VOUGA
ABOGADOS

ENERGY REGULATION IN PARAGUAY

Disclaimer: *This article does not constitute legal advice, nor does it intend to offer recommendations. The analysis presented herein is limited to the interpretation of the current regulatory framework and should not be used as a basis for making legal decisions without the prior advice of a specialized attorney.*

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Content

I. INTRODUCTION

Since 2012, global investments in installed renewable energy capacity have surpassed those in conventional sources (i.e. fossil fuels and nuclear power). By 2019, renewable energy – excluding hydroelectric power – accounted for 77.6% of new electricity generation installations worldwide. In 2021, solar alone represented 28% of the total installed generation. Meanwhile, in 2020, 29% of global electricity generation came from clean sources - 10% higher than in 2010. If this trend continues, projections suggest that by 2050, more than 40% of global energy generation will come from renewable sources.[1] [2]

Paraguay is gradually integrating into this global shift. There is increasing interest in developing energy projects in the country and the region, particularly in renewable sources. In response, the National Electricity Administration of Paraguay (ANDE)[3] has significantly increased its infrastructure investments in recent years to keep pace with this trend.

Historically, Paraguay's electricity sector has operated – and still partly operates – under a monopoly regime, with ANDE being responsible for generation, distribution, and commercialization of power. Paraguay's power generation is predominantly hydroelectric; over 80% originates from the binational Itaipú hydroelectric plant (owned by ANDE and its Brazilian counterpart), approximately 15% from Yacyretá hydroelectric plant (jointly owned with Argentina), and the remaining 1% from the Acaray plant, which is entirely owned by ANDE.[4]

The legal opening of the electricity market began in 2006, with the enactment of Law No. 3009/06 on the Independent Production and Transportation of Electric Energy ("Law 3009"), which for the first time allowed private entities to generate and sell electricity through "Auto-Generator" or "Co-Generator" licenses[5]. More

[1] JACOBS, Jack, Renewable Energy Law and Policy, Ed. 2023, Lexis Nexis, pp. 4, 5.

[2] Data reveals that in 2017, approximately USD 298 billion were invested worldwide in new renewable energy generation capacity. Additionally, renewable energies currently account for about 26.5% of the total global energy generation capacity from all sources and supply around 25% of the world's electrical power.

[3] Publicly owned electricity provider.

[4] The government is taking measures to diversify our energy matrix, as, without its intervention, other renewable energy sources will not be able to compete with hydroelectric power. As a result, there will be insufficient market capacity and profitability potential to promote the development and investment in other energy sources.

[5] Promoting private and foreign direct investment in the renewable energy sector reduces dependence on government support and helps balance the market by dismantling the power of dominant actors, especially in countries where monopolies exist.

recently, in 2023, Law No. 6977/22 was enacted to regulate to promote the development and use of electricity from non-conventional renewable energy sources (Non-Hydroelectric) ("NCRE Law"), followed in 2024, by its regulatory decree, Decree No. 1168/2024 ("Decree 1168"). The NCRE Law allows license holders (similar to Law 3009) to sale or export the electricity they produced whether as Auto-Generation, Co-generation, Generation, and/or Transportation ("NCRE License"). The enactment, of NCRE Law applies exclusively to Auto-Generators, Co-generators, Generators, and Exporters ("Licensees") of energy from renewable sources (e.g., solar, wind, biomass, etc.), while the scope of Law 3009 has been limited – following the enactment of Law No. 7299/2024, ("Law 7299") – to electricity generation from non-renewable sources such as natural gas and hydropower.

Despite these legal openings, both Law 3009 and the NCRE Law still restrict the domestic sale of electricity to ANDE – there is currently no provision for direct sales to third parties. Distribution and commercialization remain within ANDE's monopoly, with only 2 exceptions: (i) consumers located on the same premises as the licensee, and (ii) the city of Villarica, where the company CLYFSA has managed distribution since the 1970s. In contrast, electricity exports are not subject to this restriction. Nonetheless, exports require payment of tolls and are contingent on ANDE's transmission infrastructure capacity. Furthermore, entities wishing to export under the NCRE Law must obtain an export license.

Compared to other countries in the region, Paraguay has historically enjoyed some of the lowest prices, largely due to the abundance of hydroelectric power. However, sustained economic growth in recent years is expected to significantly alter this dynamic over the next decade. Forecast suggests that Paraguay's energy surplus will shrink significantly. In this scenario it becomes urgent to diversify the energy matrix by expanding both capacity and generation though innovative technologies, while also investing in strategic transmission infrastructure. These efforts must be supported by comprehensive regulatory reforms aimed at streamlining procedures and improving the investment climate for private sector participation in both generation and transmission, thus ensuring long-term energy security and sustainability.

This new scenario represents a turning point: one that offers opportunities and significant challenges. To seize these opportunities, it's critical to understand Paraguay's legal and regulatory framework and to examine global energy that can inform future reforms. This article analyzes the regulatory framework governing the electricity sector, highlights the current challenges, identifies potential opportunities, and outlines ideas for reforms to support the sector's future development.

II. LEGAL FRAMEWORK OF THE PARAGUAYAN ENERGY SECTOR

Paraguay's regulatory framework in the energy sector mainly consists of the following norms:

- Law No. 966/64 establishing the National Electricity Administration (ANDE) as an autonomous entity and its Organic Charter ("Law 966");
- Law 3009;
- NCRE Law;
- Law 7299;
- Decree No. 1168/2024 regulating the NCRE Law ("Decree 1168");
- Decree No. 9829/2012 regulating Law 3009 ("Decree 9829");
- Decree-Law No. 5/1991, which establishes the organizational structure and functions of the Ministry of Public Works and Communications, as amended by Law No. 167/1993, which approves with modifications Decree-Law No. 5 of March 27, 1991, establishing the organizational structure and functions of the Ministry of Public Works and Communications ("Decree-Law 5");
- Decree 2553/2024 of September 19, 2024, which approves Paraguay's Energy Policy until 2050 and repeals Decree 6092 of October 10, 2016 ("Decree 2553").

Additionally, administrative resolutions issued by ANDE play a key role in regulating the operational and practical aspects of the electricity sector. These include, among others, the applicable tariffs for specific sectors and consumer categories, supply conditions, and guarantee requirements, as well as the current Tariff Schedule.[6] Other regulations complement the regulatory framework. These include: Law No. 426/1994 establishing the Organic Charter of the Departmental Government ("Law 426") and Law No. 3966/2010 on Municipal Organic Law ("Law 3966"). Under Law 426 departmental governments are authorized to supply electricity using funds allocated in their respective budget[7]. Meanwhile, Law 3966 grants municipalities the authority to regulate and oversee construction standards – both for public and private works – including those related to the structural aspects of electrical installations.[8]

[6] **Current Tariff Schedule is No. 21 of March 10, 2017.**
[7] Law 426, art. 16 section h).
[8] Law 3966, art. 12 section e).

III. PUBLIC INSTITUTIONS IN THE ENERGY SECTOR

A. The Ministry of Public Works and Communications

According to Decree-Law No. 5, the Ministry of Public Works and Communications (Ministerio de Obras Públicas y Comunicaciones – "MOPC") is the government entity responsible for formulating, proposing, and implementing the Executive Branch's policies and directives related to infrastructure and basic services aimed at national integration and economic development. Its responsibilities also encompass the administration of public goods and services, including the energy sector[9]. Within the MOPC[10] the Vice Ministry of Mines and Energy (Viceministerio de Minas y Energía – "VMME") has regulatory functions related to the use of energy resources. This includes conducting technical, economic, legal, and financial analysis to promote the sustainable use of energy resources, as well as identifying, assessing, and proposing energy alternatives aligned with current national needs and development potential.[11]

In addition, the VMME has a supervisory and coordinating function – oversees the proper use of energy resources and serves as the organization through which ANDE interacts with the MOPC and, through it, with the Executive Branch.[13]

B. ANDE

ANDE's legal and regulatory framework is governed by Law 966. Law 966 establishes that ANDE's institutional purpose is structured around 3 main activities: (i) the formulation of energy policies, in coordination with the MOPC and the VMME[14]; (ii) the administrative and corporate management of the institution; and (iii) the technical and economic regulation of the electricity sector.[15]

[9] Decree-Law 5, art. 2.
[10] There is an initiative by the government to elevate the VMME to the rank of a ministry.
[11] Decree-Law 5, art. 25 y 28.
[12] Decree-Law 5, art. 25 y 28.
[13] Decree-Law 5, art. 29.
[14] In coordination with the MOPC and the VMME.
[15] *Ibidem*, 223.

