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TWELFTH EDITION

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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*.

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Latham & Watkins LLP
Washington, DC
May 2023

Chapter 18

SPAIN

Pedro L Marín, José Antonio García and Fernando Bañez[1]

I OVERVIEW

The liberalisation of the electricity and gas markets in Spain started in 1997 with the Electricity Sector Law 54/1997 and the Hydrocarbons Sector Law 34/1998. These laws differentiate between regulated activities (e.g., distribution, and transportation/transmission) and those subject to competition (e.g., production and supply). Law 54/1997 also created a wholesale electricity market (or pool) to facilitate transactions and deliver a transparent, competitive price for electricity generation. After harmonising legislation, Spain and Portugal formed a single electricity pool, the Iberian Electricity Market (MIBEL), in 2007.

In the late 1990s, electricity and gas companies were already private. However, due to high concentration, particularly in the gas sector, and the existence of companies with dominant positions, retail prices for domestic consumers remained fully regulated until the late 2000s.[2] Currently, there is still a regulated last resort tariff (LRT) for electricity and gas consumers with very low consumption.[3] In addition, a 'social bonus' is also awarded to vulnerable customers.[4]

The electricity and gas markets were reformed between 2013 and 2015. Law 24/2013 repealed Law 54/1997, which previously regulated the electricity sector. The main aim of Law 24/2013 is to guarantee the economic and financial sustainability of the electricity system. Law 24/2013 further modifies the remuneration of renewable energy for existing and new installations and establishes new methodologies for calculating the remuneration for electricity transmission and distribution. Law 18/2014 and Law 8/2015 modify the remuneration framework for regulated activities in the gas sector – including regasification, storage, transmission and distribution – and create an organised market or hub for natural gas,

1 Pedro L Marín and José Antonio García are principals, and Fernando Báñez is an associate with The Brattle Group.

2 Royal Decree (RD) 485/2009 of 3 April, liberalises the electricity sector; and RD 1068/2007 of 27 July (annulled by the Spanish Supreme Court on 21 April 2009), Royal Decree-Law (RDL) 6/20089 of 30 April, and RD 104/2010 of 5 February liberalise the gas sector.

3 Power up to 10kW for electricity and up to 4 busbars with total annual consumption below 50,000KWh for natural gas. The regulated LRT is a special tariff set by the government. According to Spanish law, to contract the regulated LRT for electricity/gas, consumers need to contact any of the last resort retailers – that is, those specific retail companies that have assumed the obligation of last resort.

4 The electricity social bonus is defined as a discount (of up to 80 per cent for severe cases in 2023) applied to the electricity bills; whereas the Thermal Social Bonus is defined as an annual allowance that varies depending on geographic location and degree of vulnerability of the consumer. The Thermal Social Bonus for 2023 varies from a minimum of €40 to a maximum of €375.

encouraging competition. In particular, Law 8/2015 and RD 984/2015 appoint MIBGAS as the operator of the Iberian gas market and define a virtual balance point (*Punto Virtual de Balance* (PVB)) within the gas transmission network.[5]

Currently, the Integrated National Energy and Climate Plan 2021–2030 (INECP 2021–2030) defines Spanish energy policy until 2030, putting special emphasis on the role of renewable technologies. The INECP 2021–2030 sets forth an ambitious 2030 energy target of 42 per cent of total energy consumption that will require significant additional investments in renewable capacity.

Combined with the steep drop in costs for renewable technologies, the additional economic incentives and the development of new, more efficient and sustainable energy technologies, Spain's new ambitious climate and energy targets make the country's energy markets very active and attractive in the coming years.[6] However, recent developments in energy markets worldwide, and the subsequent regulatory interventions in Spain, have increased uncertainty and tempered investors' confidence.

II REGULATION

i The regulators

The Secretary of State for Energy within the Ministry for Ecological Transition and Demographic Challenge is the ministerial department responsible for establishing the basis of Spain's energy regime and its regulatory framework and authorising installations when their use affects more than one region. It is also the ministerial department responsible for the regulation and implementation of the economic regime governing renewable energy. Autonomous regions have the authority to regulate the deployment of renewable projects and may introduce additional requirements in their respective territories.

