

THE ENERGY  
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AND MARKETS  
REVIEW

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# PREFACE

In our 12th year of writing and publishing *The Energy Regulation and Markets Review*, the most pressing global concerns continue to be inflation, supply chain concerns, the Ukraine war and continuing efforts to combat climate change. Accordingly, many of our contributing authors have emphasised concerns associated with the effects of these crises on infrastructure development, commodity purchases and energy demand. We have also seen industry and regional specific changes that have added uncertainties to global energy policies. For example, oil and gas prices have remained high, compared with three years earlier. European demand for natural gas has remained an important energy security issue in light of the region's historical reliance upon supplies from Russia, which, in turn, dramatically increased European electricity prices. Additionally, there has been a sharp increase in the development of liquified natural gas (LNG) facilities in the United States and increased export activity as a result of the pricing changes globally. The convergence of these events has created a catalyst for increased investment in renewable energy and energy efficiency in order to further reduce reliance upon Russian natural gas and oil. Additionally, the United Kingdom continues to experience uncertainties resulting from its transition, not only in terms of energy resources associated with decarbonisation efforts, but also out of the European Union (a process known as Brexit). The Biden administration has continued to reassure US allies and historical trading partners that it remains committed to the 2015 Paris Agreement, notwithstanding the Trump administration's previous withdrawal. And the memory of the 2011 Fukushima nuclear incident continues to affect energy policy in many countries. Finally, there are continued efforts to liberalise the energy sector globally.

## I CLIMATE CHANGE DEVELOPMENTS

We continue to see significant carbon reduction efforts globally, including increased use of renewable resources and measures to improve energy efficiency and reduce demand.

In the United States, the Biden administration has continued to commit to the fight against climate change, despite the previous administration's support for fossil fuels. While coal and other aged fossil fuel plants continue to retire at an unprecedented rate (primarily because of the economics of those facilities), the Texas winter storm in February 2021 and winter storm Elliott in the north-east and mid-Atlantic regions in December 2022 have raised questions about whether renewable resources alone will be sufficient for long-term reliability. The US Federal Energy Regulatory Commission has continued to focus on ensuring resource adequacy at just and reasonable rates, and on winter gas-electric coordination in the northeast markets. While many states have continued to award procurements of thousands of megawatts of new offshore wind development projects on the east coast, companies that were awarded

contracts have initiated renegotiations of those contracts due to price increases emanating from supply chain issues and inflation. The Federal Energy Regulatory Commission has continued to struggle with whether and how to impose regulatory restrictions on the ability of states to subsidise renewable energy projects in light of their adverse impacts on competitive market prices. The Inflation Reduction Act provides additional incentives to assist in the conversion to renewable resources.

The European Union's Renewable Energy Directive II seeks to reach 32 per cent of the region's total energy needs through renewable energy and 14 per cent for the share of renewable fuels, both by 2030, and climate neutrality by 2050. This past March, the EU Commission published proposed changes to regulations and market issues that will create further divergence from the United Kingdom's regulatory approach. France is seeking to double its wind and solar capacity and President Macron has announced a goal to close the remaining coal plants by 2022. France has recently updated its national policy priorities with respect to climate change to include low-carbon hydrogen resources as well as power plants equipped with pumped storage, and provided a new certification process for biogas. Italy had previously targeted a 28 per cent reliance on renewable energy by 2030 but is now working to reach the 32 per cent target adopted by the European Union, and has changed the recently formed Ministry of Ecological Transition to the Ministry of Environment and Energy Security to assist with the fight against climate change. To reduce reliance on Russian oil and gas, Belgium seeks to triple its offshore wind capacity to 5.8GW by 2030. Portugal is retiring coal generation and replacing it with renewable and hydrogen generation resources, and recorded a 7 per cent drop in carbon emissions in 2020. Greece is decommissioning some of its old lignite plants and has begun implementation of a 'just transition' plan (increasing renewables from 14 per cent to 43 per cent of all generation), while increasing domestic coal production in the near-term, and accelerating its effort to develop offshore natural gas resources and increase LNG storage.

China continues to have ambitious renewable energy goals, aiming for an emissions peak by 2030, carbon neutrality by 2060 and a goal of 25 per cent of generation supplied by non-fossil fuel generation by 2030. India aims for almost half of its generation capacity to be made of renewable energy resources by 2030, which would amount to 500GW. Singapore has a Green Plan to meet its sustainability targets, including increasing solar energy deployment fivefold to 2,000MW, having 200MWh of energy storage deployment after 2025, and increasing clean energy imports. A new law was enacted last year in Indonesia that sets forth a path to meet its climate-change commitments, including new coal-fired power plant commitments, as well as a law (enacted the previous year) on carbon pricing. While there remains significant debate in Australia regarding the role of gas and coal in the energy landscape, which has led to a patchwork of national and state policies that point to continued uncertainty regarding Australia's commitment to carbon reduction, Australia has already met its legislated target of 23.5 per cent of power generation from renewables.