Under Law 966, ANDE is an autonomous, decentralized public entity, with illimited duration, legal personality, and its own assets, subject to general civil and commercial provisions[16]. Its main social goal is to meet the country's electricity needs, promote economic development, and foster the well-being of the population through the utilization of Paraguay's natural resources. To achieve this, ANDE may: develop, plan, build, and acquire generation, transmission, and distribution infrastructure, along with other works, installations, and assets necessary for providing electric services; operate its own or third-party electrical supply systems under its charge; buy and sell electricity within and outside the country from other companies or public or private electrical systems, and exchange energy with them; as well as carry out, in general, all other acts and functions related to fulfilling its purposes.[17] This legal configuration grants ANDE hierarchical independence from other government entities, providing it with administrative and budgetary autonomy –fundamental for its operational independence.

Law 966/64 encourages private initiative to meet energy supply needs, and ANDE may participate in such initiatives.[18] To achieve its objectives, Law 966 grants ANDE powers, authorities, and privileges, among which the following stand out:[19]

1. Functions of ANDE

i. **Regulatory:** ANDE has the power to regulate and establish regulations concerning all matters related to electricity that it generates, transforms, transmits, distributes, and/or supplies[20]. Additionally, it serves as the normative authority regarding the generation, transportation, distribution, and commercialization of electricity in Paraguay.[21]

ii. **Tariff Setting:** The tariffs for electricity supply and other services provided by ANDE shall be approved by ANDE's Board of Directors[22]. Furthermore, ANDE may establish different tariffs for various consumer groups (industrial, commercial, domestic)[23]. An example of this is Resolution No. 47,191/2022 dated December 5, 2022 (and its subsequent amendments), which created the Special Intensive Consumption Group and establishes, among other things, special tariffs applicable to users processing data, providing information storage services, and related activities, including crypto-asset mining, blockchain, tokens, and data centers, at levels of Very High Voltage (220 kV), High Voltage (66 kV), and Medium Voltage (23 kV)[24].

iii. **Oversight and Inspection:** ANDE has the authority to request information regarding any matter related to the study, execution, and operation of privately owned electrical installations to recommend, when appropriate, the measures that should be adopted by the relevant authorities.[25] Additionally, ANDE has the power to access private properties to carry out studies or investigations related to its functions. It may also inspect the internal installations of users when deemed necessary to verify compliance with applicable regulations.[26]

[16] Law 966, art. 2.
[17] Law 966, art. 5.
[18] Law 966, art. 7.
[19] Law 966, arts. 5 y 66. Among ANDE's powers are to develop and implement planning and programs for the electrical sector; to design, build, and acquire generation, transmission, and distribution works, as well as other facilities and assets necessary for the proper functioning of electrical services. For this purpose, it can call public tenders for the contracting of works and services, as well as for the purchase of goods; to operate its own electrical supply systems or those of third parties under its charge; to supply energy to consumers and provide public lighting services, in accordance with tariffs approved under the provisions of Law 966; to regulate all matters related to the generation, transformation, transmission, distribution, and/or supply of electrical energy; to buy and sell electricity both within and outside the national territory, to other companies or public and private electrical systems, and to exchange energy with them; and to delegate to other companies, through contracts, the exclusive right to supply electrical energy, with the terms and conditions to be aligned with what is established in Law 966.
[20] Law 966, art. 5 section e)
[21] Law 966, art. 3. As explained in this article, this power partially overlaps with the powers of the VMME under Law 6977.
[22] Law 966, art. 84.
[23] Law 966, art. 91.
[24] To access the resolution, click on the following link: **Resolution 47191**
[25] Law 966, art. 6.
[26] Law 966, arts. 73 and 105.

iv. Expropriation: Properties declared to be of utility for ANDE to expand and improve the provision of electric service are subject to expropriation in accordance with applicable law. Furthermore, ANDE has the authority to establish easements, including power line easements, on both public and private properties.[27]

v. Sanctioning: ANDE has the power to suspend electricity supply in case of non-compliance with the provisions of Law No. 966. Additionally, ANDE can impose fines on those who violate prohibitions such as: a) performing unauthorized actions, interventions, or manipulations on ANDE's utility installations; b) obtaining electricity through illicit means, such as fraudulent connections to distribution networks, unauthorized derivations from existing connections, and tampering with meters; c) clandestinely supplying third parties through the user's own facilities.[28]

2. Competences of ANDE

The most relevant competences of ANDE are:

i. Developing electrical plans and development programs: ANDE will propose a National Electrification Plan to the Executive Power for approval, which will be updated at least every five years[29]. In this regard, it is noteworthy that Master Plans for Generation, Transmission, and Distribution are developed by ANDE for a 10-to-20 year horizon.[30]

ii. Designing, constructing, and acquiring or contracting goods, equipment, and services: ANDE has the authority to plan, build, and acquire generation, transmission, and distribution works, as well as other facilities and assets necessary for the normal operation of electric services. This power is typically exercised through tenders, which can be national, international, or, under certain conditions, through exceptions.[31] [32]

iii. Purchasing energy: ANDE has the competence to buy energy both domestically and internationally, from private and public sources[33].

iv. Participación en sociedades: To achieve their objectives, ANDE may financially participate in other entities, companies, or cooperatives operating within the country. It may also enter into acts, contracts, and conduct civil and commercial operations aimed at forming or integrating companies and, generally, undertaking any action necessary for its operation.[34]

v. Electricity Supply: By law, ANDE has a monopoly on the supply of electricity to all users across the country and is also obliged to provide energy to any requester, unless there are justified reasons to the contrary[35]. ANDE may delegate this power[36] if necessary. Regarding the distribution of electricity from a user with a contract with ANDE to secondary users located in free zones, shopping centers, or data center hosting services, it is important to clarify that these cases do not constitute supply in the strict sense contemplated by Law 966. This is because such scenarios do not represent a 'derivation' of the service, as these secondary users operate within the same unified premises under a single cadastral account and property registry, functioning as internal redistribution rather than as an independent supply subject to monopoly regulation.

[27] Law 966, arts. 74, 75 and 76.
[28] Law 966, arts. 113, 121 and 122.
[29] Law 966, art. 5 section a)
[30] To access the Master Plans, click here: **Master Plans - ANDE**
[31] The applicable law for the tenders is Law No. 7021/2022 "On Public Supply and Procurement.".
[32] To access the list of tenders called by ANDE over the past years, as well as those scheduled for the near future, click on the following link: **List of ANDE´s Tenders**
[33] Law 966, art. 27 section k).
[34] Law 966, art. 27 section m) and v).
[35] Law 966, art. 96. ANDE will not be obliged to supply electricity when the capacity and characteristics of its facilities do not permit it.
[36] Law 996, arts. 66 and 96.

3. Special rights of ANDE

The main special rights that ANDE has are:

i. To supply energy and provide public lighting throughout the country. Besides being a power – as outlined in the previous section – this is also classified as a special right.
ii. To utilize water resources. As will be discussed below, the reform to Law 3009 impacts, to some extent, this special right.
iii. To use public spaces to fulfill its functions.

Law 966 constitutes the legal basis that supports ANDE's functions as a state entity responsible for ensuring electricity supply in Paraguay. This regulation grants ANDE operational autonomy, enabling it to pursue strategies aimed at consolidating the country's energy sector. By granting it legal personality, Law 966 establishes a flexible framework that allows ANDE to adapt to national energy challenges, promoting initiatives ranging from infrastructure planning and development to the implementation of strategic projects in collaboration with private actors.

Specifically, legislation grants ANDE broad powers to design, construct, and manage facilities for the generation, transmission, and distribution of electricity nationwide. These faculties enable ANDE to lead projects for the benefit of Paraguay's energy development. Furthermore, Law 966 authorizes ANDE to form partnerships with national and international entities, provided that these alliances are aligned with the public interest and aim to strengthen the country's electrical infrastructure.

In this way, Law 966 provides ANDE with a solid set of legal tools to implement innovative initiatives, ensuring that these are conducted effectively, promoting collective welfare, and fostering Paraguay's economic growth through a sustainable and reliable energy system.

IV. OPENING OF THE ENERGY SECTOR. LEGAL FRAMEWORK

A. Law 3009

Law 3009 is the first regulation, since the enactment of Law 966, aimed at promoting the production and transportation of electricity by private entities.

1. Purpose and Scope of Law 3009

Originally, the purpose of Law 3009 was to comprehensively regulate all activities related to independent production and/or transportation of electricity, including co-generation and auto-generation modalities.[37] However, although the text of Law 3009 is not explicit on this point, with the enactment of Law 7299, the scope of Law 3009 experienced a significant restriction, being limited exclusively to projects for electricity generation from conventional energy sources, particularly natural gas[38], and projects of Small Hydroelectric Generation (with an installed capacity of less than 50 MW)[39]. Another aspect that is not properly regulated pertains to Hydroelectric Power Generation projects with an installed capacity exceeding 50 MW. Law 3009 does not clearly establish whether these projects, which, according to current regulations, must be awarded through international public bidding procedures[40], are subject to the requirement of obtaining prior energy licensing.[41]

2. Modifications of Law 7299

The most significant modifications introduced by Law 7299 to Law 3009 are:[42]

i. **Licensing and Transportation:** To conduct transportation activities under Law 3009, the applicant must obtain a specific license, or at minimum, the co-generation and auto-generation licenses must specify that they also cover

[37] Law 3009, art. 2.

