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CONTENTS

Chapter 1  AUSTRALIA ................................................................. 1
Simon Adams and Jo Garland

Chapter 2  AUSTRIA ................................................................. 11
Stefan Lampert

Chapter 3  BELGIUM ............................................................... 18
Laura De Deyne, Roeland Van Cleemput and Vera Van Thuyne

Chapter 4  BRAZIL ................................................................. 28
Pablo Sorj, Fabiano Ricardo Luz de Brito and Ana Carolina Katlauskas Calil

Chapter 5  CHINA ................................................................. 43
Libin Zhang

Chapter 6  EGYPT ................................................................. 55
Donia El-Mazghouny

Chapter 7  INDONESIA ............................................................. 64
Kanya Satwik, Tracy Tania, M Insan Pratama and Theodora Saputri

Chapter 8  ITALY ................................................................. 76
Marco D’Ostuni, Luciana Bellia and Giuliana D’Andrea

Chapter 9  JAPAN ................................................................. 88
Naoaki Eguchi, Naoki Ishikawa and Fei Zhou

Chapter 10 KOREA ............................................................. 100
Tong Keun Seol, Dong Eun Kim and Tom Shin

Karen B Wong
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Country</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>NIGERIA</td>
<td>Dolapo Kukoyi and Adeyemi Esan</td>
<td>108</td>
</tr>
<tr>
<td>12</td>
<td>RUSSIA</td>
<td>Thomas Heidemann and Anastasia Makarova</td>
<td>124</td>
</tr>
<tr>
<td>13</td>
<td>SOUTH AFRICA</td>
<td>Lido Fontana and Sharon Wing</td>
<td>134</td>
</tr>
<tr>
<td>14</td>
<td>SPAIN</td>
<td>Hermenegildo Altozano</td>
<td>142</td>
</tr>
<tr>
<td>15</td>
<td>UNITED KINGDOM</td>
<td>John Dewar and Kilian de Cintré</td>
<td>154</td>
</tr>
<tr>
<td>16</td>
<td>UNITED STATES</td>
<td>Karen B Wong and Henry T Scott</td>
<td>162</td>
</tr>
<tr>
<td>17</td>
<td>VIETNAM</td>
<td>Nguyen Viet Ha and Nguyen Hong Hai</td>
<td>174</td>
</tr>
<tr>
<td>Appendix</td>
<td>ABOUT THE AUTHORS</td>
<td></td>
<td>185</td>
</tr>
<tr>
<td>Appendix</td>
<td>CONTRIBUTING LAW FIRMS' CONTACT DETAILS</td>
<td></td>
<td>199</td>
</tr>
</tbody>
</table>
I am incredibly honoured to be the editor of the first edition of *The Renewable Energy Law Review*. Little did I know, working as a young associate in the ‘early days’ of renewable energy projects, that, fast-forward to 30 years later, the industry would be as large and as active as it is today across the globe. As a US-based partner at Milbank practising in the energy industry, I see different political environments, tax and other incentives in place in our 50 states and, having worked on multiple international projects on four different continents, I know that the regimes across the world are equally unique. This compendium has been formulated to provide you with a good overview of the legal framework and current status and challenges in structuring, financing and investing in renewable energy projects in the selected jurisdictions.

Whether you are someone already active in this sector or merely interested in learning more about the policies, legal structures and state of play in the renewable energy industry globally, I hope that this guide will aid you in your efforts as a participant in an industry that is increasing new sources of energy projects with fewer carbon emissions. As a young, naive and idealistic student applying to law school, I had a genuine desire to acquire the necessary skills and tools of a profession that would empower me to change the world. Frankly, I never imagined that I would have a legal career – to date spanning over three decades – that would offer me the opportunity to do just that in my capacity as an attorney facilitating transactions that literally help to keep our skies bluer and our air cleaner globally.

Karen B Wong
Milbank Tweed Hadley & McCloy LLP
Los Angeles
July 2018
Chapter 1

AUSTRALIA

Simon Adams and Jo Garland

I  INTRODUCTION

Renewable energy projects in Australia range from solar, wind and hydro to tidal and geothermal. There has been an increasing uptake of hybrid projects, such as solar battery, solar diesel and solar wind projects, to mitigate intermittent renewable generation issues.

Significant renewable projects in Australia are usually developed under an engineering, procurement, and construction (EPC) model. An EPC model involves a principal engaging a contractor to design, build and deliver the asset in an operational state. Once commissioning is complete, the project is transferred to either debt or equity investors or the entity taking the electricity generated by the project.

Factors affecting the bankability of a renewable energy project generally include securing an offtaker (i.e., a purchaser of the electricity) or access to the electricity market to sell electricity; procuring access to the electricity network if the project is grid-connected; whether the project involves proven or new technology; the experience and creditworthiness of the parties involved, including the EPC contractor; whether government grants or funding is available; the availability of renewable incentives such as renewable energy certificates; and a stable long-term energy policy.

II  THE YEAR IN REVIEW

The past year has seen extraordinary growth in the renewable energy industry in Australia. The Clean Energy Council has reported that 50 large-scale energy projects have either been actively under construction or had secured financial commitment by the end 2017. In May 2017, total new clean energy investment was estimated at A$10.3 billion. It appears that this growth pattern is set to continue, with Green Energy Markets indicating that more than 100MW of rooftop solar PV installations have been installed each month of 2018, which is already 56 per cent above last year’s record-breaking rate.

The increase in solar penetration and intermittent renewable technologies has heightened concerns about energy security and reliability. This is particularly as a result of

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1 Simon Adams is a partner and Jo Garland is a special counsel at HFW.
the widespread blackouts in South Australia during 2017. Renewable technologies in the form of battery storage have been used as a mechanism to combat reliability issues. The landmark Tesla lithium battery installed in South Australia has already been used successfully to respond to power failures. It was reported that the battery delivered 100MW into the national energy grid in 140 milliseconds following a power plant trip in Victoria.

Another major renewable energy initiative that has been developed over the past year is the Western Australian Synergy Renewable Vehicle (SRV) (financed by Cbus Super and the Dutch Infrastructure Fund). The SRV will finance the A$500 million Warradarge Wind Farm along with the expansion of Greenough River Solar Farm (which was Australia’s first large solar project when built) and the refurbishment of the Albany Grasmere Wind Farm.

The solar financing by Wirsol Energy and Edify Energy of A$380 million across three projects in Queensland and Victoria is another example of landmark renewable energy projects in Australia that are to be completed this year.

Pumped hydro is also becoming part of the energy mix, including the proposed expansion of the Snowy Mountains hydro scheme. The proposed expansion would result in the biggest ‘battery’ in the southern hemisphere and is another good example of the measures being taken to combat the intermittency of renewable energy sources.

The rapid growth in renewable energy projects in Australia has been attributed to the Renewable Energy Target (RET), which is expected to be met before it expires in 2020. The RET will be replaced by the National Energy Guarantee (NEG). The NEG aims to trigger investment in ‘dispatchable’ supply capacity (coal, gas, hydro, battery storage) and requires retailers and large energy users to make reductions in emissions levels and comply with reliability obligations. According to the Electricity Security Board, renewable energy will account for 28 to 36 per cent of total energy generation in 2030 under the NEG.

The NEG is also a departure from the Clean Energy Target recommended in the Independent Review of the Future Security of the National Electricity Market by Dr Alan Finkel AO. The Clean Energy Target proposed sets a target of new ‘clean’ electricity based

9 In the Black, ‘Renewable energy gets set to outsmart coal’ <https://www.intheblack.com/articles/2018/03/01/renewable-energy-storage/>.
on the required emissions reductions for the electricity sector by 2030. This Clean Energy Target, in contrast to the NEG, still promotes widespread investment in renewable or clean technologies. However, the NEG is still in its high-level design stage, so it is yet to be seen how it will impact investment in renewable energy and storage.

Another trend is the increased penetration of renewable energy technologies in the form of solar and battery storage. This correlates with the plunging cost of large-scale solar power, which is said to be a result of the RET.14

III THE POLICY AND REGULATORY FRAMEWORK

i The policy background

Australia’s RET aims to ensure that by 2020 at least 33,000GWh (or 23.5 per cent) of Australia’s total electricity is generated from renewable sources. The RET is an Australian federal government policy that has operated since 2001. Various state and territory governments of the Commonwealth of Australia have also implemented their own renewable energy targets.

Australia is on track to achieving the RET by 2020, with the Clean Energy Council noting that approximately 17,500GWh of renewable energy was generated in 2016 and 25,485GWh estimated for 2017. If the RET is achieved, that renewable energy will be enough to power around five million houses per year.

The RET is made up of two schemes – the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). The LRET encourages investment in renewable power stations through financial incentives in the form of tradable certificates; the SRES encourages small users to install small-scale systems. Australian states and territories have also incentivised the uptake of small-scale solar generators by providing feed-in-tariffs.

It is expected that the LRET will deliver the majority of the RET. The price of renewable energy generation is becoming increasingly more cost-effective. Additionally, investment in large-scale solar projects has been assisted by the Australian Renewable Energy Agency (ARENA) and the Clean Energy Finance Corporation, which have pushed the prices

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15 In 2015, the RET was reviewed and was scaled down from the previously legislated amount of 41,000GWh to the current 33,000GWh.

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of these projects down to almost half of what they recently were.\textsuperscript{19} For example, in 2015, ARENA committed A$20.90 million in funding for the DeGrussa solar project in Western Australia, which has a total project value of A$39.47 million.\textsuperscript{20}

While the RET is dependent on investment in renewable energy sources, Australia’s new NEG – announced by the Australian federal government on 17 November 2017 – is a technology-neutral policy, allowing for emissions reductions from all sources of power, be they fossil fuels or renewables,\textsuperscript{21} with the ultimate mix to be decided by the market.\textsuperscript{22} The Energy Security Board (ESB) recommended the NEG to the government in response to the Independent Review into the Future Security of the National Electricity Market.\textsuperscript{23}

The NEG intends to deliver more reliable, affordable and cleaner energy to Australian consumers\textsuperscript{24} and has two components – a reliability guarantee and an emissions guarantee. The reliability guarantee will impose an obligation on electricity retailers to meet a percentage of their load requirements through flexible and dispatchable resources. The emissions guarantee will impose an obligation on retailers and large electricity users to meet their load requirements at a certain average emissions level. The latter component is designed to ensure that Australia meets its Paris Agreement obligations to reduce emissions by 26 to 28 per cent of 2005 levels by 2030.\textsuperscript{25}

The NEG does not change the RET; but it is proposed that the emissions-guarantee aspect of the NEG will replace the RET in 2020.\textsuperscript{26}

\textsuperscript{19} See note 5 above.
\textsuperscript{21} Australian Financial Review, ‘Energy Minister Josh Frydenberg calls on Australian governments to back NEG’ (20 April 2018).
\textsuperscript{25} ‘Australia’s Intended Nationally Determined Contribution to a new Climate Change Agreement’ (August 2015), 1 <http://www4.unfccc.int/Registrations/INDC/Published%20Documents/Australia/1/Australias%20Intended%20Nationally%20Determined%20Contribution%20to%20a%20new%20Climate%20Change%20Agreement%20-%20August%202015.pdf>.
\textsuperscript{26} See notes 4 and 10 above.
ii The regulatory framework

Network access and market dynamics

The largest electricity market in Australia is the National Electricity Market (NEM), which operates in all states and territories other than Western Australia and the Northern Territory. The NEM is operated by the Australian Energy Market Operator (AEMO), in accordance with the National Electricity Law and the National Electricity Rules.

The NEM includes a ‘gross pool’ market for electricity, where all transmission-connected generation is dispatched in each five-minute period based on the results of a security and transmission-constrained auction. The auction sets a marginal price for each five-minute period and has a price cap of A$14,200/MWh. Generation facilities can connect to the network in the NEM on a ‘constrained-access’ basis – that is, the total amount of generation capacity is not restricted to network capacity, but only the cheapest set of generators are dispatched to meet system requirements.

In the NEM, most renewable generators are considered to be ‘semi-scheduled’. These facilities can normally generate unconstrained; however, the AEMO can direct them to operate below certain output limits in certain situations (for example, for system security).

In Western Australia, the Wholesale Electricity Market (WEM) is operated by the AEMO in accordance with the Wholesale Electricity Market Rules and WEM market procedures. The WEM is a gross pool electricity market that includes a mechanism to pay for capacity by low electricity price caps, and a hybrid constrained–unconstrained network access model. A constrained network access model is currently being considered by the Western Australian government. The constrained network access model being proposed for the WEM is similar to the model currently used in the NEM.

Western Australia’s mechanism to ensure reliability and security of supply, through which scheduled generators and non-scheduled generators (such as wind and solar) can provide capacity when required, is called the Reserve Capacity Mechanism. The state government proposes to review alternative pricing models for the Reserve Capacity Mechanism in 2018.

RET

The RET is administered by the Clean Energy Regulator (CER) in accordance with the Renewable Energy (Electricity) Act 2000 (Cth) and the Renewable Energy (Electricity) Regulations 2001 (Cth). The CER is Australia’s independent statutory authority, established in 2012 by the Clean Energy Regulator Act 2011 (Cth).

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27 The Interim Northern Territory Electricity Market was implemented in 2015 and is managed by the Market Operator and System Controller. The territory government will review the learnings from the design, development and implementation of the interim market and consider what is needed for a full Northern Territory electricity market; Department of Treasury and Finance, ‘Interim Northern Territory Electricity Market’, 2 <https://www.powerwater.com.au/__data/assets/pdf_file/0007/93328/intem-dtf-policy-paper.pdf>.


30 Ibid.
The RET operates as a market for tradable certificates for each megawatt of electricity generated from renewable sources. Tradable certificates are created and issued through the REC Registry, which is administered by the CER. ‘Liable entities’ (electricity retailers and some large users) must source those certificates from persons that generate power from renewable sources to meet their own renewable energy obligations, and then surrender those certificates to the CER in certain percentages (determined under the Renewable Energy (Electricity) Regulations) to meet annual targets for the RET.

The CER also validates tradable certificates and makes recommendations about tradable certificate requirements.

NEG

The NEG is in its early design stages. On 20 April 2018, the federal and state energy Ministers met at the Council of Australian Governments Energy Council and approved more detailed design work on the NEG. Stakeholder workshops will continue to be held throughout May and June 2018. A decision is to be made on the final design of the NEG by August 2018, with the ESB proposing that the NEG be legislated (primarily by way of amendments to the Australian Energy Market Agreement, the National Electricity Law and National Electricity Rules) by the end of 2018.31

We are interested to see the ultimate design of the NEG and in particular how it will affect, and the extent to which it may be adopted in, Western Australia and the Northern Territory, which both operate outside the NEM. The Western Australian Minister for Energy has indicated that, post 2020, there could be a non-national regime guiding the uptake of renewable energy technology.32

Approvals for renewable energy projects

There are many regulatory approvals required for renewable energy projects, including planning and environmental approval. The type and timing of approval processes will vary from state to state, depending on the scale and type of project. Applications for funding from ARENA typically take 60 days to negotiate (after an initial expression-of-interest phase) and require the applicant to satisfy the relevant merit criteria to a high standard. Project proponents may also be confronted with environmental-noise and visual-impact assessments.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

Project finance transaction structures

Current trends in project financing of renewable energy projects in Australia have seen the emergence of the use of ‘project’ or ‘green energy’ bonds. Australia’s green bond market has doubled in size since the 2015, with the big four domestic banks, and international development banks, being the major issuers of bonds.33 Going forward, increased diversity

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of issuers is predicted as local governments and councils have shown interest in these types of bonds.\textsuperscript{34} In fact, the Victorian government in 2016 was the first government in Australia to use green bonds.\textsuperscript{35} Bonds are seen as an attractive method to finance renewable projects given that they are considerably cheaper than financing or refinancing through traditional project finance.\textsuperscript{36}

In terms of bank lending, currently international lenders are very active in the Australian renewables market, as there is an aversion to long maturity loan funding by Australian lenders.\textsuperscript{37} However, there is some evidence that this trend may be changing with the landmark financing of three large solar farms by Wirsol Energy and Edify Energy this year. In this transaction, the Commonwealth Bank of Australia funded a 19-year term loan, the first time a domestic Australian bank has lent to a renewable energy project on such a long-term basis.\textsuperscript{38} In common with other transactions of this nature, it used a combination of debt finance in conjunction with a grant from the Australian government’s Clean Energy Finance Corporation.\textsuperscript{39}

An alternative financing arrangement for renewable projects that is starting to appear is the establishment of ‘energy funds’. AGL, and now Synergy, have set up energy funds in partnership with institutional investors. The funds provide the opportunity for investors to finance a portfolio of renewable assets, which diversifies risk and reduces cost. It also reduces the amount of equity that energy providers are required to invest in new projects, as well as assisting the energy providers in meeting their 2020 renewable energy commitments. The arrangement is usually set up so that ownership in the renewable energy certificates generated by the project remains with the energy provider.

Australia also has a market for trading renewable energy certificates between financial institutions, brokers, traders, registered agents and electricity retailers. The highest demand for large-scale certificates comes from electricity retailers who are required to meet Australia’s renewable energy target.\textsuperscript{40} Small-scale system owners and registered agents also have the option to sell small-scale technology certificates through the clearing house or to the electricity provider.\textsuperscript{41}

\textsuperscript{34} Ibid.
Distributed and residential renewable energy

Australia has the highest penetration of rooftop solar of any country in the world,\textsuperscript{42} with Queensland accounting for the highest proportion of residential installations.\textsuperscript{43} As battery storage further saturates the market, it is predicted that solar PV growth will be focused in commercial and industrial sectors rather than in the residential market.\textsuperscript{44} Battery installations have more than doubled, with 1,566 installations in 2016 increasing to 3,763 installations in 2017.\textsuperscript{45}

The ownership structure of solar and battery products varies. The Clean Energy Finance Corporation has provided funding for a major retailer to offer power purchase agreements to customers. The arrangement provides that the retailer owns, installs and maintains the systems, giving eligible residential and business customers the opportunity to buy any electricity generated from those systems at a price that is forecast to be lower than the average retail electricity tariff.\textsuperscript{46} The benefit of this approach is that residential customers avoid paying the upfront costs of installation while still enjoying a lower cost of energy.

In addition to the customer-ownership model, leasing is an alternative arrangement that is offered in Australia to customers. Solar companies design, install, own, operate and maintain the solar and battery systems and then lease the systems to the customers. The benefit of this approach to customers is that the monthly lease payments are less than the normal monthly power bill.\textsuperscript{47}

Financial institutions have also partnered with the Clean Energy Finance Corporation to provide discounts when financing renewable technologies. For example, Macquarie Leasing currently provides discounted financing for electric vehicles,\textsuperscript{48} while Westpac also currently offers its customers a discount on renewable energy solutions. Finance options can be in the form of a finance lease, commercial loan or commercial hire purchase agreement.\textsuperscript{49}

Blockchain technologies and smart contracts

While not yet commonplace, and with some regulatory hurdles to be overcome, blockchain technologies are emerging in the energy and renewables space. Power Ledger has created a peer-to-peer energy trading application envisaged to be for the benefit of producers and consumers. Its technology aims to enable the sale of surplus renewable energy generated at residential and commercial developments.\textsuperscript{50} Power Ledger has most recently partnered with

\begin{itemize}
  \item Ibid.
  \item Ibid., 6.
\end{itemize}
a US-based clean energy company to bring its trading platform to North America.\textsuperscript{51} From a finance perspective, Australian banks are beginning to invest in blockchain technologies and the Australian Securities Exchange is exploring the viability of applying distributed ledger technology to current clearing and settlement systems.\textsuperscript{52}

The Australian government has recently passed the Anti-Money Laundering and Counter Terrorism Financing Amendment Act 2017 to regulate digital currencies. The purpose of the Act is to ensure that currency exchange platforms are regulated to mitigate against money laundering and terrorism financing risks.\textsuperscript{53} However, these regulations only extend to participants who exchange digital currencies for money and would not currently appear to extend to the use of blockchain technologies limited to trading in renewable energy products. Other regulatory issues with the technology relate to attributing liability in a decentralised network,\textsuperscript{54} protection of personal data and privacy issues,\textsuperscript{55} as well as data security.\textsuperscript{56}

\section*{V RENEWABLE ENERGY MANUFACTURING}

On a world scale, Australia has a very small renewable energy manufacturing sector. The manufacture of renewable energy products in Australia is limited to a number of isolated projects and no major renewable energy manufacturing industries exist in Australia. Presumably this is due to Australia’s relatively high income levels and high energy prices, making manufacturing of such products more suited to other countries with lower input costs.

The majority of Australia’s renewable energy ‘manufacturing’ relates to the development and commercialisation of intellectual property. This is arguably driven by the lack of subsidies available in Australia for renewable energy manufacturing, as well as the Australian government’s apparent priority of investing in emerging renewable energy technologies and grants or tax incentives for companies that invest in research and development. For example, the Australian government is responsible for:

\begin{itemize}
  \item[\textit{a}] the A$2 billion Australian Renewable Energy Agency (ARENA), a statutory authority charged with co-investing in projects that improve the competitiveness of renewable energy technologies and increase the supply of renewable energy in Australia; and
\end{itemize}

\begin{thebibliography}{99}
\item Tranter Wilson, Alice, ‘Cracking the code: bringing initial coin offerings and decentralised autonomous organizations within the Australian corporate law framework’ (2018), 34(1) \textit{Australian Banking & Finance Law Bulletin}, 14, 15.
\item Tranter Wilson, Alice, ‘Cracking the code: bringing initial coin offerings and decentralised autonomous organizations within the Australian corporate law framework’ (2018), 34(1) \textit{Australian Banking & Finance Law Bulletin}, 14, 15.
\item Tranter Wilson, Alice, ‘Cracking the code: bringing initial coin offerings and decentralised autonomous organizations within the Australian corporate law framework’ (2018), 34(1) \textit{Australian Banking & Finance Law Bulletin}, 14, 15.
\end{thebibliography}
the Commonwealth Scientific and Industrial Research Organisation’s ‘Low Emissions Technology Roadmap’, which identifies the opportunities for Australia to be part of the future global energy supply chain.

Australia, and Western Australia in particular, is experiencing strong demand for its lithium mineral reserves because of the increase in lithium-ion batteries (used in electric vehicles and other large battery storage). Australia has the third-largest lithium resources in the world (approximately 16 per cent);[^57] is home to the world’s largest and highest-grade spodumene deposit;[^58] and was the largest producer of lithium in 2017.[^59] A number of lithium processing plants are currently being built in Western Australia and the Western Australian government recently announced a task force to explore the potential for Western Australia to also leverage its significant nickel, cobalt, manganese, graphite and copper resources to expand into more of the battery supply chain.[^60]

Australia has free trade agreements with a number of overseas jurisdictions and does not impose any specific tariffs on renewable energy equipment from its trading partners.

**VI CONCLUSIONS AND OUTLOOK**

We expect that the strong investment in wind and solar projects will continue in the year ahead. Although there is uncertainty around the NEG and its impact on renewable energy projects, it does at least represent a long-term policy (which some commentators say has been lacking in Australia for some time).

We also expect that there will be increased investment (including from government-funded organisations) in projects addressing the intermittency caused by renewable generation and demand-profile issues caused by household rooftop solar.

Batteries and electric vehicles will likely become increasingly more affordable and will play a role in shaping the energy future for consumers.

[^59]: See note 40 above.
I INTRODUCTION

Austria is already close to achieving its 2020 renewable energy target of 34 per cent.\(^2\) In 2016, 33.5 per cent of Austria’s final energy consumption came from renewables.\(^3\) The current ‘new’ government is aiming for all electricity to come from renewable sources by 2030\(^4\) and for a fully decarbonised energy sector by 2050. The Austrian government shows a clear political commitment to renewable energy, thus opening, or reopening, a huge potential market. To do so, the Austrian government put additional funding into the renewable energy market by way of an amendment of the Green Electricity Act.\(^5\) Therefore, renewable energies are of major importance in Austria. Austria provides a dynamic environment despite the fact that Austrian electricity law is divided between federal and state law. However, among countries in the European Union, Austria leads the pack when it comes to the percentage of electricity it generates from renewable sources.\(^6\)

II THE YEAR IN REVIEW

The latest figures on the Austrian energy industry show that Austria continues to play a pioneering role in the use of renewable energy sources. Above all, the use of biomass, wind, photovoltaics and hydropower is of paramount importance. With the highest share of renewable energies in gross electricity consumption, Austria continues to occupy the top position within the European Union. The share of wind power and photovoltaics increased further between 2005 and 2016, and currently accounts for 4.4 per cent of domestic energy generation.

In 2017, there were also significant changes in the legal framework to further promote the decarbonisation of the Austrian energy system. In the transport sector in particular,

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1 Stefan Lampert is a senior associate at Wolf Theiss Rechtsanwälte GmbH & Co KG.
3 See Statistics Austria.
4 See Government Programme 2017–2020 (Regierungsprogramm 2017–2020), page 175: ‘Klare Zieldefinition für die Steigerung des Anteils von erneuerbaren Energien am nationalen Gesamtverbrauch: 100% (national bilanziell) Strom aus erneuerbaren Energiequellen bis 2030’. At the same time, the government facilitated implementation by bundling relevant competencies within one ministry (Bundesministerium für Nachhaltigkeit und Tourismus).
A significant focus has been put on emission-free mobility. Around 90 per cent of the transport sector is still largely based on fossil fuels but accounts for around one-third of energy consumption and causes a significant portion of total emissions in Austria.

III THE POLICY AND REGULATORY FRAMEWORK

i The policy background

The Austrian electricity market, which was liberalised in 2011, operates within a framework that consists of the relevant legislation at EU, Austrian and provincial level: the decisions handed down by the bodies of the Austrian regulatory authority, E-Control, the Austrian electricity market rules and the market participants’ general terms and conditions. The regulatory regime relating to renewable energy has undergone several amendments in recent years. In general, recent legislative actions have addressed the issue of a more efficient allocation of support funds and have aimed at a quicker approximation of green electricity facilities to real market conditions. The regulatory regime is likely to undergo similar amendments in the years ahead. However, there are currently no indications of anticipated fundamental changes to the regulatory regime governing renewable energy in Austria in the near future.

In Austria, a guaranteed feed-in tariff encourages renewable energy project development. As a matter of statutory obligation, the Green Electricity Settlement Centre offtakes the electricity generated in officially recognised electricity facilities using renewable energy sources (RES) on the basis of set feed-in tariffs and in accordance with contractual terms and conditions approved by E-Control, and for the term set in the Green Electricity Act. The task of exercising the functions of the Green Electricity Settlement Centre is conferred by way of a concession issued by the Minister of Science, Research and Economy for the entire Austrian territory. The functions of the Green Electricity Settlement Centre are currently exercised by the joint-stock corporation OeMAG Abwicklungsstelle für Ökostrom AG, owned by grid system operators, banks and industrial corporations. The feed-in tariffs are set by the Minister of Science, Research and Economy in agreement with the Minister of Agriculture, Forestry, Environment and Water Management, and by the Minister of Labour, Social Affairs and Consumer Protection on an annual basis (or more often) by ministerial ordinance. Mandatory contracting at the guaranteed feed-in tariffs is only applicable to RES electricity generated in facilities that have been specifically recognised under the Green Electricity Act. Facilities eligible for official recognition are: (2) power generating facilities that are run exclusively on the basis of RES; (2) specific hybrid plants; and (3) specific mixed combustion plants. The guaranteed feed-in tariffs for RES electricity from recognised facilities depend on the prices at the time of application. The compensation for recognised RES electricity facilities is based on the electricity produced and fed into the public electricity grid system. Furthermore, mandatory contracting only applies if RES electricity generated in a recognised facility and fed into the public grid system is provided to the Green Electricity Settlement Centre over a period of at least 12 months. The duration of the general mandatory contracting period and the mandatory statutory obligation to offtake electricity generated in officially recognised RES electricity facilities is generally 13 years, and 15 years for solid and liquid biomass and biogas facilities from the date on which the Green Electricity Settlement Centre offtakes

7 See E-Control, The Austrian Electricity Market.
8 E-Control is a public authority.
RES electricity. In any case, it ends at the end of the 20th year of operation of the facility. After expiry of the mandatory contracting period, the Green Electricity Settlement Centre is obliged to offer to offtake the electricity from the RES electricity facility operator at market prices for an indefinite period. RES electricity from specific facilities, such as hydropower plants with a peak capacity of more than 10MW, and from animal meal, waste lye and sewage sludge, cannot be made subject to mandatory contracting at the guaranteed feed-in tariffs. In those cases, the Green Electricity Act might under certain circumstances provide for specific investment grants. The guaranteed feed-in tariffs are set by the Minister of Science, Research and Economy in agreement with the Minister of Agriculture, Forestry, Environment and Water Management, and the Minister of Labour, Social Affairs and Consumer Protection on an annual basis (or more often) by ministerial ordinance. These tariffs are essentially based upon the average production costs for cost-efficient, state-of-the-art production facilities. The tariffs shall foster achieving the purposes of the Green Electricity Act, especially with a view towards an efficient use of funds, and should be designed in such a way that the production of RES electricity increases continuously. However, an increase of the production of RES electricity from RES electricity facilities dependent upon sources can be pursued only where the sources are verifiably secured. Note that the applicable legislation and regulations do not provide for any indexation mechanism. Basically, feed-in tariffs are reviewed on a yearly basis and determined for one full year. However, if it is necessary, they may be set for two or more years. The determination of feed-in tariffs for a period of less than one year is also legitimate.