Nigeria is targeting to have 30 per cent of its electricity generated from renewable resources by 2030 and net zero carbonisation by 2060. In Brazil, hydroelectric resources constitute more than half of its installed generation capacity, and efforts continue to increase wind and solar generation as the cost of renewable generation has decreased.

## **II INFRASTRUCTURE DEVELOPMENT**

The multiple crises so far this year (e.g., inflation, the war in Ukraine, supply chain issues, etc) have made infrastructure development difficult for many countries, particularly those in which a reliable energy supply remains the primary concern, regardless of fuel source. Even the United States is no exception, as controversy remains over the Dakota Access Pipeline, development and approvals for which have continued to stall, and the Biden administration revoked the Keystone XL Pipeline's presidential permit in January 2021, regardless of the recent dramatic increases in oil prices, leading to an arbitration claim by Keystone against the United States government for US\$15 billion. The European Union has recognised the need to secure a diverse energy supply, particularly in view of Russia's invasion of Ukraine and the desire to reduce reliance on Russian oil and gas. Belgium is expected to increase investment not only in renewable generation but also in hydrogen and geothermal energy to combat reliance upon Russian oil and gas. This was, for example, the first time in over a decade that Spain exported significant amounts of natural gas to France. Portugal is also expanding the development of green hydrogen as an alternative fuel source, including development of the Sines project, which is intended to replace in part the capacity lost following the retirement of coal generation. It is anticipated that Brazil may be able to produce the cheapest green hydrogen in the world, due to geographic and climate conditions. Furthermore, and unsurprisingly, Russia has not received any foreign investment from Europe, the United States or the United Kingdom due to sanctions imposed by these countries related to Russia's invasion of Ukraine. Singapore is adding to its LNG import capabilities. Ever since sovereign power was transferred to Myanmar's Commander-in-Chief of the Defence Services three years ago, foreign investment in infrastructure development has stalled, which has made the country's goal of electrification of 75 per cent of the population by 2026, and electrification of the entire population by 2030, a challenge. Lebanon has consistently faced energy shortfalls and is now in a full-blown economic crisis that has made significant infrastructure development extremely difficult. Nigeria has only 16,000MW of installed generation capacity, which is insufficient to meet its needs, and is looking to the gas sector in the country to supply sufficient fuel to support additional generation resource development. The energy infrastructure of the Democratic Republic of the Congo is even more challenging, as there is only enough electricity to power 19 per cent of its approximately 90 million people.

## **III NUCLEAR POWER GENERATION**

Ten years after the Fukushima disaster, there is a struggle between efforts to limit reliance upon nuclear energy and the emissions reductions and fuel diversity benefits nuclear power offers. Because of the Ukraine war and the need for fuel diversity, and the importance of nuclear power for fighting climate change, Belgium has extended the economic lifetime of two nuclear power plants until 2035 and is now considering extending three other plants beyond 2025. France had previously sought to eliminate nuclear generation by 2025 but has extended that date. In the United States, although the early retirement of certain nuclear plants has been driven by cost and power market considerations (rather than safety concerns), some states have passed legislation to subsidise nuclear energy to allow owners to continue to operate through zero emissions credit programmes, including Illinois, New York, New Jersey and Ohio.

#### IV LIBERALISATION OF THE ENERGY SECTOR

We have seen significant energy sector regulatory reforms in many countries. The European Union has sought to continue efforts to centralise the regulation of the EU energy sector, albeit without the participation of the United Kingdom. Belgium, Portugal, Greece and France (among others) have each taken significant steps towards further liberalisation of the energy sector. This was particularly important for countries (such as France) that had longstanding state-owned electricity and natural gas monopolies. However, many countries, including Spain, Portugal and Australia, imposed regulatory limitations on electricity and gas prices, due to the sharp price increases, and adopted a new resource-specific pricing mechanism that resulted in significant differences in electricity prices from renewable generation compared to natural gas generation. Australia has opened access to transmission through regulatory reforms to ensure timely transmission investment and encourage market entry, and continues to engage in significant changes in the regulation of the energy market, including increases in the wholesale market price cap. Brazil has recently implemented net metering regulations and is now implementing distributed generation regulations. China has reduced subsidies for renewable energy and has implemented a market-price mechanism for pricing coal-based generation. The United Kingdom has implemented a competitive tender process for the development of offshore transmission. In the United States, while states have continued to subsidise renewable generation (particularly significant new subsidies for offshore wind development in the Northeast), the Federal Energy Regulatory Commission has continued to struggle between deference to states in making procurement decisions and protections against adverse impacts on competition by implementing minimum offer price rules to combat buyer-side mitigation markets. Mexico appears to be taking an anti-liberalisation approach, seeking to unwind reforms from previous years, and favouring state-owned electric and oil companies over non-Mexican companies.

I would like to thank all the authors for their thoughtful consideration of the myriad interesting, yet challenging, issues that they have identified in their chapters in this 12th edition of *The Energy Regulation and Markets Review*.