[38] Law 3009, art. 5, *"License. Independent Production and/or Transportation of Electricity (PTIEE), from the use of natural gas and Small Hydroelectric Generation, will require a license granted by the Implementing Authority."*

[39] Law 3009 defines Small Hydroelectric Generation as: the production of electrical energy through the utilization of small watercourses with reservoirs that have minimal environmental impact, with capacities of up to 50 MW (fifty megawatts), which can supply electricity in isolated systems or connect to the Interconnected System.

[40] Law 3009, art. 12.

[41] Except for environmental permits or other types of licenses that are mandatory.

[42] For more information about the changes introduced by Law 7299, click on the following link: **VOUGA – Modifications of Law 7299**

transportation activities. Previously, the definition of license in the law only included generation activities.[43]

ii. **Limitations to ANDE's Privilege of Water Resources Use:** The threshold below which private entities and ANDE must compete under equal conditions for the use of water resources for energy production is increased from 2 MW to 50 MW. Above this threshold (50 MW), ANDE retains its preferential rights to utilize hydraulic resources for electricity generation.

iii. **Implementing Authority:** The new implementing authority is the MOPC, through the VMME. Previously, the implementing authority was the National Council for Independent Production and Transportation of Energy. This change is expected to streamline the license granting process.

iv. **Scope of Application:** The reform introduced by Law 7299 limits the scope of Law 3009 to projects involving the production and transportation of electricity from Natural Gas and Small Hydroelectric Generation. Law 3009 and Law 7299 do not clarify whether they apply to energy production from other conventional fossil sources, whether liquid or solid.

ix. **Dispute Resolution:** Any disputes not resolved by the Implementing Authority must be submitted to the civil and commercial courts of the capital of Paraguay.[44] Before the reform, disputes could be submitted to arbitration under the Rules of Conciliation and Arbitration of the International Chamber of Commerce in Paris.

3. Licensees

Licensees may be:[45]

i. **Co-generators:** They are the producers or transporters who generate electricity for their own industrial processes and have an energy surplus. This surplus can be used to meet the needs of other facilities linked to the co-generation process, thus improving the energy and economic efficiency of the entire system, or it can be sold to ANDE.

ii. **Auto-generators:** They are the producers or transporters who self-supply electricity to meet their own needs. Auto-generators do not sell their energy to ANDE or third parties.

4. Other aspects to highlight from Law 3009

Other relevant aspects of Law 3009 are:

i. **Requirements for obtaining Licenses and deadlines:** Articles 8 and 9 of Law 3009 regulate the requirements for obtaining licenses, including demonstrating technical and financial capacity and having secured sources of funding. Licenses are granted directly by the Implementing Authority for a renewable period of 10 years. Once the license is granted, the licensee and ANDE must sign the

[43] Law 3009, art. 3.
[44] Law 3009, art. 33.
[45] Although Law 7299 included, within the definition of license, those who transport energy, the law in question did not establish the figure of the transportation licensee, as it does, and as will be further discussed, in the NCRE Law.

corresponding contract; the terms of the contracts must comply with the minimum provisions established in Law 3009.[46]

ii. **Compensation:** Licensees will receive, for the electricity supplied to the public grid, an amount not exceeding the reference tariff, which is equivalent to 70% of the tariff established in ANDE's tariff schedule corresponding to the category and modality of supply of the co-generator or auto-generator (voltage, power, energy, peak hours or off-peak hours). If the producer is an interruptible energy generator, the applicable tariff will be 60% of the reference tariff. Law 3009 does not define whether projects involving Natural Gas and Small Hydroelectric Generation are considered interruptible or not. It is expected that this issue will be addressed in future regulations or modifications to existing regulations.

iii. **Energy procurement process:** Although Law 3009 does not explicitly specify it, since electricity, being classified as a good under Law 966[47] and Law No. 7021/2022 on Supply and Public Procurement ("Law 7021"), the contracting process should be conducted through public procurement mechanisms. However, it should be noted that the requirement for a bidding process may be exempted in cases where any of the grounds for exception listed exhaustively in Law 7021 or other applicable sectoral regulations are met, allowing alternative contracting methods in such cases.

iv. **Toll: :** For energy transport, licensees must pay the transmission line owner[48] a monthly base price of USD 0.01 per kilometer per megawatt-hour, which will be adjusted every two years and will be charged regardless of actual use. We are not aware of any updates to this tariff.

v. **Construction of new transmission facilities:** If the construction of new electrical transmission facilities is necessary, the applicant may choose to contract an independent licensed transporter or build their own transmission line, if they adhere to standards approved by ANDE.[49]

[46] According to the provisions of Article 11 of Law 3009, license agreements must necessarily include the following stipulations: a. The minimum term of the license for independent production and/or transportation of electricity shall be ten years, unless the interested party requests a shorter term, renewable at the request of either party for an equal or different period, provided that the Implementing Authority has verified the strict compliance of the licensee with all its obligations, including environmental and tax obligations, and that the renewal is beneficial for the country's electrical system. b. The responsibility of the independent producer and/or transporter for environmental preservation. c. A service quality regime that allows monitoring of the service provider with objective parameters and without implicating the State in the company's business management. d. The right to obtain, over private property, the necessary easements for the provision of the licensed service. e. The licensee's obligation to have fulfilled all its obligations established in applicable laws and regulations before the license expires. f. Grounds for expiration and revocation, which must be linked to non-compliance with the conditions set forth in the contract, such as the construction of facilities within specified deadlines, the commencement of service provision, or serious breach of the License Contract without remedial action, as well as the definition of the arbitration system to which any dispute arising from the license will be submitted. g. The powers of the Implementing Authority regarding inspection and supervision, and any other matter inherent to the service. h. The investment schedule related to the License Contract. i. The causes of definitive suspension of the license. j. The identification of the facilities comprising the electricity transmission system that will be affected or built. k. The obligation of the independent producer and/or transporter not to wholly or partially abandon their facilities during the license period, nor cease to provide the services under their responsibility, without the authorization of the Implementing Authority, which will only grant it after verifying that the facilities or services to be abandoned are not needed for current or foreseeable future electricity generation; otherwise, proceedings will follow the respective regulations. l. The responsibility of independent energy producers and/or transporters to operate and maintain their facilities and equipment so that they do not pose a danger to public safety, and to comply with the regulations and directives of the Implementing Authority. m. Specifications on how licensees must conduct maintenance of their facilities to ensure minimum conditions for proper system operation.

[47] Law 966, art. 120.

[48] ANDE or the private transporter.

[49] This will be possible in the following situations: when ANDE declares that it is not interested in owning the installation, or when the applicant's generation plant requires its own transmission line to connect to the national interconnected system. In these cases, ANDE will manage the necessary permits and oversee the construction of the installation, as provided in Article 19 of Law 3009. This entails a delegation of ANDE's authority over expropriation and easements and constitutes an exception to the general principle of civil property rights.

vi. **Incentive Regime[50]:** Law 3009 provides that successful bidders in Hydro Energy Generation contracts, in addition to being subject to current tax regulations, can access the benefits provided by national laws granting tax incentives for the import of equipment, machinery, and other goods necessary for the construction of the power plant and auxiliary facilities, including transmission lines[51], as well as the benefits under the Maquila Law. [52]Furthermore, electricity exports will be conducted freely, subject to prior authorization from the Implementing Authority. They will also be exempt from any national, regional, or municipal taxes[53]. It is also important to mention that the law states the Implementing Authority may sign an agreement of guarantee with the licensee or the successful bidder of a Hydro Electric Generation contract to establish conditions for legal stability.[54]

vii. **Irrevocability and State Guarantee:** License contracts, Hydro Electric Generation contracts, or Energy Transmission contracts will constitute irrevocable obligations of the Republic of Paraguay and will remain in force for the entire period specified in each agreement. Future laws or regulatory regulations cannot modify them directly or indirectly, unless expressly agreed upon by the licensee and the Implementing Authority.[55]

5. Opportunities for Improvement

In our experience, there are certain aspects of Law 3009 whose modification should be considered, as they could make the investment environment more attractive[56]– both from the perspective of potential promoters or developers, and from that of their financiers. These aspects include:

Method of acquiring electricity

As already discussed above, Law 3009 does not explicitly establish the mechanism for the acquisition of energy from projects involving biogas, other conventional energies, and Small Power Generation projects; it only explicitly provides for the tender process for acquiring energy from Hydroelectric Generation projects. In this regard, we believe it is necessary to introduce amendments to explicitly specify the contracting methods for energy from licensee projects, as this would provide greater clarity and certainty for investors interested in developing such projects. Furthermore, to make the process more attractive and modernize the bidding procedures, Law 3009 could incorporate a process of competitive dialogue –similar to what is provided in Law No. 7452/2025, "On the Modernization of the Promotion Regime for Investment in Public Infrastructure and the Expansion and Improvement of Goods and Services managed by the State," also known as the "Public-Private Partnership Law" (PPP Law). During this phase, interested

[50] The regime of fees and tariffs applicable to subjects under Law 3009 is detailed in Articles 26 and 27 of the law.