The independent regulator, the National Commission for Markets and Competition (CNMC), is responsible, among others, for the following tasks:

a preparing reports on energy regulation;

b overseeing the function and competition in the electricity and gas markets, both wholesale and retail;

c supervising the operation and technical management of the systems;

d managing the settlement systems;

e producing reports on the compensation of regulated activities and infrastructure access fees;

f monitoring the origin of electricity from renewable energy sources and high-efficiency cogeneration;

g overseeing the integrity and transparency of the wholesale energy markets;

5 From the start, the purpose of MIBGAS was to integrate both the Spanish and Portuguese markets and become the reference hub in south-west Europe. The Portuguese side of the market started operations a few years later, in March 2021.

6 The Spanish electricity system operator and transmission agent, Red Eléctrica de España (REE), concludes that, as at 3 April 2023, it has received applications for renewable projects for about 338GW, with about 235GW coming from photovoltaic and 79GW coming from wind. Out of the 338GW, about 149GW have already obtained the access permits, including 103GW from photovoltaic and 41GW from wind. About 150GW of the requested access permits have been denied. For additional details, see the REE web page at www.ree.es/es/clientes/consumidor/acceso-conexion/conoce-el-estado-de-las-solicitudes.

h processing sanctioning cases for non-compliance; and
i resolving disputes between agents.

ii Regulated activities

As mentioned above, transmission/transportation and distribution operate as regulated activities because they are natural monopolies. Within the gas sector, regulation also affects liquefied natural gas (LNG) terminals and underground storage facilities.

Energy regulation also applies to the distribution and supply of liquefied petroleum gas (LPG) – propane and butane in particular – for domestic use. However, over the past 20 years, LPG has been gradually replaced by natural gas, losing relevance in the energy mix.

III TRANSMISSION/TRANSPORTATION AND DISTRIBUTION SERVICES

i Vertical integration and unbundling

REE, Spain's electric grid operator which is 20 per cent state-owned, has a monopoly over the country's electricity transmission network regarding ownership and management. However, REE cannot participate in the generation, distribution or supply of electricity.

Spain's gas transmission network is owned and managed by several companies. Enagás is the system operator and owner of most of the transportation network, including the trunk natural gas pipelines, which deliver gas from international interconnections and LNG plants to consumer areas. Enagás is also the owner of several LNG terminals. Like REE, Enagás cannot participate in the generation, distribution or supply of gas. Companies owning small sections of the transportation network can participate in the provisioning, production, distribution and supply of gas if they establish an independent system operator to manage their network.

Several companies own distribution assets and provide services as a monopoly in their regional or local markets.[7] Electricity and gas distribution companies are responsible for operating, maintaining and developing their distribution networks.[8] Energy companies can carry out both regulated (distribution and transportation/transmission) and liberalised (generation and supply) activities as long as these activities are legally and functionally unbundled, with separate legal entities that make decisions autonomously.

ii Transmission/transportation and distribution access

Network operators must ensure fair third-party access to their electricity and gas networks. Traditionally, access was granted by the transmission/transportation system operator on a 'first ask, first served' basis.

Given Spain's target to install 60GW of renewable capacity in the electricity sector by 2030, developers of potential power plants have requested a large number of grid connections to REE.[9] To avoid potential speculation with access rights and to optimise grid use, RD

7 Spain has more than 300 electricity distribution companies, but five distribution companies control the large majority of the distribution network. International Energy Agency, *Spain 2021 – Energy Policy Review*, May 2021, pp.115 and 167.

8 There is no centralised planning.

9 As explained in footnote 6, by April 2033, REE received network access applications for renewable projects amounting to a cumulative figure of 338GW: 149GW have already obtained the access permits, 150GW have been denied, and the remaining 38GW are still pending (differences due to rounding).