**David L Schwartz**

Latham & Watkins LLP

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# PORTUGAL

*Ivone Rocha, Ana Pires da Silva, Vanessa Matos Mendes and Luísa Vilas Boas<sup>1</sup>*

## I OVERVIEW

Last year, the European Union returned to its beginnings, dealing with the effects of energy crises and war, this time, in a green deal context. With the Ukraine war, Europe's dependence on Russian energy supplies put energy prices to insufferable levels, especially for industries and consumers. The spot marginal price market, which is mainly based on a single supplier, has become inefficient. Taking the Portuguese electricity mix, which is split into conventional generation (gas) and renewables (wind, solar photovoltaic (PV), hydropower and biomass), in consideration the Portuguese and Spanish governments approved a relief mechanism that placed a cap on marginal gas price. Therefore, the Iberian Energy Market, with the European Union authorisation, adopted changes to spot marginal prices. Also, to accelerate the construction of new renewable power generation facilities, Portugal approved legal changes on licence energy proceedings, especially regarding environmental legal requirements. Those two measures, with special support to the more vulnerable consumers, encouraging saving energy and increasing awareness of costs, marked the Portuguese energy agenda in 2022.

As a Member State of the European Union, all activities in the electricity and gas markets, from production to supply (except in a very few specific cases), are subject to mandatory unbundling and must be developed by legally separate entities. Although the provisional opening of the regulated market to new consumers – due to price increases for the more vulnerable customers – the complete liberalisation of these sectors in Portugal is due to happen in 2025 with the extinction of regulated end-user energy supply tariffs, shifting all consumers to liberalised markets and to natural monopolies in distribution and transmission grids for both power and natural gas systems.

Only generation, supply and trading of electricity and gas (which now includes hydrogen and other renewable and low-carbon gases) are subject to licensing procedures, although these are mostly deregulated activities in contrast with the operation, maintenance and exploitation of infrastructure, such as transmission and distribution grids, liquefied natural gas (LNG) terminals and gas storage facilities. The use of infrastructure is subject to access rates administratively set by the national regulatory authority, the Energy Services Regulatory Authority (ERSE).

The government's current policy for the energy sector is set out in the National Plan for Energy and Climate 2020–2030 (the PNEC 2030), which aims to establish the means to achieve both EU goals and Portugal's commitments to increase the amount of energy

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generated from renewable sources, improve energy efficiency and reduce energy prices for consumers, without losing sight of the economic rationale. The main objectives of the PNEC 2030 are:

- a* contribute to decarbonising the Portuguese economy;
- b* prioritise energy efficiency;
- c* strengthen the commitment to renewable sources of energy and reduce the country's energy dependency;
- d* ensure security of supply;
- e* foster sustainable mobility;
- f* develop an innovative and competitive industry; and
- g* ensure a fair, democratic and cohesive transition.

In addition, following the introduction of green hydrogen and other renewable gases into the Portuguese framework in 2020, steps have been taken towards the gradual introduction of green hydrogen into the energy sector (and others). Relevant public funds are being made available for the deployment of pilot and industrial-scale green hydrogen projects, with multiple large-scale clusters appearing in the Sines region and elsewhere. The first ones achieved ready to build status.

## **II REGULATION**

### **i The regulators**

In Portugal, the energy framework presents several regulatory entities with different functions and responsibilities regarding the various aspects of the industry with the common aim of ensuring the sustainability of the sector.

The regulatory authority for electricity, gas, liquefied petroleum gas in all categories and fuel sectors is ERSE, a public entity with administrative and financial autonomy, which is also responsible for regulating the national electric mobility plan.

ERSE's by-laws were approved by Decree-Law No. 97/2002 and amended by Decree-Law No. 76/2019 and the entity is governed by the Framework-Law of Regulatory Bodies (Law No. 67/2013 as amended by Law No. 71/2018). ERSE, as the economic regulator of the energy sector, ensures adequate customer protection, promotes competition among market agents, contributes to the progressive improvement of environmental and economic conditions concerning in the sector, and arbitrates disputes.

ERSE has also the power to issue regulations required for the performance of its tasks and intended to implement legislation governing the organisation, operation and compensation in the energy sector, from generation to supply and trading. Some of the most relevant of these are the Regulation on Self-Consumption, the Regulation on Trade Relations, the Tariffs Regulation, the Regulation on Smart Grids and the Regulation on the Management of Electric Mobility Network Operations.

In addition to ERSE, the General Directorate for Energy and Geology (DGEG), is the entity, administered by the state, which contributes to the planning, promotion and development of the state's policies regarding energy matters and the exploitation of natural resources. The nature of DGEG and its areas of responsibility are set out in Decree-Law No. 130/2014, amended and republished by Decree-Law No. 69/2018.

DGEG is also the competent entity for granting licences and other administrative authorisations concerning energy-related activities, such as production, establishment or exploitation.