[51] The most important law in this regard is Law No. 60/1990, which establishes the Tax Incentives Regime for Capital Investment of National and Foreign Origin. Investment projects approved under this law may benefit, depending on each project's characteristics, from exemptions on the following taxes: (i) Value-added tax on the purchase of imported capital goods (as well as capital goods produced in Paraguay) used in the installation for industrial or agricultural production; (ii) All taxes related to the formation, registration, or recordation of companies and corporations; (iii) Customs duties and internal taxes on imports of capital goods, raw materials, and inputs used in investment projects for manufacturing capital goods; (iv) Taxes and other levies on remittances, and payments abroad for interest, commissions, and capital thereof when the investment is financed from abroad and amounts to at least USD 13,000,000 (thirteen million dollars), and the tax on such dividends and profits is not a tax credit for the investor in the country of origin of the investment. For more information, click here: **Vouga – Tax Updates – February 2023**

[52] Governed by Law No. 1064/1997 of the Export Maquiladora Industry.

[53] Law 3009, art. 29.

[54] Regarding this, the reference law is Law No. 5542/2015 on Guarantees for Investments and Promotion of Employment, and Economic and Social Development, which establishes the protection of capital investments in the creation of industries or other productive activities established within the national territory. These activities must contribute to employment generation and the country's economic and social development.
This benefit can be claimed by individuals and legal entities, both domestic and foreign, who invest capital in the creation of companies and meet the previously mentioned requirements, or who adapt existing companies to these requirements.

[55] Law 3009, art. 32.

[56] Other incentive mechanisms for investment in the renewable energy sector used in various countries include: (i) granting permits and preferential locations, (ii) facilitating grid connection, (iii) expediting approvals required by relevant authorities, and (iv) eliminating subsidies for conventional fossil fuels.

parties would have the opportunity to discuss contractual terms, which could later be reflected in the terms of reference and bidding documents.

Price

Indexation of the energy purchase price to the reference tariff, according to the category and supply modality of the license established in the current tariff schedule, may limit incentives for investment in the sector. As of the date of this document's publication, since the entry into force of Law 3009, only two licenses have been granted, and no energy sale contracts with ANDE have yet been signed. In this regard, it could be beneficial for the law to grant ANDE greater flexibility in setting tariffs[57], allowing adjustments based on the market prices paid internationally for energy generated from hydroelectric and natural gas sources. Therefore, we are of the opinion that, for tariff calculation, consideration should be given to other factors such as opportunity cost, the convenience of having energy available at certain delivery points, energy quality, among others.

Characterization of Electric Energy

Unlike the NCRE Law, Law 3009 does not define what constitutes interruptible and non-interruptible electricity. This absence of definition is particularly problematic because it directly affects the determination of the applicable tariff. Licensees who produce non-interruptible energy will be subject to a maximum tariff of 70% of the reference tariff in ANDE's Tariff Schedule corresponding to their category and supply modality, while those producing interruptible energy will have this limit reduced to 60%. Notwithstanding the above, considering the current scope of Law 3009, it is questionable to maintain this distinction. There is a broad consensus in the market recognizing that both hydroelectric generation and gas-based generation are sources that provide stability and reliability in supply - characteristics inherent to non-interruptible sources. Therefore, it would be advisable to eliminate this artificial distinction, thereby aligning the regulation with the inherent characteristics of the technologies included within its scope of application.

Dispute Resolution

We believe it is important to reintroduce the possibility of resolving disputes through arbitration, as was originally provided in Law 3009 before the amendments introduced by Law 7299. Arbitration is a more attractive mechanism for investors compared to the obligation to resolve disputes in local courts. The application of alternative dispute resolution mechanisms is not new in Paraguayan legislation. There are numerous examples, such as Law 6324/2019, which grants sovereign guarantees to ANDE projects ("Law 6324")[58], the PPP Law, Law 7021[59], among other regulations.

Contract Duration

Law 3009 establishes that license agreements must have a minimum duration of 10 years[60], renewable, for equal or different periods, provided that the implementing authority verifies the licensee's compliance with their obligations and that the renewal is beneficial to the

[57] Feed-in tariff models operate in different ways, including: (i) fixed-price model, (ii) fixed-price model adjusted for inflation, and (iii) front-loaded load model. First, the fixed-price model offers the advantage of providing security and predictability, which facilitates access to financing since it allows stakeholders to know the revenue flow throughout the project's lifetime and is easier to manage. Second, the inflation-adjusted fixed-price model helps mitigate certain market risks and offers security to investors. Additionally, by paying a lower feed-in tariff at the start of the contract, it helps increase social acceptance and is easier to implement from a political perspective. Third, the front-loaded load model envisions a high feed-in tariff at the beginning of the contract, which decreases over the project's lifespan. This approach is beneficial because it provides substantial initial funding during early, capital-intensive stages. Finally, the success of these models largely depends on setting tariffs at a sufficiently high level to promote investment, along with a stable and predictable regulatory environment, and the ability for the generated electricity to access transmission and distribution networks.

[58] Law 6324/2019 "Granting the Paraguayan State Guarantee, through the Public Treasury, for Power Transmission and Distribution Projects Implemented by ANDE, under the Public Tender modality with Financing as Provided in Article 17 'Complementary Modalities' of Law No. 2051/03 on 'Public Procurement'.

[59] Law 7021, Article 93, paragraph b): "Alternative dispute resolution methods. Disputes may be resolved through alternative dispute resolution mechanisms, such as: (...) b) Mediation and arbitration. The regulations will determine the conditions and procedures required for including arbitration clauses in the bidding documents, contracts, or independent agreements.

[60] Law 3009 art. 11 section a).

country's electrical system. We consider it appropriate to increase this term to at least 20 years, with the possibility of renewal. This would help ensure the return on investments, which in energy projects – especially hydroelectric and gas installations – are very high. Additionally, it would be prudent to minimize administrative discretion in approving renewals by removing the condition that licenses will be renewed based on the system's convenience.

Scope of Application of Law 3009

Article 1 of Law 3009/06 promotes the use of natural gas and "other energy sources" for electricity generation, without specifying which sources these are, leading to uncertainty about its scope of application. This ambiguity is worsened in Article 3, which defines "non-conventional energy" as energy produced, among others, from natural gas. However, this classification is inappropriate, as Law 6977 specifically regulates biogas (and other non-conventional energies such as wind, solar, and biomass), but not natural gas, which should not be considered a non-conventional source. Additionally, Article 5 requires a license for independent production or transportation of electricity from natural gas and for small hydroelectric generation, without clarifying how other sources are treated.

Law 3009 (or its regulations) should explicitly specify which energy sources it covers, beyond natural gas and hydroelectricity, or indicate which are excluded from its scope. This would clearly differentiate its coverage from that of the NCRE Law and Law 779/95 on hydrocarbons, avoiding regulatory overlaps and misinterpretation.

B. NCRE Law

1. Scope and Generalities

The NCRE Law regulates the promotion, generation, production, development, and use of electricity from non-conventional renewable energy sources, excluding hydroelectric power and natural gas (which are regulated by Law 3009). It includes the production and commercialization of electricity generated through activities such as self-generation, co-generation, export, and power generation projects[61]. The NCRE Law defines non-conventional renewable energies ("NCRE") as biomass, bioenergy, solar energy, wind energy, geothermal energy, and green hydrogen[62].

The implementing authority for the NCRE Law is the Ministry of Public Works and Communications (MOPC), through the Vice Ministry of Mines and Energy (VMME).

The law states that the production of electricity from NCRE sources with a nominal capacity greater than 1 MW requires a license granted by the VMME ("NCRE Licenses"). Therefore, projects with a generation capacity of one megawatt or less are exempt from obtaining an NCRE license[63]. Regarding the requirements for obtaining NCRE Licenses, the VMME must define the legal, administrative, financial, social-environmental, technical, and other criteria necessary for granting the license[64]. However, both the NCRE Law and its regulatory decree No. 1168/2024 ("Decree 1168") have not yet established the specific requirements or procedures for obtaining licenses, and these topics remain pending regulation.