The regulatory framework

The legislative competency in matters of electricity is shared between the federal state, which has competence for enacting the framework legislation in the electricity sector, and the federal provinces of Austria, which are responsible for the implementing legislation.

The federal state has adopted the Federal Electricity Industry and Organisation Act, which contains directly applicable provisions of law and sets out the legislative framework to be further specified by the nine Austrian federal provinces. The federal provinces have enacted provincial electricity statutes in accordance with the framework provisions of the Federal Electricity Industry and Organisation Act. As a consequence of this split of areas of competence, the Austrian legal structure regulating electricity is rather heterogeneous. However, the following acts or ordinances are the principal regulatory acts related to renewable energy in Austria:

a. the Green Electricity Act is the central regulatory act for promoting green energy in the Austrian electricity market;
b. the Federal Electricity Industry and Organisation Act, together with the provincial electricity statutes, sets the principal regulatory framework for the generation, transmission, distribution and supply of electricity and for the organisation of the electricity market in Austria;
c. the Federal Act on Combined Heat and Power provides a support scheme for the operation and modernisation of existing combined heat and power (CHP) plants;
d. the Ministerial Green Electricity Feed-in Tariffs Ordinance 2018 for the offtake of electrical energy from green electricity facilities on the basis of contracts concluded through the Green Electricity Settlement Centre from 1 January 2018 until the end of

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2019, enacted jointly by the Minister of Science, Research and Economy, the Minister of Agriculture, Forestry, Environment and Water Management, and the Minister of Labour, Social Affairs and Consumer Protection, sets standardised feed-in tariffs for electricity generated from renewable energy sources;

with regard to energy efficiency, the Energy Efficiency Act, which is based on EU Directive 2012/27/EU, aims to reach its 20 per cent energy-efficiency target by 2020, increasing security of supply and the share of renewables in the energy mix, and reducing greenhouse gas emissions. These goals are to be achieved through compulsory implementation of energy efficiency measures and related reporting obligations. Parts of the Act entered into force in the summer of 2014, while the remaining parts entered into force on 1 January 2015; and

the Electric Power Transmission Act, together with provincial electricity statutes, applies if an electric cable for power current affects two federal provinces.

Notwithstanding the above, the construction of a power plant may be subject to various permits.

The construction of a power plant may be subject to an environmental impact assessment (EIA) permitting procedure under the Federal Environmental Impact Assessment Act (the EIA Act). The types of renewable energy power plants subject to an EIA permitting procedure include:

- wind power projects with a total capacity of at least 20MW or 20 wind turbines each with a nominal output of at least 0.5MW (or, under specific circumstances, wind power projects with a total capacity of at least 10MW, or 10 wind turbines, each with a nominal output of at least 0.5MW);
- hydropower plants with a maximum capacity of at least 15MW (or, under specific circumstances, 10MW, or in the case of power plant chains); and
- certain thermal facilities (e.g., combining waste management with power generation).

The EIA procedure constitutes a combined permitting procedure that replaces other applicable regulatory permitting procedures. The procedures of the EIA Act provide for extensive participation by the public.

The provincial government of the federal province where the power plant is to be located has competence for the EIA procedure. Under the EIA Act, the provincial government generally must decide upon an application – depending on the type of the particular project – within nine months or six months (e.g., in the case of wind power projects) of the submission of an application. The decision of the provincial government is – as of 1 January 2014 – subject to appeal before the Federal Administrative Court. Taking into consideration the preparation of all relevant documents, the permitting procedure can last up to two years or even more.

If the regulatory regime under the EIA Act does not apply, the power generating facility (in particular hydropower plants) may require the issuance of a water use permit. The water use permit is usually issued by the relevant district authority or, in the case of hydropower plants with a maximum capacity of more than 0.5MW, the relevant provincial governor in accordance with the conditions set out in the Federal Water Act. Moreover, setting up a power generating facility will, in most cases, require a permit under the applicable building laws. Building laws fall within the sole competence of the federal provinces of Austria. Therefore, regulations regarding the construction and operation of a building vary from province to
province. In general, a hierarchy of provincial zoning and construction plans determines the sites on which a power plant may be set up. Provincial building laws contain rules regarding the construction of the building and the administrative permitting procedure. The competent construction authority in the permitting procedure is usually the mayor of the relevant municipality. This decision is subject to appeal to the municipal council in most of the federal provinces. In some federal provinces (e.g., Tyrol or Vienna), as of 1 January 2014, this decision is subject to appeal to the relevant provincial administrative court. According to the general administrative procedural rules, the authorities have to issue a decision within six months of submission of an application.

Power generating facilities are exempt from the permitting procedure under electricity laws if they serve mainly for the operator’s own consumption. Such facilities are subject to the permitting procedure under the Federal Trade Act.

Finally, there is no Austrian legislation requiring the participation in a prior tender procedure to be granted the right (concession) to exploit natural resources. Hence, the Austrian legislation does not foresee the possibility of triggering a public tender by way of an unsolicited proposal. Consequently, no specific act prescribing the award of concessions for the right to exploit natural resources by way of a public tender or the mandatory conclusion of a concession contract with some public entity as legal basis for this right has been enacted.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

In Austria, there is no preferred specific legal form of investment vehicle in the renewable energy sector. As a matter of general business practice, the legal entity operating a green electricity facility will usually be a limited liability company or a joint-stock corporation.

The Green Electricity Act provides for investment allowances granted to the entity constructing or renovating certain hydropower plants and CHP plants.

Besides the Green Electricity Act, the Climate and Energy Fund Act is the legal basis for subsidies from the Austrian climate and energy fund granted for projects relating to energy efficiency and sustainability (e.g., for photovoltaic facilities with a peak capacity of up to 5KW).

However, there are no significant investment incentives for renewable energy producers other than the promotional framework of the Green Electricity Act.

The investment allowances granted to the constructing (or renovating) entity of certain hydropower plants and CHP plants under the Green Electricity Act amount to a certain percentage of the investment costs in the case of medium-sized hydropower plants and are processed by the Settlement Centre for Investment Allowances.

In addition, the federal provinces may enact individual incentive mechanisms within their legislative competence. Such investment incentives usually relate to the construction of photovoltaic and biogas facilities operated on a private level.

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Distributed and residential renewable energy

As a matter of fact, the already existing Austrian generation structure is characterised by a considerable amount (16 per cent)\(^\text{11}\) of distributed generation.\(^\text{12}\) In particular, the key players for distributed energy are in the hydropower, wind power and photovoltaic sector. A steady tendency for a significant rise in distributed renewable energy is expected in Austria.\(^\text{13}\)

Non-project finance development

In Austria, the project finance model is typically used for the purpose of financing the delivery of long-term infrastructure or natural resource projects, including a wide variety of energy types (e.g., wind, solar and hydro) and infrastructure assets (e.g., roads, schools and hospitals).\(^\text{14}\) Project finance is, in my experience, the standard form of financing. I have not seen non-project finance used for a renewable energy project yet. Nor have I seen crowdfunding used as a source of finance. In general, structures other than project finance are uncommon in the Austrian renewable energy market.

RENEWABLE ENERGY MANUFACTURING

Renewable energy as an alternative to fossil-fuel energy is more than simply a catchword for Austrian companies. Austrian companies are aware of their responsibility and invested early in this promising area.\(^\text{15}\)

There are no special policies or programmes supporting renewable energy manufacturing; however, the Green Electricity Act, the environmental support for companies, and the climate and energy funding pools, as well as the Austrian Research Promotion Agency,\(^\text{16}\) may be quoted as prime examples of state subsidy programmes, although not specifically aimed at the manufacturing sector. Furthermore, there are no tariff or trade policies with respect to renewable energy equipment in Austria.

CONCLUSIONS AND OUTLOOK

The regulatory regime relating to renewable energy has undergone several amendments in recent years. In general, the recent legislative actions have addressed the issue of a more efficient allocation of support funds and have aimed at a quicker approximation of the green electricity facilities to real market conditions. However, Austria is still an interesting market for investors and project developers because of a guaranteed feed-in tariff that encourages renewable energy project development. Hence, the proportion of renewable energy compared to the gross amount of energy consumption in Austria is exemplary. With

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11 See https://www.e-control.at/documents/20903/-/-/d40175e2-196b-4e01-9fc5-4eb75fdd7095.
12 See https://www.e-control.at/sr_publikationen/sr_publikationen-strom/sr_studien/sr_studie_dezentrale_ erzeugung_in_sterreich_0;
13 See https://www.e-control.at/documents/20903/-/-/d40175e2-196b-4e01-9fc5-4eb75fdd7095.
a share of 32.2 per cent, Austria lies in third place behind Latvia and Sweden.\textsuperscript{17} The fields of hydropower (38.9 per cent), solid biomass (31.5 per cent) and district heating (10.3 per cent) contribute primarily to the total volume of renewable energy.\textsuperscript{18}

The European Union has set itself the target of improving the energy efficiency of buildings by 2020 and increasing the use of renewable energy for heating, hot water and air conditioning.\textsuperscript{19} The new Austrian government goes one step further and is aiming for all electricity to come from renewable sources by 2030, and for a fully decarbonised energy sector by 2050. What is certain is that Austria with its renewable energy strategy will play a major role in the future.

\textsuperscript{19} Information from the Commission, COM (2008) 772.
Chapter 3

BELGIUM

Laura De Deyne, Roeland Van Cleemput and Vera Van Thuyne

I INTRODUCTION

Belgium is a federal state with a complex governmental structure. Apart from offshore wind and hydropower, the three regions (Flanders, Wallonia and the Brussels-Capital Region) are primarily responsible for renewables. Both the federal government and the regions have policies and a statutory framework in place to promote the production of electricity from renewable sources. The most important energy policy tools include priority grid access and green certificate schemes.

Because of the allocation of energy policy responsibilities, disputes occasionally arise between the federal and regional governments. Lack of cooperation, for instance, has delayed the transition from fossil fuels to clean and sustainable energy sources. However, after lengthy debate and much delay, Belgium’s four energy ministers recently agreed on an ‘Energy Pact’.

As a Member State of the European Union, Belgium is also subject to the binding national targets set out in the framework of the 2020 Climate and Energy Package. Belgium has to reach a target of 13 per cent for the share of energy from renewable sources in its gross final consumption of energy by 2020. If this target has not been reached, Belgium could be subject to sanctions imposed by the European Union. It is likely, however, that Belgium will reach the target by 2020.

Key trends in relation to renewable energy and the Belgian energy sector include:

a the proposal for an Energy Pact setting out a common goal to obtain security of supply, low-carbon energy generation, reduced CO₂ emissions and affordable energy prices;

b a consolidation of the energy suppliers market due to low energy prices, with traditional fossil-fuel energy suppliers diversifying into renewables, and increased competition;

c a sizeable reduction in the development costs for solar and wind energy production installations due to technological developments;

d a reduction in the level of financial support given to new offshore wind energy installations;

e state-aid notification of the Flemish green certificate and cogeneration certificate schemes for reasons of legal certainty;

f in Flanders, the integration of the environmental permit and the urban planning permit into a ‘single permit’ of indefinite duration on the basis of a single application process, public inquiry and consultation procedure;

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1 Laura De Deyne, Roeland Van Cleemput and Vera Van Thuyne are associates at NautaDutilh.
2 The 2020 package comprises binding legislation to ensure the EU meets its climate and energy targets for the year 2020. The goal is to cut greenhouse gas emissions by 20 per cent from 1990 levels, increase the share of EU energy from renewables to 20 per cent and improve energy efficiency by 20 per cent (https://ec.europa.eu/clima/policies/strategies/2020_en).
In Flanders, the annulment of the ‘Turteltaks’, a controversial tax intended to help cover the deficit caused by green energy certificates; and in Wallonia, annulment by the Council of State of the Walloon environmental requirements for wind turbine parks, although the effects of these requirements have been maintained for another three years.

II THE YEAR IN REVIEW

2017 was a rather calm year, with few policy changes and legislative actions related to renewable energy. One of the most anticipated policy documents (the Energy Pact) was finally adopted in December 2017. This 22-page document sets out Belgian energy policy until 2050 and emphasises the need for an energy transition that takes into account environmental, economic and social efficiency, with a central role for consumers and flexibility. In 2030, the energy mix should comprise 8GW of solar energy, 4.2GW of onshore wind energy and 4GW of offshore wind energy, together with combined heat from biomass, biogas and geothermal energy. Industrial, residential and local storage and electric vehicles should yield a total of 3.5GW in storage capacity by 2030. The Energy Pact is, however, only a policy document, with general guidelines and objectives. It does not introduce concrete measures or action plans. Such measures will be introduced – in accordance with the technology and market segment – in the National Energy and Climate Plan, which should be adopted in 2019.

In 2017, the financial support system for offshore wind energy was altered. The system of subsidies, based on green certificates, was individualised to prevent over-subsidising. Each wind turbine park with financial close after 4 March 2017 now receives a subsidy based on its individual levelised cost of electricity. For the two most recent wind turbine parks, the levelised cost of electricity was set at €129.80/MWh (Rentel) and €124/MWh (Norther). Previously, there was a generally applicable levelised cost of electricity, set at €138/MWh for all wind turbine parks with financial close after 1 May 2014. The period of financial support was also reduced from 20 to 19 years.

One of the most notable mergers on the Belgian energy market in 2017 was the acquisition of the Belgian branch of Eni Gas & Power and Eni Wind Belgium (the third most important player on the energy market) by the Dutch supplier Eneco, which mainly invests in renewable energy.

In October 2017, Belgium notified the European Commission's state-aid department of the Flemish green certificate and cogeneration certificate schemes, for reasons of legal certainty. The Commission found that the two schemes are compatible with the EU state-aid rules and thus did not raise objections to these state-aid measures.

Until recently, a business seeking permission to construct and operate a new energy installation in Flanders was obliged to obtain both an urban planning permit and an additional environmental permit. In practice, acquiring different permits through different procedures proved to be relatively cumbersome. On 23 February 2017, the Flemish government and provinces introduced the single permit, which replaces and consolidates the urban planning permit and the environmental permit into one permit of unlimited duration.

In November 2017, the Council of State annulled the Walloon environmental requirements for wind turbine parks (i.e., noise levels) on the ground that the region’s decision

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4 Council of State, 16 November 2017, No. 239.886.
had been adopted without a prior environmental impact assessment, as required by Directive 2011/92 on the assessment of the effects of certain public and private projects on the environment (formerly Directive 2001/42/EC). The Council of State submitted a request for a preliminary ruling to the Court of Justice of the European Union. The Court decided that a decision containing environmental requirements is a plan or programme for which a prior environmental impact assessment is required. The Council of State nonetheless decided to maintain the effects of the cancelled decision for another three years, which should give the Walloon government sufficient time to perform an environmental impact assessment and take a new decision.

III THE POLICY AND REGULATORY FRAMEWORK

Policy background

Belgium does not have an abundant supply of renewable energy resources. Since the end of domestic energy production based on coal, the country has been heavily dependent on nuclear power and imported energy. Belgium has, however, relatively good potential for offshore wind energy and biomass.

Energy policy in Belgium is divided between the federal government and the three regions. Apart from offshore power generation in the North Sea, the regions have authority over renewables. Renewable energy policy thus varies between the three regions and at the federal level. In particular, offshore wind energy policy differs from onshore wind energy policy since the former is a federal power and the latter a regional one. The objectives of the federal and regional energy policies are aligned closely to European Union priorities, such as developing renewable power generation, promoting energy efficiency and environmental protection, ensuring a stable and affordable security of supply and guaranteeing the functioning of the internal energy market.

Belgium offers a wide array of special incentives, including quotas, investment grants, priority grid access, tax exemptions, VAT reductions and beneficial credit terms. The main policy tools at both the federal and regional levels to support renewable energy generation include priority grid access and quota obligations within a green certificate scheme. Power from renewables is given priority for both connection to and use of the transmission and distribution grids.

Under the various green certificate schemes, green certificates are issued to a producer for the amount of electricity generated. Each year, electricity suppliers and grid users are obliged to submit a certain number of green certificates to the energy regulator. If an energy supplier or grid user is unable to present the required number of certificates, a fine will be imposed. Because of this administrative sanction, green certificates have economic value and are sold by producers either directly on the market or to the transmission system operator or distribution system operator at a minimum price.

The regions increasingly require new buildings to be environmentally friendly, thus indirectly obliging contractors to install solar panels or heat pumps. In return, the regions grant subsidies for small-scale renewable energy infrastructure. Small-scale producers of

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5 CJEU, 27 October 2016, C-290/15, ECLI:EU:C:2016:816.
renewable electricity also benefit through net metering from the difference between the amount of electricity generated and fed into the grid and the amount of electricity consumed and taken from the grid.\textsuperscript{6}

Other policy tools include beneficial credit terms for investments in renewable energy projects, investment grants, tax exemptions, VAT reductions, training programmes for installers of renewables and awareness campaigns. The regions offer investment and tax support for research and development programmes, thus encouraging technological development.

\textbf{ii The regulatory framework}

As a federal state, Belgium is divided into regions and communities. The various areas of competence with regard to energy are divided between the federal level and the regions. The powers of the federal level include security of supply, nuclear power, large-scale infrastructure for storage, transport and generation of energy, and transmission tariffs. The federal level is also responsible for offshore electricity production. The three regions – Flanders, Wallonia and the Brussels-Capital Region – are responsible for the distribution of electricity (voltage below or equal to 70kV) and gas, renewable energy sources, energy efficiency and distribution tariffs, as well as onshore electricity production.

With regard to renewable energy, areas of competence are subsequently divided between the federal and regional parliaments (the legislative branch), the responsible minister and his or her cabinet and administration\textsuperscript{7} (the executive branch), and the independent regulatory authorities. The independent regulatory authorities (IRAs) are the Commission for Electricity and Gas Regulation (CREG) at the federal level, the Flemish Regulator for Electricity and Gas (VREG) for Flanders, the Walloon Commission for Energy (CWaPE) for Wallonia, and the Brussels Regulator for Electricity and Gas (BRUGEL) for Brussels.

The respective parliaments adopt laws (at the federal level), decrees (in Flanders and Wallonia) or ordinances (in the Brussels-Capital Region). The government and ministers take executive decisions. The IRAs set tariff methodologies and issue Technical Rules. The following are the key sources of law and regulation.

\textit{a} At the federal level (only regarding offshore energy): the Electricity Act of 29 April 1999; the Royal Decree of 20 December 2000 on concessions; the Royal Decree of 16 July 2002 on (offshore) renewable energy sources; the Royal Decree of 20 March 2014 on maritime spatial planning; the Royal Decree of 30 July 2013 on guarantees of origin; the Royal Decree of 7 September 2003 on a maritime environmental permit; the Royal Decree of 12 March 2002 on the power cable permit; the Royal Decree of 19 December 2002 on Technical Rules; and decisions of the CREG\textsuperscript{8} – for example, on the Nemo Link tariff methodology (offshore interconnector).\textsuperscript{9}

\textit{b} For Flanders; the Energy Decree of 8 May 2009; the Energy Decision of 19 November 2001; decisions of the Flemish government or minister; and VREG’s Technical Rules for Electricity Distribution of 5 May 2015.

\textsuperscript{6} Although in Flanders, for example, there is a capacity tariff.

\textsuperscript{7} In Flanders, this is the Flemish Energy Agency.

\textsuperscript{8} Available at http://creg.be/nl/publications.

\textsuperscript{9} See http://www.creg.info/pdf/Diversen/Z1109-7NL.pdf.
For Wallonia: the Walloon Electricity Decree of 12 April 2001; the decision of the Walloon government of 30 November 2006 on the promotion of renewable energy, and the decision of the Walloon government of 21 March 2002 on the electricity suppliers’ permit; and CWaPE’s Technical Rules for Electricity Distribution of 3 March 2011.

For Brussels: the Electricity Ordinance of 19 July 2001; the decision of the Brussels government of 17 December 2015 on the promotion of green electricity; and BRUGEL’s Technical Rules for Electricity Distribution of 23 May 2014.

Renewable energy sources include wind power, solar power, geothermal power, hydropower, tidal power, biomass, biogas and liquid biofuels. Energy is qualified as green or renewable based on guarantees of origin, which provide proof of the origin of the electricity produced. These guarantees are an instrument used to track and prove to consumers that a given share of the electricity supplied comes from renewable generation. Guarantees of origin are granted by the regulatory authority to producers of renewable electricity and held in a database administered by the regulator. Electricity suppliers purchase guarantees of origin and can only describe the electricity they sell as green or renewable if they can provide the correct number of guarantees. Suppliers can then redeem the guarantees of origin with the regulatory authorities.

The federal rules on the integration of renewable energy into the electricity grid can be found in the Royal Decree of 19 December 2002 on Technical Rules. Article 319 of the Technical Rules states that the transmission system operator (TSO) must give priority to production installations that use renewable energy sources and combined heat, taking into account the security of supply. Specifically, Article 79 of the Technical Rules states that the TSO – if possible and taking into account security of supply – must give priority to the request for an orientation study that concerns production units using renewable energy sources and combined heat (with a nominal volume of less than or equal to 25MW). Articles 94 and 100 of the Technical Rules state that when the TSO investigates and reviews a connection request, it must give priority, if possible, to requests that concern production units using renewable energy sources and combined heat (with a nominal volume of less than or equal to 25MW). Article 265 of the Technical Rules states that the TSO must take into account the priority afforded to renewable energy and combined heat when managing congestion; taking into account, however, measures relating to grid safety, reliability and efficiency. Article 8, Section 1, Section 3, No. 5, b of the Electricity Act refers to the priority dispatching of electricity generated from renewable sources or combined heat.

In Flanders, the priority of renewable energy and combined heat is mentioned in Article 4.2.1.2.7 of the Energy Decree and Article 6.4.14 of the Energy Decision. VREG’s Technical Rules of 5 May 2015 also give – if possible and taking into account security of supply – priority to requests for orientation studies and the review of connection requests (Article III.3.3.20(4) and Article III.3.3.24(1)). When drafting a detailed study or in the case of accompanying capacity reservations, there is no priority (Article III.3.3.24(2)). Article IV.5.3.1(1) states that the DSO shall give priority to combined heat units and production units that use renewable energy, in the event of congestion.

In Wallonia, the priority of renewable energy and combined heat is mentioned in Article 34(4)(a) and (h) of the Walloon Electricity Decree. CWaPE’s Technical Rules of 3 March 2011 give – compared to other requests – priority to requests for orientation studies that concern production units using renewable energy or combined heat or that produce electricity from waste or recovery from industrial processes (Article 72(1)). The CWaPE
Technical Rules also give – compared to other requests – priority to the investigation and review of connection requests (Article 81(1)). Priority is also given to capacity reservations (Article 81(2)). Finally, Article 90(2) of the Technical Rules states that the DSO shall give priority, compared to other non-urgent works, to the connection of combined heat installations, production units using renewable energy and units producing electricity from waste or recovery from industrial processes.

In Brussels, the priority of renewable energy and combined heat is mentioned in Article 12(1)(9) of the Brussels Electricity Ordinance. BRUGEL’s Technical Rules of 23 May 2014 give – if possible and taking into account security of supply – priority to requests for orientation studies that concern production units using renewable energy (Article 98). The Technical Rules also give – if possible and taking into account security of supply – priority to connection requests for production units using renewable energy when drafting a detailed study (Article 104). Capacity reservations also benefit from priority (Article 104). Article 112(2) of the Technical Rules states that the DSO shall give priority to the connection of production units that use renewable energy above other non-urgent works. Finally, Article 181 states that the DSO shall give priority to compensating energy losses from renewable energy production.

The construction and operation of an onshore renewable energy project are subject to regional urban planning and environmental laws and regulations. Permits for both the urban planning aspects and the environmental aspects of the project will be necessary, and must be acquired prior to the start of construction works. Both these aspects have been integrated in one procedure in Flanders and Wallonia, resulting in one single permit. It is still necessary to apply for both an urban planning permit and an environmental permit in Brussels.

Depending on the nature and size of the project, either the municipality, the province or the regional government will be competent to grant the permit. Prior to the submission of the permit application, an environmental impact assessment could be required, depending on the specific project. Following submission of the permit application, the competent authority will check whether the application is complete and admissible. This check takes roughly between 20 and 30 days. Following this check, a public consultation and enquiry will be organised if necessary. The competent authority will take a decision on the permit application within a time frame of 45 or 160 days, depending on the region and the procedure. The authority may impose certain urban planning or environmental conditions on the renewable energy facility.

Depending on the net capacity of an onshore renewable energy facility, an additional federal energy production permit may be required. A federal energy production permit is not required for an onshore renewable energy facility with a capacity of less than 25MW, although construction must be notified to the federal energy minister and the CREG.

10 Act of 29 April 1999 on the organisation of the electricity market, Belgian State Gazette 11 May 1999; Royal Decree of 11 October 2000 on the grant of individual permits for the construction of installations for the production of electricity, Belgian State Gazette 1 November 2000.
Certain onshore renewable energy facilities are subject to specific statutory obligations. For instance, biomass facilities must meet the requirements of the waste legislation. Circulars set out the criteria by which public authorities assess permit applications for renewable energy projects (such as onshore wind turbines and biomass facilities). An authorisation from the local authorities to block a public road may also be required (e.g., to transport a wind turbine).

The construction and operation of an offshore wind farm require a domain concession, an authorisation to place underwater cables and a maritime environmental permit. The project developer submits an application for a domain concession to the Federal Public Service for Energy, which issues an opinion to the federal energy minister, who is responsible for granting the concession.\footnote{Royal Decree of 20 December 2000 on the conditions and procedure for the award of domain concessions, Belgian State Gazette 30 December 2000.} The authorisation to place underwater cables is also issued by the federal energy minister, based on the opinion of the Federal Public Service for Energy.\footnote{Act of 13 June 1969 on the exploration and operation of non-living resources in the territorial sea and continental shelf, Belgian State Gazette 8 October 1969; Royal Decree of 12 March 2002 on the rules for the laying of underwater cables, Belgian State Gazette 9 May 2002.} To obtain a maritime environmental permit, the project developer must submit an environmental impact study to the Management Unit of North Sea Mathematical Models (MUMM) of the Federal Public Service for Health and the Environment. MUMM then prepares an environmental impact assessment, followed by a public consultation. Based on MUMM’s opinion, the North Sea minister will take a decision on the permit application.\footnote{Act of 20 January 1999 on the protection of the marine environment, Belgian State Gazette 12 March 1999; Royal Decree of 7 September 2003 on the procedure for licensing and authorising of activity, Belgian State Gazette 9 September 2003.} Depending on the complexity of the project, it can take six to eight months from submission of the application to obtain a final decision from the minister.

An important innovation is the construction of the Modular Offshore Grid (MOG) in the Belgian North Sea. The MOG will provide an offshore electricity hub for wind farms, allowing offshore wind farms to connect their underwater cables directly to the MOG instead of onto the onshore grid located much further away. The MOG should be fully operational by 2020.

Renewable energy projects may give rise to environmental concerns relating to endangered or protected species and natural conservation areas. The presence of civilian and military airports further limits the development of wind turbine installations in Belgium. Finally, as Belgium is densely populated, local residents often oppose the construction of onshore wind parks.

### IV RENEWABLE ENERGY PROJECT DEVELOPMENT

#### i Project finance transaction structures

The ownership structure used in renewable energy projects depends on the nature and location of the project. For instance, onshore photovoltaic installations are often placed on the rooftops of large buildings using a right to build. Ownership is thus split between the owner of the solar panels and the owner of the building. Such photovoltaic (PV) installations are increasingly leased. Onshore wind turbines are often constructed on the property of a third party via a right to build granted to the operator of the wind turbines.
For offshore wind turbines or onshore wind turbines in port territory, domain concessions are used as such turbines are constructed in the public domain. The public domain is a concept of Belgian law that refers to goods that are used by the general public or that are allocated to services in the general interest. Ownership of goods in the public domain cannot be transferred. In addition, no rights in rem (such as security interests) can be granted in such goods. However, a public authority can grant temporary rights to private entities over goods in the public domain pursuant to a concession agreement. A domain concession is an administrative contract whereby a public authority grants a private party the right, for a limited period and in return for a contractually defined fee, to make private use of a public good.

In general, for the construction of a (large-scale) renewable energy project, such as an offshore wind park, a special purpose vehicle (SPV) is set up. The SPV enters into various agreements with contractors, which can be executed by subcontractors. The SPV is typically financed with equity and quasi-equity provided by the sponsors or shareholders (15 per cent to 30 per cent) and with debt (70 per cent to 85 per cent). Within the security package, the SPV typically requires the contractor's parent company to guarantee execution of the main contract with the contractor and a bank guarantee or letter of credit from a rated financial institution to be provided by the contractor itself. Further, the liability of the contractor will be capped as a percentage of the construction price or maintenance fee.