1183/2020 changed the approach to grant grid access, allowing the government to auction the available connection capacity. In June 2022, the government launched a public consultation on the rules for the first grid access auction for 5.8GW.[10] The new rules would establish a ranking point-based auction that will consider each project's technical characteristics, the environmental and socio-economic impact, and the period to become operational.

iii Rates

Law 18/2014 modified the remuneration framework for regulated activities. The remuneration sets parameters for electricity and natural gas transmission and distribution, and for natural gas regasification and storage, which can be reviewed every six years. The remuneration is based on:

a the cost recovery of the investments;
b a reasonable return;
c the operating costs incurred by an efficient company;
d productivity and efficiency incentives; and
e financial adequacy.

IV ENERGY MARKETS

i Development of energy markets

Electricity

On 1 July 2007, Spain and Portugal created MIBEL, which integrated the Spanish electricity market – in operation since 1998 – with the newly created Portuguese electricity market. The creation of MIBEL was an important step in the development of the internal EU energy market. MIBEL recognises the principle of reciprocal recognition of agents, meaning that when one agent is granted the status of producer or supplier by one country, it is automatically recognised by the other country.

The electricity market operator is OMI. The spot market, organised by the Spanish OMIE, includes daily auctions with the settlement of energy at every hour of the following day. Subsequent intraday sessions allow agents to trade power for each hour covered by the auction. The derivatives market, organised by the Portuguese OMIP, offers standardised products, including futures, base load and peak load, with physical and financial delivery, forward contracts and swaps.

Natural gas

Law 8/2015 and RD 984/2015 appointed MIBGAS as the operator of the Iberian gas market. MIBGAS offers the possibility of trading within-day, day-ahead, balance-of-month and month-ahead products in Iberia at the PVB.

In 2017, the CNMC commented on the limited liquidity of the spot market at the PVB, but confirmed that PVB month-ahead prices were in line with international price

10 Ministry for the Ecological Transition and the Demographic Challenge (MITECO), *El MITECO saca a información pública la propuesta de orden para convocar un concurso de capacidad de acceso a la red de transporte de electricidad*, 10 June 2022.

benchmarks.[11] International prices influence the Spanish market through various links, including LNG regasification capacity and reloading capacity at each of Spain's six terminals[12] and a reinforced direct pipeline interconnection with Algeria.[13]

Major Spanish gas importers have established sophisticated trading operations, which permit them to manage risk and take advantage of LNG arbitrage opportunities with different countries. The Spanish system is highly integrated with the Portuguese system, where there is an additional regasification terminal. The French interconnector connects the Spanish market directly to the French spot market (PEG) and indirectly to the Dutch hub (TTF).

By 2018, the French market had one hub serving the entire country, with liquidly traded short-term gas contracts. The liquidity of the French market assures Spanish gas companies of the ability to find willing counterparties for short-term transactions. Spanish gas companies can procure competing supplies on short notice, and the French market can also serve as an export destination for Spanish gas when the value of gas is higher in France.

By 2019, the Agency for the Cooperation of Energy Regulators (ACER) had classified the PVB as an 'advanced hub',[14] with high liquidity in the spot market, focused on relatively short-term spot contracts and some use for longer-term products for hedging, but with relatively lower liquidity levels.

CNMC Circular 2/2020 defines two additional balancing points, one for LNG at the tanks located at the regasification plants, and another one at underground storage facilities, providing further liquidity and flexibility to the gas system.

Currently, MIBGAS is used as a price reference in Spain. As in other European markets, end-users and midstream companies that import gas for resale to end-users in Spain found it convenient to sign contracts for the purchase of natural gas at prices that depended on mathematical formulas linked directly to the prices of petroleum products. As petroleum products saw significant declines in use and the market became more open and competitive, competition among alternative gas supplies became predominant. The Spanish market can easily obtain competing gas sources on relatively short notice thanks to the development of short-term trading in the international LNG market and hubs in European countries, including France.