The Central Storage entity and responsible, on the one hand, for the constitution, management and maintenance of national reserves of oil and petroleum products and, on the other hand, for the supervision and oversight of all areas of the energy sector is National Entity for the Energy Sector (ENSE). The nature of ENSE and its areas of responsibility are defined in Decree-Law No. 339-D/2001, amended by Decree-Law No. 69/2018.

The Portuguese Environment Agency (APA) is the Portuguese regulatory authority on hydropower resources, waste and dam safety. It also has broad powers in relation to other environmental matters, the most important being the responsibility for conducting environmental assessments for energy market-related projects. Having important powers in licensing and policy matters, APA has the authority to carry out its duties, namely to ensure the safety of public domain assets under its administration, to prevent and control infringements and to enforce sanctions for illegal activities.

Finally, in coordination with ERSE, the Competition Authority (AdC) ensures compliance with the rules regarding the promotion and protection of competition and the promotion of competition in a liberalised and free market.

## **ii Regulated activities**

The regulated activities are production, trading and operation and management of the national transmission and distribution grids. Both transmission and distribution concessions are awarded through utility concession agreements entered into with the Portuguese state, granting the concessionaires the exclusive right to exploit the grids for periods of up to 50 (for transmission concessions) and 35 years (for distribution concessions), respectively. Management of distribution grids may be segregated from management of transmission grids in which case the concession grants exclusive rights for management of the distribution grids for a period of up to 30 years.

For low-voltage distribution grids there are municipal concessions which hold rights of exploitation granted through concession agreements valid for periods of 20 years.

The import, exploitation, transmission, distribution and operation of LNG terminals and of LNG storage facilities are also regulated and subject to administrative authorisations. Although Portugal does not produce LNG owing to a lack of commercial findings, prospection concessions are still on the country's agenda, to determine the extent and economic viability of existing resources on the Algarve coast.

The operation of the national transmission and distribution grids, of LNG terminals and LNG storage facilities is also granted by means of concession agreements, offering the exclusive right to develop these activities for 40 years within a certain geographical area.

Additionally, there are some local gas distribution grids with no physical connection to the national transmission or distribution grid, which may be operated by obtaining a licence, valid for 20 years.

## **iii Ownership and market access restrictions**

Electricity generation may be carried out by any entity that has the means and meets the conditions required to obtain a production licence or authorisation, or an establishment licence. A licence or authorisation may be requested by a company holding a title that confers the right to supply energy to the national grid, whenever applicable. The procedure to obtain

such permissions was recently simplified, focussed on the scope and object of the projects, in response to European appeals embodied in the RePower and European Re-Industrialisation Plan, the licensing authority is the DGEG, although other entities, such as APA and municipal councils, are also involved in the procedure. Moreover, following the issuance of a production or establishment licence and prior to commencing industrial exploitation, facility operators must also obtain an exploitation licence, which is granted after an inspection to ensure that all the technical and safety conditions required for operation have been met.

Production licences do not have a set term, unless the power is generated using public domain water resources (i.e., hydro) or the power plant is installed in a maritime zone under sovereign or national jurisdiction (i.e., offshore wind farms) or uses other assets in the public domain (e.g., floating solar PV installations), in which case the term of the production licence will correspond to the licence or concession agreement granting the right to use the public domain resources.

The transmission system operators (TSOs) for the electricity and gas sectors are subject to full private-party ownership under the unbundling regime adopted by Portugal. The current Portuguese TSO, *Redes Energéticas Nacionais*, SGPS, SA (REN), will hold the concession until 2057.

Within this framework, no entity may hold an equity participation greater than 25 per cent of the share capital of the TSO. Also, the TSO or the companies that control it may not, directly or indirectly, exercise control or any rights over companies dedicated to generation or supply of electricity or gas. Equally, companies dedicated to generation or supply of electricity or gas, or the entities that control them, directly or indirectly, cannot exercise control or any rights over the TSO.

The TSO is also strictly forbidden from acquiring electricity or gas for resale.

In the downstream oil sector, entities that carry out storage and pipeline transport of oil or oil products must be legally independent from entities that conduct refining, distribution by pipeline or supply of oil or oil products.

ERSE exercises its powers to supervise the obligations of the TSO relating to the full unbundling regime, in accordance with Portuguese and EU law.

Distribution activity, carried out by distribution grid operators, is also a regulated activity along similar lines to transmission activity.

#### **iv Transfers of control and assignments**

The transfer of any resources related to activities approved through concession agreements is subject to prior authorisation from the government.

Concentration operations that meet certain predetermined requisites must be notified to the AdC and are subject to its prior approval.

Following notification of a concentration operation, a decision should be issued within 30 to 90 days, depending on whether a thorough examination is required and if any additional information from the company, or an opinion from another competent entity, is required by the AdC.

