount of power that the plant is allowed to sell and is committed to deliver under PPAs.[11] This calculation is very important as it sets the limit on the power available for sale (originating from the plants' own power generation).[12]

The operation of the Brazilian interconnected system may cause a dissociation of the participants' contractual commitments from the actual physical delivery of the power traded. Power production mainly depends on operational decisions made by the ONS, since several power plants are subject to centralised dispatch, which reduces the control that companies have over their own plants' output. A few regulatory mechanisms have been established to mitigate this risk and avoid these participants facing financial exposure for reasons they cannot manage, such as the energy reallocation mechanism applicable to hydropower plants.

iii Contracts for sale of energy

Within the regulated market, because of the auction process, long-term PPAs are executed between the generation companies that have won the bid and the distribution companies buying at the auction. Similarly, in backup energy auctions, a backup energy agreement is executed between the sellers and the CCEE, as the representative of all consumers. All contractual conditions are defined within the bid process and are not subject to negotiation, including supply period, rates (set by the lowest-bid award criterion) and amounts.

The contracts' effective terms depend on each type of auction and power source and may vary from 15 years to 35 years for new energy auctions, from one year to 15 years for existing energy auctions, and for up to 35 years for backup energy auctions. The PPAs may be executed under one of two modalities: quantity or availability. Under quantity contracts, sellers assume hydrological risks (variations between the amounts contracted and effectively produced) and deliver the power sold at the submarket where the plant is located. Under availability contracts, buyers assume the risks deriving from the plant's unavailability resulting in lower production than the amount contracted.[13]

It has become increasingly common to have long-term PPAs in the free market, which makes the construction of new plants financially feasible. There is even a specific practice whereby a producer who is also the consumer can be exempt from certain sector-specific charges (self-generation). Within the free market, participants execute PPAs in which they freely establish the conditions, supply period (short, medium or long term), price and amounts, provided that the contractual terms comply with sector rules and regulations, particularly the CCEE's trading rules and procedures.

iv Market developments

Law No. 14,120, dated 1 March 2021 stated that the government will cease to grant grid discounts for new renewable projects requesting power generation authorisation 12 months after 2 March 2021, the date the law was enacted, or entering into operation 48 months after the date of issue of the authorisation (assuming an authorisation request before 2 March 2022). Once a discount has been granted, the project concerned remains entitled to the benefits until the relevant licence expires (usually a period of 35 years). Said transition regime acted as a catalyst for a surge of new applications for generation authorisation as from 2021, mainly for solar plants. Thus, solar power has consolidated itself as the second largest source of installed capacity in Brazil. Law No. 14,120/2021 also provides for the creation of a new incentive for energy sources with low carbon emissions, although details of this mechanism have yet to be specified.

In addition, distributed generation is subject to a new regulatory regime, introduced by Law No. 14,300, dated 6 January 2022, which sets out changes to credit compensation, in particular regarding the payment of 'Wire B' and 'Wire A' distribution system use tariffs. Plants already connected to the system or that connect within 12 months of publication of Law No. 14,300 will continue to benefit from the terms of ANEEL Resolution No. 482/2012 until 31 December 2045. Law No. 14,300 sets out different transition periods for plants that connect to the system between months 13 and 18, and those that connect after month 18, following publication of the Law, according to the category, source and capacity of the plant. After the transition period, plants will have to pay all the tariff components, minus the applicable discounts determined by ANEEL for each particular electrical system project. More recently, ANEEL has enacted Normative Resolution No. 1,059 of 7 February 2023, in order to regulate Law No. 14,300/2022.

Regarding ANEEL's Regulatory Agenda for 2024 and 2025, which was approved on 5 December 2023, the main topics that are expected to be regulated are:

1. process of monitoring the electric energy market;
2. the development and exploration of offshore power plants;
3. the curtailment of hydroelectric generating plants (CGHs);
4. the development of storage mechanisms in the interconnected system; and
5. financial guarantees in the spot market.

Long-term renewable PPAs, for which renewable energy certificates can be obtained, and self-generation projects, which are entitled to exemptions from certain sectoral charges, remain in the spotlight.

Renewable energy and conservation

i Development of renewable energy

One of the most significant regulatory policies adopted in the past to encourage the development of renewable power has been Proinfa, an incentive programme to encourage the use of alternative power sources, created by Law No. 10,438/2002. This programme was based on feed-in mechanisms to contract wind, biomass and SHPP projects for 20 years. According to the programme regulations, a total of 3,300MW was expected to be contracted under the first phase of Proinfa. The second phase aimed to achieve 10 per cent of the annual energy consumption deriving from renewable sources until 2022, excluding large HPPs. For the current year, the incentive is evaluated in an amount of 5 billion reais. Proinfa costs are shared among all energy consumers, except low-income consumers.