Given the sustained liquidity of the PVB on the spot market and that oil products have lost relevance to end users, Spanish customers have switched from oil price indexation to hub price indexation. Currently, most Spanish end-users purchase gas at a level consistent with PVB prices and have adopted indexation to hub prices going forward, primarily the TTF.

11 CNMC, SNC/DE/174/17, p.19.

12 International Gas Union, *2019 World LNG Report*, p.77. An additional regasification terminal will open in Gijón during the first half of 2023. The terminal finished construction in 2012 but was mothballed due to the reduction in demand following the financial crisis. See www.enagas.es/en/press-room/news-room/press-releases/2023-03-02-np-asignacion-servicios-logisticos-el-musel.

13 Spain used to buy Algerian gas through two interconnections until late 2021. The oldest interconnection, the Maghreb pipeline, with 11.5 bcm/year of capacity, crossed through Morocco and was closed in October 2021 following diplomatic tension between Algeria and Morocco. The second interconnection, the Medgaz pipeline, started operations in 2011 and since its capacity has increased from 8 bcm/year to 10.5 bcm/year in 2022. The capacity of Medgaz could be increased up to 16 bcm/year in the future subject to the signature of additional long-term natural gas contracts with Europe.

14 ACER, Annual Report on the Results of Monitoring the Internal Natural Gas Market in 2019, p.7, figure iv.

ii Contracts for sale of energy

In addition to selling electricity and gas in the organised markets, the regulatory framework allows market participants to sign individual bilateral contracts at agreed prices, referred to as corporate purchase agreements. Corporate purchase agreements with physical delivery must be notified to the system operator,[15] indicating the amount of energy involved in the transaction and the participating generation and consumption units.

iii Market developments

Electricity

Wholesale electricity prices began to soar in April 2021, largely due to the global increase in gas demand and the simultaneous contraction in supply. The monthly price increase peaked between autumn 2021 and spring 2022. After spring 2022, electricity prices have remained high mainly due to the curtailment in the supply of Russian gas to Western Europe, which has been increasing ever since.[16] The Spanish government implemented several regulatory changes accompanying the increase in energy prices. Specifically:

a On 6 May 2021, the legal limit of the hourly price was raised from €180.3/MWh to €3,000/MWh.[17]

b RDL 12/2021 suspended the tax on electricity generation for the third quarter of 2021. The suspension was subsequently extended until at least 31 December 2023.[18]

c RDL 17/2021 and RDL 20/2022 set a gas clawback mechanism, limiting the income of hydroelectric, nuclear and renewable plants not receiving a regulated remuneration. Generators selling energy in the market will see their monthly income reduced in proportion to the estimated increase in income obtained because of the rise in the marginal electricity price caused by higher gas prices. Generators selling energy through contracts signed after March 2022 at a price higher than €67/MWh will only receive 10 per cent of the difference between the selling price and €67/MWh.

d RDL 10/2022 introduced a limitation on the hourly price of bids from gas generation plants,[19] which received compensation to cover the difference between the price limit and the cost of gas.[20] The cap mechanism, known as the 'Iberian Exception', allowed Spain and Portugal to decouple the price of electricity from the price of gas, with the final goal of reducing electricity bills.[21]

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15 PPAs can be classified as physical and financial (or virtual). In a physical PPA the buyer receives the physical delivery of energy from the seller through the grid at the agreed price. In a financial PPA the parties settle the differences of purchasing and selling the energy with respect to the agreed price without physical delivery.

16 European Commission, *Quarterly Report on European Gas Markets*, Market Observatory for Energy, DG Energy, Volume 15, Issue 1, 2022; and European Commission, *Quarterly Report on European Gas Markets*, Market Observatory for Energy, DG Energy, Volume 15, Issue 2, 2022.