The main transaction documents needed for renewable energy project finance include (1) finance documentation, (2) project documentation and (3) equity documentation. Finance documentation includes the credit agreement, security documents, inter-creditor agreement if multiple funders are involved, hedging agreements if an interest-rate swap is taken, and sometimes a separate account bank agreement. Project documentation includes the construction agreement (i.e., the design and build or engineering, procurement, construction and installation (EPCI) agreements), the turbine supply agreement, maintenance (and operation) agreement, power purchase agreement, certificates purchase agreement, grid connection agreement, domain concession and ancillary right-to-build agreements, as well as any other service agreement. Finally, equity documentation comprises the constitutional documents of the SPV (such as by-laws), equity subscription agreement and, if applicable, shareholder loan agreements and the shareholder agreement.

In Belgium, there are no unique features of renewables project financing per se. At the regulatory level, however, the use of domain concessions and ancillary securities on those domain concessions for offshore wind parks is rather unique.

The typical tenor for term debt for renewable energy projects is linked to the duration of the subsidies under the relevant support scheme (which differs from one region to another). The project financiers typically request security by way of a possessory pledge of the SPV’s shares, its bank accounts (or more precisely, a pledge of the pledgor’s right to repayment of the credit balance of the bank account upon request), contractual claims and receivables, business and movable assets or intellectual property. They can also request security by way of a mortgage on the SPV’s immovable property.

The principal participants in project finance transactions are the SPV of the renewable energy project, the sponsors or shareholders of the SPV, the lenders to the SPV, the EPCI contractors, the maintenance contractors, the guarantors of these contractors, the power purchaser (generally the energy supplier), the green certificate purchaser (generally the energy supplier) and the transmission or distribution system operators.
The European Investment Bank, commercial banks, certain insurance companies, traditional power producers and export credit agencies have been instrumental in financing the first renewable energy deals in Belgium. Today, development banks, commercial banks, leasing companies, pension funds, infrastructure funds, public investment vehicles and other institutional investors all participate in renewable energy project finance transactions.

The renewable energy generated is purchased by utilities companies, industrial companies, residential consumers and, increasingly, public authorities.

**ii Distributed and residential renewable energy**

Distributed and residential renewable energy is on the rise. The distribution systems range from small-scale solutions, such as PV panels for residential households, to production units used to deliver power to large manufacturing facilities.

Cogeneration plants (combined heat and power generation) are mainly used for heavily energy-intensive industries. Such plants are operated jointly by production facilities (factories) and power suppliers. A financial support mechanism similar to the green certificates is available for the power producers.

On-site distribution systems form an exception to the distribution system operator (DSO) monopoly, and individual permission from the authorities is therefore required. In Flanders, different rules apply to direct lines, closed distribution systems and private distribution systems. For direct lines, permission of the regulator (VREG) is only necessary if the line extends beyond its own site (Article 4.5.1 Flemish Energy Decree). A closed distribution system, which is a system that distributes electricity within a geographically confined, industrial, commercial or shared-services site and does not supply household customers, must be notified to the VREG (Article 4.6.1 Flemish Energy Decree). Private distribution systems are in principle forbidden (Article 4.7.1 Flemish Energy Decree), but an exception is made for charging points for electric vehicles and where the distribution of electricity is ancillary to the provision of another service (e.g., student dorms).

In Brussels, a direct line can only be created if the energy minister has granted an individual permit (Article 30 Energy Ordinance). Closed distribution systems are treated as private distribution systems. Private distribution systems must be approved by the DSO (Article 34 BRUGEL Technical Rules of 23 May 2014).

For the creation of a direct line in Wallonia, prior approval of the regulator (CWAPE) is necessary (Article 29 Walloon Energy Decree). Closed distribution systems also require a permit from CWAPE (Article 15 ter Walloon Energy Decree). Private distribution systems are in principle prohibited, except for temporary consumption (maximum of 12 weeks per year), where the distribution of electricity is ancillary to a service or in a single office building (Article 15 bis Walloon Energy Decree).

The user of a distributed energy system and the owner of the production unit can be the same. However, lease agreements are also common. In this case, a leasing company will rent a rooftop or land for the installation of PV panels. The leasing company installs and maintains the installation. Consumers pay a monthly fee for the energy supplied by the installation. Both classic energy companies and banks offer leasing solutions.

Recently, more heating networks using deep geothermal heat have been constructed. The owner of the installation is often the same as the DSO. No permit or prior approval is required for the supply of heat. In Flanders, public service requirements for the suppliers of heat have been already established, but these requirements have not entered into force yet (Article 4/1.3.1 et seq. Flemish Energy Decree).
iii Non-project finance development
Financing based on the balance sheet of the sponsor is relatively rare and only available to larger energy companies (such as ENGIE Electrabel, EDF and Eneco). Developers obtain financing based on their balance sheet and their capacity to reimburse the lender or financier. This is generally cheaper and provides more freedom for the developer, since no other parties are involved. The lender can still request security and guarantees, such as a mortgage, to ensure that it is paid first with the proceeds from the sale of the project in the event of the borrower’s insolvency.

V RENEWABLE ENERGY MANUFACTURING
The manufacturing of renewable energy components is less common in Belgium. A production plant for wind turbines is located in Ostend, at the Belgian coast. This is a joint venture between Mitsubishi Heavy Industries and Vestas. They have produced, installed and are maintaining the Belwind, Northwind and Nobelwind wind parks in the Belgian North Sea. PV panels are produced in Belgium but on a small scale (for instance, by Finale 24 in Eupen).

A tax deduction is available for investment in research and development of new products and technologies that do not have a negative impact on the environment or that try to limit environmental impact (Articles 68 to 77 and 201 Tax Code). The tax deduction is granted by the federal tax authorities, but the ‘environmentally friendly’ nature of the investment is assessed by the regional authorities. In lieu of a deduction, a tax credit can be taken instead.

In Belgium, there are no specific tariff or trade policies regarding renewable energy equipment. Trade and tariff policies are governed by the European Union, which determines import and export tariffs and implements trade policy for goods originating from outside the European Economic Area. Once goods enter the European Economic Area, they can move freely on the internal market.

VI CONCLUSIONS AND OUTLOOK
The energy landscape in Belgium is currently in a transitional phase. Important steps have been taken; for example, the development of the modular offshore energy grid and the recent decision to allow the construction of a new wind park in the North Sea. In general, however, the Belgian economy is still heavily reliant on fossil fuels and nuclear power. By adopting the Energy Pact, the different governments of the federal state of Belgium have set out the framework allowing Belgium to transition to a low-carbon society in 2050. Key principles are the security of supply, low-carbon energy generation, reduced CO₂ emissions and affordable energy prices. These seem ambitious goals. However, as we stated above, the Energy Pact is merely a policy document, and does not introduce concrete measures or action plans. Such measures will be introduced – in accordance with the particular technology and relevant market segment – in the National Energy and Climate Plan, which should be adopted in 2019. Challenges include energy flexibility and storage, the phase-out of nuclear power and achieving the targets for renewable energy and energy efficiency set out by the EU.
I INTRODUCTION

Today, renewable energies represent nearly 21.14 per cent of the Brazilian energy mix divided into the following sources:

- small hydro power plants: 3.57 per cent;
- wind power plants: 8.05 per cent;
- photovoltaic power plants: 0.78 per cent; and
- biomass-fuelled power plants: 8.74 per cent.

Although many countries in South America have made efforts to develop a renewable energies market, Brazil is still considered the leader in this area. To illustrate, currently renewable energy sources represent only 17.82 per cent of the Chilean electricity market, while in Argentina, wind and photovoltaic energies represent less than 1 per cent of the national energy mix. Nevertheless, similarly to Brazil, most Latin American countries have adopted the use of government auctions based on long-term power purchase agreements (PPAs) with the purpose of developing their own (renewable) energy market.

The substantial amount of clean energies in Brazil is a direct result of the federal government’s efforts to introduce renewable energy sources into the national energy market with the purpose of diversifying the country’s energy mix. As outlined below, the federal government has carried out initiatives such as the creation of the Programme of Incentives for Renewable Electric Energy Sources (Proinfa) in 2002, and the promotion of a number of public auctions carried out by the National Electric Energy Agency (ANEEL) and the Ministry of Mines and Energy (MME).

In 2017 and the beginning of 2018, after two years of economic and political crisis and changes in the federal government resulting from former President Dilma Roussef’s impeachment, the federal government undertook the organisation of public auctions for the construction of new power plants and the supply of their energy to distribution companies.
In addition, governmental authorities initiated a debate concerning a review of the legal and regulatory framework applicable to the energy sector. Along with the recovery of the national economy and stabilisation of the political situation, this initiative was important in focusing the attention of national and foreign investors in the Brazilian electric energy market once again, which was evidenced in an increase in M&A transactions as well as in the competitive energy auctions held at the end of 2017 and the beginning of 2018.

With these general remarks in mind, this chapter details how past and recent governmental initiatives have affected and helped to develop the Brazilian renewable energies market.

II THE YEAR IN REVIEW

For the Brazilian energy market, 2017 was a very challenging year characterised by the restarting of government auctions for the acquisition of energy produced by new plants, and the start of discussions associated with the reformulation of the legal and regulatory framework applicable to the sector.

During the years that preceded 2017, in addition to the economic and political crisis faced by the country, the Brazilian energy market struggled with a scenario in which distribution companies had contracted more energy than was necessary for their markets (over-contracting status), and entrepreneurs that were unable to construct their power plants due to difficulties associated with the Brazilian economic and political crisis.

i Relevant role of the mechanism for compensation of surpluses and deficits from 2016 to 2018

Due to excessive energy in the market and a number of projects facing delays associated with the start of their commercial operation, the mechanism for compensation of surpluses and deficits (MCSD) played a role from 2016 to 2018 in balancing the demands of the national energy market. MCSD is a mechanism similar to an auction provided by ANEEL’s regulation that allows a partial, total, temporary or definitive reduction of the amount of energy contracted under energy trading agreements in the regulated environment (CCEARs).

The purpose of MCSD is to balance existing energy surpluses in the market. In summary, distribution companies with a lack of energy are able to contract energy in the free market (ACL), while distribution companies with excess energy will be able to suspend their obligations to purchase energy under a CCEAR. The mechanism was considered extremely relevant from 2016 to 2018 because it allowed projects facing commercial operation delays to keep their CCEARs, and distribution companies with excess energy to balance the CCEARs currently in force.

In addition to MCSD, ANEEL also carried out an auction specifically to cancel CCEARs currently in force, and enacted a specific regulation – ANEEL Resolution No. 711 4 – allowing distribution companies and power producers to renegotiate the terms and conditions of their CCEARs, especially those relating to conditions regarding terms and energy amounts. As with MCSD, this measure assisted power producers struggling with commercial operation delays to keep their CCEARs, and to meet a scenario in which several distribution concessionaires were facing excess energy.

4 ANEEL Resolution No. 711 of 19 April 2016.
ii Stabilisation of the economic crisis and the resumption of public auctions

In August 2016, the National Congress approved the former President’s impeachment, resulting in the appointment of Michel Temer as President, and in several changes associated with the federal government’s structure and personnel.

With the stabilisation of the economic crisis and changes in the federal government, and to meet market demand for new energy auctions (which have been rare since 2014), at the end of 2017 MME and ANEEL carried out two auctions for the delivery of energy produced by thermal, hydro, photovoltaic and wind power plants within four and six years of the occurrence of the auction (as explained below – ‘A-4’ and ‘A-6’ energy auctions). These bids represented the restoration of the auction system in the Brazilian energy market.

According to Energy Research Office (EPE) information, 708 projects were technically accredited to participate in the A-4 2017 auction (58 hydro power plants, 20 biomass-fuelled thermal power plants, 315 wind and 315 photovoltaic power projects). Of this total, only 25 projects sold energy in the bid, representing 891.1MW for the interconnected system. The table below summarises the number of projects that won the relevant auction per energy source and the average prices charged by the future power producers (average goodwill of 54.65 per cent in comparison with the ceiling prices defined under the auction rules).

<table>
<thead>
<tr>
<th>Energy source</th>
<th>Number of projects declared winners in the A-4 2017 auction</th>
<th>Average price (reais/MWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>2</td>
<td>108.00</td>
</tr>
<tr>
<td>Hydro</td>
<td>2</td>
<td>181.63</td>
</tr>
<tr>
<td>Biomass</td>
<td>1</td>
<td>234.92</td>
</tr>
<tr>
<td>Photovoltaic</td>
<td>20</td>
<td>145.68</td>
</tr>
</tbody>
</table>

In the A-6 2017 auction, nearly 887 projects were technically accredited by EPE to participate in the bid (46 hydro power plants, 30 biomass-fuelled thermal power plants, seven gas-fuelled thermal power plants and 803 wind projects). Within this total, only 63 undertakings were declared winners in the auction, representing 3,842MW for the interconnected system. The table below summarises the number of projects that won the relevant auction per energy source and the gain obtained by the grid compared with the ceiling prices.

<table>
<thead>
<tr>
<th>Energy source</th>
<th>Number of projects declared winners in the A-6 2017 auction</th>
<th>Average price (reais/MWh)</th>
<th>Goodwill (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>49</td>
<td>98.58</td>
<td>64.3</td>
</tr>
<tr>
<td>Hydro</td>
<td>6</td>
<td>218.91</td>
<td>22.1</td>
</tr>
<tr>
<td>Biomass</td>
<td>6</td>
<td>216.04</td>
<td>34.3</td>
</tr>
<tr>
<td>Photovoltaic</td>
<td>2</td>
<td>212.91</td>
<td>33.3</td>
</tr>
</tbody>
</table>

In the A-6 auction, it was also possible to observe an increase associated with the participation of gas-fuelled power plants (especially liquefied natural gas power plants), which are called on to produce energy during periods of variations in the production of energy from hydro, wind and photovoltaic sources.

5 All information related to auctions carried out by MME and ANEEL is available on EPE’s official website: http://www.epe.gov.br/pt/leiloes-de-energia/leiloes. Accessed on 3 May 2018.
In view of the successful auctions held at the end of 2017, MME and ANEEL carried out another A-4 auction on 4 April 2018, the résumé of which is presented below.

<table>
<thead>
<tr>
<th>Energy source</th>
<th>Number of projects declared winners in the A-4 2018 auction</th>
<th>Average price (reais/MWh)</th>
<th>Goodwill (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>4</td>
<td>67.60</td>
<td>73.5</td>
</tr>
<tr>
<td>Hydro</td>
<td>4</td>
<td>198.12</td>
<td>31.9</td>
</tr>
<tr>
<td>Biomass</td>
<td>2</td>
<td>198.94</td>
<td>39.5</td>
</tr>
<tr>
<td>Photovoltaic</td>
<td>29</td>
<td>118.07</td>
<td>62.2</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MME has scheduled a new A-6 auction to take place on 31 August 2018.

iii Reformulation of the legal and regulatory framework applicable to the energy sector

As a result of changes to the federal government’s structure and personnel, in July 2017, MME opened two public hearings aimed at receiving contributions from market players to reformulate and improve the Brazilian power sector’s legal framework. The first public hearing discussed general principles and guidelines applicable to the sector, while the other discussed specific measures that could positively affect the market. These public hearings resulted in a draft of Bill of Law, which is now under discussion by Congress.

The main provisions addressed by the public hearings that affect the Brazilian renewable energy market were a change in the tariff benefits related to renewable energy, the expansion of access to the energy free market and the creation of capacity public auctions.

The hearings recommended the end of discounts applicable to transmission and distribution use-of-system charges (respectively TUST and TUSD fees) for new renewable energy projects, as well as discussing the impossibility of their renovation by brownfield power plants after the term of the relevant licence. This recommendation was based on the fact that Brazil has already developed a sustainable and strong renewable energy market and, therefore, this provision has been maintained by the Bill of Law. The hearings also recommended an ‘incentive award’ to replace the aforementioned discounts, which would vary according to the amount of energy produced by the plants. However, the Bill of Law did not adopt the suggestion, providing alternatively an obligation for the federal government to create policies to stimulate the use of renewable energies up to 31 March 2020.

As detailed in Section III.i, Law No. 9,427, of 26 December 1996, authorised ANEEL to grant a discount on the TUST and TUSD fees for wind, solar, biomass and small hydro power plants, which were able to lower their costs of production and, therefore, the price of the generated energy.

With regard to the free market, the hearings suggested its gradual opening to new players until 2028 by decreasing the access requirements from 200kW to 75kW of power consumption. The Bill of Law retains the idea of a gradual opening, but the end of this process would be 2026 (and not 2028). Additionally, by 2026, there would be no access requirements, which means that anyone interested in participating in the free market would be able to do so.

6 Law No. 9,427, of 26 December 1996.
Finally, the hearings also suggested the possibility of the creation of public auctions specifically for the sale of capacity (instead of the currently existing auctions whose purpose is to sell energy produced by power plants).

These discussions fostered the interest of national and foreign investors in the market, as evidenced in the competitive energy auctions held at the end of 2017 as well as in the increase of M&A transactions during the entire year. Based on information provided by Transactional Track Record, renewable energy power producers participated in 35 M&A transactions between January 2017 and January 2018.7 These transactions demonstrate not only the entrance of new players in the Brazilian renewable energies market, but also the consolidation of the participation of large players in the sector through the acquisition of smaller projects or projects developed by third parties.

iv Other initiatives carried out by the federal government during 2017

At the beginning of 2017 (April 2017), ANEEL enacted Resolution No. 766,8 which defines new rules related to the constitution of guarantees by power sector agents under financing transactions. In broad terms, besides replacing the previous regulation on the matter (namely ANEEL Resolution No. 532/2013), the new regulation allows renewable power producers to create liens over receivables, assets and shares, as well as to offer corporate guarantees without requesting ANEEL’s prior approval, if the transaction does not jeopardise power production and its delivery to the grid.9

In addition to the energy auctions held to strengthen the participation of renewable energies in the Brazilian mix, in January 2018, the government requested its admission to the International Renewable Energy Agency (IRENA). The Agency defines itself as ‘an intergovernmental organisation that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation, a centre of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy’. To fulfil its goals, IRENA provides practical tools and policy advice for governments wishing to change their energy matrix to increase sustainable energy participation up to the country’s potential.

Brazil’s admission into IRENA assures the government’s commitment to investing in and expanding its clean energy power plants, in addition to a significant increase in the solar and wind power offer over the past two to three years.

Finally, on 23 February 2018, Centrais Elétricas Brasileiras SA – Eletrobras announced the sale of its equity interest in 23 special-purpose vehicles that own wind power projects, as well as in 11 transmission companies. To date, Eletrobras has not enacted the rules that will guide the auction in which the shares will be sold.

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8 Resolution No. 766, of 25 April 2017.
9 Nevertheless, since each financing transaction has a different structure, it is recommendable to review and confirm the regulatory implications of the transaction after the structure is defined. In addition, in accordance with Article 4, § 1° of ANEEL Resolution No. 766/2017, ANEEL’s approval will be required for the removal or sale of assets related to hydro power generation and its associated transmission lines.
III  THE POLICY AND REGULATORY FRAMEWORK

i  The policy background

Legal concept of renewable energies

First it should be noted that the Brazilian legal framework currently does not contain a definition of what should be considered as renewable energy.

However, as explained above, some renewable energy projects are entitled to obtain a discount applicable to connection tariffs for the use of the transmission and distribution system, namely, small hydro power plants with a power equal to or less than 50MW (provided that the discount is only applicable for 30MW delivered into the system), and solar, wind and biomass or qualified cogeneration, in accordance with ANEEL’s regulatory definition, with power equal to or less than 300MW.

In addition, certain energy sources are the object of public auctions held by MME and ANEEL specifically for renewable energies.

Creation of Proinfa

The introduction of renewable energies into the national matrix was one of the solutions brought forward by the federal government to contribute towards the diversification of the Brazilian mix following an energy crisis that occurred during 2001 and 2002.

The first initiative regarding the introduction of renewable energies into the Brazilian matrix relates to the creation of Proinfa by Law No. 10,438. Through Proinfa, power producers could participate in a bidding procedure to sell energy to Eletrobras, as off-taker, within long-term CCEARs and under fixed and predetermined prices.

The selection criteria within Proinfa bidding procedures include priority for projects with environmental licences granted before those of their competitors.

The price paid under Proinfa CCEARs, as well as the costs related to the maintenance of the programme, is supported by all end consumers (except low-income residential consumers) through the collection of a charge imposed by Proinfa.

Pursuant to Law No. 10,438/2002, Proinfa would be executed in two phases. In the first phase, the programme would encompass the implementation of 3,300MW from wind, small hydro and biomass-fuelled power plants, fully funded by final consumers. After the implementation of the first phase, the second phase would comprise the development of additional renewable power projects so that, by 2022, such projects would account for 10 per cent of the energy offer in Brazil.

In accordance with Eletrobras, Proinfa’s first phase resulted in the implementation of 119 renewable energy projects with a total installed capacity of 2,649.87MW.

The second phase of Proinfa has never been launched. As further explained below, straight after the creation of Proinfa, the federal government implemented changes to the energy sector’s regulatory framework, which resulted in the establishment of the successful governmental auctions.

Federal energy auctions

Following Proinfa’s implementation, one of the initiatives carried out by the federal government that fostered the introduction of renewable energies into the Brazilian market, namely the creation of energy trading auctions, was implemented through the reform of the energy regulatory framework in 2004 (enactment of Law No. 10,848/2004).11

In accordance with Law No. 10,848/2004, the purchase and sale of power may take place in the free market (ACL) or in the regulated market (ACR). In the ACL, generation companies and traders can freely negotiate the price for the sale of energy to other generation companies, traders, and free and special consumers. In the ACR, distribution companies buy energy from generation companies that have won public auctions organised by the federal government. The conditions, amounts and rates for sales of energy are determined through auctions.

There are different types of power generation auctions, namely A-N (‘N’ being the year after the auction during which the power producer must start to deliver energy to the relevant offtakers) and auctions specifically for renewable energies. For details related to participation in ACR auctions, see Section III.ii.

Investors declared winners in ACR auctions are awarded concessions or authorisations for energy production; commit to build the project with which they won the auction; and have the right to execute long-term CCEARs with distribution companies.

Additionally, Law No. 10,848/2004 created reserve energy auctions in which investors can register generation projects and compete with each other for the lowest electricity price. If they succeed, investors are entitled to execute a reserve energy agreement (CER) with the Energy Trading Chamber (CCEE) (acting as representative of all consumers).

Under this scenario, by guaranteeing an exclusive environment for energy trading and long-term CCEARs, the federal government has fostered the development of the renewable energies market in Brazil.

Other incentives

With regard to other incentives, as mentioned previously, Law No. 9,42712 authorised ANEEL to grant a discount in the TUST and TUSD fees for wind, solar, biomass and small hydro power plants.

In addition, Law No. 13,203/2015 provides that biomass, wind and solar power plants will receive a 50 per cent discount on TUST and TUSD fees as long as their production capacity is lower than 300MW, provided that the projects participated in energy auctions in or after 2016, and the projects were granted with licences in or after 2016. ANEEL authorised a further discount of 80 per cent for solar plants that began operations by 31 December 2017, with a reduction to 50 per cent after the 10th year of operation.

Based on the aforementioned policy and incentives, the federal government was able to introduce and strengthen the participation of renewable energies in the national mix, and it now accounts for 21 per cent of the energy matrix.

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12 Law No. 9,427, of 26 December 1996.
The regulatory framework

Governmental authorities of the Brazilian energy sector

In accordance with Article 22, IV of the Brazilian Constitution, the federal government is empowered to regulate energy-related matters, and states and municipalities are not allowed to enact laws contradicting federal guidelines and regulation.

In view of the exclusive federal competence to regulate energy-related matters as defined under the Constitution, the following federal authorities are responsible for defining policies applicable for renewable energies:

a. the National Energy Policy Council is responsible for advising the President on the sector’s development and to ensure that the country’s energy needs are met;

b. MME is responsible for the general planning of the country’s energy sector and monitoring the energy supply. MME also plans renewable energy auctions to foster the development of the sector;

c. ANEEL is responsible for the regulation and supervision of the power industry in accordance with MME’s guidelines;

d. the CCEE is an association responsible for registering all power supply agreements and accounting transactions of the spot market, including but not limited to renewable energy transactions. CCEE is also the purchaser in the CERs ‘granted’ to bid winners in reserve energy auction structures by the federal government to balance the grid supply;

e. the National Grid Operator is responsible for coordinating and controlling generation and transmission systems; and

f. EPE is responsible for studies and research to support the planning of the energy sector by other governmental authorities. EPE also performs technical accreditation of projects that are willing to participate in public auctions.

As seen from the above, the Brazilian power sector is highly regulated, and several government entities hold powers in terms of structuring, defining, implementing and supervising the public policies of the sector. ANEEL, however, has a prominent role in this context.

As an independent agency, ANEEL’s board of directors comprises one main officer and four others appointed by the President and approved by the Federal Senate for four-year terms. ANEEL’s internal organisation comprises a number of departments (each related to a specific regulatory subject, such as power production supervision or regulation) responsible for assessing the technical aspects of the matters subject to the board of directors’ deliberations.

As a regulatory agency, ANEEL aims to ensure, through regulation and supervision of the activities of generation, transmission, distribution and electric power trading, the operation of facilities in a balanced environment that allows companies to obtain solid results over time, and consumers to obtain reasonable tariffs. ANEEL’s main responsibilities encompass:

a. regulation of the power sector, including the issuance of normative resolutions;

b. supervision of generation, transmission and distribution concessions and authorised companies that perform activities in the power sector;

c. carrying out public bids for new power concessions and generation licences in accordance with MME guidelines;

d. settling administrative disputes among power industry agents; and

e. definition of the criteria and methodology to determine the tariffs applicable to distribution and transmission, as well as the review and adjustment of tariffs.
**Licensing procedure for power production activities**

With the purpose of constructing and operating renewable energy projects, entrepreneurs must obtain licences issued by the federal government, represented by MME or ANEEL. A licence can be granted through two different procedures:

1. an administrative procedure carried out by ANEEL through which the entrepreneur requests from the regulatory agency the issuance of a specific licence after presenting legal, technical and economic and financial accreditation documents and information; or
2. participation in ACR public auctions after which, in addition to receiving the relevant licence, the power agent executes CCEARs or reserve energy agreements for the sale of electricity on the ACR.

After obtaining a licence, renewable energy projects must comply with the milestones of the construction schedule defined by the relevant licence. When reaching the test operation and commercial operation phases, projects must request ANEEL’s approval to become operational.

**Participation in regulated market auctions**

Over the years, the federal government has carried out:

1. ‘new energy’ auctions (‘A-N’ auctions, as previously explained);
2. ‘old energy’ auctions;
3. adjustment auctions to complete the electric power load needed by distribution concessionaires;
4. reserve energy auctions; and
5. renewable sources auctions.

The criterion of lowest price to guarantee tariff affordability to captive consumers forms the basis of the execution of public auctions. When establishing the guidelines of the public auction, MME sets a reference price to the sale of power in reais/MWh, which shall be considered the higher price of a successful bid. The intention of MME is to obtain a discount in the referential price during the auction.

For a new power generation plant to participate as seller in power purchase auctions, the entrepreneur must be registered with ANEEL, as well as an enrolment with and a technical accreditation from EPE. MME Ordinance No. 102/2016 sets forth the rules applicable to requests for enrolment and technical accreditation of new power generation plants.

Pursuant to the latest documentation of auctions for new power generation plants, the structure of an auction comprises the following stages:

1. online registration;
2. submission of a bid bond to the custody agent;
3. systematic training and designation of responsible operational agents, and the distribution of passwords to access the system to power sellers so they can participate in the simulation and the auction;
4. simulation of the auction and power sellers’ validation by means of the configuring data of the system;
5. auction (submission of bids);
6. submission of qualification documentation;
7. analysis of documentation and result of qualification;
8. homologation and adjudication of the auction;
9. enrolment with CCEE;
reimbursement of auction expenses by power sellers;
k submission of documents of organisation of special purpose vehicles (SPVs), when applicable;
l collection of performance bonds;
m grant of licences to power plants that have negotiated power in the auction without such licences; and
n execution of the PPAs.

ANEEL usually structures auctions for new power generation plants with an inversion of phases, which means that bidders submit their bids prior to the submission and analysis of the qualification documents.

The auctions held by ANEEL at the end of 2017 (mainly ‘A-4’ and ‘A-6’) established a new technical qualification criterion. This criterion prevents power agents and their controlling shareholders that have had their licence or concession revoked, or have been subject to two or more penalties or fines because of a delay in the construction milestones of one year or more within the past 36 months counted from the release of the auction notice, to qualify for the auction.

After the bidding phase is completed, the bid commission examines the qualification documents of the power plants that negotiated power in the auction. These documents concern:

a legal qualification;
b tax and labour regularity;
c economic and financial qualification;
d technical qualification; and
e compliance with ANEEL and other obligations of the power industry.

After an analysis of the qualification requirements, the winning power generation plant has the unconditional obligation of execute a PPA.