NCRE Licenses are granted for an initial period of 15 years, renewable at the licensee's request[65]. However, we believe this time horizon may be insufficient to achieve a proper return on invested capital while maintaining competitive tariffs for end users. Additionally, recent technological advances have significantly increased the lifespan of equipment and infrastructure used in these projects, allowing for extended amortization periods. Considering all these factors, extending the validity period of licenses and contracts could have a positive impact on the sector.

[61] Law NCRE, art. 5.
[62] Law NCRE, art. 4 section 1).
[63] Law NCRE, art. 10.
[64] Law ERCN, art. 8.
[65] As of the date of publication of this material, a bill was presented by MOPC, ANDE and MIC to the National Congress ("Bill"). The Bill introduces a number of important key bankability provisions to the existing NCRE Law, including extending the NCRE License term to up to 30 years, the possibility to agree on arbitration as dispute resolution mechanism, payments in foreign currency, take-or-pay provisions, performance guarantees, among other.

2. NCRE Licenses

The VMME can grant, depending on the type of activity, four types of NCRE Licenses:

NCRE Self-Generation License: Granted to those who produce electricity from NCRE sources for their own consumption, with the possibility of injecting their surplus into the National Interconnected System ("NIS").

NCRE Co-generation License: Granted to those who produce, jointly, steam or another form of subsidiary energy for industrial or commercial purposes, along with electricity from NCRE sources, with the possibility of injecting their surpluses into the NIS.

NCRE Generation License: Granted to those who produce electricity solely for supply to ANDE or other concessionaires of the public service in the area. That is, licensees holding an NCRE Generation License cannot use the electricity produced by the project for their own consumption.

NCRE Exporter License: Granted to those who produce electricity from NCRE sources exclusively for export purposes.

3 Main Characteristics of NCRE Licenses

i. NCRE Self-generation Licenses and NCRE Co-generation Licenses

Supply Conditions	Compensation[66]	Connection and Reinforcement Works	NCRE Connection and Supply Contract
ANDE's Obligation to Purchase Surplus Power Up to 1 MW ANDE will purchase the portion of electrical capacity exceeding 1 MW at its discretion.	ANDE will pay the NCRE Licensee: a) 70% of the NCRE Reference Tariff when the energy injected by the NCRE Licensee into the NIS is interruptible; or b) 100% of the NCRE Reference Tariff when the energy injected into the NIS is non-interruptible.	If the construction of distribution or transmission works to connect to the NIS is necessary, these will be the responsibility of the NCRE Licensee, who will own the infrastructure. ANDE will reimburse up to 50% of the cost of these works.	NCRE Licensees wishing to connect to the NIS must sign a connection and supply agreement ("PPA", in English "Power Purchase Agreement") with ANDE. In such cases, the energy purchase by ANDE is excluded from the legal framework governing public procurement. PPAs may be transferred. However, the assignee must hold a valid NCRE License. PPAs will have both general and specific conditions; the general conditions will be set by the VMME, while the specific conditions will be negotiated between the NCRE Licensee and ANDE.

ii. NCRE Generation License

Supply Conditions	Compensation	Acquisition by Public Service Concessionaires	Prerequisite for License Granting
Contracts for the supply of energy to ANDE by Generators will be awarded through a competitive process, which must adhere to the general guidelines established by the VMME. The agreements between ANDE and the Generators will have a duration of 15 years.[67]	The VMME will be responsible for setting the reference price for the acquisition of electricity produced by an NCRE Generator, considering the specific characteristics involved in purchasing electrical energy. The reference price will serve as the maximum value for the bid in the tender process. The VMME will establish the mechanism for annual adjustment of the unit value awarded to the NCRE Generator, which must be included in the PPA.	Public service concessionaires in the electricity sector may sign power purchase agreements with NCRE Generators in their concession area, under the same parameters required of ANDE.[68]	NCRE Generators using biomass or biogas must have a sustainability certificate issued by an independent certifier recognized by the VMME.

iii. NCRE Export License

Toll	ANDE's Transmission Capacity	Connection and Reinforcement Works	NCRE Transport Contract
The NCRE Exporter must pay ANDE a fee for the use of electricity infrastructure. The base monthly fee for transmission system usage is in USD per kilometer and per contracted MW. Unlike Law 3009, this fee is not fixed at a specific toll value. The VMME will establish the monthly toll fee through a prior resolution, following a favorable opinion from ANDE. To date, the VMME has not issued any such determination.	In the first half of each year, ANDE will receive from the VMME the requests for transmission capacity for the export of Non-Conventional Renewable Energy (NCRE). If the available capacity is sufficient, ANDE will allocate the requested capacity and sign the transmission contracts. If capacity is insufficient, a price competition will be conducted among interested parties, with the contract awarded to the highest supplementary price above the established toll.	If connection works to the NIS are needed, these will be at the NCRE Exporter's expense. Once completed, the connection works must be transferred to ANDE.	NCRE exporters must have an agreement signed with ANDE, which will specify the rights and obligations related to the transmission of electricity. Contracts may have a term of up to 15 years and will include the general conditions required by the VMME, as well as the specific conditions agreed upon with ANDE. Transmission contracts may be transferred. However, the assignee must hold an NCRE Exporter License. The NCRE Exporter cannot commit in contracts with foreign buyers to a capacity exceeding that licensed. As of today, no licenses with power limits have been granted.

Regarding the Generators, it is important to highlight that the NCRE Law does not specify who – ANDE or the Generator – should bear the costs and carry out the works for connecting to the NIS, nor who would be responsible for the release of the servitude corridor, if necessary. It also does not clarify whether the Generator should be reimbursed for any expansion, modification, or reinforcement works to the NIS infrastructure necessary for interconnection.[69]

4. Other aspects to highlight from the NCRE Law

i. Incentivos: A special fiscal incentive regime[70] is established, applicable to both the assets and the capital used and invested for the construction of equipment and works aimed at electricity production. The application of this regime will be valid for a period of 5 years[71].

a. Benefits: Investments covered under the NCRE Law will enjoy the tax benefits provided in Law 60/1990, which establishes the Incentive Regime for Capital Investments of National and Foreign Origin; Law 5542/2015, on Guarantees for Investments and Promotion of Employment and Economic and Social Development; and Law 117/1991, on Investments.[72] To be considered beneficiaries, applicants must demonstrate the physical, technical, environmental, and financial viability of the project by presenting studies, plans, and projections to the VMME.[73]

b. Beneficiaries: Owners of investments or concessionaires of new works related to the manufacturing of equipment, implementation, use, and production of electricity generated from NCRE, whose production is intended for energy sale, integration into the NIS, or provision of public services.

c. Timeframes: The benefits apply from the approval of the respective project by the Implementing Authority, provided that the project has an effective start of execution within one (1) year of approval.[74]

ii. Promotion of Renewable Energy Use: Construction permits for certain types of buildings will only be authorized when they include sanitation facilities and works for the installation of equipment for water heating and lighting in common areas using renewable energy, according to percentages established by law. Regarding public works, within six months of the regulation of the Law, the Ministry of Industry and Commerce, the Ministry of Environment and Sustainable Development, may require all new industrial or agro-industrial projects to conduct a technical feasibility assessment for the installation of renewable energy systems regulated under the NCRE Law, aimed at energy saving in the project. We are not aware of any regulations by municipalities, the Ministry of Industry and Commerce (Ministerio de Industria

[66] The NCRE Reference Tariff will be applied whenever the power injected into the SIN does not exceed the contracted capacity.

[67] Regarding timeframes, see the provisions in section [1], above.

[68] As mentioned in the Introduction, the only case is that of Clyfsa.

[69] Articles 15 and 21 of the NCRE Law establish that, in the event that connection works to the SIN are required, including bidirectional measurement systems, these will be the responsibility of the self-generator and the co-generator, respectively. Likewise, they will be responsible for the release of the servitude corridor and indemnities. Regarding modification, reinforcement, or capacity expansion of the SIN infrastructure, the NCRE Law states that these will be paid by the self-generator or co-generator, and ANDE will reimburse the self-generator or co-generator up to 50% of the cost of these works, through a 20% discount on billed consumption for a period of 2 years from the date of connection; any remaining balance will benefit ANDE.

[70] Industry experts affirm that there are primary and secondary instruments supporting the development of renewable energy. On one hand, primary instruments include feed-in tariffs and competitive tendering, while secondary instruments encompass tax incentives and soft loans. Therefore, authorities should promote the use of primary instruments within our regulatory framework to make it more efficient.

[71] Law NCRE, art. 35.

[72] For more information on this point, see: **VOUGA Updates - September 2023;**

[73] The list of equipment that can benefit from exemptions is provided in Article 37 of the NCRE Law.