17 CNMC Resolution of 6 May 2021, Annex 2.

18 RDL 20/2022 of 27 December.

19 RDL 10/2022.

20 RDL 10/2022.

21 The Iberian exception was originally scheduled to expire at the end of May 2023, but the European Commission has recently approved its extension until the end of December 2023. The mechanism set the cap at €40/MWh between June and December 2022. Then it increased by €5/MWh every month until March 2023, and by €1.1/MWh from March to December 2023, reaching €65/MWh in December 2023. Currently, forward wholesale prices are well below the threshold that would activate the price cap.

e Moreover, in December 2022, Spain introduced a temporary levy for large energy companies to be paid in 2023 and 2024 on the net turnover of the previous year derived from their activity in Spain at the rate of 1.2 per cent.[22] The levy will be aimed at supporting vulnerable consumers, promoting energy savings and independence, and supporting large industrial energy consumers, and will include other measures to reduce the impact of the current energy crisis.

Natural gas

As of mid-2021, Gazprom started reducing Russian natural gas short-term supplies to Europe. Since April 2022, Gazprom has exacerbated the situation by delivering substantially less gas than required by its long-term contracts with European buyers. Although Spain does not directly import gas from Russia, Spanish end users have felt the effects of Russian curtailments and underdeliveries for two reasons.

First, reductions in Russian supplies have raised the demand in the international markets for LNG as a substitute, increasing its price. Second, Spain also has pipeline links with France, which imports Russian gas. High French prices have affected the Spanish market. For the first time since 2010, Spain exported significant amounts of gas through the interconnection with France.

V RENEWABLE ENERGY AND CONSERVATION

i Development of renewable energy

In the first half of 2021, Spain approved the final version of the INECP 2021–2030, which sets an ambitious 2030 energy target of 42 per cent of total energy consumption (up from 20.8 per cent in 2021).[23] Renewable sources should account for 74 per cent of electricity generation. To meet the 2030 targets, Spain projects an increase in electricity capacity from renewable sources – mainly wind and photovoltaic – of more than 60GW by 2030, along with 6GW of storage to be put into operation. Reaching these goals will require investments of over €200 billion in renewable power plants and storage.[24]

In May 2021, Spain approved the Climate Change and Energy Transition Act (CCET Act), which establishes the foundations and mechanisms to achieve the 2030 targets. In July 2021, the European Council approved Spain's Recovery, Transformation and Resilience Plan (RTRP), which is providing financing for many of the initiatives to deploy renewable energy facilities and electrify the economy, particularly the transport sector – which are among the main pillars leading to the energy transition.

By 2030, the total installed capacity in the electricity sector is predicted to be 161GW, from the following sources:

a wind power: 50GW;
b photovoltaic: 39GW;
c combined cycle gas turbines: 27GW;
d hydroelectricity: 16GW;

22 Law 38/2022 of 27 December, Article 1.

23 In terms of total energy consumption, renewable energy in Spain (20.8 per cent in 2021) is around the EU average (21.8 per cent in 2021). Source: EU Eurostat.

24 INECP 2021–2030, p.212.

e pumped-storage hydropower: 9.5GW;
f solar thermal: 7GW;
g nuclear: 3GW; and
h other technologies: 9.5GW.

Renewable energy auctions, which are run under a pay-as-bid model, are cornerstones of the energy transition and achieving the renewable energy capacity targets for 2030. The projects awarded in the auctions receive financial support in the form of stable and predictable fixed feed-in tariffs (FIT) per megawatt-hour (MWh) produced for up to 20 years, adjusted in each case for market price exposure. The planned auction schedule indicates that, until 2025, the goal is auctioning 8.5GW of wind and 10GW of photovoltaic capacity.

Spain launched two auctions in 2021, one in January and one in October, and two auctions in 2022, one in October and one in November. As a result, around 6.4GW were allocated, mainly to wind and photovoltaic additional capacity. The initial intention was to allocate a larger amount of capacity, but market dynamics undermined the allocation of capacity in the 2022 auctions.[25]

Above, we explain that market participants can sign corporate PPAs.[26] PPAs form a core part of the Spanish market, and are viewed as very important in the future of renewable development in Spain, especially as investment funds, private corporations and utilities are gaining relevance. Spain is currently the market leader in Europe for such PPAs.