Regardless of the CCEAR providing fixed terms and conditions, the revenue structure, specifically, is associated with the source of power generation, such as wind farms, solar, thermoelectric or hydroelectric power plants. Nevertheless, the CCEAR or CER ensures certified and constant revenue, which serves as satisfactory collateral for the financing of the project’s development.

As detailed below, in general, the power seller often assigns the CCEAR or CER’s receivables to financing institutions as collateral for contracted loans. In this matter, CCEARs allow the assignment of receivables if these relate to the power plant’s financing.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

Brazilian financing structures usually include initial bridge finance from commercial banks to an SPV, which is secured by corporate guarantees provided by the sponsors (i.e., the shareholders of the SPV). This bridge loan is followed by a permanent loan in a quasi-project finance structure, with security interests over the company’s assets, shares and credit rights.

The typical tenor for bridge loans is between six and twenty-four months. As per permanent loans, the typical tenor varies between 16 and 20 years.

For long-term loans, typical project finance customisations between debt amortisation schedules and offtake agreement revenues will generally apply. The majority of these loans
in renewable energy projects include the participation of public banks, such as the Brazilian Development Bank (BNDES), the Brazilian Northeast Bank (BNB), Banco do Brasil and Caixa Econômica Federal (Caixa).

The banks will generally pass on default risks to commercial banks through lending structures; require a bank guarantee through bank letters of credit for the period prior to the financial completion of the project – understood as physical completion, start of commercial operations and attainment of a revenue stream sufficient for a certain debt service coverage ratio; or both. In both cases, commercial banks require a corporate guarantee from sponsors until the financial completion.

Usually, the commercial banks more involved in project-financed transactions regarding renewable energies are Bradesco, Santander and Itaú.

Bonds for renewable energy projects are also common, and may be subject to tax incentives for investors when the use of proceeds relates to the construction of new undertakings (for greenfield or brownfield projects) and the project is within the requirements set out by the government for ‘priority infrastructure projects’.13

As for subsidised debt, since the mid-1990s, BNDES has been the main source of capital to fund all infrastructure projects (renewable energy included), mainly due to the amount of capital made available to the sector and to its subsidised policy of interest rates. For instance, BNDES has a specific credit line to renewable energy projects. However, it is possible that the role of the bank in project financed-transactions will be reduced.

Federal Law No. 13,48314 replaced BNDES’ long-term interest rate (TJLP) with a long-term rate (TLP) for loans granted by BNDES as of 1 January 2018. In 2018, the TLP is fixed at the same level as the TJLP, and it will gradually increase until 2023, from which time it will be calculated based on the Brazilian inflation rate plus the yield on government bonds.

In addition to BNDES, there are other institutions that typically act as project finance lenders, including:

- local and international development banks such as BNB, the Brazilian South Regional Development Bank, the Bank of Amazônia and the InterAmerican Development Bank;
- export credit agencies;
- FIDCs (receivables investment funds) that invest in infrastructure receivables and credit instruments;
- FI-FGTS (an investment fund of the public pension fund, FGTS); and
- state-related agencies.

Since the enactment of TLP, we have seen a particular increase in funding from BNB to projects in the northeast of Brazil through the Constitutional Financing Fund of the Northeast, which holds funds constitutionally committed to the promotion of the development of the region. This funding is still provided at subsidised rates, and has one the most competitive rates in the market for renewable energy projects.

Moreover, Caixa and the São Paulo State Development Agency also have specific credit lines to finance renewable energy projects.

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13 Pursuant to Article 2, Paragraph 1, Item III of Federal Law No. 12,431, dated 24 June 2011, all energy projects are deemed priority.
The companies that usually participate in project finance transactions regarding renewable energies in Brazil are Enel Green Power, Canadian Solar, Atlas, Neoenergia, CPFL Renováveis, Rio Energy, Echoenergia, Atlantic, AES Tietê, Contour Global, EDF Energies Nouvelles and Brookfield.

ii Distributed and residential renewable energy

In 2012, by means of Resolution No. 482,\textsuperscript{15} ANEEL regulated micro and mini on-site generation, allowing final consumers to install power generation projects (wind, solar, etc.) in their residence or other commercial or industrial facilities, and offset energy with the local distributor (energy generated is injected into the grid, and is used to reduce the consumption of electricity from the consumer unit). The rule is valid only for consumer units that use renewable energy sources (such as hydro, solar, biomass, wind and qualified cogeneration).

Consumers that install on-site generation systems are not allowed to sell any excess energy generated, and the only way they can be compensated for energy produced is through its consumption.

On-site generation systems may be micro systems that comprise power plants with installed capacity lower than or equal to 75kW, or mini systems that comprise power plants with installed capacity superior to 75kW and inferior or equal to 5MW.

After ANEEL’s review of Resolution No. 482/2012 in 2015, the number of distributed generation projects has been increasing. According to ANEEL, since 2012 the distributed generation system has increased 407 per cent.\textsuperscript{16} In Brazil, there are currently 27,083 distributed renewable energy plants, totalling an installed capacity of 322,102.8kW, as detailed below.\textsuperscript{17}

<table>
<thead>
<tr>
<th>State</th>
<th>Quantity</th>
<th>Consumer units receiving credits</th>
<th>Installed capacity (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acre</td>
<td>20</td>
<td>21</td>
<td>227.14</td>
</tr>
<tr>
<td>Alagoas</td>
<td>121</td>
<td>140</td>
<td>1,393.84</td>
</tr>
<tr>
<td>Amazonas</td>
<td>30</td>
<td>30</td>
<td>295.99</td>
</tr>
<tr>
<td>Amapá</td>
<td>11</td>
<td>11</td>
<td>315.60</td>
</tr>
<tr>
<td>Bahia</td>
<td>582</td>
<td>700</td>
<td>5,930.28</td>
</tr>
<tr>
<td>Ceará</td>
<td>954</td>
<td>1,124</td>
<td>24,607.42</td>
</tr>
<tr>
<td>Federal District</td>
<td>400</td>
<td>421</td>
<td>5,031.63</td>
</tr>
<tr>
<td>Espírito Santo</td>
<td>764</td>
<td>787</td>
<td>3,725.97</td>
</tr>
<tr>
<td>Goiás</td>
<td>607</td>
<td>696</td>
<td>9,442.85</td>
</tr>
<tr>
<td>Maranhão</td>
<td>309</td>
<td>346</td>
<td>3,731.96</td>
</tr>
<tr>
<td>Minas Gerais</td>
<td>5,717</td>
<td>14,683</td>
<td>93,542.32</td>
</tr>
<tr>
<td>Mato Grosso do Sul</td>
<td>577</td>
<td>1,211</td>
<td>5,804.21</td>
</tr>
<tr>
<td>Mato Grosso</td>
<td>527</td>
<td>665</td>
<td>11,724.15</td>
</tr>
<tr>
<td>Pará</td>
<td>203</td>
<td>204</td>
<td>1,319.76</td>
</tr>
<tr>
<td>Paraíba</td>
<td>301</td>
<td>417</td>
<td>3,387.92</td>
</tr>
<tr>
<td>Pernambuco</td>
<td>451</td>
<td>598</td>
<td>7,266.31</td>
</tr>
<tr>
<td>Piauí</td>
<td>211</td>
<td>231</td>
<td>5,015.04</td>
</tr>
</tbody>
</table>

\textsuperscript{15} Resolution No. 482, of 17 April 2012.


\textsuperscript{17} Available at http://www2.aneel.gov.br/scg/gd/GD_Estadual.asp. Accessed on 2 May 2018.
Brazil

<table>
<thead>
<tr>
<th>State</th>
<th>Quantity</th>
<th>Consumer units receiving credits</th>
<th>Installed capacity (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paraná</td>
<td>1,738</td>
<td>1,746</td>
<td>14,874.11</td>
</tr>
<tr>
<td>Rio de Janeiro</td>
<td>1,975</td>
<td>2,110</td>
<td>20,236.57</td>
</tr>
<tr>
<td>Rio Grande do Norte</td>
<td>398</td>
<td>408</td>
<td>5,898.15</td>
</tr>
<tr>
<td>Rondônia</td>
<td>56</td>
<td>74</td>
<td>4,188.87</td>
</tr>
<tr>
<td>Roraima</td>
<td>9</td>
<td>9</td>
<td>244.57</td>
</tr>
<tr>
<td>Rio Grande do Sul</td>
<td>3,217</td>
<td>3,716</td>
<td>39,273.87</td>
</tr>
<tr>
<td>Santa Catarina</td>
<td>2,398</td>
<td>2,684</td>
<td>19,463.81</td>
</tr>
<tr>
<td>Sergipe</td>
<td>167</td>
<td>172</td>
<td>1,540.89</td>
</tr>
<tr>
<td>São Paulo</td>
<td>5,197</td>
<td>5,651</td>
<td>32,519.57</td>
</tr>
<tr>
<td>Tocantins</td>
<td>143</td>
<td>149</td>
<td>1,100.00</td>
</tr>
<tr>
<td>Total</td>
<td>27,083</td>
<td>39,004</td>
<td>322,102.80</td>
</tr>
</tbody>
</table>

In 2016, the distributed generation system for solar-sourced power represented 99 per cent of the total number of systems installed (and representing 70 per cent of the power installed in distributed systems in Brazil), followed by wind plants.

Owing to regulatory changes implemented in 2015, the regulation now allows for distributed generation systems not to be necessarily installed on-site (therefore, the consumer can install his or her facilities in a location other than the point of consumption) provided that all units are in the same distribution concession area.

Despite the flexibility provided by the regulation, in Brazil, on-site generation still corresponds to 93 per cent of the distributed generation systems already installed. This high percentage is related to the fact that the majority of generation systems are located in residential consumer units, corresponding to 79 per cent, followed by commercial consumer units at only 15 per cent.

Regardless of these statistics, Brazil still has few examples of distributed generation systems located apart from consumer units that are owned by third parties. For example, a relevant player in the Brazilian market has developed a pioneer distributed generation project, which comprises a solar condominium project of 3,420 photovoltaic panels installed in the city of Tabuleiro. This project was structured as a remote self-consumption project, and the system has been rented by a network of pharmacies called Pague Menos for 15 years.

iii Non-project finance development

As previously mentioned, public banks are in charge of most project-financed deals in the renewable energy sector. The banks, in general, either pass on default risks to commercial banks through lending structures or require bank guarantees through bank letters of credit for the period prior to the financial completion of a project. In both scenarios, commercial banks require a corporate guarantee from sponsors until financial completion.

Due to the wide adoption of this structure, it is commonly perceived that Brazil still lacks financing through pure project finance structures.
V RENEWABLE ENERGY MANUFACTURING

The creation of Proinfa in 2002 and the award of contracts in subsequent public auctions has helped the development of the wind equipment industry in Brazil.\(^\text{18}\)

<table>
<thead>
<tr>
<th>Equipment suppliers and assemblers of wind turbines</th>
<th>Location (city)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tecsis</td>
<td>Camaçari</td>
</tr>
<tr>
<td>Wobben</td>
<td>Sorocaba</td>
</tr>
<tr>
<td>Wobben</td>
<td>Juazeiro</td>
</tr>
<tr>
<td>Wobben</td>
<td>Pecém</td>
</tr>
<tr>
<td>Aeris</td>
<td>Pecém</td>
</tr>
<tr>
<td>LM Wind Power</td>
<td>Suape</td>
</tr>
<tr>
<td>Weg</td>
<td>Jaraguá do Sul</td>
</tr>
<tr>
<td>GE</td>
<td>Campinas</td>
</tr>
<tr>
<td>Gamesa</td>
<td>Camaçari</td>
</tr>
<tr>
<td>Acciona</td>
<td>Simões Filho</td>
</tr>
</tbody>
</table>

Specifically with regard to the photovoltaic energy industry, some players have also started their industrial operations in Brazil; nonetheless, the industry is still considered incipient for the wider and cheaper use of solar energy.\(^\text{19}\)

<table>
<thead>
<tr>
<th>Assets</th>
<th>Main companies operating in Brazil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modules</td>
<td>Csem/Sunew; Minas Sol; Pure Energy; BYD; Canadian Solar; Globo Brasil; Tecnometal/Dya Premier</td>
</tr>
<tr>
<td>Invertors</td>
<td>Solar Energy; Ecosolys; WEG; Erzeg/Gptech; Serrana; GE; ABB; Friem; Irisar/Jema; Ingeteam; Sindustrial (Vacon)</td>
</tr>
<tr>
<td>Metal structures</td>
<td>Brafer/Clavijo; Sonnen Energia; NexTracker; Constâlica; Solar Group; PLP Brasil; CSI-Solar Tracker; Brametal; RBI Solar; Soltec; STINordland</td>
</tr>
<tr>
<td>String Box</td>
<td>WEG; Erzeg/Gptech; Globo Brasil; DMS Engenharia; Friem; Sindustrial; Painitec; PHB Solar</td>
</tr>
<tr>
<td>Batteries</td>
<td>Newpower; Tudor; Unipower; Nansen; Moura; Eletra Energy</td>
</tr>
<tr>
<td>Measurement equipment</td>
<td>Dowertech; Elo Sistemas; Elster Medicação; Sultech; Siemens; Landis+Gyr</td>
</tr>
</tbody>
</table>

It is expected that the restart of the public energy auctions in 2017 and 2018, as detailed in Section II, will foster even more development of the wind and photovoltaic industries in Brazil.

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VI CONCLUSIONS AND OUTLOOK

During the past few decades, the federal government has presented initiatives and incentives that have fostered the introduction of renewable energies into the Brazilian mix. Consequently, clean energies today represent 21 per cent of the national energy matrix.

For example, wind projects have grown constantly over the years, today reaching 6 per cent of the energy matrix of Brazil.

The number of solar projects is also increasing. In the past two years, the number of solar projects grew 70 per cent, and players estimate that by 2030, solar sources will correspond to 10 per cent of the energy matrix.

There are, however, still some difficulties to overcome, such as non-recourse funding, transmission constraints and an increase in the number of equipment suppliers, which could be addressed by the following:

a Adequate financial support: in 2016, in view of the recent downturn that has affected the financing ability of national development banks and the Brazilian economy, in general, entrepreneurs have been facing difficulties and struggling while turning to BNDES for financing. In addition, in view of the commercial structure adopted for fund energy projects in the country, it is possible to verify that Brazil still lacks financing through pure project finance structures.

b Transmission constraints: transmission constraints or lack of transmission capacity prevent the development of energy plants in general, thereby directly affecting the development of renewable energy. During 2012, several wind power projects were unable to start their commercial operations due to the failure of certain transmission companies to construct connecting facilities. However, projects facing transmission constraints are now expressly exempted from liabilities related to regulatory or contractual penalties (when dealing with CCEARs executed in the ACR). However, they are not entitled to receive revenues until a project is completely connected and operational.

c Equipment suppliers: the federal and state governments still have to develop mechanisms to attract power equipment suppliers to Brazil. For instance, we have an incipient photovoltaic panels market that could help to reduce the price of solar energy in the country.
Chapter 5

CHINA

Libin Zhang1

I INTRODUCTION

The official start of the renewable energy sector in China was witnessed by the promulgation of the Renewable Energy Law in 2005 (the 2005 Renewable Energy Law). To provide a basis for the implementation of the Law, the National Development and Reform Commission (NDRC) formulated the Medium-Term and Long-Term Plans for Renewable Energy, thus providing the guiding principles, main tasks, development objectives, key areas and assurance measures for the development and construction of China’s renewable energy projects. In 2009, China amended the 2005 Renewable Energy Law to make it more enforceable. In 2013, renewable energy was written into China’s 11th five-year plan. As a general observation, PRC law regarding renewable energy, while successful in providing a basic legal framework, still contains many loopholes in terms of interpretation and implementation.

Under the Renewable Energy Law, as amended as in 2009 (the Renewable Energy Law), the term ‘renewable energy’ is defined as ‘non-fossil energy, including wind energy, solar energy, water energy, biomass energy, geothermal energy, ocean energy’. The Law stipulates that the State Council will decide whether the Law will apply to hydropower. Application of the Law to hydropower generation shall be subject to regulation by the energy administration department under the State Council, and to approval by the State Council.2

Since the enactment of the Renewable Energy Law, China’s renewable energy industry has been developing quickly. At present, China has the biggest volume of global wind and solar power generation equipment in the world.

According to a report by UN Environment and Bloomberg New Energy Finance, China’s investment in renewable energy projects (solar, wind, biofuels, geothermal, biomass waste-to-energy, small hydro and marine) was US$126.6 billion in 2016, which is much greater than the amount of renewable energy investment in India (US$10.9 billion) and Brazil (US$6 billion). Solar and wind power are the dominant renewable energy sectors, with investments in 2016 of US$86.5 billion (solar) and US$36.1 billion (wind).3

1 Libin Zhang is a partner at Broad & Bright.

2 Article 2 of the Renewable Energy Law provides that for the purposes of the Law, renewable energy means non-fossil energy, including wind energy, solar energy, water energy, biomass energy, geothermal energy and ocean energy. The Law is not applicable to the utilisation of straw, firewood, etc., through direct burning in low-efficiency stoves.

The report states that the cost of solar projects is continuing to fall because of improved technology and management. In spite of difficulties found in absorbing solar power into the grid, solar projects are still developing rapidly, which can in part be attributed to the deployment of solar projects involving rooftops, industrial parks and other locations. Size-wise, many Chinese solar projects financed in 2017 were in the first rank globally, including the 540MW Jiangxi Municipal Poverty Alleviation Plant (at around US$653 million) and the Huanghe Hydropower Hainan Gonghe installation (at around US$605 million).\(^4\)

The report further found that China’s offshore wind power was prominent in 2017, with 13 projects valued between US$600 million and US$1.2 billion being green-lighted, including the 400MW CGNWP, Yangjiang Nanpengdao array. 2017 was a record year in terms of China’s investment in offshore wind, with offshore wind asset financing reaching US$10.8 billion (up 180 per cent). Comparatively, investment in onshore wind in 2017 was at its lowest since 2008, and down 28 per cent from 2016. The slowdown in onshore wind is mainly attributable to concerns about curtailment and declining feed-in tariff rates. Nevertheless, China remained the biggest onshore wind market in terms of installations, with 20GW added in 2017, down from 22GW in 2016 and a record of 29GW in 2015.\(^5\)

The renewable energy industry’s rapid growth is due to the support of the Chinese authorities, which take a leading role in its development. At the beginning of 2018, the regulatory authorities made considerable efforts to further enhance the system’s adjustment capacity and improve the capacity to adjust power. In particular, the phenomena of dumping renewable energy power and the curtailment of renewable energy have been ended and regulated.

The underlying reasons for the difficulty in connecting renewable power to the grid are that China’s current energy system is structured to be more supportive of fossil energy and is not adapted to the needs of the developing renewable power sector. Solving this issue means having to deal with very complicated systems in terms of the current regulatory systems, energy planning, market mechanisms and management of the energy sector, and conflicts encountered by renewable power producers in feeding their energy supplies into the grid.\(^6\) Some public interest litigation against the state grid is being considered, but so far there have been no cases with successful results, partly because of loopholes in the legislation and partly because of a lack of judicial support in such cases.

\(\text{II} \quad \text{THE YEAR IN REVIEW}\)

While the Renewable Energy Law has the statutory provisions on the government obligations in place (originally promulgated in 2006 and amended in 2009), the Law has played a very limited role in reality, particularly where renewable energy generation is viewed to be at odds with fossil energy generation under the current energy structural system. For the implementation of the Renewable Energy Law, NDRC, the Ministry of Finance and

\[^4\] Ibid.
\[^5\] Ibid.
National Energy Administration (NEA) have all promulgated various measures and rules regarding renewable energy development and utilisation, with some of the following detailed regulations still being effective:

- **a** Administrative Measures on Renewable Energy Power Generation (NDRC, 5 January 2006);
- **b** Administrative Measures on Renewable Energy Power Price and Costs Allocation (NDRC, 6 January 2006);
- **c** Administrative Measures on the Renewable Energy Power Quota (NDRC, 11 November 2007);
- **d** Measures on the Supervision of Volume of Power from Renewable Energy Sources to be Entirely Taken by the Grid Enterprises (State Power Regulatory Commission, 25 July 2007);
- **e** Administrative Measures on the Special Funds for the Industrialisation of Wind Power Equipment (Ministry of Finance, 11 August 2008);
- **f** Administrative Measures on the Fiscal Subsidy Funds for Solar Power as Applied on Architecture (Ministry of Finance, 23 March 2009);
- **g** Notice on Improvement of Biomass Power Price Policy for Agriculture and Forestry Sectors (NDRC, 18 July 2010);
- **h** Administrative measures on the Collection and Use of Renewable Energy Development Funds (Ministry of Finance, NDRC and NEA, 29 November 2011);
- **i** Guiding Opinions Regarding the Promotion of Geothermal Energy Development and Utilisation (NEA, 22 February 2013); and
- **j** Interim Measures on the Administration of Solar PV Power Station Projects (NEA, 18 November 2013).

In addition to the above regulations, local legislative bodies and relevant local governments have adopted some local legislation for implementing the Renewable Energy Law in various localities. In reality, local legislation is weak in supporting renewable energy as compared with the implementing regulations adopted by NDRC, NEA and other ministry-level bodies. Local authorities have adopted different approaches, and their attitudes towards renewable energy may vary. For instance, in a case involving the local authority in Gansu province, a local wind power producer was requested by the local authority to lower the price for selling to direct buyers of power that engage in the polluting steel manufacturing business, thereby seriously affecting the profitability of such wind power projects. Until recently, Gansu was criticised for refusing to connect renewable energy power to the state grid, and therefore failing to support the development of renewable energy. Some academic researchers have pointed out that local authorities should follow the provisions of Article 12 of the Renewable Energy Law by incorporating renewable energy-related R&D and industrial development into their provincial policies on R&D and industrial development.

To resolve the wind and photovoltaic (PV) power abandonment issue, and to facilitate the sustained and sound growth of renewable energy, NEA and NDRC issued a circular to encourage direct sales of wind and PV power from wind and solar power plants. On 5 February 2016, NEA promulgated the Circular on Duly Carrying out Works for Renewable Energy Consumption in the ‘Three Northern Regions’ (i.e., North Eastern China, Northern China and North Western China). Article 1 of the Circular emphasises the need for:
duly carrying out direct trading of electricity generated by renewable energy resources, promoting local consumption of renewable energy, encouraging businesses who generate power with renewable energy resources to actively participate as market entities in over-the-counter market trading to gradually expand the scope and scale of trading, and encouraging electric power generated beyond the guaranteed utilisation hours for renewable energy to be traded on the market.

At the national level, the authorities encourage wind and solar distribution generation projects. Although this policy has met with some obstacles from the grid and some local authorities that are more supportive of coal-fired power plants, we have seen some change in attitude regarding the development of distributed generation at the grid and the local government level. In the renewable power sector, the most noticeable recent regulatory measure was the issue by NEA, on 3 April 2018, of the Administrative Measures for the development and construction of distributed wind power projects (NEA Decree No. 30), encouraging all types of enterprises and individuals to invest, construct and operate distributed wind power projects under the land utilisation plan, and encouraging innovation of new business models in this regard.

III  THE POLICY AND REGULATORY FRAMEWORK

i  The policy background

China’s energy portfolio is still coal-dominant, and the entire nation is suffering, to different degrees, from smog in the big cities. The government has realised the need for a transition towards renewable, low-carbon energy to make the bio-system more sustainable. Therefore, China is trying to improve its energy portfolio by achieving a higher percentage of cleaner and low-carbon energy, such as natural gas, wind, solar, biomass and geothermal, which is the reason behind the enactment of the Renewable Energy Law. The development of renewable energy will also contribute to a better environment and more sustainable economic and social development. The Renewable Energy Law identifies the development and utilisation of renewable energy as a development priority.

To encourage various entities to engage in the renewable energy sector, the Renewable Energy Law requires that the state protect the legitimate rights and interests of investors in renewable energy projects (see Article 4 of the Renewable Energy Law). Article 14 stipulates that ‘The State encourages and supports grid-connected power generation with renewable energy’. For this purpose, the Renewable Energy Law has incorporated a system of complete guaranteed purchase of renewable energy power (see Article 14 of the Renewable Energy Law), which imposes on grid enterprises a statutory obligation to enter into connection agreements with renewable energy power producers ensuring the 100 per cent guaranteed purchase of renewable energy power. Whether the obligation will be honoured and enforced is not certain, as such an obligation is conditional and could be easily avoided by grid enterprises using technicality excuses (such as intermittency and energy security concerns).

In overview, since 2002 China has conducted five rounds of concession rights projects for demonstration purposes, and concession contracts will be granted to selected renewable energy investors through competitive bidding. From 2008, China has moved to adopt a wind power on-grid rate system (using mainly the feed-in tariff (FIT)). In 2009, NDRC
announced different benchmark rates (respectively 51, 54, 58 and 61 yuan cents) for four different types of wind resources areas. With the above measures adopted and implemented over the years, China has managed to achieve significant growth in the wind power sector.7

Nevertheless, in recent years, China has encountered problems with the grid rejecting and abandoning wind and solar power and refusing to let them connect with the grid. This phenomenon is attributable to both the monopoly of the state grid, which can easily brush aside its obligation to purchase renewable energy power, and resistance from coal power producers. Some cases have been brought against the grid enterprises, but the results have not been very satisfactory. We expect that more antitrust claims will be brought against the state grid, as some antitrust litigation was brought against Sinopec in 2014,8 and anticipate that more companies will challenge the monopoly of state-owned enterprises in the energy sector in the future.

The reform of China’s power industry is being carried out on the basis of the guidelines and road map as set forth in Document No. 9 of 2015 issued by the State Council. One principle in the Document is the guaranteed purchase of electricity. To implement the Document in this regard, on 4 March 2016 NDRC promulgated the Administrative Measures on the Guaranteed Purchase of Electricity Generated by the Use of Renewable Energy Resources at Full Price.9 Under the Measures, the annual power generated by grid-connected renewable energy generation projects would be split into power guaranteed to be purchased and power traded on the market. Power subject to a guaranteed purchase arrangement must be purchased at the benchmark on-grid rate in the full guaranteed amount by giving priority to the annual generation schedule and through signing priority power generation contracts (physical contracts or contracts for difference) with power grid companies. In the case of market-trade power, renewable energy power generating enterprises may gain power generation contracts through market competition, and such contracts will be performed by power grid companies in accordance with the priority scheduling principle. However, because they are departmental regulations, the Measures are quite low in the legal hierarchy. The means of determining power, which is subject to a guaranteed purchase arrangement, is also conditional and lacks certainty, and the Measures further lack punitive provisions and terms on legal liability.

To address accountability issues, NDRC and NEA jointly promulgated the Circular on Duly Administering the Guaranteed Purchase of Wind and Photovoltaic Power at Full Price on 27 May 2016, which contains the provision that:

except where impacted by resource conditions, any province (or region or municipality) which fails to satisfy the requirements for minimum guaranteed purchases of annual utilisation hours will no longer be permitted to build new wind power or photovoltaic power station projects (including projects already under planning or which have obtained approval).

8 See Yunnan Yinding Co, Ltd v. Yunnan Branch of Sinopec, filed in court in 2014.
9 NDRC Energy No. 625 of 2016.
In addition, the Circular also stipulates that:

in the case of power generation subject to capacity restrictions, yet which falls within the scope of guaranteed power capacity purchases and therefore requires compensation, the grid companies shall assist electric power trading agencies in determining a specific amount of compensation based on (i) the benchmark on-grid tariff applicable to the area in which the wind and photovoltaic power generation projects are located, and (ii) the capacity so restricted. Moreover, a mechanism for apportioning such compensation must be determined.

By comparison, the Chinese arrangements for guaranteed purchase are not at all similar to renewable energy portfolio standards (RPS) (where grid companies are mandated by statute to sell a certain percentage of power generated from renewable energy), and there is no statutory RPS-type obligation created and imposed on grid companies to sell a certain percentage of renewable energy. It should be noted that under guaranteed purchase contracts, renewable power will be sold to the grid under a benchmark on-grid rate. This would be similar to the FIT if such benchmark on-grid rate is contractually certain and enforceable by giving renewable power producers some promises of profit under such rate.

In July 2009, the Ministry of Finance and other ministries issued a circular regarding the implementation of demonstration projects for the Golden Sun solar subsidy scheme, which include comprehensive fiscal subsidies, R&D support and help in using market mechanisms. In March 2018, Chinese authorities put household and village-level solar poverty alleviation on a priority list for receiving subsidies from funds fuelled by the ‘renewable energy power purchase price plus’ (a fee paid by power consumers for subsidising the renewable energy power sector).

China also has various tax benefit policies for wind power projects. Since 2008, newly constructed wind power projects have been subject to a unified income tax rate of 25 per cent and, commencing from the tax year when the project receives the first payment for its production and operation, it is entitled to a benefit of tax exemption for the first three years and a 50 per cent tax reduction for the following three years. Since 2009, after China completed its reform for value added tax, wind power projects have been allowed to deduct the input tax paid for procured wind equipment. There are also various subsidies for local wind equipment production, and the amount of import tax for importing relevant types of wind power generators, as well as relevant key components and materials, has been adjusted.