Changes of control of both production licences for generation and the companies holding such licences are subject to authorisation by a licensing authority and are generally allowed if the recipients meet certain legal requirements concerning technical and financial suitability. Also, if the transfer is intended prior to the issue of the operating licence, it follows the assumptions for the transfer of the capacity reservation title.

### **III TRANSMISSION/TRANSPORTATION AND DISTRIBUTION SERVICES**

#### **i Vertical integration and unbundling**

The electricity industry was verticalised under Energias de Portugal, SA (EDP) in 1975. However, in 1995, the industry's different energy-related activities began to be unbundled. Nowadays, the operation and exploitation of the national transmission grids for both electricity and gas are carried out in accordance with the unbundling regime. EDP was required to spin off any assets relating to the transmission grid into a separate company, which is why REN was established. Similarly to how EDP's responsibilities were unbundled, but with regard to natural gas, GALP Energia, SA (GALP) was also required to dispose of its transmission assets, which are now owned and operated by REN Gasodutos SA.

The distribution of electricity and gas is subject to a legal unbundling regime. This means that, from a legal, organisational and decision-making standpoint, distribution grid operators must act independently of other activities unrelated to distribution. Distribution companies that serve less than 100,000 clients are not subject to the legal unbundling regime, but they must still implement accounting and functioning unbundling measures.

Trading activities are also subject to the unbundling regime and therefore, implicitly, must be legally separate from other activities. The seller of last resort is also bound by this unbundling regime, even in relation to common suppliers.

ERSE exercises its powers to supervise the obligations of companies relating to the full ownership unbundling framework.

#### **ii Transmission/transportation and distribution access**

To ensure equal conditions for all market participants, the concessionaires of transmission and distribution activities in the electricity and gas sectors must comply with specific public service obligations to guarantee equal access conditions to all markets participants and to refrain from adopting any discriminatory behaviour or practices.

The safeguarding of equal conditions to all market participants for access to and use of infrastructure is envisioned to create efficient and effective market conditions, promoting healthy competition, and thus enhancing consumers' experience in these markets.

#### **iii Rates**

Remuneration for the services of electricity and gas transmission and distribution is determined by ERSE and regulated in accordance with its Tariff Regulation.

ERSE also determines the issues that must essentially be included in the grid usage agreement. These are better defined in the Grid and Interconnections Access Regulation and include duration, interruption of service conditions, payment methods and conditions for termination, which vary depending on the contracting parties (generators, suppliers, grid operators or consumers). The general terms of the grid usage agreement are submitted to ERSE for prior approval.

The Portuguese tariff system is set up in such a way that for each regulated activity there is an associated regulated tariff, and the tariff applicable to each consumer is the sum of the various activity-related tariffs.

Tariffs for the use of regulated infrastructure are based on the provider's cost plus a rate of return, which will determine the operator's permitted revenue. The rate of return is also established by ERSE for a certain period.

The allowed revenue and the provider's costs for the activity of transmission and distribution of electricity and gas are determined in accordance with the Tariffs Regulation.

The formula used to calculate TSOs' permitted revenue factors in efficiency costs into providers' overall costs, to reward efficient spending and investment, with allowances for the maintenance and operation of end-of-life equipment.

#### **iv Security and technology restrictions**

The concessionaires of electricity and gas transmission activities (i.e., TSOs) are also in charge of managing and monitoring the National Electricity System (SEN) and the National Gas System under the supervision of ERSE and DGEG.

Companies responsible for transmission have the responsibilities to secure the capacity of both systems; to operate the transmission grid; to provide information to other operators to:

- a* maintain safety in operation;
- b* estimate the level of reserves needed for safety of supply; and
- c* in general, form a vital part of both systems; and to coordinate with all other participants to maintain the safety of the systems.

DGEG published a 'Monitoring Report on the Supply Security of the National Electricity Production System' for 2022–2040. The Report described SEN, provided future scenarios for the grid, and set out planned and installed capacity and levels of energy generation.

## **IV ENERGY MARKETS**

### **i Development of energy markets**

The Iberian Electricity Market (MIBEL) resulted from cooperation between the Portuguese and Spanish governments with the aim of promoting the integration of both countries' electric systems. This cooperation contributed significantly to the establishment of an electricity market not only at the Iberian level but also at the European level, and to the development of the internal energy market.

The operation of the wholesale market at any given time is determined by the mix of production structure, import capacity, the imperfect meshing of the grid, the inelasticity of demand and the system reserve margin.

One important aspect of MIBEL is the principle of reciprocal recognition of agents: if an agent is granted the status of producer or supplier by one country, it is automatically recognised by the other and therefore has equal rights and obligations.

The management of the Iberian spot electricity market is the responsibility of OMEL, the Spanish division of the Iberian Energy Market Operator.

In the spot electricity market, transactions are executed by the participation of agents on the daily and intraday market that aggregate the Spanish and Portuguese areas of MIBEL. Trading on the daily market is based on a daily auction, with settlement of energy at every hour of the following day.