According to information made available by ANEEL on 3 January 2024, in 2023 over 625,000 micro and mini distributed generation projects were connected to the system, adding more than 7.4GW of installed capacity to the 18.4GW of micro and mini distributed generation projects that had already been connected until 2022. Although solar power is the most common source, it also expected that wind, hydropower and thermal projects will increase in the coming years.

Wind power is the source that has been most prevalent and has grown the most in regulated auctions. According to the National Energy Plan 2050 issued by MME, the improvement of the analysis of the wind energy potential, the expertise gained by the agents and the high competitiveness were, among other aspects, essential for the reduction of wind energy prices in Brazil, providing the permanent development of this source. The EPE has stated in the Energy Plan that, although wind power has become more competitive in price, the competitiveness of SHPPs has decreased particularly because of environmental and construction risks.

Renewable energy sources are entitled to some regulatory benefits (such as a discount on fees for use of the electrical grid, subject to the changes affecting new projects indicated above, and the option to sell power to special consumers under the terms established by law) and to some special credit lines from the National Bank for Economic and Social Development. Pursuant to Law No. 14,120 of 1 March 2021 (see Section IV.iv), benefits will change in the future as renewable sources become more competitive.

The Special Incentives Regime for Infrastructure Development, known as REIDI, is a federal tax incentive scheme for the development of infrastructure that lasts for five years and is applicable to the purchase of equipment related to power generation and transmission projects, including those involving renewable energy, under conditions established by legislation. At the federal level, a tax incentive is granted for 'infrastructure debentures' as well. There are also some tax incentives granted by the states to encourage the development of renewable sources.

ii Energy efficiency and conservation

The Brazilian power market increased in efficiency during the 2001 rationing, when the market learned how to reduce the consumption required by the government. As the market has suffered unfavourable hydrological conditions in recent years, broad awareness campaigns about the country's exposure to water shortages have been conducted, possibly as a way of encouraging energy-efficiency measures without recourse to stricter rationing control.

In addition, since January 2015, power rates have been subject to a band pricing scheme, which, by allowing customers to be charged more when the system incurs higher generation costs, represents an important incentive for demand reduction.[14] Moreover, a new pricing scheme became available from January 2019 for certain low-voltage consumers. This pricing scheme, as regulated by ANEEL Normative Resolution No. 1,000, dated 7 December 2021, is also referred to as an hourly tariff or white tariff and allows users to pay different rates according to the time and the day of the week of their consumption.

Finally, since January 2021, the PLD, or spot market price, has been calculated by the CCEE on an hourly rather than weekly basis. ANEEL believes that these changes will incentivise producers and consumers to rebalance intermittent supply and improve utilisation factors in the system.

iii Technological developments

The Brazilian market has taken important steps towards the implementation of smart grid technologies and batteries. New technologies should also foster investments in renewables in Brazil. Offshore wind power plants started to gain traction since 2020, and around 96 projects have already requested environmental licensing, according to information provided by the Brazilian Institute of Environment and Renewable Natural Resources.[15] One of the great challenges for the development of offshore wind power in Brazil is the regulation on the use of offshore land, which belongs to the Brazilian government. It is currently understood that it will be necessary to execute agreements regarding the onerous assignment of use of public property, for which there should be a prior bidding process. Once challenges regarding the use of offshore land have been overcome, Brazil will certainly take advantage of this new energy frontier, which is greatly benefited by Brazil's almost incomparable coastline and favourable climate conditions.

Green hydrogen is also expected to create major market opportunities. Brazil has the potential to produce the cheapest green hydrogen in the world, due to its geographical and climate conditions, which are extremely favourable to the development of wind and solar energy sources, which are, in turn, necessary in the green hydrogen production chain. In Ceará, north-east of Brazil, the Port of Pecém Complex shows promise for green hydrogen business, having already attracted several multinational companies with this objective. The Hydrogen Council estimates that Brazil can take the lead for green hydrogen, because of the fast expansion of renewables in the country. At the end of 2023, two different major bills of law regulating green and low carbon hydrogen were approved by one of the two Houses of Brazilian Congress. On 4 August 2022, Resolution CNPE No. 6/2022 was published to create the National Hydrogen Program (PNH2) for the development of public policies, technology and markets related to hydrogen.

In addition, the Brazilian National Energy Policy Council defined the technology as strategic to the country, which means that more research and development projects will be funded on the matter in the following years with resources from mandatory research and development investment of public services concessionaires.

Year in review

In 2023, M&A activity in the Brazilian electricity sector remained strong and is expected to become even more eventful in 2024. The privatisation of Companhia Paranaense de Energia (Copel), concluded on 8 August 2023, raised around 5.2 billion Brazilian reais on a follow-on process.

See below a few of the relevant M&A operations that occurred in 2023:

1. Acquisition of Alameda Acre Participações, sole holding of Usina de Energia Eólica Vila Acre I SPE, wind farm located in the city of Serra do Mel, State of Rio Grande do Norte, with 27,300kW of installed capacity, consisting of 13 generating units of 2,100kW each, by XP Infra II.
2. Acquisition of Integração Transmissora de Energia SA, formerly owned by Equatorial Energia SA, by Infraestrutura e Energia Brasil SA (subsidiary of Caisse de Dépôt et Placement du Québec - CDPQ). The deal's value was up to 396 million reais.