As to fiscal and tax benefits for solar power projects, solar power is sold to the grid at a rate (set forth the government) that is cost plus reasonable profit. In 2008, NDRC allowed a rate of 4 yuan per kW/hour. In 2009, through a bidding process, NEA approved the FIT for the bid winner at a rate of 1.09 yuan per kW/hour. The pricing mechanism for solar power in connection with the grid needs to be further discussed in the future.

Tax benefit policies for solar power stations are centred on large-scale power stations: if a project qualifies as an infrastructure project, it is entitled to the benefit of a tax exemption for the first three years of operation and a tax reduction for the following three years.

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The regulatory framework

Pursuant to Article 6 of the Renewable Energy Law, the relevant energy administrative agencies within the State Council are in charge of organising and coordinating investigations into nationwide renewable energy resources, and shall be responsible for formulating the relevant technical standards for such investigation. Based on the information gathered, the relevant energy administrative agencies will determine national mid-term and long-term plans for renewable energy development. Based on these plans, provincial governments will prepare local renewable energy development plans taking into account local resources and conditions, with such plans being filed at the national energy authorities.

In China, the regulators of renewable energy at the national level are mainly NDRC and NEA, as well as the Ministry of Finance (MOF). NDRC is mainly in charge of pricing in the energy sector. NEA, which was established in 2008, is responsible for:

a) the regulation of the renewable energy industry;
b) the formulation of energy industry standards;
c) the promotion of R&D for major energy manufacturing equipment; and
d) the review and approval of fixed-asset investment projects under state plans and annual plans.

MOF is in charge of financing and fiscal policies for the support of renewable energy development.

In January 2010, the State Council established the State Energy Commission, which is a consultation and coordination commission above various ministries within the State Council. The State Energy Commission is in charge of research and formulation of state energy development strategies, and coordination of significant issues relating to domestic energy development as well as international energy cooperation.

Other ministries are also relevant in terms of the different types of renewable energy resources (such as the water, geothermal, ocean energy and meteorological authorities, the Ministry of Agriculture and the Ministry of Forestry). There has been criticism that the regulations regarding all of these energies are fragmented, therefore making regulation more difficult. Regulatory issues in China are often regulated in rules, decisions, decrees, administrative regulations, executive orders, policy statements, and judicial decisions and interpretations.

The limits of power and scope of jurisdiction over the renewable energy sector are not well defined, with the regulatory powers of different authorities overlapping, making the system burdensome and fragmented. Furthermore, there are obvious inconsistencies between the practices of the national energy agencies and local energy regulatory authorities. Sometimes, national renewable energy policies are resisted at the local level, while at other times, national rules are strictly implemented locally without taking into consideration local resources and conditions. Clearly, coordinated mechanisms and procedures at the national and local levels regarding accountability would be more desirable. Another criticism is that through recent government restructuring, the power and jurisdiction of the regulatory authorities in charge of saving energy and the development of renewable energy have been weakened, with the normal functioning of the supervision of renewable energy being negatively affected.

With respect to specific renewable energy projects, for the purpose of construction of projects for grid-connected power generation with renewable energy, sponsors of the target company shall obtain an administrative licence, or an application shall be submitted for the record, in accordance with law and the regulations of the State Council. The law further
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requires that, if there is more than one person applying for the construction of the same project for grid-connected power generation with renewable energy for which an administrative licence needs be obtained, the successful licensee shall be determined through bid invitations and bidding procedures.

For wind farm projects, at the project planning stage a development agreement should be signed with the local government, while a subsequent filing to the state for the approval of such project would also be imperative at this stage. Further, a feasibility study and the preliminary approval of the local authority would be necessary. If approved, the government will list the project in the national or provincial construction plan and annual development plan, and issue an approval document to the investor or sponsor of the project. A concession agreement, signed by the sponsor and the government, may also be needed.

Regarding land use, usually the party investing in such project should make sure that it obtains a land use right through a long-term lease for the location of the project. Before land is leased, due diligence should be conducted on the land to establish whether it is burdened with security interests or easements for other purposes; and whether the landlord has paid the unpaid land grant fee to the state and, if necessary, has settled with any farmers their relocation costs.

It should be noted that obtaining a licence does not necessarily mean that the investment for a project can be closed. While at this stage it is not possible for the investor or project company to sign a power purchase agreement (PPA) and a grid-connection agreement, opinions or a comfort letter, which should be obtained from the grid enterprise as to the connection or FIT for the power purchase, would be necessary and important conditions for getting funding of a project.11

Furthermore, renewable energy projects are subject to environmental laws and regulations. With respect to a particular renewable energy project, the sponsor shall try to obtain an environmental appraisal report within the approval procedures. Land use will usually take the form of a land lease. For all these approvals and prerequisite issues, including a preliminary agreement with the grid for the PPA and connection agreement, due diligence will be conducted and checked beforehand.

Development of renewable energy projects is subject to compliance with the national and local environmental protection laws and regulations. Further, feasibility studies of renewable energy projects shall comply with the national and local renewable energy development plans, which often take into account the protection of local natural resources and bio-economic considerations such as endangered or protected species and cultural resources. Renewable energy projects will also be subject to various restrictions under the PRC regulations on protection of national parks and nature reserve areas. Certain exemptions and compromise solutions should be negotiated and approved if any renewable energy project is considered not to be harmful to the biological and environmental protection of national parks and nature reserve areas.

11 Pursuant to Article 14 of the Renewable Energy Law, power grid enterprises shall sign a grid-connection agreement with enterprises generating renewable energy that have legally obtained an administrative licence or have submitted to the record projects to be constructed to buy the entire quantity of grid-connected power generated with renewable energy within the coverage of their power grids, and provide grid-connection services for the generation of power with renewable energy. In reality, a power grid company may find technical reasons for refusing to sign such agreement, and there has been no case yet to test Article 14 under the Renewable Energy Law where a power grid company has refused to sign such an agreement in violation of the good faith principle.
IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

Theoretically speaking, project financing can be used for financing renewable energy projects in China. In this case, the ownership structures used in the project financing of Chinese renewable energy projects would not differ from the ownership structure as commonly adopted in other jurisdictions. Any investors who invest equity in a project company for a renewable energy project will establish the project company pursuant to the PRC Company Law and those laws relating to foreign-invested enterprises. A lending agreement and security agreement will be entered into between the banks and the project company. A PPA would be required as a condition precedent to the closing; however, in China it is difficult to enter into a PPA at the development stage. Banks would look to the assets of the project company or even the parent company as guarantee for the financing for a project.

At present, project financing is still not common in the financing of renewable energy projects, because many Chinese banks are not used to financing in the form of project finance. Very often, Chinese banks lend money to the sponsor or shareholder of a project company under a guarantee of the sponsor’s parent company based on that parent company’s balance sheet, after which the sponsor would invest the loaded funds as an equity investment into the project company for the renewable energy project. Where the project company borrows directly from the banks, the sponsor or the sponsor’s ultimate parent would be requested by banks to give a guarantee for such loan. In addition, banks may also request the assets of the project company and the future cash flow as security for such loan. Where there is an engineering, procurement and construction (EPC) contractor for the project company, the EPC contractor would usually be requested to extend some commercial credit by providing wind or solar equipment with delayed payment, thereby financing the renewable energy project to a certain degree.

Where renewable energy power is connected to the grid in China, such green power (as evidenced by a green power certificate) would be sold by the grid company to any purchaser of such power. According to the relevant regulations, anyone who has signed up to the green power trading platform can purchase such green power. The purchasers can be government agencies, enterprises (such as industrial companies or local utilities companies), institutional units or any natural persons. Where a renewable energy project such as a wind power plant or solar power station is established for a local community as a distributed generation project, depending on how the distributed energy project is structured, it will be the local community or local host-offtake customers that will be the purchaser of the renewable energy. There have been instances of foreign-invested companies buying green power from the grid or negotiating with renewable energy companies to establish a renewable energy power plant as a distributed generation project.

China is in the process of establishing a nationwide market for trading carbon emission trading certificates. Until then, such certificates will not function as a tool for enhancing the profitability of renewable energy power plants. Green power certificates are the result of an experiment of the Chinese authorities to encourage consumers to purchase green power rather than fossil power. According to the rules of the certificates, the State Renewable Energy Information Administrative Centre will verify the volume of renewable power connected to the grid and issue green power certificates to renewable energy power producers that qualify. The certificates have identification codes that can identified electronically. The Information Administrative Centre will also establish a trading platform in which these green certificates can be subscribed for or traded with limitations (generally limited to a one-time transfer.
within the validity of the green certificates). For tracking information, a qualified enterprise to whom a green certificate has been issued should file project-related power volume information on the trading platform system on a monthly basis. The Information Administrative Centre should check and verify the legality of projects and their monthly traded power volume based on the information provided by enterprises. Enterprise would be responsible for the authenticity of the filing documents.

ii Distributed and residential renewable energy

Distributed renewable energy is becoming popular in China, and certainly would be area where there is more room for solar and energy storage business opportunities. Distributed renewable energy is also considered a way to get round the grid and to have direct access to energy consumers in local communities. As extra power needs to be sold to the grid while back-up power will be necessary where the distributed power is adequate and secure, the involvement and support of the state grid is a prerequisite for distributed generation projects.

In the past few years, authorities such as NDRC and NEA have become more supportive of the concept of distributed power generation, and have issued some important rules and circulars in this regard. Since the end of 2017, NDRC and NEA have issued several decrees to encourage the development of distributed power generation by means such as pushing for the direct sale of power from distributed power generators to power consumers. Such measures are viewed as ground-breaking for distributed energy, and even for the reform of the whole Chinese power system.

NEA Decree No. 30 applies to both renewable power generation for self-use and renewable power to be supplied to the grid. The content and significance of NEA Decree No. 30 cannot be underestimated. It calls for a one-stop-shop approval process for distributed power projects, and requires grid enterprises to comply with statutory obligations and procedures for providing better interconnection operating services for power supplies of 35kV or lower voltage. As previously noted, the state grid has been not particularly cooperative in the past in connecting renewable energy, citing various technical reasons for employing curtailment. However, NEA Decree No. 30 now requires grid enterprises to manage their interconnection with the grid correctly, and to provide relevant services based on the principles of safety, convenience, timeliness and efficiency.

NEA Decree No. 30 also requires grid enterprises to ensure that state subsidies be transferred to distributed wind power projects on a priority basis. To solve the intermittency problem, the Decree requests distributed wind power providers to use their own adjustment capacity and to compensate the costs for the power control requirement. In the past, the intermittency problem has been the main reason for the grid to reject the wind power. How the stipulations of NEA Decree No. 30 will solve this issue remains to be seen.

iii Non-project finance development

Other than project financing, Chinese renewable energy projects are more commonly financed by:

- traditional financing (such as commercial lending, policy bank loans and fiscal subsidies);
- corporate bond financing (such as bank loans, enterprise bonds or bridge loans);
- asset-backed securitisations;
- financial leasing (direct leasing or leaseback);
trust investment financial products (i.e., trust companies providing trust loans to borrowers with future utilities bills revenue, and fixed assets as security or based on third-party guarantees); and
internet-based crowd funding (although this has not been legalised within the legislation).

State banks and commercial banks also provide ‘green loans’ to renewable energy projects with favourable terms.

It is interesting to note that NEA Decree No. 30 devotes a whole chapter (Chapter 6) to the financing and investment development model. It encourages local governments to cooperate with local banks and financial institutions to encourage innovation in financing distributed power projects. It also encourages:

- banks and financial institutions to adopt a lending facility using a power sales fee charging right and project assets as collateral for such financing; and
- farmers to establish various equity holding cooperatives, or to adopt other means such as mixed ownership, funds and consortium or the PPP model, in joining distributed power projects dominated by local government.

Notably, NEA Decree No. 30 will be implemented with a validity term of five years. China should promulgate more formal legislation at the national and provincial levels to support the development of distributed generation. This will be very helpful in allowing China to achieve the transition from fossil energy to non-fossil and renewable energy.

V RENEWABLE ENERGY MANUFACTURING

The manufacturing of wind power equipment and solar PV components (including turbines and solar PV panels) is developing extremely fast in China. The Ministry of Industry and Telecommunications issued the Action Plan for the Smart Solar PV Industry Development (2018–2020), requiring the upgrade of the base materials for the solar PV industry, the acceleration of the manufacturing of solar batteries and components, and the integration of internet, big data and artificial intelligence with the solar PV industry.

On 4 April 2018, the Ministry of Finance and State Taxation Bureau issued the Circular Regarding the VAT Tax Rate, which stipulates that as of 1 May 2018, the tariff rate that applies to the sale or importation of goods will be adjusted to a lower level. For wind power and solar PV project, this means that, with the adjustment of value added tax to a lower level (16 per cent for taxable sales or 10 per cent for the importation of goods), their profitability will be improved.

VI CONCLUSIONS AND OUTLOOK

Looking at developments in the first quarter of 2018, it is clear that the reform of the power sector has reached a critical stage, and we are convinced that the sector will be structurally improved with the political atmosphere changing towards the restriction of coal-fired power projects, and greater support and encouragement being offered to distributed generation projects (such as wind).

12 2018, No. 32.
China

To progress the energy transition process, the Chinese authorities should use new ways to regulate the energy sector, including open and transparent legislation, and public hearings to hear the views of different interest groups (such as energy investors and producers, grid and infrastructure owners and operators, as well municipal utilities and public consumers). New legislation should be introduced, the natural monopoly of the grid and infrastructure should be regulated, and liberalisation and the use of market mechanisms should be encouraged. The rule of law should be established in the energy sector, especially when it comes to the judicial courts in which affected parties seek relief and justice. In this regard, given a lack of judicial independence, China still has a long way to go in establishing and operating a healthy regulatory system for its energy sector.
I INTRODUCTION

Before 2014, renewable energy project development was very limited in Egypt. In September 2014, the government launched an ambitious incentives programme for the generation of 4.3GW of solar and wind energy projects. The feed-in tariff (FIT) programme is considered the real breakthrough for renewables development in the country. The target for the first regulatory period (2015 to 2017) of the programme was 2GW of wind (20–50MW), 2GW of utility-scale solar photovoltaic (PV) (0.5–50MW), and 300MW of small-scale PV (less than 500kW). Of 178 solar bids, 67 consortia qualified with a total capacity of 2,880MW, and the utility-scale PV tender was oversubscribed by a factor of two, but of the 48 consortia bidding for wind projects, only 27 qualified, amounting to 1,670MW, and not all projects reached completion.

On 21 December 2014, Egypt published the Renewable Energy Law, identifying four main mechanisms to reach its renewable energy targets:

\(a\) state-owned projects with competitive bidding for engineering, procurement and construction (EPC) contracts;
\(b\) competitive bidding for build-own-operate (BOO) contracts;
\(c\) feed-in tariffs; and
\(d\) a merchant scheme according to which independent power producers can enter into bilateral contracts to sell power directly to consumers using the national grid against wheeling and grid-access charges payable to the grid operator.

A number of renewables developments went ahead; then, on 8 July 2015, the new Electricity Law was published, followed on 23 May 2016 by its Executive Regulations issued by Decree of the Minister of Electricity and Renewable Energy, which encouraged energy efficiency and the generation of electricity from renewable sources, as well as provided for the complete independence of the activities of generation, distribution and transmission of electricity in order to reach a liberalised and competitive electricity market.

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1 Donia El-Mazghouny is a partner at Shahid Law Firm.
5 New Electricity Law No. 87/2015.
6 Decree of the Minister of Electricity and Renewable Energy No. 230/2016.
II THE YEAR IN REVIEW

The three years between Q4 2014 and Q4 2017 have completely transformed the renewable energy scene in Egypt. Two Prime Ministerial Decrees, Nos. 1947/2014 (published on 27 October 2014) and 2532/2016 (published on 29 September 2016) established the offtake tariffs applicable to the first and second regulatory periods of the Egyptian solar and wind feed-in tariff programme respectively (later referred to as ‘Round 1’ and ‘Round 2’ of the FIT programme). Large-capacity solar projects (between 20MW and 50MW) were paid a tariff of US$14.34 cents/kWh, reduced to US$8.40 cents/kWh by the Round 2 decree, while wind projects of the same capacity were paid a tariff between US$4.60 cents/kWh and US$11.48 cents/kWh, reduced to between US$4.00 cents/kWh and US$7.96 cents/kWh by the Round 2 decree depending on the maximum operating hours of the wind plant. The equally split 4GW of utility-scale solar and wind projects attracted a lot of interest from international developers and investors, while the 300MW of distributed solar projects (of less than 500kW capacity) have seen limited uptake.

Round 1 of the FIT programme ran into a roadblock when projects failed to achieve financial closure in the summer of 2016 due to a foreign exchange shortage in Egypt and an arbitration arrangement considered unfavourable by a number of development finance institutions (DFIs) providing the main portion of the senior debt to Round 1 projects. Only two solar project companies had managed to execute a power purchase agreement (PPA) with the Egyptian Electricity Transmission Company (EETC) as offtaker with a total capacity of 100MW out of the 136 solar and wind qualified consortia. However, following the devaluation of the Egyptian pound on 3 November 2016, and after the government had addressed the issue related to the seat of arbitration in the programme’s principal project agreements, 30 project companies have successfully signed PPAs with EETC, raising the capacity to be installed in the Benban Solar Park (Aswan, South of Egypt) to 1,465MW with a total investment cost of about US$2 billion, out of the Park’s maximum capacity of 1,750MW distributed over 45 plots of land with a total surface area of about 37 square kilometres.

The success of the Benban solar projects was echoed by the 250MW Gulf of Suez wind project developed by a consortium of French, Japanese and Egyptian sponsors reaching financial closure in December 2017 (and increasing its maximum capacity by an additional 500MW), and two more wind projects developed by British and Italian consortia following suit expecting to reach financial closure soon.

The government is also planning the development of a first-of-its-kind pumped storage hydro power plant in Africa and the Middle East: the Ataqa Hydro Power Plant is expected to have a capacity of 2,400MW, to cost US$2.6 billion and to be completed in 2024.

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III THE POLICY AND REGULATORY FRAMEWORK

i The policy background

Renewable energy policies and incentives are established at the national level by the government, typically through the Cabinet of Ministers. The government has a target for 20 per cent of electricity consumption to be generated from clean energy sources by 2022 and 37 per cent by 2035, according to the Energy Strategy approved in 2016. Of the 2022 goal, 12 per cent is set to come from wind energy, with the remainder coming from small hydro and solar projects.\(^\text{10}\)

The new Investment Law,\(^\text{11}\) published on 31 May 2017, grants a special investment incentive to projects generating renewable energy or depending on it, consisting of a deduction of 30 per cent of the net taxable profits for the first seven years of the life of the project, subject to certain conditions such as the incentive value not exceeding 80 per cent of the paid-in capital until the start of the project’s operations and the project company being established within three years from the date of entry into force of the Executive Regulations issued by Prime Ministerial Decree No. 2310/2017 (i.e., from 29 October 2017). The Investment Law also creates a 2 per cent unified rate of customs duties for all equipment and machinery necessary for the establishment of the project (down from 5 per cent). Land may be allocated free of charge if the project company’s activity is deemed of strategic interest; otherwise, 2 per cent of the production is generally payable yearly for land lease (based on the Renewable Energy Law).

In 2013, Egypt introduced a net-metering scheme to promote distributed solar. The scheme allows small-scale renewable energy projects in the residential and industrial and commercial sectors (with a maximum capacity recently increased from 5MW to 20MW) to feed electricity into the low voltage grid. It does not specify a limit on installed capacity, meaning that customers can connect a system that produces more electricity than they consume; however, systems are limited to the low voltage level, typically around 380 volts. Under the scheme, solar PV generation is credited against the user’s bill for consumption from the grid using a calculation method that credits surplus electricity only in consumers’ highest tariff bracket (adopted to maximise bill savings).\(^\text{12}\)

In addition to the utility-scale solar projects, the FIT programme had also proposed tariffs for distributed PV ranging from E£0.848/kWh for residential systems below 10kW up to E£0.973/kWh for systems between 200kW and 500kW. These tariffs were lower than those for utility-scale projects because the government envisioned that distributed solar investors would have access to concessional finance in local currency, as the Ministry of Finance had proposed a financing programme under which investors could receive concessional loans at 4 per cent interest for installations below 10kW and 8 per cent for installations below 500kW. However, this concessional finance programme was never implemented, but Egyptian SMEs are now (since January 2016) eligible for loans at a 5 per cent interest rate. As such, the

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11 New Investment Law No. 72/2017.
new tariffs proposed in the FIT Round 2 decree were higher for distributed solar at 1.0288 Egyptian pounds/kWh up to 1.0858 Egyptian pounds/kWh for systems below 500kW (with increases between 4.8 and 28.6 per cent).\(^13\)

The merchant or independent power producer model provided for in the Renewable Energy Law also allows private offtakers to enter into agreements with private power generation companies to secure the purchase of electricity from renewable energy sources. However, in practice, the use of such model is still in its early stages, and is typically appealing for energy-intensive industries, especially in the cement sector, and for some oil and gas companies in line with their mandates and renewables targets under the Paris Agreement (within the United Nations Framework Convention on Climate Change).

The electricity price hikes introduced by Decree of the Minister of Electricity and Renewable Energy\(^14\) (applicable as of 1 July 2018 until 2019) are expected to increase the demand for renewable energy generation projects, particularly in the commercial and industrial segments. It remains to be seen how this will impact the renewable energy generation schemes proposed by the Renewables Law.\(^15\)

\section*{ii \ The regulatory framework}

Egypt mainly had a single buyer electricity market, with the Egyptian Electricity Holding Company (EEHC) being the main player and owner of the transmission system and almost all of the distribution assets. Under this model, the EETC, a state-owned company (previously an EEHC subsidiary), purchases electricity from all public and private generation companies, and sells it to nine main distribution companies and other private electricity distribution companies. It also directly sells electricity to a number of consumers connected to the extra-high voltage and high voltage networks. EETC is also responsible for power exchanges with neighbouring countries over the present interconnections.

The New and Renewable Energy Authority (NREA), established in 1986, is the arm of the Egyptian Ministry of Electricity and Renewable Energy (MOERE) tasked with developing renewable energy programmes in Egypt on a commercial scale, as well as implementing related energy conservation programmes.

The Egyptian Electric Utility and Consumer Protection Regulatory Agency (EgyptERA), established in 2000, is the independent legal entity that grants licences for the generation, transmission and distribution of electricity, and that is responsible for overseeing compliance with the existing rules and regulations in the electricity sector.

Egypt aims at gradually replacing the current model with a competitive market, based on bilateral contracts, together with spot, balancing and ancillary services markets. The Electricity Law lays the ground for this transformation, with EETC separating from EEHC and becoming independent from all electricity companies and electric utility parties, and establishing third-party access to its network, as well as allowing for the reorganisation of EgyptERA, granting it the right to approve different electricity tariffs. In addition, the Renewable Energy Law provides for different schemes for the development of renewables projects so as to enable the government to reduce Egypt’s dependence on fossil fuels and reach its target of renewables in the energy mix.

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\item \(^{13}\) Ibid.
\item \(^{14}\) Decree of the Minister of Electricity and Renewable Energy No. 157/2018 of 4 June 2018.
\item \(^{15}\) Renewables Law No. 203/2014.
\end{itemize}
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The Renewable Energy Law defines ‘renewable energy resources’ as ‘natural sources of energy, which are non-depletable, and which may be used to produce electricity’.

Egypt is a party to both the United Nations Framework Convention on Climate Change (UNFCCC), and the Kyoto Protocol by virtue of their ratification on 5 March 1995 and 12 December 2005 respectively. The Kyoto Protocol binds its state parties included in Annex I (Annex I Parties) to reducing their greenhouse gas emissions to certain targets over the course of periods known as ‘commitment periods’. The first commitment period under the Protocol started in 2008 and ended in 2012, and the second commitment period will end on 31 December 2020.

Since Egypt is not an Annex I Party, it is not bound by specific emission targets. It is, however, involved in the Protocol’s Clean Development Mechanism (CDM), as outlined in Article 12 of the Kyoto Protocol, which allows states with emission-reduction (or emission-limitation) commitments to implement an emission reduction project in a developing state, which in turn can ‘earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO2 . . . [These credits] can be traded and sold, and used by industrialised countries to meet a part of their emission reduction targets under the Kyoto Protocol”. As such, the CDM allows emission-reduction projects in developing countries to earn one CER credit for each tonne of CO2.

The implementation of the CDM in each member state is conducted under the auspices of a designated national authority (DNA), whose work is overseen by the CDM Executive Board. The CDM Executive Board constitutes the point of contact for CDM project participants for the registration of projects and the issuance of CERs. The Board supervises the CDM under the authority and guidance of the Conference of the Parties, the ultimate decision-making body of the Convention. The role of the CDM Executive Board includes, but is not limited to: (1) developing procedures for the CDM; (2) approving new methodologies; (3) accrediting designated operations entities; (4) registering projects (in accordance with specific procedures); and (5) issuing CER credits earned through CDM projects in accordance with specific procedures.

16 Egypt approved the Convention by Presidential Decree No. 386/1994 and ratified the Convention by virtue of the Minister of Foreign Affairs Decree No. 4/1994. Later, the Kyoto Protocol was ratified by Presidential Decree No. 227/2003.

17 Annex I Parties are parties to the Convention who, in accordance with Articles 3 and 4 of the Kyoto Protocol, undertake to, individually or jointly, reduce their overall emissions of greenhouse gases by at least 5 per cent below 1990 levels in commitment period 2008 to 2012 and by 18 per cent below 1990 levels in commitment period 2013 to 2020. [Article 3 of the Kyoto Protocol (http://unfccc.int/resource/docs/convkp/kpeng.pdf) and Doha Amendment to Kyoto Protocol, dated 8 December 2012 (http://unfccc.int/files/kyoto_protocol/application/pdf/kp_doha_amendment_english.pdf)].


19 In accordance with Article 12 of the Kyoto Protocol, the purpose of the CDM ‘is to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3’.

The Egyptian DNA is subordinate to the Egyptian Environmental Affairs Agency (EEAA) and consists of two bodies: (1) an executive body, the Egyptian Council for CDM (EC-CDM), which comprises representatives of certain ministries, including, but not limited to, the Ministry of Investment and International Cooperation and the Ministry of Petroleum, as well as having a technical division; and (2) the Egyptian Bureau for CDM (EB-CDM), which comprises experts providing technical recommendations to the EC-CDM. Both the EC-CDM and the EB-CDM play a role in deciding on the issuance of CER credits.

The board of EgyptERA is ultimately responsible for ratifying the rules, conditions and processes related to the issuance and trading of all renewable energy certificates.

In addition to the Egyptian Transmission Grid Code, and the Egyptian Distribution Network Code, a Solar Energy Grid Connection Code and a Wind Farm Grid Connection Code set the special requirements for the connection of solar and wind farms to the medium, high and extra-high voltage distribution and transmission systems, as the case may be.

The Electricity Law requires projects set up for the generation, distribution or sale of electricity to be developed through Egyptian joint-stock companies. Such companies must seek a preliminary and then a final power generation licence from EgyptERA in order to be allowed to carry out their activities.

The Companies Law\textsuperscript{21} requires a minimum of three founders to incorporate a joint-stock company, and capital of at least 250,000 Egyptian pounds. Incorporation itself, followed by commercial and tax registration, could be completed in as little as one week; however, the compilation of the documents required for incorporation typically takes longer, between one to two months on average.

Following incorporation, and in anticipation of the commencement of generation, which is the most commonly sought licence by private investors, the project company must identify a plot of land for the project, and have a pre-feasibility study carried out, as well as submit an application to EgyptERA to obtain an interim power generation licence for the project. This is typically issued within a maximum of 60 days for a period of one year, with a possibility of renewal. Then, upon completion of the full feasibility study, the project submits to EgyptERA an application for a permanent power generation licence, issued within a maximum of 60 days, which is renewable on a yearly basis.

\textbf{Environmental considerations}

Egypt is one of the most significant corridors for bird migration in the world, used by millions of birds during migration seasons. More than 470 bird species have been recorded in the country; the majority are non-breeding seasonal visitors, and about 150 species are breeding residents found year-round. Egypt also has a population of 19 globally threatened species and 34 sites declared as important bird areas.\textsuperscript{22} Wind projects established in Egypt must therefore carry out full technical and bird migration studies covering all seasons of the year before being granted a power generation licence.

Both solar and wind projects must also consider cultural and mineral resources and obtain avian and military clearances before being set up. Public land offered to investors for the development of renewables projects is typically fully permitted, which facilitates

\textsuperscript{21} Companies Law No. 159/1981.

the process of obtaining power generation licences, hence the high demand for such land, especially for utility-scale projects where senior lenders are particularly keen about the environmental attributes of the projects.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

For a long time, companies operating under the MOERE umbrella dominated the Egyptian electricity market. Private companies are now entering this market, mainly through BOO projects that are particularly seen in the wind field, or the FIT programme, which has positively impacted a renewables market that was rather stagnant, and created an influx of foreign direct investment opportunities in renewables projects that is unprecedented in the Egyptian electricity market. Large foreign utilities, energy providers, EPC companies, operating and maintenance service providers, DFIs and more generally international finance institutions (IFIs), as well as foreign and local commercial banks, have had Egypt on their radar for the past four years as a country with large investment potential in renewables.