There are various intraday sessions subsequent to the daily market auction in which agents can trade electric power for the various hours of the day covered by that market. Trading is also done by auction.

OMIP is the operator of the Portuguese division of MIBEL and is responsible for the management of the derivatives trading market. On the OMIP trading platform, all features

of the futures agreements are standardised. Therefore, when an agent opens a position, it only needs to choose the agreement it will trade, the relevant quantity and the price (except if it is a market offer). These contracts are marked to market each day.

The operations carried out by OMIP are registered in trading accounts and simultaneously registered in clearing accounts through which the financial settlement of the agreements is assured.

In a recent revision, system services markets were added to the Portuguese market strictly in accordance with European legislation on the matter. REN, in its capacity as system manager, is responsible for contracting these system services through competitive, open and transparent mechanisms. Under the watchful eye of ERSE, REN may be granted authorisation to enter into bilateral contracts with certain operators for system services where the specific nature of these services justifies an exception to the traditional competitive procurement mechanisms. Any market participants (including from small-scale self-consumption power plant operators down to consumer level, provided that they meet market agent requirements or are represented by a market agent through aggregation) may participate in these markets.

The Iberian natural gas market, MIBGAS, offers its users the possibility of trading within-day, day-ahead, balance-of-month and month-ahead products at the Iberian level. The main objective of MIBGAS is to provide transparency about the natural gas prices negotiated in the Iberian Peninsula by making them known to all interested parties and thus contributing to fostering competition in the natural gas sector.

## **ii Energy market rules and regulation**

The legal framework applicable to the organisation of MIBEL is based on the MIBEL Agreement between Portugal and Spain regarding the establishment of an Iberian electric energy market. It establishes the general terms and conditions for the organisation and management of MIBEL, namely the legal framework applicable to the spot and derivatives markets.

Because of its financial nature, the MIBEL derivatives market is directly subject to Portuguese law and jurisdiction and hence to the legislation applicable to this type of market, namely:

- a* the Portuguese Securities Code;
- b* the Portuguese Securities Market Commission (CMVM) Regulations; and
- c* the CMVM instructions.

This market comes under the jurisdiction of the CMVM, with a direct connection to ERSE. Moreover, regulation of MIBEL takes place through market rules developed by the market operators, OMIE and OMIP, which have the duty of developing and jointly applying all the rules.

## **iii Contracts for sale of energy**

Any entity (producer, supplier, aggregator, consumer or other participant) registered as a market agent (as required by Portuguese law) may enter into a bilateral power purchase agreement.

As regards the applicable legal and regulatory provisions, the terms of a power purchase agreement (PPA) are agreed between the contractors. The market agents must notify the TSO (because it is the global system manager) of the completion of an agreement, indicating the term for which it is executed.

Pursuant to Decree-Law No. 15/2022, bilateral PPAs entered into in the context of self-consumption, namely for renewable energy communities (RECs), require a PPA to be defined under each REC's internal rules, and are subject to approval by ERSE.

#### **iv Market developments**

The armed conflict in Ukraine caused a great deal of instability in the energy sector. It is unequivocal to state that the increase in fuel prices had impacts on various sectors of economic activity and energy consumption by companies and families. Considering the characteristics of MIBEL, as well as the reduced electrical interconnection of the Iberian Peninsula and continental Europe, the governments of Portugal and Spain cooperated in designing a mechanism for decoupling the price of natural gas from the MIBEL, with a view to mitigating the instability around respective prices. Therefore, Decree-Law No. 33/2022 of 14 May, provided for an exceptional and temporary regime to fix the prices in MIBEL, through fixing a reference price for natural gas consumed in the production of electricity traded on MIBEL, with a view to reducing the respective prices of energy. This Decree-Law and the mechanism created by it were initially to apply only until 31 May 2023, but were later extended until 31 December 2023.

Finally, it is also worth noting that, in accordance with Decree-Law No. 15/2022 of 14 January, ERSE carried out a survey of the rules provided within the Decree-Law that determine the production of regulations by ERSE. Following this, a public consultation ran until 31 May 2023 regarding proposals to revise and reformulate various regulations of the electricity, gas and liquefied petroleum gas sectors. The proposed regulations submitted by ERSE will be binding on all agents involved in the electricity sector and, in matters having impacts, on all agents intervening in the gas and piped liquefied petroleum gas sectors. These changes, if occur, will have relevant impacts, adjusted to the current reality of the sectors. These relevant effects of these changes, if they go ahead will be adjusted to the current reality faced by the energy sector.

## **V RENEWABLE ENERGY AND CONSERVATION**

### **i Development of renewable energy**

With the purpose of reducing energy imports and dependency and following the enactment of several European Union directives regarding a carbon neutral society by 2050, Portugal has been developing and investing significantly in renewable sources of energy.