3. Acquisition by a vehicle from Pátria Investimentos of Contour Global do Brasil Holding Ltda., with 100 per cent equity interest in 24 special purpose vehicles with activities in the wind power sector in Brazil adding up to 600MW of installed capacity, formerly owned by ContourGlobal and Eletrobras.

Outlook and conclusions

Since 2022, the sector has been trying to adjust to the new social and economic situation, and important transactions can be expected in the near future. Competition and the number of new foreign bidders entering the market is expected to continue to increase.

According to ANEEL and MME,[16] the following auctions are expected to take place in 2024:

Sector	Public notice	Date
Transmission	No. 01/2024, published by ANEEL on 20 February 2024	28 March 2028
Transmission	No. 02/2024, whose public consultation was opened by ANEEL on 20 February 2024	27 September 2024
Generation (capacity reserve)	Published by MME on 22 December 2022	July 2024
Generation (new generation projects)	A - 4 and A - 6/2022, published by MME on 22 December 2022	August 2024
Generation (isolated systems)	Published by MME on 22 December 2022	October 2024
Generation (capacity reserve)	Published by MME on 22 December 2022	November 2024
Generation (existing generation projects)	A - 1 and A - 2/2024, published by MME on 22 December 2022	December 2024

Moreover, important players in the electricity sector have recently announced potential transactions for 2024, such as Eneva and Vibra (merger process), EDP (sale of hydroelectric plants in the state of Amapá), Eletrobras (sale of thermoelectric plants) and Comerc Energia (sale of solar plants complex in the state of Minas Gerais).

The strength of Brazilian market institutions will certainly continue to play an important part in stability in the power sector. In summary, the Brazilian power sector should be viewed as a target for long-term investment, to the extent that investors are knowledgeable about the characteristics of each type of investment and are able to assess accurately the risks involved.

Endnotes

1 José Roberto Oliva Junior is a partner and José Carlos Altomari Teixeira is a senior associate at Pinheiro Neto Advogados. Back to section

2 Information provided by the Brazilian electricity regulatory agency (Agência Nacional de Energia Elétrica (ANEEL)) on its power generation data centre – see Sistema de Informações de Geração (SIGA), at https://bit.ly/2IGf4Q0 (last accessed on 1 April 2024). Back to section

3 Information provided by the Brazilian electricity regulatory agency (Agência Nacional de Energia Elétrica (ANEEL) on its power generation data centre – see Sistema de Informações de Geração (SIGA), at https://bit.ly/2IGf4Q0 (last accessed on 1 April 2024). Back to section

4 In a way, the companies were already subject to regulation before the creation of the National Electric Energy Agency (ANEEL), but the previous government bodies lacked effectiveness since they did not have autonomy and were part of central government, which also controlled the state-owned companies that were the main service providers within the sector at the time. Back to section

5 The importance of the difference between the two regimes has diminished since independent producers are entitled to consume part of their production and self-producers can sell the unused portion of their own output under the conditions set out by rules and regulations. Back to section

6 The concept of 'controlling interest' adopted by ANEEL is the same as that provided in Brazilian corporate law and is associated with dominance in the company's corporate and managerial decision-making. Back to section

7 Article 5 (IV), Schedule III of ANEEL Resolution No. 948/21. Back to section

8 In Brazilian reais/MWh. Back to section

9 The Electricity Trading Chamber (CCEE) calculates the PLD based on the operating marginal cost and a variety of criteria established by legislation (e.g., hydrologic conditions) for each submarket. Back to section

10 The CCEE is responsible for the processes described – the auditing of the market's traded power amounts and the financial settlement of the values involved in spot market transactions. Back to section

11 The assured capacity takes into account the plant's expected production and excludes events of unavailability and may be lower than the installed capacity of the power plant. Back to section

12 Although in the regulated market the assured capacity represents the limit available for sale, participants in the free market can sell an amount above the assured capacity if they have executed PPAs to cover the total amount sold. Back to section

13 Under availability contracts, the remuneration consists of a fixed amount for the plant to be available and an additional value that varies according to the plant's effective production. Back to section

14 Green, yellow and red flags indicate lower, medium and higher generation costs respectively. As a result of the recent water shortages, the National Electric System Operator has continuously dispatched high-cost thermal power plants since the end of 2012, and consumers have had red flags in their bills for some time. Back to section

15 https://www.gov.br/ibama/pt-br/assuntos/laf/consultas/arquivos/20240129_Mapa_eolicas_offshore_Ibama.pdf (last accessed on 25 March 2024). Back to section

16 Ordinance No. 7/GM/MME, published on 22 December 2022. Back to section

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