Most utility-scale renewable energy projects in the country are funded mainly through non-recourse project finance and a smaller equity portion (in the range of 75:25 or 80:20). Loans are typically sourced from IFIs and DFIs, such as the International Finance Corporation, European Bank for Reconstruction and Development, European Investment Bank, Japan Bank for International Cooperation, Japan International Cooperation Agency or the African Development Bank for 12 up to 18-year tenures. Where EETC is the offtaker, senior lenders now generally require a sovereign guarantee from the Ministry of Finance or Central Bank of Egypt for payments by the transmission company to the seller, as well as a seat of arbitration outside Egypt for the PPA. They also require double-layered security for projects to ensure full protection in the case of default against lengthy enforcement procedures in Egypt, which may require public authorities’ interference or court orders in certain instances.

The construction of renewables projects is typically undertaken as lump-sum turnkey projects, with the design and procurement largely carried out by highly specialised companies located outside Egypt, and the installation and civil works, in addition to limited scope procurement, by local contractors and sub-contractors. Construction is largely financed by IFIs for private sector projects, or through grants from international donors for NREA projects. A very limited portion of the funding and part of the bonding is sourced from local commercial banks, given that most of the project components are sourced from outside Egypt in foreign currency, and local banks are legally required to lend in foreign currency only where most of the utility-scale projects in which EETC is the offtaker are paid in local currency, in the equivalent of the tariff priced in US$).

ii Distributed and residential renewable energy

In January 2013, EgyptERA adopted a net-metering policy by virtue of Circular No. 1/2013, which allows small-scale renewable energy projects to feed in electricity to the national grid. Generated surplus electricity is discounted from the balance through the net-metering process.

Rooftop and small-scale solar power generation was also promoted by the government, with the FIT programme dedicating 300MW of its fixed tariffs to projects of a capacity not exceeding 500kW. All produced electricity is fed into the national grid operated by EETC.
Off-grid solar power plants are encouraged by EETC, but are not widely spread. Most off-grid projects rely on photovoltaic technology, and hence lack the required stability and continuity of operation throughout the day. Battery storage systems are not yet commonly used in Egypt, but their use is expected to increase following the lifting of the subsidies of fuel and electricity tariffs by the government.

As fuel and electricity were largely subsidised by the government, residential solar projects were not financially appealing, and the lack of solid regulatory support for such projects has since gone unnoticed. Following the lifting of subsidies, it is expected that such privately owned projects would become more common.

iii  Non-project finance development

Regarding renewable energy projects that have been developed using non-project finance structures, there is no reliable publicly available data in this respect.

V  RENEWABLE ENERGY MANUFACTURING

Through a joint venture between EEHC and a Chinese company, Egypt manufactures mainly high-voltage electric equipment and switchgear, such as gas-insulated switchgear for 66kV up to 220kV power transformers, power capacitors and lighting arresters. Again through a joint venture with another Chinese manufacturer, EEHC contributes to a factory for the production of multiple types of low-voltage switchgears that are tailor-made to meet local demand. A large Egyptian manufacturing group dominates the local cables market and owns several manufacturing facilities in the region as well.

Most recently, in May 2018, Egypt's Ministry of Military Production signed a memorandum of understanding with a large Chinese group to build a solar panel facility at a cost of up to US$2 billion. The facility is expected to manufacture panels capable of producing 5GW annually.

Based on Minister of Finance Decree No. 106/2017, the applicable value-added tax on imported machinery and equipment used in the production and provision of services if considered a single production line is 5 per cent, instead of the standard rate of 14 per cent. It is applicable to solar and wind plant equipment even when shipped in different consignments.

VI  CONCLUSIONS AND OUTLOOK

The government has a long-term plan of diversification of the energy mix and reduction of dependence on fossil fuels, which pre-dates the large Zohr gas discovery offshore from Egypt. Although the FIT programme generated a lot of interest in the market for large-scale projects, the development of distributed solar remains almost inexistent. The potential of renewables development in the commercial and industrial segments also remains largely untapped. The framework for the setting up of commercially viable waste-to-energy projects also remains in gestation, as it requires close coordination between MOERE and the Ministry of Environment, as well as a solution to the lack of an efficient waste collection system. Low pricing is also an issue, particularly given that payment will take place in Egyptian pounds without pegging to the US dollar. In November 2015, the government approved FITs for refuse-derived fuel and electricity generated from solid waste at a preliminary price of 0.92Egyptian pounds/kWh. It was also reported to have agreed to issue grants to
In sum, Egypt has the basic legislation in place to encourage the development of renewable energy projects, and has experienced great success with the FIT programme in the form of the one-stop shop created within EETC to govern and liaise all regulatory aspects related to projects: the Central Unit for Feed-In Tariffs. However, smaller-scale projects and developments in the commercial and industrial sectors, which mainly have to deal with distribution companies on the lower voltage networks, do not enjoy the same benefits. There is also a lack of clarity with respect to the licensing process for such projects, and a lack of support in relation to the permitting of the land required for the establishment of the projects, as well as a lack of detailed information regarding potential opportunities of investment in renewables in general, which could largely be facilitated by the government if it wishes to boost renewables development in the coming years, especially in view of the natural uptake that will result from hikes in the electricity price, applicable as of July 2018.
I INTRODUCTION

As the fourth most populous country in the world and the largest economy in South East Asia, Indonesia’s energy requirements are considerable and growing, and the country has set an ambitious target of achieving electricity generation capacity of 35,000MW by 2019. Although the majority of energy resources would predominantly continue to be derived from fossil fuels, there remains room for renewable energy sources to grow, and Indonesia’s energy outlook suggests that the renewable energy sources sector will increase its portion of the national energy mix from 12.4 per cent in 2018 to 20.4 per cent in 2027. Based on Indonesia’s broader master plan, the government expects that by 2050, the use of renewable energy for power will increase to 31 per cent.

The most developed renewable energies are hydropower and geothermal energy, with a total installed capacity of 5,024MW and 1,403.5MW, respectively. These figures, however, are low in comparison with its total potential. In 2015, the development of renewable energy only reached 2 per cent of the total potential renewable energy sources in Indonesia. Despite attempts to broaden the offtaker base, PT Perusahaan Listrik Negara (Persero) (PLN) is, de facto, the sole offtaker in Indonesia, and independent power producers (IPPs) are required to sign a power purchase agreement (PPA) with PLN under a tariff approved by the government.

The following may have contributed to hindering potential investment in the development of renewable energy:

\( a \) fuel subsidies;
\( b \) legal uncertainties;
\( c \) a lack of incentives for the use of renewable energy;
\( d \) complex licensing procedures;

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1 Kanya Satwika is a partner, Tracy Tania is a senior associate and M Insan Pratama and Theodora Saputri are associates at Assegaf Hamzah & Partners.
2 Presidential Regulation No. 4 of 2016 on Acceleration of the Development of Electricity Infrastructure (PR 4/2016).
6 RUEN at page 20.
In spite of the government’s commitment to optimising the development of renewable energy, there remain questions on how these issues would be addressed.

II THE YEAR IN REVIEW

PLN annually prepares an electricity generation plan to be approved by the Minister of Energy and Mineral Resources (MEMR). PLN’s electricity plan for 2018 suggests a correction of the national growth in and development of electricity demand from 77,900MW to 56,000MW. The reduction affects mostly new coal and gas-fired generation, as well as hydro and geothermal. Despite the reduction, the number of power plants using renewable sources is expected to grow, and to increase their portion of the national energy mix to 3.7 per cent of the total energy being produced nationally, amounting to a capacity of 2.1GW.

Significant capacity growth, from 1,200MW to 2,000MW, is expected for wind and solar sources. PLN is considering approximately 1,000 locations for new solar photovoltaic (PV) and wind farms to be built between 2018 and 2027 across Java, South Sulawesi, Nusa Tenggara and Madura. For solar power plants, the key focus is to develop floating solar PV using existing water reservoirs of hydropower plants, thereby reducing land acquisition costs and risks.

Counter-intuitively, in 2017 MEMR issued several regulations introducing more government controls that may affect the bankability of power projects, including those using renewable energy as power sources, as follows:

a MEMR 10/2017, which shifts the risk of natural force majeure affecting PLN’s grid from PLN to the IPPs, and deregulates changes in the laws and government policy as force majeure (see Section III.ii);

b MEMR 50/2017, which revoked the applicability of feed-in tariffs for renewable energy projects (see Section III.ii); and

c MEMR 48/2017, which restricts share transfers in an IPP during certain periods (see Section III.ii).

Following industry criticism, in 2018, MEMR revoked several other regulations in the electricity and renewable energy sectors: five regulations in the electricity sector and four regulations in the renewable energy sector were revoked. In spite of the laudable intention of removing bureaucratic hurdles, promoting investment and stimulating economic growth, this deregulation has not addressed or removed the challenges posed to new IPPs as a result of the regulations issued in 2017.

7 RUEN, page 13.
8 MEMR Regulation No. 10 of 2017 concerning the Principle Terms of Power Purchase Agreement as amended with MEMR Regulation No. 49 of 2017 and MEMR Regulation No. 10 of 2018 (MEMR 10/2017).
9 MEMR Regulation No. 50 of 2017 on the Use of Renewable Energy for Electricity Supply (MEMR 50/2017).
III THE POLICY AND REGULATORY FRAMEWORK

i The policy background
To balance the government’s ambition to achieve a 35,000MW electricity capacity while increasing the proportion of renewable sources in the energy mix, the government has introduced several incentives to IPPs that develop renewable energy sources, namely:

a a possible exemption by the Bank of Indonesia on the mandatory use of the rupiah for power plant projects as strategic infrastructure projects;\(^{11}\)

b tax incentives provided for renewable energy power generation projects, including solar, wind, ocean and hydropower,\(^ {12}\) and covering:
   - income tax deductions in an amount of 5 per cent per year for six years;
   - lower tariffs for income tax on dividends paid to non-resident taxpayers;
   - an extended tax loss carry-forward period of up to 10 years;
   - accelerated depreciation on tangible assets; and
   - accelerated amortisation of intangible assets;\(^ {13}\)

c IPPs may be granted a 2.5 per cent customs duty exemption for the import of capital goods used in energy development projects;\(^ {14}\)

d the possibility to acquire government guarantees for power plant projects,\(^ {15}\) which is further elaborated in Section IV; and

e a three-hour licensing service to obtain a temporary electricity business licence (IUPTLS);\(^ {16}\) IPPs may obtain an IUPTLS without submitting all the required documentation provided that the IPP warrants to the Investment Coordinating Board (BKPM) that it will submit complete documentation within 60 days of the issuance of the IUPTLS.\(^ {17}\) Proof of PLN’s commitment to purchase the electricity produced by an IPP, however, must be submitted with the first IUPTLS application, and is not subject to the said exemption.

ii The regulatory framework
Electricity generation from renewable sources is mainly governed by the Energy Law, the Electricity Law,\(^ {18}\) the Investment Law,\(^ {19}\) and other sectoral and implementing regulations in the areas of geothermal, water, environment and forestry. In addition, renewable energy project finance must also comply with the applicable laws in relation to offshore loans and the mandatory use of the rupiah.

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12 Government Regulation No. 18 of 2015 concerning Income Tax Facilities for Capital Investment in Certain Business Sectors and/or Certain Regions (GR 18/2015), Schedule I Point 60.
13 GR 18/2015, Article 2 (2).
14 BKPM 13/2017, Article 60.
16 Regulation of the Indonesian Investment Coordinating Board (BKPM) No. 13 of 2017 (BKPM 13/2017), Article 111 and 112.
17 BKPM 13/2017, Article 112 (8).
18 Law No. 30 of 2009 concerning Electricity (Electricity Law).
19 Law No. 25 of 2007 on Investment (Investment Law).
Electricity supply business licences

For IPPs to generate electricity and deliver it to PLN, they are required to obtain an IUPTL issued by the government to control the IPP’s technical and financial capability, and fulfil environmental protection requirements. To simplify bureaucracy, IUPTL applications are pooled by and submitted to BKPM. To obtain an IUPTL, an IPP is required to submit, inter alia, an electricity generation feasibility study, the project’s proposed location, construction and operation schedules, and a PPA with PLN to evidence the IPP’s technical, financial and environmental protection capabilities.

Geothermal licences

The regulatory regime with respect to geothermal business activity is divided into two regulatory regimes: the old regulatory regime applicable prior to 2003 and the new regulatory regime applicable after 2003.

Prior to the issuance of the geothermal law in 2003, Pertamina was appointed by the government as the sole geothermal mining authority in Indonesia. Pertamina has the exclusive right to undertake geothermal business activities in work areas stipulated by the government by implementing its own operations or appointing a contractor pursuant to a joint operation contract (JOC). The JOC sits back-to-back with an energy sales contract (ESC) between the contractor as the deliverer of the geothermal energy or electricity produced, Pertamina as the seller and PLN as the buyer.

Following the enactment of the geothermal law in 2003, geothermal business activity is implemented by virtue of a geothermal licence issued by the government following tenders for work areas. Notwithstanding the foregoing, all JOCs and ESCs entered into prior to the enactment of the geothermal laws in 2003 remain valid until the end of their terms.

Procurement process for renewable energy PPAs

PLN in general is required to purchase electricity produced from renewable energy if the following requirements are met:

- the electricity generation is in line with PLN’s local grid supply–demand balance;
- a feasibility and connectivity study has been conducted and verified by PLN;
- funding is available; and
- the pricing of the electricity is consistent with MEMR 50/2017 (see Section III.ii).

The procurement process for PLN to enter into a PPA with an IPP generally must follow a competitive tender process. However, an exception is provided under the law for the

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22 Perusahaan Pertambahan Minyak dan Gas Bumi Negara now PT Pertamina (Persero) (Pertamina). Pertamina’s geothermal business and role under the old geothermal regimes was then assigned to its wholly owned subsidiary, PT Pertamina Geothermal Energy (PGE).
23 Law 21 of 2003 as amended by Law No. 21 of 2014 on Geothermal (Geothermal Law) and Government Regulation No. 59 of 2007 regarding geothermal business activity (GR 29/2007).
purchase of electricity generated from renewable energy whereby PLN may appoint an IPP by way of direct selection or direct appointment, depending on the type of renewable energy in question, as follows.  

<table>
<thead>
<tr>
<th>Power sources</th>
<th>Procurement process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar PV</td>
<td>Direct selection based on a quota of capacity</td>
</tr>
<tr>
<td>Wind</td>
<td>Direct selection based on a quota of capacity</td>
</tr>
<tr>
<td>Hydro</td>
<td>Direct selection</td>
</tr>
<tr>
<td>Biomass</td>
<td>Direct selection</td>
</tr>
<tr>
<td>Biogas</td>
<td>Direct selection</td>
</tr>
<tr>
<td>Municipal waste</td>
<td>Direct appointment</td>
</tr>
<tr>
<td>Geothermal</td>
<td>Direct appointment</td>
</tr>
<tr>
<td>Ocean tidal or thermal</td>
<td>Direct selection</td>
</tr>
</tbody>
</table>

The direct appointment process involves the appointment of one specific IPP, whereas direct selection involves the selection of more than one potential IPP. MEMR’s approval is required to initiate the direct appointment and direct selection processes.

**Terms and conditions for PPAs**

Until recently, the provision of PPAs was mostly based on business-to-business negotiations between an IPP and PLN. In 2017, however, the government issued MEMR 10/2017 to ‘lock down’ certain provisions of PPAs. This regulation may reduce the time needed to negotiate the terms of a PPA, but at the same time may prejudice the general bankability of a PPA because of provisions regarding risk allocation, deemed capacity payment and government force majeure (GFM) events.

MEMR 10/2017 is widely applicable to most types of power plant with the exception of intermittent power plants and certain renewable energy power plants, namely biogas, mini hydro power plants below 10MW and municipal waste-based power plants. Other renewable energy plants such as geothermal, hydro power and biomass plants, remain subject to this regulation.

The key provisions regarding PPAs based on MEMR 10/2017 (including its subsequent amendments) and recent PPA precedent in the areas of renewable energy are as follows.

<table>
<thead>
<tr>
<th>Key terms</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term</td>
<td>Maximum of 30 years as of the commercial operation date (COD)</td>
</tr>
<tr>
<td>Scheme</td>
<td>Build, own, operate and transfer (BOOT)</td>
</tr>
<tr>
<td>Deemed dispatch</td>
<td>Limited only in the event that PLN’s grid is interrupted or unable to take the net electrical output because of PLN’s default or negligence</td>
</tr>
<tr>
<td>GFM</td>
<td>References to GFM are omitted from the most recent regulation</td>
</tr>
</tbody>
</table>

24 MEMR Regulation No. 001 of 2006 on the Procedure to Purchase Electricity and/or to Lease Electricity Grid for Public Interest Purposes, as amended with MEMR Regulation No. 004 of 2007 (MEMR Regulation 001/2006). Specifically, for renewable energy, the procurement process may be carried out by way of direct selection or direct appointment as provided under MEMR 50/2017.

**Key terms** | **Remarks**
---|---
Price review | Limited to changes of cost structures or changes to the technical details of a project. A change in cost structure is defined as a change in laws in the following areas: a regulations related to electricity prices; b taxation; c environment; and d regulations related to energy cost.

PLN take-or-pay | Limited to a certain period agreed by the parties and in consideration of the repayment term to an IPP's lenders.

Penalty payable to PLN | a Penalty for failure to meet the COD schedule b Penalty in respect of availability factor or capacity factor, and outage factor c Penalty in respect of IPP’s failure to cope with PLN’s megavolt amperes reactive interconnection system, except if the failure is due to a PLN request d Penalty for failure to maintain frequency required by the electrical grid system (grid code) e Penalty for failure to meet the required ramp rate.

Remedy for PLN default or political force majeure | PLN is required to purchase the project with consideration of the equity injected, the equity return rate, and senior debt and interest.

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**Electricity tariff for renewable power generation projects**

The general pricing guidelines under MEMR 50/2017 for renewable power generation projects are benchmarked against PLN’s average electricity generation basic cost for the preceding year in the area where that project is to be located (the generating BPP). The electricity tariffs for renewable power generation projects are as follows.

**Power sources** | **Calculating the electricity tariff**
---|---
Solar PV | If the generating BPP is higher than the national average, then the tariff may not exceed 85 per cent of the generating BPP.
Wind farm | If the generating BPP is lower or the same as the national average, then the electricity purchase price will be determined by mutual agreement between the IPP and PLN on a business-to-business basis.
Biomass | If the generating BPP is higher than the national average, then the tariff may not exceed the generating BPP.
Biogas | If the generating BPP of the Sumatra, Java and Bali areas or the relevant generating BPP is lower than or the same as the national average, then the electricity purchase price will be determined by mutual agreement between the IPP and PLN on a business-to-business basis.
Ocean tidal or thermal | If the generating BPP is higher than the national average, then the tariff may not exceed the generating BPP.
Hydro | If the generating BPP of the Sumatra, Java and Bali areas or the relevant generating BPP is lower than or the same as the national average, then the electricity purchase price will be determined by mutual agreement between the IPP and PLN on a business-to-business basis.

The national average generating BPP for the period from 1 April 2017 to 31 March 2018 was US$7.39 cents/kWh and the national average generating BPP for the period from 1 April 2018 to 31 March 2019 is US$7.66 cent/kWh.

For obvious commercial reasons, PLN intends to lower or at least maintain the generating BPP. Benchmarking the electricity tariffs to the generating BPPs will affect investors’ appetite to develop renewable power generation projects, because the low generating BPPs in most of the relevant areas are caused by Indonesia’s major reliance on coal-fired power plants, which are not comparable for generating the prices of renewable power generation.

**Supervision by MEMR**

Under MEMR 48/2017, MEMR exercises supervisory authority over IPPs in several areas, including regarding share transfer restrictions, and notification requirements for changes in

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26 Biaya Pokok Penyediaan Pembangkitan.
shareholdings and in the composition of the board of directors and board of commissioners of an IPP. The share transfer restrictions have created some concerns over the bankability of IPP projects.

**Environmental matters**

Pursuant to the Environmental Law, business entities carrying out operational activities with significant impact on the environment are required to prepare an environmental impact assessment (AMDAL) that has to be approved as a prerequisite to secure an environmental permit. Where an AMDAL is not required, companies shall annually submit environmental management and environmental control effort reports to be approved by the authorised government institution.

**Forestry issues**

It is not uncommon for renewable power generation projects to be located in forestry areas. Generally protected, the development of any power generation project within forest areas may be challenging.

Indonesia’s forests are classified into three different classifications depending on their nature and functionality: production forests, protected forests and conservation forests. To use production and protected forests for commercial activities, including for the development of power plants, and the transmission and distribution of power supplies, a ‘borrow-and-use’ permit must be obtained from the Minister of Environment and Forestry (MOEF). The Forestry Law in general prohibits commercial activities within areas of conservation forests to protect their pristine nature. However, geothermal activities may be implemented within nature reserve forest areas after securing a geothermal environmental services utilisation permit issued by MOEF. There is currently no legal framework available to secure access to conservation forests and hunting parks.

**Land matters**

Under the Agrarian Law, the state holds ultimate title to all land in Indonesia, with the highest title available to Indonesian citizens being a hak milik, which is similar to a common law freehold title. To construct a power plant (except in a forestry area), IPPs must first secure a land title in the form of a building right. Prior to acquiring any land title with a total area of more than 10,000 square metres, IPPs must obtain a location permit, as well as a permit to conduct land acquisition within the framework of investment and to utilise the land for operational activities, from the relevant authority, which depends on the location of the land.

To mitigate project risks due to land acquisition, the government provides a legal framework for the mandatory acquisition of land, including for electricity infrastructure development, if this is in the public interest. Such land acquisition is undertaken through

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27 Law No. 32 of 2009 regarding Environmental Protection and Management (Environmental Law) and Government Regulation No. 27 of 2012 regarding Environmental Permits (Regulation No. 27 of 2012).
28 Law No. 41 of 1999 regarding Forestry, as amended by Law No. 19 of 2004 and partly revoked by Law No. 18 of 2013 (Forestry Law), MOEF Regulation No. P.50/Menhk/Setjen/Kum.1/6/2016.
29 Law No. 5 of 1960 on the Principles of Agrarian (Agrarian Law).
30 Law No. 2 of 2012 on Land Procurement for Public Interest Development (Law 2/2012) and Presidential Regulation No. 71 of 2012 on the Implementation of Land Procurement for Public Interest Development, as amended from time to time (PR 71/2012).
the state budget. Accordingly, any such land title must be transferred from the relevant landowner to the government, in this case to the National Land Agency (BPN). IPPs may be required to assist in the land acquisition process, and may have a use right over the land, but will not be entitled to register the land under their name.

In addition to land for power plants, IPPs may also be required to acquire a right of way for a transmission line to traverse the conductors from power plants to PLN interconnection points (where power plants and PLN’s grid system are connected). Transmission lines and interconnection points are commonly referred as ‘special facilities’. Based on PPA precedents, IPPs are required to construct these special facilities and transfer their title to PLN on or before the COD. Thus, IPPs may not place any encumbrances over special facilities.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

Transactional structure

Project financing for the development and implementation of renewable energy projects is generally similar to those for other infrastructure projects. A typical project finance in Indonesia is structured through a combination of the sponsor’s equity and senior debt secured by the entire project’s assets, including cash flow, with limited recourse against the project’s sponsors. The project company shall be in the form of an Indonesian limited liability company established especially to own and manage the project, and in most cases it is a joint venture between a local sponsor and an international sponsor who participate in the construction and management of the project.

As mentioned above, the BOOT scheme is used for most renewable energy projects. Aside from BOOT, the build, own, operate model has also been used in the past for several geothermal and hydro projects. The project company will then enter into an electricity offtake agreement in the form of a PPA with PLN. During the PPA period, the project company will own all project assets and enter into all agreements relating to the project. Under the BOOT scheme, following the expiry of the PPA, termination of the PPA due to PLN’s default or GFM, the project company shall be transferred to PLN. In the case of termination because of PLN defaulting or GFM, PLN is required to purchase the project according to a predetermined price structure: see Section III.ii.

Project finance lenders in Indonesia are mainly international commercial banks, multilateral development agencies such as the Asian Development Bank (ADB), and export credit agencies (ECAs) such as Korean Exim Bank, China Exim Bank and JBIC. Typically, ECAs from the international sponsor’s jurisdiction will be involved in providing financing, particularly if the international sponsor is also the project’s contractor. It is difficult for local banks to provide project financing because of their limited liquidity for long-term debt and the lack of a derivatives market.

In the past 10 years, PT Sarana Multi Infrastruktur (Persero) (SMI), a state-owned infrastructure financing company, and PT Indonesia Infrastructure Finance (IIF), a joint venture between the government (through SMI), ADB, International Finance Corporation, Deutsche Investitions-und-Entwicklungsgesellschaft and Sumitomo-Mitsubishi Banking Corporation, have also been actively providing project financing for infrastructure projects in Indonesia, including renewable energy projects. Both SMI and IIF were established by
the government as part of its efforts to accelerate infrastructure developments by providing domestic finance in the form of debt and equity. In 2015, SMI was mandated by the government to manage the state budget allocated specifically to fund geothermal projects.

**Documentation**

**Project documents**

Aside from the PPA, the key project documents in renewable energy projects typically include:

- engineering, procurement and construction (EPC) contracts;
- operation and maintenance (O&M) contracts;
- service agreements;
- government support agreements (if provided);
- sponsors’ agreements;
- bank guarantees; and
- performance guarantees.

Construction contracts must be executed in compliance with the Construction Law,\(^{31}\) which, *inter alia*, sets out the minimum key terms of the contract and the mandatory use of the Indonesian language. Further, a tripartite converting agreement between an IPP, PLN and designated state-owned bank regulates the conversion of Indonesian rupiah payments for power purchased by PLN into US dollars at the prevailing exchange rate to comply with the mandatory use of the rupiah.

**Finance documents**

In a typical project financing, the financing documents include:

- facility agreements;
- sponsor support agreements;
- inter-creditor agreements;
- direct agreements;
- hedging agreements; and
- security documents.

The above are elaborated below in further detail.

For transactions that combine different types of financial institutions or granted facilities, a common terms agreement is typically executed to govern the principal terms of the financing, with a separate facility agreement for each creditor or facility. Indonesian law does not provide for any standard form of financing documents (save for security documents in certain cases), and they will generally be in such a form as is acceptable to the market.

Security in project finance transactions in Indonesia covers all the project’s assets owned by the project company. Certain assets used as special facilities for the project will be transferred to, owned and operated by PLN once constructed, and thus will not be included in the security package. The security taken by the lenders is generally as follows:

- a pledge over the shares in the IPP project company;
- a mortgage over immovable assets (i.e., land and buildings);

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\(^{31}\) Law No. 2 of 2017 on Construction Services (Construction Law).
c  *fiducia* security over movable assets, receivables derived from the PPA, insurance and reinsurance claims, and buildings or fixtures;

*In addition to this security, a lender will also usually require a direct agreement to be executed, to allow it to have step-in rights into the main project documents, so that the lender may replace a project company in the documents when it exercises its rights thereunder.*

**Government support for the development of electricity infrastructure**

*Public–private partnerships*

In early 2015, the government issued a regulation framework to boost public–private partnerships (PPPs) in the procurement and development of essential infrastructure projects in Indonesia.32 PPPs have traditionally been regarded with some suspicion by many segments of Indonesian society, which continue to believe that infrastructure provision should be the sole responsibility of the state. However, it has become increasingly apparent that the state does not have the financial capacity to tackle Indonesia’s enormous infrastructure deficit on its own. Accordingly, the development of the PPP sector over the past 10 years has been characterised by a slow progression from a highly restrictive regime to a more liberal one.

Under the new regulation, PR 38/2015, the number of sectors allowed to utilise PPPs has expanded from nine to 19 sectors, with the addition of, among others, renewable energy, water resources, waste management and energy conservation. Foreign and local investors are now allowed to participate in tender processes directly without establishing a company in Indonesia. Once an investor has been selected, it should establish a project company in Indonesia to implement and execute the PPP.

PR 38/2015 also addresses one of the major constraints in infrastructure development in Indonesia: land procurement. PR 38/2015 makes land procurement the government’s responsibility, and sets out a clearer procedure and timeline for investors. A tender process may not commence until the government obtains a site determination from the relevant provincial governor: thus, a project’s site will be final from the outset. Under PR 38/2015, the government may now also place the land procurement process in the hands of a private sector partner to act on its behalf through a special power of attorney, which gives the private entity more room to operate.

Government guarantees for PPP projects have a key role to play in encouraging investment in the infrastructure sector. The government may now provide guarantees on political and sub-sovereign risks that can, for example, ensure the continuity of a PPP project despite a change in government, and assure the deliverables made by a regional public sector authority. The possibility of government support in the form of tax incentives and fiscal contributions should also help to improve the attractiveness of PPP projects, thereby potentially resulting in more competitive bids from the private sector. Partial financing

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32 The President issued Regulation No. 38 (PR 38/2015) revoking its predecessor, Regulation No. 13 of 2010 on Cooperation between the Government and Business Entities in Infrastructure Provision.
and viability support for PPP projects of social interest and public benefit in relation to the construction of new infrastructure, or the operation and maintenance of infrastructure, should also help boost private investor interest.