[74] An effective principle of execution will be considered to exist when funds associated with the project have been disbursed in an amount not less than 15% (fifteen percent) of the total planned investment prior to the date mentioned above.

y Comercio - "MIC"), or the Ministry of the Environment and Sustainable Development (*Ministerio del Ambiente y Desarrollo Sostenible* - "MADES") that have implemented these requirements.

iii. **Dispute Resolution:** Any disputes that may arise during the implementation of PPAs and the NCRE transportation contract will be resolved in the jurisdiction of the courts of the Republic of Paraguay, Judicial Circumscription of the Capital.[75]

iv. **Fees:** The VMME will collect a fee equivalent to 1% of transactions conducted by NCRE licensees, for which a sworn declaration of the income resulting from the commercial account must be submitted[76]. The NCRE Law and Decree 1168 do not specify the deadlines or the types of transactions covered by this fee.

5. Opportunities for Improvement

Based on our experience advising on renewable energy projects in Paraguay, we have identified that, from the perspectives of promoters, equipment suppliers, and financiers, there are several aspects of the NCRE Law that we consider worth reviewing to optimize the regulatory framework and encourage investment in this strategic sector.[77] These aspects include:

NCRE Reference Tariff: The Implementing Authority has not yet established the NCRE Reference Tariff. According to the law, the NCRE Reference Tariff will be equivalent to the average generation cost for the connection voltage level to the National Interconnected System (NIS), and it will be determined annually by the VMME based on a technical report issued by ANDE. To date, the technical criteria and components to be considered for calculating the average energy generation cost have not been published. From our perspective, the calculation of the NCRE Reference Tariff could also consider other factors such as opportunity cost, the convenience of having energy available at specific delivery points, the type of energy, energy quality, among others.

We also believe that an effective mechanism to boost investments in the renewable energy sector would be to implement a tariff scheme that aligns the remuneration of licensees with international standards widely recognized in global markets for renewable energy producers. This could involve establishing different tariff segments based on the specific technology (e.g., solar[78], wind, biomass[79]). Notably, this approach is common practice in more mature energy markets, such as Germany, whose law on renewable energy sources ("EEG" in German) successfully applies this segmentation model for tariffs.[80]

Additionally, in a short term (2029, 2030), the energy production from Itaipú and Yacyretá will be insufficient to meet the growing domestic demand. This makes it essential to attract significant investments in renewable energy generation to fill this gap. In this context, implementing a clear and competitive tariff regime

[75] Law NCRE, art. 47.

[76] Law NCRE, art. 48.

[77] Other incentive mechanisms for investment in the renewable energy sector used in various countries include: (i) granting permits and preferential locations, (ii) facilitating grid connection, (iii) expediting approvals required by relevant authorities, and (iv) eliminating subsidies for conventional fossil fuels.

[78] Data indicates that, since 2009, the prices of photovoltaic solar modules have decreased by approximately 80%, and the costs of wind turbine equipment have fallen between 30% and 40%.

[79] A notable aspect of biomass is that, as a raw material, it can be stored. However, its energy density is lower than that of fossil fuels, making its transportation more costly.

[80] Article 28 of the EEG states: a tariff of 25.0 cents per kilowatt-hour for electricity generated from geothermal energy, with an increase of 5.0 cents for petrothermal technology; Article 29: tariffs for wind energy (non-offshore). According to this article, the base tariff is 4.87 cents of Euro per kilowatt-hour, but the initial tariff will be 8.93 cents per kilowatt-hour during the first 5 years after commissioning; this period may be extended based on the performance of the installation compared to a reference performance; Article 31: tariffs for offshore wind energy. The base tariff is 3.5 cents of Euro per kilowatt-hour, however, during the first 12 years after commissioning, it will be fifteen cents of Euro per kilowatt-hour ("Initial Tariff"). The payment period for the Initial Tariff will be extended by 0.5 months for every full nautical mile beyond the twelve nautical miles separating the installation from the coast, and by 1.7 months for every full meter of water depth exceeding twenty meters. Article 32: Solar projects in certain urbanized areas or on sealed lands (e.g., near infrastructures such as highways or railways) may benefit from adjusted tariffs to promote the installation of solar panels in these locations, encouraging the use of already developed land; Article 33: This article regulates the tariffs applicable for electricity generated by solar installations located exclusively in, attached to, or on a building or acoustic barrier wall. Tariffs are established based on the installed capacity.

becomes crucial for attracting investments, as it is the main factor that ensures a return on investment and, consequently, the economic viability of projects – especially considering the substantial initial capital costs characteristic of these technologies.

Improved tariff conditions would also serve as a differential incentive to channel investments toward Paraguay, where both specialized infrastructure and the availability of qualified labor still face significant limitations. Establishing such an approach would, in the medium and long term, foster a more robust ecosystem driven by an appropriate tariff framework, with a diversified base of generators and an upward learning curve for the entire sector. As installed capacity expands, unit generation costs will gradually decrease thanks to technological improvements and operational cost optimizations. This phenomenon would, long-term, facilitate balanced tariff reductions, benefiting both consumers and investors.

Incentive Mechanisms. To promote the development of renewable energy projects in Paraguay, three widely recognized regulatory incentive mechanisms at the international level are suggested: (i) Feed-in tariffs. This mechanism establishes a fixed price or an additional premium for each kilowatt-hour (kWh) generated by renewable sources. It can be applied as a tariff based on installed capacity (kW) or on actual energy production (kWh). The goal is to ensure a stable return for investors, encourage the installation of new renewable capacity, and reduce economic uncertainty; (ii) Quota obligations. This instrument requires electricity suppliers to include a minimum percentage of energy from renewable sources in their supply. By setting specific targets, quota obligations promote diversification of the energy matrix and stimulate ongoing investments in clean technologies; and (iii) These instruments have the potential to accelerate the transition toward sustainable energy sources through clear incentives and well-defined objectives.

Tariff Differentiation Between Intermittent and Non-Intermittent Energy: The NCRE Law establishes a distinction between intermittent and non-intermittent sources; electrical energy is considered intermittent when the co-generator or self-generator lacks an energy storage system for the generated electricity from uncontrollable energy sources for later use, demand supply, or that allows the delivery of the generated energy to the grid with the quality standards specified in the regime for energy quality, whether permanent or transient as mentioned in technical energy quality aspects.[81] It would be advisable for the Implementing Authority to clearly define what is understood by an energy storage system, in order to provide greater certainty regarding the differences between intermittent and non-intermittent sources.

In any case, to encourage investments in the renewable energy sector, we consider it appropriate to eliminate this distinction: (i) primarily because the differentiation between intermittent and non-intermittent generation is generally implemented in contexts where system stability depends on the constant availability of certain generators. However, with advanced storage and grid management technologies, the capacity for rapid response to fluctuations has increased, reducing dependence on this differentiation; (ii) secondly, tariff differentiation acts as a disincentive for potential investors seeking income stability. Establishing a single maximum tariff for all generators would promote investment in renewable energy infrastructure and help balance the energy system in the long term. Additionally, it should be noted that, as of today, the NCRE Reference Tariff has not yet been set by the Implementing Authority; (iii) thirdly, because energy sources such as natural gas, solar, and wind have higher costs per MWh compared to hydroelectric plants, which are the main energy source in Paraguay. In a diversified energy matrix, higher-cost generators tend to be idle when there is no need to increase power generation due to load balancing. Currently, there are no incentives for these sources to be remunerated for remaining on standby, ready to supply energy if needed. Therefore, it is recommended to implement competitive tariffs to compensate sources that are kept offline at the request of the Paraguayan electricity system regulator, thus encouraging new investments in the sector.

[81] Law NCRE, arts. 25 and 43. However, as of the date of publication of this article, a bill is expected to be introduced that would amend the NCRE Law, which would eliminate the distinction between intermittent and non-intermittent sources.

Process for Obtaining NCRE Licenses: To date, we are not aware of any resolution issued by the VMME regulating the process for obtaining licenses and the requirements to be fulfilled.

Validity of Licenses and Contracts: The periods established by the law and the decree only regulate PPAs with Generators; however, they do not specify the durations for PPAs with Co-generators and Self-generators. Additionally, the term of PPAs should be extended to match the useful life of the equipment, which would allow for more competitive tariffs and improve the investment return profile.[82]

Alternative Method for Contracting: Several countries use the reverse auction process as an alternative method for procurement. Through this approach, the government establishes a reserve market for a specific amount of electricity generated from renewable sources and organizes a competitive process among producers to allocate this amount. In most cases, the bids that meet government requirements and offer the lowest cost per kWh during the bidding process are selected. Brazil has had successful experiences with reverse auctions, especially in the wind sector. The application of this process, along with long-term power purchase agreements, has significantly reduced project costs.[83]

Creation of Development Zones: A major challenge for renewable energy projects are the high costs associated with connecting to transmission lines. To mitigate this obstacle, it is common practice in other markets to cluster several synergistic projects within the same geographic area. This approach would allow sharing infrastructure costs, as well as those related to permits issued by relevant authorities, among the various involved developers. In this sense, it would be highly beneficial for the government to identify and designate specific development zones to concentrate the installation of industrial and energy projects. Such a measure, similar to those implemented in free trade zones, exclusive economic zones, or areas designated for industrial development, could optimize cost efficiency within these areas, reducing economic and administrative barriers.