The renewables sector finally woke up in 2019 and 2020 confirmed that trend, in spite of the covid-19 pandemic. Carbon emissions dropped by almost 7 per cent in 2020, an all-time record. Portugal has become known worldwide for its leading role in the promotion of renewable energy, thanks to significant developments and investments in wind and solar PV projects and following the publication of its National Hydrogen Strategy, and is expected to develop in three phases:

- a* the first, between 2020 and 2023, aims to develop the legislative and regulatory landscape for implementation of the first projects, of variable scale and across several sectors;
- b* the second, between 2024 and 2030, is geared towards consolidating the national framework, strengthening competence in the sector, and rolling out projects at national level; and

- c* the third, between 2030 and 2050, is expected to achieve full realisation of the Portuguese hydrogen market, including exports and the development of the international dimension.

Portugal has been the target of several investments, especially regarding the production of hydrogen and other renewable gases, aiming to achieve carbon neutrality and promoting energy transition through financing renewable energy supplies. Therefore, several projects with varying scales of generation capacity are being announced all across Portugal. While the industrial project at Sines is still considered an anchor project for the hydrogen sector in Portugal, given both its potential for synergies with other industrial projects in the surrounding area and the neighbouring deep-water port, many other industrial-scale ventures have looked to the EU Recovery and Resilience Facility funds for public capital expenditure support. There appears to be a sustained level of political support for these projects and for developing Portugal's capabilities as a renewable energy source exporter, for Europe and the world.

For situations in which grid capacity is not available, Decree-Law No. 15/2022 provides the option to enter into an agreement with the TSO by bearing the costs incurred in adapting the grid to facilitate a connection to the project. Current legislation makes it harder to obtain grid connection titles and new ones can only be awarded subject to a final decision in those cases of procedures initiated under the previous framework that are still pending. It is particularly important to note that the State Energy Secretary recently announced an extension of the deadlines allocated to the 2019 solar PV auctions, and an extension to the deadlines for obtaining operating certificates and licences for the remaining pending projects. These announcements are based on the logistical and supply constraints arising from the covid-19 pandemic and the severe instability caused by the Ukraine war.

## **ii Energy efficiency and conservation**

In December 2018, the revised Energy Efficiency Directive (EU Directive 2018/2002 of the European Parliament and of the Council of 11 December 2018) entered into force, setting a community-wide energy efficiency target for 2030 of at least 32.5 per cent. One of the primary goals of the PNEC 2030 is to prioritise and boost the development of energy efficiency projects. The government has introduced the several measures to set that up in the next couple of years, such as:

- a* a review of the legal framework for energy management and efficiency and a strengthening of the monitoring systems;
- b* promoting the rational use of energy by end users;
- c* equipping the energy sector with the necessary capacity in terms of human resources qualified in energy efficiency;
- d* promoting increased penetration of more efficient equipment and products through the renewal of existing ones; and
- e* simplifying procedures and reorienting and strengthening funds and funding programmes.

Regarding this, the Homeowners' Communities Support Programme is currently underway. With an overall allocation of €12 million, this programme was opened by the Environmental Fund of the Ministry of the Environment and Climate Action on 5 April 2023, and the deadline for submission of applications is 28 December 2023 (or when the planned

appropriation is exhausted). The main goal of this programme is to finance energy efficiency measures that improve the thermal comfort of residential buildings, and so contribute to the reduction of energy bills and the renovation of existing housing stock. Specifically, the programme aims to promote the adoption of thermal insulation measures for façades, roofs and floors, which have a greater potential for energy efficiency and energy savings in buildings.

In addition, the promotion of energy efficiency measures is achieved through various instruments. Since 2006, ERSE has been implementing the Consumption Efficiency Promotion Plan (PPEC), which is a competitive mechanism to support measures that make a real contribution to reducing consumption in the electricity sector. Under the PPEC, incentives are awarded for the promotion of measures aimed at improving efficiency in electricity consumption. These measures are carried out by suppliers, operators and organisations that promote and protect the interests of electricity consumers in Portugal. The actions result from specific measures, subject to a selection process, whose criteria are defined in the Rules for the Consumption Efficiency Promotion Plan. This process allows the selection of the most promising measures for energy efficiency to be implemented by the promoters, considering the amount available in the PPEC annual budget, which is approved at the beginning of each regulation period for each year of its term.

### **iii Technological developments**

In the past couple of years, Portugal has been investing in new energy models for mobility that aim to improve quality of life and reduce pollution.

Legal framework applicable to small production units has made possible the emergence of prosumers (i.e., small producers that generate electricity for self-consumption and sell the remainder on, including to the public grid in some cases). The prosumer approach is suitable not only for small production units but also for all those who intend to form collectives of self-consumers (e.g., the occupants of a condominium) or renewable energy communities (RECs) for the purpose of sharing the energy they produce. This is one of the most researched legal mechanisms as it allows participants to reduce electricity costs, as self-production is logically cheaper. RECs are at these days getting more and more adherence by companies and even local authorities, as they are able to generate savings and profits, as well as to achieve environmental and decarbonization goals.