PR 38/2015 provides greater assurances with respect to land procurement, and greater government support to make the sectors utilising PPP more attractive to investors. However, very few renewable energy projects have been funded through PPPs to date. Pursuant to the 2018 PPP Handbook, 15 PPP projects are ready to be offered in 2018, but none of them is a renewable energy project.33

**Business viability guarantee from the government for electricity infrastructure**

In addition to government support and government guarantees for PPP projects, the government may issue a guarantee to investors for power generation projects.34 The government guarantee may include a business viability guarantee letter (BVGL).

BVGLs are granted to IPPs to secure PLN’s financial obligations under a PPA, which consist of the payment of the electricity price and other payment obligations. PLN’s financial obligation shall be limited to other payment obligations arising from the occurrence of political risks, such as government actions and inaction or a change in law, which must be borne by PLN, or any other PLN non-remediable event as stipulated in the PPA. BVGLs will be signed by the MOF and issued to IPPs with a copy going to PLN.

We understand from previous experience that the obligations of the government under a BVGL constitute obligations under Article 1316 of the Indonesian Civil Code. The clause is essentially an indemnity provision, allowing the indemnified party to claim for the indemnified amount directly from the indemnifying party. Thus, an IPP could make a claim directly against the government under a BVGL. However, MOF 130/2016 requires the payment to go to PLN first, rather than directly to an IPP. After PLN receives the amount, PLN should pay that amount to the relevant IPP; however, this system has yet to be implemented.

**ii Distributed and residential renewable energy**

To achieve the government’s commitment of 23 per cent utilisation of renewable energy, the MEMR encourages domestic households to adopt rooftop solar PV power systems. Although the government has not issued any specific legislation, the board of directors of PLN, as the sole offtaker in Indonesia, has issued decree No. 0733.K/D/Dir/2013 ‘on the use of excess power produced by PLN’s customers from solar PV rooftop power systems’. Pursuant to this decree, PLN’s customers may deliver any excess of electricity generated from rooftop solar PV to the PLN’s grid system and PLN will install metering equipment to calculate the energy delivered by such customers; the amount of dispatched energy will be deducted from the customer’s electricity bill. The installation of rooftop solar PV equipment is subject to the local content requirement (see Section V).

34 MOF Regulation No. 130/PMK.08/2016 on the Procedure of Granting of Government Guarantee for the Acceleration of Electricity Infrastructure Development (MOF 130/2016).
V RENEWABLE ENERGY MANUFACTURING

The Electricity Law requires IPPs to prioritise the use of domestic products in developing power generation projects, including renewable energy projects. The government requires IPPs to comply with minimum local content requirements (for goods and services) for the development of electricity infrastructure. Failure to comply with these local content requirements may result in administrative and financial sanctions.

VI CONCLUSION AND OUTLOOK

In spite of the recent correction to Indonesia’s energy outlook (see Section II), the renewable energy sector’s share of the energy mix is still expected to grow. However, the government’s latest regulation spree in 2017 may prove to be counterproductive in proliferating new renewable projects; for example, because of the limit on electricity tariffs to the BPP, the imbalance in risk allocation in PPAs between PLN and IPPs, and the stringent supervision of MEMR in the energy sector.

On the other hand, the government has also introduced several incentives to encourage investors to invest in renewable energy projects, including:

a tax incentives;
b government support and guarantees for the financing of electricity infrastructure projects;
c a shorter time frame for the licensing process; and
d the simplification of the appointment process by PLN.

35 Minister of Industry Regulation No. 54 of 2012 on the Local Content for Electricity Infrastructure (as amended by Regulation No. 5 of 2017) (MoI Regulation 54/2012).
I INTRODUCTION

There has been a substantial increase in renewable energy projects in Italy in the past decade, resulting in the use of more renewable energy sources (RES) in all sectors (heating and cooling, electricity and transport).

The share of RES in the Italian energy mix has more than doubled in the past decade, already outpacing EU and Italian government RES targets for 2020. In 2017, around 31 per cent of Italian gross electricity consumption was from RES.

The Italian government has supported renewable energy projects with a range of economic incentive schemes that have simplified administrative procedures for the construction and operation of RES plants (e.g., green certificates) and have favoured RES plants over traditional thermoelectric plants in many respects (e.g., priority dispatch).

The generous incentive system led to an unprecedented level of development in renewable energy projects in Italy (especially photovoltaics) in the 2010–2013 period. This caused a slowdown in renewable energy projects, which are now gradually returning to growth. This growth is mainly due to the increase in small plants, including cogeneration plants, of power equal to or below 1MW (Small Generation), which benefit from indirect incentives, such as favourable conditions for access to the distribution grid.

The role of ‘prosumers’, who both produce and consume energy, is also increasing.

Major transactions in the renewable energy sector usually involve project financing schemes, while there has recently been a trend for recourse debt financing by issuing green bonds.

Energy service companies (ESCOs) play an important role in promoting Small Generation projects, usually with contracting schemes that indemnify small customers against financial risk related to such projects.
II THE YEAR IN REVIEW

Some of the key developments in legislation in the renewable energy sector in 2017 and 2018 include:

a. Law No. 205/2017 (the 2018 Budget Law), which extended for 2018 the tax deduction on expenses linked to energy-efficient modernisation of buildings and reviewed the penalty system for RES plants not complying with requirements for obtaining incentives;

b. Ministerial Decree of 16 March 2017, which approved a single simplified model for the construction, connection and management of RES plants with a generation capacity below 50kW;

c. Ministerial Decree of 14 February 2017, which provided for incentives for renewable energy on minor islands not connected to the national transmission grid; and

d. Italian Regulatory Authority for Energy, Networks and the Environment (ARERA) Resolution No. 300/2017/R/eel of 5 May 2017, launching pilot projects for access of ‘non-programmable’ (e.g., wind and solar) RES generation units and Small Generation to the dispatching services market (MSD).

Some of the key corporate transactions in the renewable energy sector include:

a. 11 April 2018: Iren SpA acquired 100 per cent of ACAM SpA, a company active in the generation of energy from wind power plants in Liguria;

b. 12 January 2018: ERG Power Generation SpA, a subsidiary of the ERG group active in the generation of RES electricity, acquired 100 per cent of ForVEI Srl, a company with 31 photovoltaic plants in Piemonte, Emilia-Romagna, Marche, Abruzzo, Campania, Calabria, Puglia and Sicily;

c. 15 December 2017: EP Power Europe AS, a subsidiary of the EPH group, acquired 100 per cent of the share capital of Biomasse Italia SpA (and, thus, indirectly, 50 per cent of Fores Italia Srl) and 100 per cent of the share capital of Biomasse Crotone SpA; both of the companies acquired are active in RES power generation (mainly solid biomass and, to a minor extent, photovoltaics);

d. 6 June 2017: the investment fund F2I acquired 100 per cent of VRG Wind 129 SpA, VRG Wind 030 Srl, VRG Wind 040 Srl, VRG Wind 060 Srl, VRG Wind 819 SpA, VRG Wind 070 SpA and VRG Wind 840 SpA, companies active in the generation of electricity from wind plants in Calabria and Sicily; and

e. 17 February 2017: AXA Infrastructure Holding Sàrl, a subsidiary of the Ardian group, which already held 65 per cent of the capital of Tre Solar Srl, acquired the 35 per cent remaining shares. Tre Solar Srl is active in the generation of RES electricity (through photovoltaic, wind, hydroelectric and biomass plants).

According to estimates by Gestore dei Servizi Energetici SpA (GSE),⁶ RES electricity generation amounted to 103TWh in 2017 (5TWh less than 2016), accounting for 31.1 per cent of internal gross electricity consumption.⁷ On 21 May 2017, RES electricity generation accounted for 87 per cent of the Italian demand for electricity, the highest score ever achieved.

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⁶ GSE is the state-owned company that, pursuant to a Ministerial Decree of 15 March 2012, monitors and calculates the consumption of RES generated energy.

⁷ GSE, Annual Report, p. 185.
The consumption of thermal energy generated from RES in 2017 amounted to 11Mtoe\(^8\) (0.5Mtoe more than in 2016), while the consumption of biofuels in the transport sector amounted to 1.1Mtoe (slightly higher than 2016).\(^9\)

In 2017, RES accounted for 17.6 per cent of total energy gross consumption, slightly higher than in 2016 (17.4 per cent) and 2015 (17.5 per cent).

## III THE POLICY AND REGULATORY FRAMEWORK

### The policy background

Implementing Directive 2009/28/EC, the Italian legislature set a target for RES of a 17 per cent share in the energy mix by 2020.\(^10\) Italy achieved this national objective for the first time in 2014, well in advance of the 2020 target date.

In November 2017, the Ministry of Economic Development (MSE) published the National Energy Strategy, a 10-year road map setting out the objectives for 2030 and encouraging further RES development.\(^11\)

The National Energy Strategy set the ambitious target for RES of a 28 per cent share of gross final energy consumption by 2030, comprising:

- a 55 per cent target for electricity (it was 33.5 per cent in 2015);
- a 30 per cent target for thermal energy (it was 19.2 per cent in 2015); and
- a 21 per cent target for transport (it was 6.4 per cent in 2015).

A generous incentive system, comprising a variety of mechanisms, has encouraged a significant increase in RES in Italy.

In particular:

- the Cip 6/92 mechanism, which is a feed-in tariff.\(^12\) This mechanism is available only for the plants that came within the scope of the Cip 6/92 resolution while it was still in force, and is applicable for a certain period, typically up to 20 years (accordingly, the number of plants entitled to benefit from the incentive is gradually decreasing);
- the Energy Account system (a feed-in premium)\(^13\) for electricity produced by photovoltaic plants that had commenced activities by 26 August 2012;\(^14\)

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\(^8\) Million tonnes of oil equivalent.

\(^9\) GSE, Annual Report, pp. 185–186.

\(^10\) Legislative Decree No. 28/2011, Article 3 provides that the national target for final consumption of energy in the transport sector produced by RES is at least 10 per cent. In addition, a Ministerial Decree of 15 March 2012 (the Burden Sharing Decree) sets out the objectives for each Italian region for 2020, with a view to proportionally sharing the activities necessary to achieve this national target. It also made the state-owned company GSE responsible for monitoring and calculating the consumption of RES generated energy.


\(^12\) A feed-in tariff includes an ‘incentive’ component and a component for remuneration for electricity conveyed into the network.

\(^13\) A feed-in premium is an incentive granted exclusively for the electricity produced, not including remuneration for the sale of that energy, which might even be self-consumed by the producer or sold to the market, generating extra profits.

\(^14\) The Energy Account system includes a standard premium related to the amount of energy produced.
green certificates, which were certificates awarded by GSE in proportion to the amount of energy produced by RES and cogeneration plants that had commenced activities by 31 December 2012. The number of green certificates awarded depended on the type of plant used for the energy generation.\(^{15}\) As of 1 January 2016, the green certificate system has been replaced by a new incentive system in the form of extra remuneration granted by GSE to operators formerly entitled to green certificates;\(^{16}\)

feed-in tariffs for electricity conveyed into the grid by RES plants (except for photovoltaic plants) not exceeding 1MW power (200kW for wind plants) that had commenced activities by 31 December 2012;\(^ {17}\)

tariff incentives for electricity conveyed into the grid by photovoltaic plants that had commenced activities between 27 August 2012 and 6 July 2013 (in the form of a feed-in tariff for plants not exceeding 1MW in power and in the form of a feed-in premium for the other plants); and

tariff incentives for net electricity conveyed into the grid by RES plants (except for photovoltaic) and thermo-dynamic solar plants that had commenced activities from 1 January 2013 (in the form of a feed-in tariff for plants not exceeding 500kW in power and a feed-in premium for plants exceeding the 500kW threshold).\(^ {18}\) The threshold for access to the feed-in premium was then increased to 1MW by a Ministerial Decree of 6 July 2016.

Therefore, the Italian legal framework still provides economic incentives for new RES plants, except for new photovoltaic plants. In 2017, more than 4,400 small RES plants came into operation, mainly wind power plants (79 per cent), hydroelectric plants (11 per cent) and bioenergy plants (9 per cent), benefiting from the incentives provided by a Ministerial Decree of 23 June 2016.\(^ {19}\)

The governmental incentives for RES generated electricity amounted to around €12.5 billion in 2017 (a decrease compared to 2016, when they amounted to around €14.4 billion) and were entirely covered by the A3 tariff component of electricity bills.\(^ {20}\) Electricity produced by RES benefiting from these incentives amounted to around 66 TWh in 2017.\(^ {21}\)

In addition to purely economic incentives such as those mentioned above, the Italian legal framework provides for other important measures that favour renewable energy

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15 Green certificates were issued by GSE and represented the environmental value of electricity generated by an RES plant (i.e., an amount of CO\(_2\) emissions lower than that produced by a plant fired by traditional fuels, such as oil). Green certificates could be traded separately from the electricity produced over the counter or through a trading platform managed by the state-owned company Gestore dei Mercati Energetici SpA, thus representing a further remuneration for RES electricity producers. Indeed, according to the legislation, each electricity producer (or importer) had an obligation to generate (or put into the grid) a given share of electricity generated from RES or, alternatively, to obtain a corresponding amount of green certificates.


17 Law No. 244/2007 and Ministerial Decree of 18 December 2012.

18 Ministerial Decree of 23 June 2016.


projects, such as simplified and expedited administrative procedures for the construction and operation of new RES plants\textsuperscript{22} and, more importantly, priority access to the electricity transmission grid for RES generated electricity (e.g., priority dispatch).\textsuperscript{23} These measures are neutral with regard to the type of RES feeding the plant.

Furthermore, the Budget Law 2018 extended for 2018 a tax deduction of 65 per cent on expenses related to the energy efficient modernisation of buildings (an 'ecobonus'), including for the installation of photovoltaic panels to heat water. It also confirmed a tax deduction of 50 per cent on building renovation, which, as the Revenue Agency Guidelines 2018 have clarified, includes installation of RES plants. However, the deduction is conditional on the plant being installed to meet residential energy needs.\textsuperscript{24}

Moreover, under Italian law, starting from 1 January 2018, construction projects for new buildings and restructuring of existing buildings must include the use of RES to cover at least 50 per cent of the building's energy needs (both electricity and heat). Failure to comply with this provision will result in refusal of the building authorisation.\textsuperscript{25}

\textbf{ii} The regulatory framework

The renewable energy sector is regulated by primary (both national and regional)\textsuperscript{26} and secondary legislation. The secondary legislation is adopted by the MSE and the Ministry for the Environment, Land and Sea (MATTM) or the ARERA. In particular:

\textit{a} The MSE is responsible for formulating and implementing Italy’s energy policy, by defining the strategy and setting out general principles for the organisation and functioning of the renewable energy market.\textsuperscript{27}

\textit{b} The MATTM is responsible for climate policy. It also co-signs with the MSE policy measures promoting renewable energy and energy efficiency.

\textit{c} The ARERA is an independent regulatory body governed by a committee of five members elected by Parliament for seven years. It regulates, controls and monitors the electricity and gas markets in Italy. It was established under Law No. 481/1995 for the purpose of protecting consumer interests, promoting competition and ensuring quality, efficiency and cost-effectiveness of energy services. The ARERA determines its costs, which are entirely recovered by means of compulsory annual contributions paid by energy service providers.\textsuperscript{28} Its regulatory powers include setting tariffs, defining service

\textsuperscript{22} Legislative Decree No. 28/2011, Article 4.
\textsuperscript{23} Legislative Decree No. 79/1999, Article 3, para. 3 and Article 11, para. 4, transposing Directive 2009/28/EC. This means that, in an oversupply scenario, RES plants will still be dispatched in the context of the power exchange market irrespective of price. In their White Paper on Renewables in the Wholesale Market, ACER and CEER called for EU legislators to bring RES into the market, by removing the priority for RES in dispatching regimes.
\textsuperscript{25} Legislative Decree No. 28/2011, Article 11.
\textsuperscript{26} Article 117 of the Italian Constitution defines whether the national or the regional legislator is entitled to adopt relevant rules in the energy sector. For more details, see D. Diaco, Produzione, trasporto e distribuzione nazionale dell’energia nei giudizi di legittimità costituzionale in via principale (2004-2015), Corte Costituzionale, Servizio Studi, available at http://www.cortecostituzionale.it/documenti/convegni_seminari/stu_281.pdf.
\textsuperscript{27} Legislative Decree No. 93/2011.
\textsuperscript{28} Law No. 481/1995, Article 2.
quality standards and regulating the technical and economic conditions governing access and interconnections to the networks. The ARERA issues general regulations applicable to energy market operators and resolutions or orders applicable to single operators, for which it must provide comprehensive reasons. The ARERA may also issue fines.\textsuperscript{29}

d Every year, the ARERA submits to the relevant parliamentary committees a report on the use and development of RES plants\textsuperscript{30} and a report on the development of Small Generation.\textsuperscript{31}

e The state-owned company GSE was established by Legislative Decree No. 79 of 16 March 1999 for the promotion and support of RES in Italy. In particular, GSE works to foster sustainable development by providing support for electricity generated from renewables. It is in charge of: (1) determining which plants meet the conditions set by law to benefit from incentive mechanisms; (2) disbursing economic incentives; (3) checking that the conditions for the recognition or maintenance of incentives are met by carrying out inspections and controls of the plants that have an agreement with GSE; (4) forecasting and monitoring electricity conveyed into the grid by RES plants to minimise imbalances in the electricity system; (5) promoting information campaigns to spread the culture of environmental sustainability; and (6) monitoring the development of RES projects.

There are simplified and expedited procedures for the regulatory approvals required to construct and operate RES plants.\textsuperscript{32} In particular:

a The construction and technological enhancement of new RES electricity plants is subject to a single permit issued by the region concerned or the delegated province (or by the Ministry of Economic Development for plants of power equal to or above 300MW), following a single procedure involving all the administrative entities concerned.\textsuperscript{33} This single permit procedure applies even if the project concerns more than one region or delegated province\textsuperscript{34} and also with regard to regions having a special statute under the Italian Constitution.\textsuperscript{35} The competent public entity must issue a decision on the request for the licence within 90 days.\textsuperscript{36}

b The construction of small plants with low generation capacity (e.g., photovoltaic plants on the roofs of buildings)\textsuperscript{37} is subject to a further simplified authorisation procedure.

\textsuperscript{29} Law No. 481/1995, Article 2, para. 20(c).
\textsuperscript{30} Law No. 239/2004, Article 1, para. 12.
\textsuperscript{31} Law No. 239/2004, Article 1, para. 89.
\textsuperscript{32} Legislative Decree No. 28/2011, Article 4.
\textsuperscript{33} Legislative Decree No. 387/2003, Article 12.
\textsuperscript{34} Ministerial Decree of 10 September 2010, Guidelines on the authorisation for the construction and operation of RES electricity plants, para 10.5.
\textsuperscript{35} Italian Constitutional Court, Judgment No. 275 of 6 December 2012.
\textsuperscript{36} Legislative Decree No. 387/2003, Article 12, para. 4.
\textsuperscript{37} See Ministerial Decree of 10 September 2010, Guidelines on the authorisation for the construction and operation of RES electricity plants, paragraphs 12-13, for an exhaustive list of activities subject to this authorisation regime.
The owner of the building is only subject to the obligation to notify the competent municipality with a declaration and a detailed technical description of the project at least 30 days before starting the construction activities.\(^{38}\)

There is further simplification for the construction of very small electricity or cogeneration plants, which, in principle, are only subject to a communication to the competent municipality with a detailed technical description of the project. The construction activities can start immediately after the communication.\(^{39}\)

The table below shows when the building of small RES plants is subject to the simplified authorisation procedure or to the simple communication regime.\(^{40}\)

<table>
<thead>
<tr>
<th>RES Plant type</th>
<th>RES Plant type</th>
<th>Generation capacity (kW)</th>
<th>Applicable administrative procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photovoltaics</td>
<td>Plant attached to or integrated into the roof of existing building and whose surface does not exceed that of the roof on which it is built</td>
<td>–</td>
<td>Simple communication</td>
</tr>
<tr>
<td></td>
<td>Plant on existing building or on existing building’s premises</td>
<td>0–200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Photovoltaic module placed on building and whose total surface does not exceed that of the roof on which it is located</td>
<td>–</td>
<td>Simplified authorisation procedure</td>
</tr>
<tr>
<td></td>
<td>Other photovoltaic plants</td>
<td>0–20</td>
<td></td>
</tr>
<tr>
<td>Biomass, landfill gas, waste gas from purification processes and biogas</td>
<td>Cogeneration plant (microgeneration)</td>
<td>0–50</td>
<td>Simple communication</td>
</tr>
<tr>
<td></td>
<td>Plant in existing building</td>
<td>0–200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cogeneration plant (small cogeneration)</td>
<td>50–1,000</td>
<td>Simplified authorisation procedure</td>
</tr>
<tr>
<td></td>
<td>Plant powered by biomass</td>
<td>0–200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plant powered by landfill gas, gases left over from purification processes and biogas</td>
<td>0–250</td>
<td></td>
</tr>
<tr>
<td>Wind</td>
<td>Individual wind generator plant with a height not exceeding 1.5 metres and a diameter not exceeding 1 metre installed on the roof of existing building</td>
<td>–</td>
<td>Simple communication</td>
</tr>
<tr>
<td>Other wind power plants</td>
<td>0–60</td>
<td>Simplified authorisation procedure</td>
<td></td>
</tr>
<tr>
<td>Hydroelectric and geothermal</td>
<td>Hydroelectric and geothermal plant built in existing building</td>
<td>0–200</td>
<td>Simple communication</td>
</tr>
<tr>
<td>Other hydroelectric and geothermal plants</td>
<td>0–100</td>
<td>Simplified authorisation procedure</td>
<td></td>
</tr>
</tbody>
</table>

The Italian regulatory framework also provides RES plants with favourable conditions for access to the distribution grid. In particular, the following special schemes are available for conveying RES-generated electricity into the electricity grid:

- Simplified purchase–resale can be requested by non-programmable RES plants, irrespective of their capacity generation, except for plants benefiting from feed-in-tariff incentives (which already include the value of electricity) and plants benefiting from incentives provided under the Ministerial Decrees of 6 July 2012 and 23 June 2016. Under this scheme, GSE plays the role of trade intermediary between the producer and the electricity company subscribing the electricity.

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\(^{38}\) Legislative Decree No. 28/2011, Article 6.
\(^{39}\) See www.gse.it/normativa/autorizzazioni.
\(^{40}\) Source: our translation of KPMG Advisory study on Italian legislation in KPMG, Investing in renewables, 2011.
and the electricity system. GSE purchases electricity from producers at a standard rate defined by the ARERA based on market prices (e.g., the regional price under the day-ahead market on the Italian Power Exchange)\(^41\) and then resells the electricity to the market. The simplified purchase–resale scheme does not provide any economic incentive\(^42\) but a simplification for producers benefiting from this sale scheme, as they avoid the accreditation procedures for trading on the Italian Power Exchange.

The net metering scheme can be requested by RES plants with a capacity generation not exceeding 200kW and that commenced activities from 2015. The net metering scheme is a regulatory measure enabling RES plants to economically exchange the value of electricity that they convey into the grid in a given hour with the value of electricity that they take from the grid in a different hour.\(^43\) This scheme actually results in an economic incentive, as RES plants do not pay transport tariffs for the network use with regard to electricity that they convey into the grid under the net metering scheme.

Furthermore, and even more importantly, the legal framework grants RES-generated electricity priority access to the transmission and distribution grid, thus giving it a competitive advantage over electricity generated from conventional sources.\(^44\)

Moreover, non-programmable RES plants can also benefit from a more favourable regime for the application of imbalance payments, which are the penalties plants must pay if they fail to comply with their daily generation plan.\(^45\) Unlike the previous regime, which fully exempted non-programmable RES from the application of imbalance payments, the current regime, which applies imbalance payments to RES plants, aims at fostering better generation forecasting from non-programmable RES, thereby reducing the costs passed on to consumers.

**IV RENEWABLE ENERGY PROJECT DEVELOPMENT**

**i Project finance transaction structures**

Project finance is the most used scheme for financing renewable energy projects in Italy. In a project finance scheme, the specific project is evaluated exclusively with regard to its profitability (i.e., on cash flows the project will generate). The cash flows also serve as the primary guarantee for the debt reimbursement to the financing entity.\(^46\)

A project finance transaction usually includes a number of participants, each having a specific role. The sponsors are the project promoters, who design the project and evaluate

\(^41\) Legislative Decree No. 387/2003, Law No. 239/2004 and ARERA Resolution No. 280/07.
\(^42\) Minimum guaranteed prices are, however, available for small electricity producers and only for small volumes of electricity generated.
\(^43\) Legislative Decree No. 387/2003, Legislative Decree No. 20/2007 and ARERA Resolution No. ARG/elt/74/08.
\(^44\) Legislative Decree No. 79/1999, Article 3, para. 3 and Article 11, para. 4, transposing Directive 2009/28/EC.
\(^45\) See ARERA Resolution No. 522/2014/R/eel.
the costs, the bankability and the profitability of the project. The core business of sponsors of renewable energy projects is often manufacturing goods used in renewable energy projects (e.g., turbines and solar panels) or providing services associated with these projects.

To achieve complete legal and economic separation of the project sponsors from the project, the project financing scheme usually requires setting up a specific legal entity (a special purpose vehicle or SPV), which is in charge of implementing the specific project assigned to it. The SPV is usually a limited company and its by-laws limit its purpose and activities to the mere implementation of the project. The SPV does not have any financial means other than those provided to it for the implementation of the project. Its assets are isolated, by means of guarantees and contractual constraints, for the benefit of the institutions financing the project (ring-fencing).\(^\text{47}\)

The structure described above limits the risk for the capital invested by the promoters and indemnifies them from the risk of losses by the SPV. The success of project financing for renewable energy is mainly due to the unlikelihood of losses by the SPVs operating RES plants, because of the economic incentives and the dispatching priority for RES plants.

The sponsors, or, if it is set up immediately, the SPV, submit the project to the competent public entities and authorities (the MSE, the regions concerned, or municipalities) to obtain the necessary approvals according to the applicable administrative procedure.

The contractual structure for project financing of renewable energy projects is complex. It includes a network of agreements involving the sponsors, the SPV (which manages the operation and maintenance contracts), financing institutions (which manage financial contracts), public entities, companies in charge of the engineering, procurement and physical construction of the plant (EPC contractors) and companies in charge of the operation and maintenance of the plant (O&M contractors). As mentioned, the EPC contractors are often the sponsors.\(^\text{48}\)

The main document for renewable energy project finance is the project finance loan agreement, which governs the relationship between the financing institution and the SPV. The terms of the project finance loan agreement do not take into account the financial stability of the sponsors or the SPV – only the capability of the financed project to generate cash flows.

Other fundamental documents in the project financing scheme are the engineering, procurement and construction contracts (entered into by the SPV and the EPC contractors), the operation and maintenance contracts (entered into by the SPV and the O&M contractors), the direct agreements (under which the financing institution is entitled to intervene in the relationships between the SPV, the EPC contractors and the O&M contractors) and the financial collateral arrangements (the ‘security package’, including the loan guarantees).

A notable opportunity provided by the Italian regulatory framework to promote the bankability of renewable energy projects is that plants admitted to a tariff incentive scheme may assign to third parties (namely credit institutions) the receivables from GSE.\(^\text{49}\) This is a further specific guarantee in addition to the other standard guarantees that are part of the security package.\(^\text{50}\)

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49 See https://www.gse.it/servizi-per-te/supporto/cessione-crediti.  
Distributed and residential renewable energy

Distributed generation by RES in Italy has developed significantly in the past 10 years, both in terms of number of plants and capacity installed.

Electricity produced by RES Small Generation amounted to 28.39TWh in 2016, of which 57.7 per cent was from photovoltaics, 28.5 per cent was from biomass, biogas and bioliquids, 9 per cent was from hydro and 1.9 per cent was from wind power. Of the electricity generated by RES Small Generation, 13.9 per cent was consumed on-site.51

Puglia is the Italian region with the highest value of electricity generated by RES Small Generation, mainly because of the strong presence of photovoltaic and wind power plants,52 while generation from hydroelectric plants is highest in the north of Italy, because of the greater presence of waterways.53

Different ownership structures are available for Small Generation in Italy. Households and small businesses can purchase their own RES plants directly, generally as part of a service including design, installation, connection to the distribution grid and testing and maintenance of the plant (a turnkey service).