Due to the growing importance of the PPA market, OMIP started offering standardised contracts for futures of baseload and solar profiles in 2022. Nevertheless, the energy price crisis and the recent regulatory changes have caused a reduction in new signings. For instance, regulatory changes to cap electricity prices have resulted in electricity generators of different technologies receiving different prices. These different prices distort the reference price indicated by wholesale markets, and could imply a change in existing PPAs.

Regulatory uncertainty related to a potential extension of the gas clawback mechanism beyond December 2023 and the potential implementation of a carbon dioxide clawback mechanism could also slow new contract signings or delay the financial closure of merchant projects.[27] The recent situation has led to an increasing demand for shorter-term and baseload-type PPAs.

Until 2018, Spanish legislation provided little incentive for the deployment of distributed renewable energy. As a consequence, Spain was behind other European countries in its deployment. Since 2018, legislation has been amended to favour distributed generation and, in particular, renewable energy. The amended legislation applied a more general definition of self-consumption,[28] introducing economic incentives, removing toll payments to self-consumption facilities and reducing the administrative burden on customers interested in installing self-consumption capacity.

In particular, 2018 and 2019 legislation:

25 A total of 3.8GW was up for tenders in 2022, including 1.9GW for photovoltaic, and 1.5GW for onshore wind. Only 0.22GW of new renewable capacity, or about 5.8 per cent, were awarded.

26 An extensive discussion on the financial support provided by Spain to foster the investment in renewables can be found in *Renewable Energy in Spain*, by García, J A, Marín, P L and Stirzaker, J; *The Renewable Energy Law Review*, July 2022, Chapter 18, pp.209–242.

27 Merchant plants are those projects whose only source of income is the sale of energy at market prices.

28 Mainly by RDL 15/2018 of 5 October 2018 and RD 244/2019 of 5 April 2019.

a updated the framework for the connection and energy supply to the electricity grid and the economic compensations attached to different schemes;
b authorised self-consumption for a group of customers (beyond single owners);
c eased the regulatory process for small-scale producers; and
d simplified the registry of self-consumption which, moving forward, will have only statistical purposes.[29]

Within the context of Spain's RTRP,[30] the Housing Rehabilitation and Urban Regeneration Plan includes lines for installing solar panels on roofs and deploying distributed renewable energy and smart and efficient street lighting. Other levers within the RTRP also contemplate lines of action for self-consumption and distributed generation.

As a result of the measures implemented since 2018, installed capacity has grown rapidly. By the end of 2022, solar self-consumption capacity had increased approximately twentyfold since 2018, with an accumulated capacity above 5GW. The expectation is that distributed photovoltaic will keep growing in the coming years, with the aim of reaching at least 9GW by 2030.[31]

Finally, in December 2022, Portugal, Spain and France agreed to build a hydrogen pipeline, the H2Med, interconnecting Spain with France. The interconnector will focus solely on green hydrogen, transporting about 2 million metric tonnes per year, with a planned start of operations by 2030.

ii Energy efficiency and conservation

The EU Energy Efficiency Directive established a common framework to promote energy efficiency, with a 20 per cent reduction target on the 2007 projections by 2020.[32] As of 2014, member states had to submit their energy efficiency plans every three years. By 2020, Spain had achieved its energy savings target, being among the top 10 countries with a higher achievement rate.[33] Energy intensity, a measure of energy efficiency, decreased annually by 1.9 per cent from 2005 to 2020 in Spain, in line with the EU average.[34]

The EU extended its efficiency target to a 32.5 per cent reduction by 2030, including a 39.5 per cent energy efficiency improvement in Spain.[35] Member states had to submit their 10-year energy efficiency plans within their INECP 2021–2030. The Spanish INECP 2021–2030 proposes 17 measures to meet the efficiency target, focusing on the transport sector as the main driver for the expected energy savings.