Additionally, a proven mechanism in several countries to incentivize renewable energy investment is the granting of permits and preferential locations for these projects within designated zones. This scheme not only promotes faster project development but also facilitates attracting foreign investments and effectively integrating renewables into the national energy matrix.

Limitations: The NCRE Law imposes a series of restrictions that, in principle, would lack technical or economic justification, such as:

a. **Restrictions on ANDE´s Purchase Obligation:** Currently, ANDE is only required to purchase energy from licensees up to a limit of 1 MW. Any surplus above this threshold is subject to ANDE's discretion and convenience, pending a resolution by the VMME that justifies such purchase. This limitation is outdated given the current capacities of renewable generation and co-generation systems, which operate efficiently at much higher ranges. The 1 MW restriction discourages investment in larger-scale projects, as licensees do not have guaranteed markets for their excess energy. To promote renewable initiatives and maximize the use of sustainable energy resources, it is essential to eliminate or significantly raise this cap, enabling ANDE to reliably and constantly acquire the total surplus energy generated. In this context, it is important to highlight that one of the most critical aspects of project bankability is the possibility of including take-or-pay clauses that guarantee the sale of all the energy produced.

b. **Limits on the Beneficiaries of Tax Incentives:** The NCRE Law imposes restrictive thresholds for accessing the tax incentives provided by the law. Wind projects are limited to a maximum capacity

[82] Once constructed, renewable energy plants no longer have associated fuel costs, allowing for better utilization of economies of scale. This, combined with improvements in technology, materials, and manufacturing processes, can offer, in the long term, more competitive energy tariffs.

[83] CROSSLEY, Penelope, *Renewable Energy Law: An International Assessment*, Ed. 2019, Cambridge University Press.

of 50 MW, solar thermal projects up to 120 MW, and biomass projects to 80 MW. Although the Implementing Authority can increase these limits, this extension is restricted to a maximum of 50% of the originally projected capacity[84] Additionally, the tax exemptions contemplated in Laws 60/90, 117/1991, and 5542/2015 are applicable, among other components, to steam turbines with a capacity not exceeding eighty megawatts[85]. These caps are insufficient to fully harness the potential of current renewable technologies, which discourages the development of larger-scale projects. To foster sustainable energy initiatives, it is crucial to relax these limits and allow more significant increases, aligning the regulations with technological capabilities and sector needs.

The restrictions on time frames and capacity lack solid technical or economic justification and, contrary to their intended purpose, function as a barrier to investments. This is especially relevant for projects with long amortization periods and substantial installed capacities. The capacity limits for accessing incentives and specific equipment do not reflect current technological advances, which enable large-scale generating units to operate efficiently and securely. Large renewable energy generation projects have demonstrated their ability to integrate effectively into modern electrical infrastructure, strengthening system stability and reliability. Furthermore, these limitations hinder the attraction of large-scale investments that rely on economies of scale to ensure their financial and technical viability.

Direct Energy Sales to Consumers: The NCRE Law could incorporate provisions that allow self-generators, co-generators, and generators to sell their energy directly to end consumers under certain circumstances. This measure would promote competition in the electricity market, encourage investment in renewable energy projects, and foster diversification of the energy matrix. At the same time, enabling direct sales would allow ANDE to transition toward a regulatory role, reducing its costs, obligations, and risks associated with generation and distribution, and focusing instead on system supervision, planning, and ensuring equitable access to the grid.

Dispute Resolution: The NCRE Law limits conflict resolution to the ordinary courts of the Republic of Paraguay, which may create uncertainty for investors. In this regard, it is important to incorporate alternative mechanisms such as arbitration – whether national or international – following precedents set by laws like the original Law 3009, the PPP Law, or Law 6324. These frameworks allow jurisdiction to be extended to courts of jurisdictions such as New York or London[86]. Such flexibility would strengthen legal security, increasing the attractiveness for both foreign and local investments by ensuring disputes are resolved under agile and reliable international standards.

Sovereign Guarantee and Bankability Clauses: We believe that, to promote the energy sector, the NCRE Law should provide, similar to Law 6324/19 "Sovereign Guarantee for ANDE" or in the PPP Law, for the possibility that the Paraguayan State guarantees, in whole or in part, ANDE's payments under contracts with private investors. Additionally, we consider it necessary to empower ANDE to negotiate clauses that ensure the bankability of projects, thereby increasing investor confidence and facilitating the financing of initiatives related to investments in renewable energies.

[84] Law NCRE, art. 36.
[85] Law NCRE, art. 37.
[86] Law 6324, art. 2

C Similarities and Differences between Law 3009 and Law NCRE

Law 3009 and NCRE Law share similarities and have differences:

Similarities	
Aspect	**Descripción**
Implementing Authority	In both regulations, the authority responsible for implementation is the MOPC, through the VMME.
Licensing Requirements	They require energy producers to obtain a license to operate, ensuring compliance with technical, environmental, and legal standards.
Promotion of Investment[87]	They share the goal of encouraging and promoting investment in the energy sector, attracting both local and foreign investors for electricity generation and transmission.

Differences		
Aspect	**Law 3009**	**NCRE Law**
Scope and Application	Regulates the production and transmission of energy from natural gas and small hydroelectric projects under 50 MW.	Promotes non-conventional renewable energies (solar, wind, biomass, among other), focusing on diversifying the energy matrix toward more sustainable sources.
Licensing Procedure	Establishes a clear and detailed process, differentiating between temporary and permanent licenses.	Lacks a detailed procedure, which creates uncertainty and delays in project implementation.
Obligation to Deliver Surpluses	Requires co-generators to sell their energy surpluses to ANDE.	Allows licensees to decide whether to deliver their surpluses to ANDE, providing greater autonomy and flexibility, except in the case of Generators who can only sell their energy to ANDE.
Duration of Licenses	Licenses have a duration of 10 years, with the possibility of renewal, which may not be sufficient to guarantee the return on investments.	Licenses have an initial duration of 15 years, with the possibility of extension up to 30 years, which is more suitable for amortizing projects.

D. Decree 2553

Decree No. 2553/24, promulgated on September 19, 2024 ("Decree 2553"), establishes the National Energy Policy through 2050. Decree 2553 outlines a vision to modernize Paraguay's energy sector. Its pillars include diversifying the energy matrix, promoting renewable energies, and increasing energy efficiency.

Decree 2553 aims to attract investments in the sector by setting clear goals that promote energy self-sufficiency and the exploitation of renewable resources such as hydropower, bioenergy, solar, and wind energy. It positions Paraguay on the path toward regional energy integration and seeks to make the country a leader in adopting cleaner, more sustainable technologies.

In line with Law 966, Decree 2553 also promotes private sector participation in energy projects and foresees the use of international financial mechanisms, such as multilateral guarantees, which are essential to reduce perceived risks for investors and to ensure the long-term bankability of energy projects.

While Decree 2553 appears to provide a more solid regulatory framework to guide the sector's development, its interaction with existing regulations (Law 3009 and the NCRE Law) is not yet fully defined. Ensuring consistency will be crucial to avoid conflicts and reduce regulatory uncertainty. The multiple objectives – low costs, sustainability, energy security – can create confusion if a clear prioritization approach is not established. Therefore, it is essential to set long-term legislative targets for renewable energy laws that provide clear signals to the market and minimize frequent modifications, supporting sustained sector development.

[87] Another tool that could be used to overcome investment challenges in renewable energy projects is clean energy loans, also known as "green loans." These types of loans are typically managed by a government agency or through a public-private partnership, with funds administered by a private financial institution. In this regard, the Development Finance Agency (AFD) or other state institutions could promote soft financing for such projects, acting as government agents. The main benefits of clean energy loans are: (i) lower interest rates than those available in the private financial market, (ii) extended repayment periods, (iii) providing certainty and predictability to the government regarding project costs, (iv) the default rate can be predictable and mitigated with proper monitoring, and (v) they are easy to manage. If managed appropriately, these loans could foster significant investments, which in turn would increase acceptance within the financial sector for providing such financing for renewable energy projects.

V. OPPORTUNITIES AND CHALLENGES OF THE ENERGY SECTOR

In addition to the improvement opportunities already mentioned in Chapter IV of this article, there are, in our view, other aspects that should be addressed to complement the range of issues to consider for enhancing our country's energy ecosystem.