Current legislation makes it possible to operate independent and integrated storage solutions in energy production. The value of storage is determined by the role it plays in creating or solving bottlenecks in a congested network. This kind of solution is being very much appreciated by developers and investors of project. Storage is also an opportunity for existing renewable energy producers, which can upscale and add value to their assets, and take a more interventive participation in the market.

Another significant development relates to the generation of offshore wind energy, which will be one of the main ways of increasing renewable energy production capacity in Portugal in the future. The Portuguese government has set the goal of producing 10GW of electricity from offshore wind energy in 2030, and announced an auction at the end of 2023, which is expected to allocate areas for offshore wind energy production according to the most competitive and beneficial offers for the national electricity system (i.e., those that will offer the lowest energy prices for sale to the grid in the long term).

Hybridisation is another of the significant developments in the recent past. Facilities may now produce electricity from different primary sources utilising the same infrastructure and grid connection point. This allows an increase in generation and a broader energy mix

(although different technologies remain subject to different licensing requirements). The combination of wind and solar has already attracted interest from major participants in the industry because it allows projects to maximise output and efficiency given the different availability of the sources, without incurring more costs for the grid operator in terms of investment in infrastructure. In this regard, it should be noted that Portugal has recently inaugurated the first hybridised wind power plant in the Iberian Peninsula, whose wind component has the capacity to produce around 11MW of power and a solar component that brings in another 9MW, basically doubling the capacity of the park using the same grid connection infrastructure.

Additional revenue streams may be available through ‘overpowering’ – an option now available to all renewable sources, whereas it was previously limited to wind-powered plants.

The repowering (i.e., the total or partial replacement of a renewable power plant’s generating equipment) of renewable power plants is also available to developers according to current legislation, which was recently clarified by DGEG. This regime applies to all renewable energy sources, with the exception of hydropower plants with connection capacities exceeding 10 megavolt-amperes (MVA). Therefore, a full replacement of generation equipment affords developers and operators an increase of up to 20 per cent in injection capacity (provided that this does not increase the total area occupied by the project). The concept of repowering involves total or partial replacement of the generating equipment, without altering its pre-existing implantation polygon, where applicable. In the case of electricity generation centres using wind power, the refitting involves the total or partial replacement of the generating equipment, without increase in the number of towers.

As per green hydrogen developments, it is worth to notice that this technology was injected into the Portuguese natural gas network for the first time, which denotes the country’s strong investment in renewable energies, in its energy autonomy and in the reinforcement of its own freedom.

## VI THE YEAR IN REVIEW

The year 2022 was a year of war and energy crises. But it was also a year with positive signs and a lesson. For positive signs, we can refer to, among other things:

- a* the development of decentralised projects individual and collective including for industrial consumers – the first renewable energy industry community was approved in November of 2022;
- b* good project examples to reduce the energy poverty, by implement energy efficiency and decentralised renewable energy production;
- c* the development of the first hydrogen projects; and
- d* new low carbon and renewable gas production.

In terms of lessons, we should conclude that the European Union needs to have a really and internal energy market with changes on the spot marginal energy prices. With this background, during 2022 legal changes were approved to facilitate access to energy production and the regulators were particularly active regarding energy price regulated questions. 2022 was also important for the offshore renewable production. Taking in consideration the limits of available land places on inshore large-scale solar projects, and the potential of the area of the Portuguese sea, the government announced, and began a public consultation regarding several plans for offshore energy allocation, including a free technological zone.

Under Portuguese national legislation, free technological zones aim to promote and facilitate research, demonstration and testing activities of technologies, products, services, processes, innovative models, concepts, business models and specific regulatory frameworks, within the scope power generation and storage, and the promotion of electric mobility and self-consumption of electricity. The first auction to give offshore capacity was announced for 2023.

## **VII CONCLUSIONS AND OUTLOOK**

The Portuguese energy market is mature, with a mix in which green energies have been gaining a significant and exponential presence.

During the difficult year of 2022, the Portuguese energy market was able to face the biggest energy crisis of recent years, especially with the approval of a compensation mechanism for energy prices by capping the marginal energy price. The main challenges will come from the European Union, which must learn from the energy crisis that reforming the energy market is absolutely necessary.

The coming months and years will feature support for a rapid increase in RECs, jointly set up by groups of companies or natural persons to generate energy mainly for self-consumption. Following the current legislative framework, there will be many new RECs established, through either public ventures or private initiatives. Traditional large participants in the consumer market have already begun advancing their commercial offerings for collective self-consumption and RECs, with a view to operating as production aggregators.

Public tenders will continue to be the main procedure for allocating grid capacity for electricity generation and storage, with a special reference to offshore energy production. In the coming years, green hydrogen and lithium are expected to play a major role in Portugal. The long-awaited licensing tender for lithium prospecting rights is expected to be launched in the near future.

Portugal has the potential to become an energy exporter, but this will only be possible through reinforcing the grid, simplifying the licensing proceedings, and deep reform of the European energy market.