29 RD 15/2018 and RD 244/2019.

30 Spain's RTRP can be found here: https://ec.europa.eu/info/files/spains-recovery-and-resilience-plan_en.

31 Distributed photovoltaic, driven largely by self-consumption in the commercial segment, is expected to account for at least 15 per cent of Spain's renewable capacity growth.

32 European Commission, *Report from the Commission to the European parliament and Council – 2022 report on the achievement of the 2020 energy efficiency targets*, Brussels, 15 November, p.2.

33 Ibid., Table 2.

34 Tsemekidi Tzeiranak, S, Paci, D, Clementi, E and Gonzalez Torres, M, *Analysis of the Reports on 2020 Targets under Article 27 of the Governance Regulation – Energy Efficiency*, EUR 31361 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-60605-5, doi:10.2760/27622, JRC131606, Table 2.

35 The EU Energy Efficiency Directive also establishes a cumulative energy saving target for the period 2021–2030.

The measures in the energy efficiency plans receive funds from the National Energy Efficiency Fund (FNEE), created in 2014. The FNEE – financed mainly by gas and electricity trading companies, wholesale petroleum, and liquefied petroleum gas operators – is expected to mobilise about €2 billion in 2021–2030.[36] The RTRP will provide additional funds for the acquisition of electric vehicles, the deployment of recharging infrastructure and the rehabilitation of buildings.

RDL 14/2022 introduced additional mandatory measures for promoting energy efficiency and energy savings in response to the tightness of the international gas market. These measures included limits on the maximum and minimum temperature of heating and cooling and a reduction of commercial lighting. The aim of the measure was to reduce gas demand by 7 per cent.[37]

VI THE YEAR IN REVIEW

The government of Spain described the extraordinary and sudden rise in energy prices since mid-2021 and the uncertainty about its future development as a situation of extraordinary and urgent need, of an intensity similar to the second oil shock of the late 1970s.[38] Spain does not import Russian gas but must pay high prices for LNG on the international market. As indicated above, Spain also has pipeline links with France, which imports Russian gas, and thus high French prices have affected the Spanish market. For the first time since 2010, Spain exported significant amounts of gas through the interconnection with France. Spanish end-users have therefore felt the effects of Russian curtailments and underdeliveries under Gazprom's long-term contracts.

The increase in gas prices translated to an increase in electricity prices to never-before-seen levels. Several regulatory changes in the electricity market have accompanied the rise in gas and electricity prices. We describe those measures in detail above. These measures mainly aim to limit the effect of the international gas price increase on the electricity price and the impact on final consumers. The regulatory changes rely explicitly on PVB prices as an indicator of the value of gas in the Spanish wholesale market,[39] validating PVB prices as the most appropriate benchmark.[40]

As current forecasts point to high gas and electricity prices until the end of 2025, the main challenge is to make the new market situation compatible with the competitiveness of the market and the measures necessary to meet the ambitious targets set for 2030.

VII CONCLUSIONS AND OUTLOOK

Since mid-2021, electricity and gas markets have shown a significant increase in prices, mainly due to the curtailment of Russian gas supplies to Europe. The increase has prompted a response from the Spanish government to intervene in energy markets, mainly by imposing

36 International Energy Agency, *Spain 2021 – Energy Policy Review* , May 2021, p.63.

37 RDL 14/2022, p.3.

38 RDL 6/2022, Introduction.

39 RDL 10/2022, p.67155.

40 For additional details see RDL 10/2022 and European Commission decision C(2022) 3942 State Aid SA. 102454, Production cost adjustment mechanism for the reduction of the electricity wholesale price in the Iberian market, 8 June 2022.

a cap on the electricity prices received by certain technologies and a levy on the net turnover of large energy companies. The government intervention is intended to mitigate the impact on final consumers.

Higher energy prices provide an additional incentive to promote energy independence in the European Union. Spain's ambitious targets for 2030 and recent regulations and commitments align with this vision. The main challenges to achieving these goals relate to regulatory stability, sufficient economic incentives and potential market limitations and shortcomings in the years to come.