A. Opportunities

1. Expansion of the Electrical Infrastructure

ANDE's master plan (2021-2030), which includes the implementation of more than two hundred transmission and power line transformation projects, represents a significant opportunity for the development of the energy sector in Paraguay. With an estimated investment of nearly USD 3 billion, the plan aims to optimize the grid and meet the demand growth. However, ANDE faces technical, operational, and financial limitations. Sovereign guarantees to support its obligations could improve access to financing, increase investor and contractor confidence, and ensure the timely execution of key projects to integrate renewable energies and strengthen distribution.

2. Upcoming emblematic Project of ANDE to be executed in the Paraguayan Chaco

The International Public Tender 450918[88], with an approximate value of USD 117 million, financed by Kreditanstalt für Wiederaufbau (KfW) and FONPLATA, for the construction of a 220 kV transmission line of 500 kilometers in length (Villa Hayes – Villa Real – Pozo Colorado – Loma Plata), will double the energy capacity of the Chaco region. This project, whose bid opening took place on September 6, 2024, will promote economic growth and employment in the area.[89]

3. Development of Data Centers, Artificial Intelligence

The government's interest in attracting technology companies to build data centers in Paraguay presents a strategic opportunity. Competitive prices for renewable energy, combined with the sector's growth potential, could position Paraguay as a regional technology hub.

Artificial intelligence requires enormous processing capacity, which in turn demands large amounts of

[88] See at: Tender 450918

[89] As of the date of this article's publication, the awardee has not yet been announced.

energy.[90] In this regard, it is estimated that energy demand for artificial intelligence could double by 2026, highlighting the need for clear policies to ensure clean energy supply and to attract major technology firms.[91]

4. Investment in Renewable Energies

The growing interest of governments in generating clean energy, such as green hydrogen[92] projects and solar energy, presents a key opportunity to diversify the country's energy matrix and make better use of hydroelectric energy. These initiatives will promote sustainability and attract investments, positioning Paraguay as a regional leader in renewable energies. Experts in the field argue that, to encourage foreign investment and reduce perceived market risks, clear, stable, and coordinated policies and regulations are needed – while avoiding practices such as: (i) subsidies to fossil fuel sources; (ii) regulatory uncertainty; (iii) fragmented policy formulation; and (iv) barriers to access to transmission and distribution lines.

5. Energy from Biomass

In 2016, biomass accounted for 5% of the final energy consumed worldwide. In Paraguay, the use of biomass represents approximately 36% of the country's energy matrix, with significant consumption in the residential sector (51%) and industrial sector (44%). Its global significance, recognized by more than one hundred countries, highlights Paraguay's potential to lead in this renewable source by optimizing the use of native forests and plantations.[93]

6. Net energy metering

The net metering system has been adopted by several countries around the world. This system allows users with an installed renewable energy source (usually photovoltaic) to connect to the electricity distribution grid through a bidirectional meter[94] that records the surplus electricity they produce. This surplus can then be injected into the grid during periods of higher demand. Implementing this mechanism in Paraguay would encourage the adoption of clean energy and promote citizen participation in the sector.

7. Financing Policies and State Guarantees

Law 6324 authorizes the Paraguayan State to provide sovereign guarantees of up to USD 300 million through the Public Treasury, representing a strategic yet unimplemented precedent. Its activation, together with multilateral guarantees (such as MIGA), would mitigate risks, strengthen investor confidence, and support renewable energy projects and grid expansion, thereby establishing an attractive ecosystem for energy development.

8. Flexibility of Law 966 as a Catalyst for Renewable Projects

Law 966/64, which grants the National Electricity Administration (ANDE) a decentralized and autonomous character, and is subject to the general civil and commercial provisions, insofar as they do not oppose the norms contained in Law 966[95], constitutes a key instrument to catalyze the development of renewable energy generation projects in Paraguay. This status enables ANDE to structure public-private partnerships, enter into innovative contracts, and form partnerships with private actors, whether national or international, with no other limitations than those established in its own organic law or specific sectoral regulations. Such powers facilitate attracting investments for solar, wind, or green hydrogen initiatives, optimizing the National Interconnected System

[90] Data indicates that, in 2022, Alphabet, Amazon Web Services, Meta, and Microsoft consumed the same amount of energy as Colombia.

[91] **The Economist.**

[92] Only five countries include green hydrogen in their legislation's definition of renewable energy, among which is Paraguay. This is a sign that the country is on the path to positioning itself as a pioneer in this sector.

[93] **Production and Consumption of Forest Biomass for Energy Purposes in Paraguay.**

[94] Regarding meters, several studies conducted in different countries indicate that, in the absence of large-scale implementation of smart meters and tariffs that reflect costs, consumer demand tends to be less sensitive to market "price spikes." In this context, in the near future, there will be a significant challenge in finding a balance between market energy demand and supply capacity.

[95] Law 966, art. 5.

(NIS) and promoting diversification of the energy matrix – provided that these efforts are complemented with clear and stable regulatory policies that strengthen investor confidence.

B. Challenges

1. Management Capacity

Although ANDE has successfully managed obtaining loans from multilateral institutions, it still faces certain challenges in optimizing its management capacity. It is important that ANDE continues to modernize and adapt to the demands of the system and the market, striving to become increasingly efficient in negotiations and in managing project timelines. The experience of the UTE in Uruguay can serve as a useful reference to identify opportunities for improvement in areas such as service quality, infrastructure development, and the implementation of energy policies.

2. Bankability

Ensuring the bankability of energy projects is essential to attract financing, as investors assess the financial, technical, and legal viability of a project to guarantee its capacity to repay capital. In Paraguay, regulatory uncertainty poses a significant obstacle to bankability, discouraging potential investors. Overcoming this challenge requires not only the proposed improvements to Law 3009 and the NCRE Law but also a comprehensive approach that combines government incentives, risk mitigation mechanisms (such as sovereign guarantees), and a clear, predictable regulatory framework. These measures would attract both international and local capital, promoting high-impact projects that diversify the energy matrix and strengthen the sustainable development of the sector.

3. Energy Security

Energy security[96] has been defined by the International Energy Agency as "the availability of adequate, affordable, and reliable energy." In this context, experts argue that energy security is achieved through diversification of the generation matrix, as this reduces dependence on a single source and helps avoid exposure to price volatility, as evidenced during the Russia-Ukraine war, which severely impacted importing countries.

In Paraguay, increasing the share of renewable energies in the energy matrix is a key strategy to improve energy security by minimizing risks associated with global fluctuations. Additionally, the country seeks to strengthen the stability of the electrical system by mitigating overloads and outages in the grid. Distributed renewable energy generation can reduce the load on the network, while more dispersed sources decrease vulnerability to widespread blackouts. These actions optimize the performance of generation, transmission, and distribution, reduce energy cuts, and reinforce resilience against internal and external risks. By diversifying the matrix and modernizing infrastructure, Paraguay can establish a sustainable, reliable energy system aligned with long-term economic and social development.

[96] Paraguay is listed among the countries that consider energy security as one of their objectives within their legal framework. Additionally, data indicates that Paraguay is among the energy exporters classified as "self-sufficient.".

VI. CONCLUSION

The Paraguayan energy sector is going through a decisive, historic juncture characterized by the urgent need to adapt to global shifts toward more sustainable, efficient, and diversified energy sources. The current legislative framework marks a significant step forward in strategic diversification of the energy matrix and the promotion of renewable energies. However, persistent structural challenges demand urgent attention: ambiguous regulations, restrictive thresholds for incentives, and insufficient timeframes for licenses and contracts limit the full exploitation of emerging opportunities.[97]

Decree 2553/2024, which establishes the National Energy Policy until 2050, introduces a long-term vision aimed at consolidating the country's energy self-sufficiency and encouraging renewable energy use. This regulatory instrument has the potential to attract both domestic and international investments, fostering sustainable economic development. Nonetheless, its integration with the existing legal framework raises questions. Ensuring coherent harmonization and making adjustments will be essential to guarantee effective and systematic implementation.

To build an attractive and sustainable energy ecosystem, Paraguay must undertake key reforms: extending contract durations to 30 years, increasing power limits to access incentives, and establishing advanced financial mechanisms such as feed-in tariffs and sovereign guarantees. Additionally, strengthening the management capacity of institutions, promoting transparency in bidding processes, and improving project execution are crucial.

Paraguay's leadership in the energy sector will depend on its ability to adapt to the dynamics of a transforming global market, balancing national energy needs with attracting qualified investments. Through strategic public-private collaboration, the country has a historic opportunity to become a regional benchmark in renewable energies, ensuring a secure, reliable, sustainable, and competitive energy supply for all its citizens.

[98] It is essential that government policies and regulations provide greater support to new market players. In this way, new entrants will benefit from the provision of accurate and timely information from the government. Moreover, continuous guidance should be offered throughout the procedures necessary to obtain the required approvals from the authorities.

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