Alternatively, RES Small Generation projects can be carried out by ESCOs,54 usually under the Energy Performance Contracting (EPC) scheme. Under the EPC scheme, the ESCO conducts an in-depth analysis of customer cost savings from a given distributed RES generation project. The ESCO then implements the project, often with the financial support of third parties, and becomes the owner and manager of the plant, while the customer pays the ESCO periodical fees that are calculated by reference to the amount of energy generated by the plant and to the level of cost savings achieved by the customer. With the EPC, the ESCO guarantees its customer a certain level of energy generated by the plant and a certain level of cost savings by means of the ESCO RES plant project. ESCO projects in Italy tend to involve the commissioning and installation of the plant equipment.55

Non-project finance development

While project financing is the most common scheme for financing renewable energy projects in Italy, some big players finance renewable energy projects using traditional schemes, both equity and debt financing.

Regarding debt financing options, green bonds have increased in popularity in Italy in the past few years.56

52 Ibidem, p. 42.
53 Ibidem, p. 45.
54 Legislative Decree No. 115/2008, Article 2(i), defines ESCO as ‘a natural or legal person that delivers energy services and/or other energy efficiency improvement measures in a user’s facility or premises, and accepts some degree of financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria.’
55 See F Arecco, G Dall’O, Energia sostenibile e fonti rinnovabili, IPSOA, 2012, p. 397.
Green bonds have the same features as ordinary bonds, but the issuer undertakes a specific obligation to use the capital collected for renewable energy projects. Returns on these bonds for investors do not differ from returns on ordinary bonds, but issuers and traders are driven by the common intention to promote renewable energy.

The Italian market for green bonds started in 2014, when the Italian energy operator Hera SpA for the first time issued a €500 million green bond. The capital was employed in the financing of 26 renewable energy projects. In the following years, many other Italian energy operators issued green bonds, with a commitment to employ the capital in renewable energy and energy-efficiency projects.

By January 2018, green bonds issued by Italian companies already amounted to almost €6 billion, and more than half of these were only issued in 2017. Enel Finance International NV, a wholly owned subsidiary of the leading Italian energy operator Enel SpA, has already issued €2.5 billion in bonds.

Italian financial institutions’ interest in financing renewable energy is rapidly increasing.

The Italian company Assicurazioni Generali SpA, which is the third-largest insurance company in the world, announced in January 2018 an underwriting commitment to increase the percentage of its portfolio related to the renewable energy sector by investing €3.5 billion in green bonds by 2020 and gradually divesting away from coal-related companies.

V RENEWABLE ENERGY MANUFACTURING

Renewable energy manufacturing in Italy mainly concerns photovoltaic panels, windmill blades and wind turbines with a power rating below 80kW.57

The leading European factory manufacturing photovoltaic panels is located in Catania (Sicily) and is owned by the Italian energy operator 3SUN Srl, a company of the Enel Group. In March 2018, 3SUN Srl launched a project to convert the factory, with a view to making it the first worldwide and exclusive manufacturer of HJT bifacial photovoltaic panels, which are based on heterojunction technology. This technology brings together two different kinds of silicon, amorphous and crystalline, generating particularly high yields.58 The 3SUN Srl factory conversion project entails an investment of over €80 million, partially financed by the European Commission,59 the MSE through the ‘Ampere’ project60 and the Sicily region.

There are also some other smaller factories in Italy manufacturing solar panels, as well as an important factory manufacturing windmill blades, located in Taranto (Puglia) and owned by the Danish wind energy operator Vestas. The manufacturing of turbines for small hydroelectric plants is also growing notably.61

59 In particular, the EU funds were awarded under the European Research and Development project Horizon 2020 European Call LCE-09-2016-2017.
VI CONCLUSIONS AND OUTLOOK

Italy has experienced an impressive increase in renewable energy projects in the past decade, outpacing the target set by the EU and the Italian legislature for 2020. This progress, resulting from governmental policies committed to environmental sustainability and to the involvement of credit and finance institutions in the green economy, has made Italy one of the global leaders in countries developing renewable energies.

The 2017 Italian National Energy Strategy has established even more ambitious targets for 2030, which should act as a key driver towards higher environmental sustainability and security of supply. Achieving these targets calls for efficient governmental policies encouraging investor confidence and decreasing the costs for the development of renewable energy projects over the long term.

Furthermore, the increasing proportion of non-programmable renewable energies (especially wind and solar) in the electricity generation mix requires a reform of the electricity system. In particular, real-time communication between electricity producers and the transmission system operator is fundamental. The development of non-programmable renewable energies also requires developing adequate infrastructure with a view to ensuring the capability of the energy system to maintain balance between generation and load when there is uncertainty in electricity demand or supply.

In the future, in response to the ARERA White Paper on renewables in the wholesale market, it cannot be ruled out that the ARERA may discuss with stakeholders rules promoting greater integration of RES into the electricity market (including into the balancing and intraday markets, and regarding dispatch based on order of merit).
I INTRODUCTION

i Overview of renewable energy project development in Japan

When disaster struck the Fukushima Daiichi Nuclear Power Plant following the Great East Japan Earthquake on 11 March 2011, there were 54 nuclear reactors operating in Japan and generating about one-third of Japan’s power. As of 1 December 2017, it had been decided that 15 of those nuclear reactors should be decommissioned, and at present only five are still operating.

Addressing the need to secure alternative energy sources to replace nuclear power, the Japanese government has strongly supported the construction of power plants utilising renewable energy sources, including solar power, wind power, hydroelectric power, geothermal heat and biomass power.


Under the FIT programme, producers of electricity from renewable energy sources are guaranteed the purchase of their electricity by regional electric power company offtakers. Since the applicable tariff rates were established at attractive levels, particularly in the opening phases of the FIT programme (for example, at the beginning, the tariff rates for non-residential solar-based electricity were 40 yen/kWh, while they are now reduced to 18 yen/kWh), Japan has experienced rapid development of renewable energy.

As of the end of March 2017, there is a total capacity of more than 28GW of utility-scale solar, 9GW of residential rooftop solar, 3GW of wind and 2GW of biomass power stations in operation.

ii Recent amendments to the Renewable Energy Law

As of 25 May 2016, the Japanese government passed an amendment to the Renewable Energy Law, which came into effect as of 1 April 2017 (the Amendment).
Under the Amendment, a handful of modifications to the FIT programme and the legal framework of the electricity retail business have been implemented, some of which have significantly impacted the renewable energies landscape in Japan. The key details of the Amendment will be further discussed in Section III.

iii Offshore wind power projects in Japan

While a wide variety of renewable energy sources fall within the purview of the FIT programme, the renewable energy sector had largely been dominated by the development of solar power projects over the past several years and, to a lesser extent, wind power projects (both onshore and offshore).

However, in recent important trends and developments, wind power projects – and especially offshore wind power projects – have been attracting more attention in Japan.

As of 9 March 2018, a long-awaited new bill ‘on promotion of use of territorial waters for offshore renewable energy generation facilities’ (the New Bill) was officially approved by the Cabinet of Japan and submitted to the National Diet on the same day. The New Bill provides general regulation of the utilisation of Japanese waters to facilitate the development of offshore wind power projects in Japan.

We will describe the general scheme of the New Bill in Sections II and III.

II THE YEAR IN REVIEW – THE BOOM IN OFFSHORE WIND

The Japan Wind Power Association (JWPA), the organisation representing lots of Japanese wind power-related industries and corporations, has strong influence over wind power project policy in Japan.

In 2014, the JWPA set mid- and long-term installation goals for offshore wind power (to be specific, 0.7GW by 2020, 9.6GW by 2030, 27.9GW by 2040 and 37.0GW by 2050), and forecast that those onshore and offshore wind farms would be able to generate enough power to cover 20 per cent or more of Japan’s total electricity demand in 2050.

The JWPA further confirmed that these goals were practically achievable, on the assumption that the current electricity system reform in Japan would be successfully implemented (see Section III for details of the electricity system reform).

In response to these projections by the wind power industry, the Cabinet approved the New Bill. The documents released by the Ministry of Economy, Trade and Industry (METI) together with the New Bill indicated that the Japanese government intends to designate five promotion zones by 2030, and the meeting of the Japanese Liberal Democratic Party’s members of the Houses on renewable energy promotion confirmed that this is not the maximum number of promotion zones.

In addition, according to the New Bill, there is no limitation on the capacity to be generated in these zones.

The JWPA has requested a commitment from the Japanese government to develop 10GW of offshore wind power by 2030, but the Japanese government has not responded so far. Therefore, the actual Japanese target capacity for offshore wind is not clear at present.

3 http://jwpa.jp/pdf/2014-06dounyuomokuhyou.pdf?_sm_au_=iVV5KnKkFLLFQGNV (Japanese);
III  THE POLICY AND REGULATORY FRAMEWORK

i  The policy background

The accident at the Fukushima Daiichi Nuclear Power Plant revealed the problems of Japan’s power supply system and prompted the Japanese government to initiate a reform of the electricity system.

The electricity system reform efforts began in 2015 with the objectives of (1) securing a stable electricity supply; (2) suppressing electricity rates by lowering the costs and optimising the supply of electricity to the maximum extent possible; and (3) providing various options for users and expanding opportunities for business entities.

These efforts led to the amendment of the Electric Business Act (Act No. 170 of 1964, as amended (EBA)) in April 2016, which fully liberalised the Japanese retail electricity market and supported more construction of renewable energy power plants.

We will describe below the details of the current regulatory framework relating to the renewable energy sector in Japan following the electricity system reform and the amendment of the EBA. In particular, we will introduce the general scheme for offshore wind development in Japan in view of the predicted importance of its role in the country’s renewable energy market.

ii  The regulatory framework

Renewable energy business outline

The principal government participants in Japan’s renewable energy sector are the METI and its affiliated agency, the Agency for Natural Resources and Energy; the Renewable Energy Law is also administered under the supervision of the METI.

The Renewable Energy Law provides that when a person desires to generate electricity by means of a renewable energy source certain practical and legal steps must be observed.

The process for establishing a renewable energy project in Japan involves a number of key steps. While the details may change depending on the specific circumstances of a given project, the general contours may be summarised as follows.

Incorporation of business entity

As the first practical step in establishing a renewable energy project, the sponsors of the project typically incorporate an entity to function as the holder of the project rights, including an appropriate authorisation from the METI (the METI Authorisation), as well as appropriate land ownership or lease rights, module ownership or lease rights and other rights relevant to the carrying on of electrical generation business. Incorporation of the desired form of legal entity for the project company is accomplished by submitting the necessary documentation to the relevant regional Legal Affairs Bureau. Generally, the process of applying to the Legal Affairs Bureau for incorporation of a legal entity requires a span of seven to 14 days for processing and acceptance.

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4 In addition, investment into an electricity generation business by a foreign investor is subject to the Foreign Exchange Law, under which foreign investors are required to provide notifications to both the Minister of Finance and the METI through the Bank of Japan.
Selection of project site

A proper site must be selected for the installation of the energy generation equipment. In general, appropriate sites for energy generation projects are selected such that they do not overlap with any land designated as agricultural land, forest reserves, culturally sensitive land or national or quasi-national park.

This is the case because surveying, inspection and possible redesignation of these types of land is an uncertain, time-consuming and expensive process.

Due diligence should be carried out over any land of interest for a proposed project, including obtaining a certified copy of the applicable land register to check the registered ownership and whether there are any registered interests such as mortgages, leases or easements that may affect the project.

Then the project company enters into land lease agreements or land superficies right agreements in respect of the parcels of land composing the project site, and it is recommended that the project company register the rights obtained under these agreements.

Environmental impact assessment and prior consultations

There is no national law on environmental impact assessment for solar power projects. However, there is one National Environmental Impact Assessment Law (Act No. 81 of 1997, as amended) applying to projects for 7.5MW or more wind power, 112.5MW or more biomass power, and 7.5MW or more geothermal power.

Some local governments maintain their own environmental impact assessment rules and often require the securing of various permits and licences, depending on the applicable circumstances.

The local prefectural and city offices should be contacted to confirm details of locally applicable land laws and regulations. Also, prior consultations with the relevant electric power company are customary and are conventionally expected. The consultations with the electric power company take the form of a preliminary consultation and a follow-up detailed consultation.

METI Authorisation granting process

The METI Authorisation granting process has been modified by the Amendment.

A principal reason for this aspect of the Amendment was the concern that many renewables projects that received a METI Authorisation were not actually carried through from construction to operational status.

To address this concern, the amended Renewable Energy Law provides that, after 1 April 2017, any project to be authorised must fulfil a number of additional requirements.

Previously, the METI Authorisation was required in relation to both contemplated electricity generation facilities and the methods of electricity generation used under the old Renewable Energy Law.

However, under the present regime, following the Amendment, a project must secure a grid connection agreement as a baseline requirement. Pursuant to Article 9 of the current Renewable Energy Law, a METI Authorisation is required in relation to a Renewable Energy Generation Business Plan, which must include a grid connection agreement.

A METI Authorisation already granted under the old Renewable Energy Law is deemed to be a valid METI Authorisation subject to following requirements: (1) projects granted authorisation on or after 1 July 2016 shall be given a nine-month leeway period to enter into a grid connection agreement; and (2) projects that are participating in a grid
connection bidding process conducted by utilities (i.e., a process whereby several projects can share construction costs for grid connection enhancements) shall be given a six-month leeway period to enter into a grid connection agreement following conclusion of the bidding process. Any other project is deemed to be automatically cancelled if the project has not entered into a grid connection agreement by 31 March 2017.

Because of the concern about renewables projects failing to achieve operational status, the Renewable Energy Law was amended to introduce a deadline for renewable energy projects to reach the commercial operation stage (the Commercial Operation Deadline).

If no operation commences after the Commercial Operation Deadline, a penalty will apply, in that the period during which the FIT rate would apply to the sale and purchase of the electricity generated by the authorised project (the Procurement Period) will be shortened (for example, one month’s delay triggers a one month deduction from the Procurement Period).

To be specific, the Commercial Operation Deadline shall be (1) a three-year period for solar power projects with an output capacity of 10kW or more; (2) with the exception of item (4) below, a four-year period for wind power, biomass power and geothermal heat projects; (3) a seven-year period for hydroelectric power projects; and (4) an eight-year period for wind power projects and geothermal heat projects requiring an environmental impact assessment.

The Commercial Operation Deadline applies to solar power projects that enter into grid connection agreements or receive the METI Authorisation after 1 August 2016, and other renewable energy projects that receive the METI Authorisation after 1 April 2018.

Grid application and power purchase agreement
Under the present regime, upon securing the METI Authorisation, electricity generated from renewable energy sources will be sold solely to an electric power company that is allowed to conduct electricity transmission and distribution by the METI (a Souhaiden Company), rather than to an electric power company that sells electricity to consumers (an Electricity Retail Company).

Where before, a power purchase agreement (PPA) would have been executed directly with an Electricity Retail Company, now, the PPA will be executed with the Souhaiden Company, which will then be obligated to procure the means of distribution to a retail distributor of electricity.

The distribution of electricity from the Souhaiden Company to the Electricity Retail Company would then be accomplished through two possible routes: the electricity would be supplied to the Electricity Retail Company by the Souhaiden Company, acting as wholesaler; or a direct agreement would be executed between the producers of electricity and the Electricity Retail Company, with the Souhaiden Company acting only as an intermediary distributor of the electricity (and not as a wholesaler).

Construction and development of renewable energy project
Upon securing the project site and obtaining the environmental impact assessment, METI Authorisation, grid connection agreement and PPA, and creating a construction plan for the development of the project site, with appropriate notification of the construction plan to the METI, construction of the project may commence.
Before commercial operation date self-check
Before the commercial operation date (COD), a power producer with capacity of 0.5MW or more must conduct a self-check of its power equipment and report the results to the METI.

On the COD, the power producer must report the commencement of operations to the METI.

Operation of the FIT programme
Determination of procurement prices and procurement periods
The FIT rates, and the applicable Procurement Period, are determined by adopting the recommendations of an independent advisory committee – the Procurement Prices Calculation Committee – which was set up under the Renewable Energy Law and is composed of neutral third-party members appointed with the consent of both houses of the Diet.

The Procurement Prices Calculation Committee calculates its recommended prices by: (1) combining all estimated construction, operation, management and other related costs; and (2) adding a profit margin based on certain internal rates of return.

Multi-year FIT rates
Under the old Renewable Energy Law, the METI established the FIT rates on an annual basis, lasting for 15 years for geothermal and 20 years for other qualified renewable sources, with the applicable FIT rates fixed for each one-year period, one year at a time.

However, following the Amendment, it has become possible for the METI to establish the FIT rates that will apply to future periods, and it will be able to fix these rates multiple years in advance of their respective periods of applicability.

This modification of the Renewable Energy Law alleviates timing concerns and promotes the new development of business related to renewable energy sources such as wind, geothermal, hydro and biomass sources, each of which can require long lead times, including, for example, in relation to environmental assessments.

FIT auction system
For the purpose of reducing electricity procurement costs through introducing more competitive processes, the Amendment established a reverse auction system for non-residential solar power projects of 2MW or more, under which developers are able to bid on a per-kWh basis to obtain new project approvals to supply electricity from renewable energy projects up to a predetermined maximum price and maximum quota (250MWx2 in 2018).

The maximum price for the first FIT auction was 21 yen/kWh, but that was in 2017, and the price for the second and thereafter will not be disclosed (i.e., a blind auction).

Electricity retail business reform leads to more renewable energy business
As described in Section III.1, the legal framework of the electricity retail business in Japan was drastically changed by the amendment of the EBA in April 2016.

Pursuant to Chapter 1, Articles 2.1 and 2.2 of the EBA, electricity retail business is defined as ‘the business of supplying electricity to meet general demand’ (the Electricity Retail Business), which is a very broad definition.
A company that operates an electricity business is required to obtain a registration from the METI. However, the requirements for applying for the registration are simple: generally, an applicant company obtains the registration automatically as long as it complies with the requirements under the EBA.

Because the barrier to entry is so low, more than 400 companies have obtained registrations to operate electricity businesses as of 1 December 2017.

Although many market players have joined the Electricity Retail Business in Japan following the Amendment, the amount of electricity traded on the Japanese retail electricity market (i.e., the Japan Electric Power Exchange) only accounts for about 3.4 per cent of the total electricity traded during the period from January to March of 2017. Therefore, companies running electricity retail businesses need to establish their own power generation plants to secure stable electricity supplies in Japan.

**Offshore wind development**

As described in Section I.iii, offshore wind power generation technology is becoming more mature, therefore in Japan more people are paying attention to the offshore wind market.

The general scheme for offshore wind development requires the national government to first identify appropriate areas in Japan for offshore wind development. The government will do so by working with relevant local prefectural governments and newly established bodies in each prospective development area, which will be known as 'Councils'.

Each Council will include relevant stakeholders for the development, including national ministries, local government bodies, fishery groups and academic experts.

The key role of each Council is to work to identify issues of local and national concern for offshore wind development in the development area for which it is responsible.

Following the above process, developers must then lodge competitive bids for use of the relevant offshore zone (with the bids setting out the proposed project details, including the bid price for electricity supply from the project).

The government will then closely review the bids and select bid winners based on both the proposed price and the project development plan (i.e., the bid winner is not assessed on price alone, but on both price and how well the overall development plan meets the development criteria).

The bid winner (or winners) will then have the right to occupy and use the specified general area of water for an offshore wind project for a period of up to 30 years maximum (including construction and decommissioning periods).

Therefore, while the New Bill will grant a longer occupancy period than the current prefectural rules (which are usually limited to three to five years), developers are required to compete on both price and the suitability of their development plans to secure the rights to specific offshore areas.

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Special value ascribed to renewable energy

The development of renewable energy power plants has important value for protecting the natural environment. In addition, under the current environmental regulatory frameworks in Japan, renewable energy also has special properties that enable the entity generating the renewable energy (the Renewable Energy Generator) to enjoy the following benefits.

Value as J-Credit

A certification system called ‘J-Credit’ in Japan offers a market for Renewable Energy Generators that reduce greenhouse gas emissions or increase greenhouse gas absorption to sell their ‘credit’ to third parties.

Under this system, the Renewable Energy Generator that plans or implements a project introducing energy-saving devices or managed forests can register its project by submitting its business plan to the relevant authority for certification to gain credit under the J-Credit scheme.

By monitoring the Renewable Energy Generator’s business, the relevant authority will certify the amount of greenhouse gas emissions reduced by the Renewable Energy Generator’s project as credit.

The Renewable Energy Generator then may sell the credit in the market by way of bilateral negotiations or an official auction held by the Japanese government.

The J-Credit market is expanding year by year. According to a report, the trading volume has reached over 0.88 million tons in 2017, which marked a new historic record.

Value as Green Power and Green Heat Certificates

Japan has also created an exchange market for tradable Green Power Certificates and Green Heat Certificates, through which the high environmental value of renewable energy use can be commercialised under certification schemes.

The Agency for Natural Resources and Energy and the Ministry of the Environment certify the environmental value of the Green Power, or Green Heat, Certificates and the Renewable Energy Generator can sell these and advance the environmental value of its Green Power Certification.

Value under local cap-and-trade programmes

Although no national cap-and-trade programme has been established in Japan, the Tokyo Metropolitan Government and Saitama prefecture have established local cap-and-trade programmes.

Taking Tokyo as an example, a business entity with facilities that consume energy of more than 1,500kl per year (the Local Cap) is obliged (1) to take measures to reduce

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6 https://japancredit.go.jp/english/.
greenhouse gas by renewing its devices and equipment, etc.; or (2) to purchase ‘credit’ from other entities to offset the greenhouse gas exceeding the Local Cap, in accordance with the criteria established by Tokyo Metropolitan Government.10

As with the J-Credit and Green Power and Green Heat Certificate schemes, under the local cap-and-trade programmes, the environmental value can be stripped out and sold separately in Japan.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

Project finance transaction structures

Characteristics of project financing in Japan

Renewable energy projects in Japan are usually developed, built and operated by project companies organised in the form of a special purpose company (SPC), and the financing is handled at the level of the SPC. In Japan, there are two types of limited liability companies, both of which are commonly used as SPCs: (1) the stock company (KK);11 and (2) the limited company (GK).12

A project sponsor financially contributes to a project to be financed by providing a limited amount of equity, which is generally injected into the SPC before the debt financing is disbursed.

The debt financing is typically arranged such that it is repaid entirely from the cash flow of the project and not by means of any additional surety on the part of the sponsors of the project.

There are various lenders that may provide the debt finance to renewable energy projects in Japan, including the Development Bank of Japan Inc, commercial banks (such as Mizuho Bank, Ltd, Sumitomo Mitsui Banking Corporation and MUFG Bank, Ltd), trust banks, local banks and life insurance companies.

GK-TK structure

For renewable energy projects in Japan, the basic structuring generally involves a GK-TK structure, or simply using a GK (or KK) as an operating company.

The GK-TK structure is commonly used by Japanese and non-Japanese investors because of the associated tax benefits.

A TK13 is a contractual relationship between two entities (rather than being a separate legal entity itself), and is provided for under the Japanese Commercial Law (Act No. 48 of 1899, as amended).

A TK needs at least one TK partner or investor (which is usually a silent investor) and one TK operator (which usually takes the form of a GK).

Under the Japanese law framework, (1) the TK investor makes a financial contribution to the TK business in the form of cash or properties; (2) the TK operator conducts the TK business without disclosing the TK structure to investors or to its customers or vendors; (3)
the TK investor has no power to administer the TK business and no power to dispose of the TK properties; (4) the TK investor is prohibited from representing the TK operator; and (5) the TK investor merely has a right to claim an allocation of profits or losses from the TK business.

Generally, in a common TK structure for project financing:

a. the project company (which is also the TK operator) is a GK and it holds the project assets, including key contracts such as the PPA, the operating and management agreement and the engineering, procurement and construction agreement;

b. the TK investor enters into an agreement with the TK operator (GK) under which the TK investor contributes funding to the GK-TK in return for a right to receive TK distributions from the TK business's profits;

c. the TK operator manages the business and the TK investor has no involvement in the management decisions or day-to-day operation of the business;

d. as an option, a KK acting as the service company (e.g., in relation to the asset management of the GK's operations) may provide services to the TK operator (because the GK is often an SPC and normally has no employees); and

e. as another option, for the term of the project financing, the GK equity interest may be held by a special purpose bankruptcy-remote entity, which is often created and held by an independent accounting firm or trust firm in Japan.

If the TK investment is made from an affiliate that is a tax resident of a tax treaty country with a favourable other-income provision, TK distributions should be free of Japanese tax so long as there is no successful treaty shopping challenge by the Japanese tax authorities. The tax treaties between Japan and Spain, Italy and Ireland have such favourable other-income provisions, under which TK distributions should not be subject to Japanese tax.

There is limited legal theory or case law regarding the grounds on which Japanese tax authorities may challenge the validity of cross-border TK structures. However, such validity will be decided based on the factual issue, and the risk may vary depending on the roles and functions of the TK investor. Careful attention should be paid to the passive legal feature of the TK investor such that (1) it has no rights to administer or operate the TK business, and (2) it has only a passive right to receive distributions of profit from the TK business, as these are critical legal characteristics of the TK arrangement required to overcome the risk mentioned above.

ii Distributed and residential renewable energy

The accident at the Fukushima Daiichi Nuclear Power Plant revealed the vulnerability of Japan's centralised energy system. To this end, the METI, the Agency for Natural Resources and Energy and the local governments accelerated the expansion of distributed energy systems and have taken various other actions, including: (1) subsidising on-site or residential renewable energy systems and independent energy storage devices; (2) providing support for developing local biomass energy infrastructures; and (3) offering partial tax exemptions for biogasoline, etc.\(^{14}\)

As the result, in recent years, we have seen electricity business operators start to implement on-site electricity generation services for electricity consumers, expanding diffusion of distributed energy systems in Japan.15

While, in the past, we have seen house or building owners becoming power sellers through ownership of solar panels, currently, the rooftop lease arrangement is becoming more popular. In this case, the power producer can lease the roof and install its own solar equipment on the roof, then sell power under the FIT programme.

iii Non-project finance development

Instead of using the project finance structure by borrowing from lenders for projects, several project companies in Japan have developed their renewable energy projects by (1) injecting their own funds; (2) being backed by the surety of the sponsors; (3) engaging in sole TK investment; and (4) utilising corporate finance or finance lease structures.

Among these methods, the finance lease structure is prevalent in Japan for the off-balance tax merit it provides. The following is a brief introduction to this structure.

The finance lease structure consists of a lease agreement between a lessor and a lessee and the corresponding sale and purchase agreement between the lessor (as buyer of leased equipment) and a supplier (as seller of leased equipment).

These two agreements are independent from each other but also closely related, and they have some corresponding provisions.

The lease agreement generally contains provisions such as: (1) the lessor shall purchase equipment from a seller, with the lessee designating both the equipment and the seller; (2) the lessor owns the equipment and leases it to the lessee; (3) the seller delivers the equipment directly to the lessee; (4) the lessee pays the lease payment to the lessor to compensate the purchase price of the equipment, other transactional costs and expenses incurred by the lessor; (5) the lessee shall be responsible for the maintenance and repair of the equipment; and (6) the lease agreement shall not be terminated.

V RENEWABLE ENERGY MANUFACTURING

There are various Japanese companies manufacturing renewable energy equipment such as solar modules, power conditioning systems, wind turbines and biomass boilers.

Also, given the strong market demand and low barrier to entry in the Japanese market, many foreign renewable energy equipment manufacturing companies are expanding their market share in Japan (e.g., Trina Solar, a strong solar panel producer, Huawei, which is famous for its power conditioning products, and Vestas, GE and Siemens, which are known for wind turbines).

In particular, according to the report by the Japan External Trade Organization, as of February 2017, Japanese companies do not have sufficiently a high level of technological capability to manufacture complete floating offshore wind systems, so there is high market-entry potential for foreign companies in this area.16

15 http://www.enecho.meti.go.jp/committee/council/electric_power_industry_subcommittee/001_005/pdf/005_000.pdf (Japanese).

There are no special policies supporting the renewable energy equipment manufacturing business; however, the METI and local governments have implemented several rules to support renewable energy equipment manufacturing by providing subsidies, promoting joint research and development and offering tax exemptions.

VI CONCLUSIONS AND OUTLOOK

In July 2015, the METI approved the Long-Term Energy Supply and Demand Outlook based on the Cabinet-approved strategic energy plan, and announced the long-term energy-mix target for 2030.

This target envisages that renewable energy will account for 22 to 24 per cent of total power generation by 2030 in Japan.\(^\text{17}\) In March 2018, the METI reviewed this target and confirmed that it remains unchanged.\(^\text{18}\)

Although this low target has been criticised by the renewable energy industries, we expect more renewable energy will be generated under the METI’s plans.

In addition, in March 2018, it was reported that Japan’s largest retail company, AEON Co, Ltd, had become the sixth Japanese company to join the RE100 initiative (following Ricoh Company, Ltd, Sekisui House, Ltd, ASKUL Corporation, Daiwa House Industry Co, Ltd and Watami Co, Ltd), and had committed to 100 per cent renewable energy consumption by 2050.\(^\text{19}\)

Witnessing the fast development of this field, and the growing enthusiasm of Japanese companies for renewable energy, we believe that both domestic and overseas investment in the renewable energy industry will continue to expand in Japan.

\(^{19}\) http://there100.org/companies.
INTRODUCTION

The regulatory framework for new and renewable energy in the Republic of Korea (Korea) primarily consists in the Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy (the Renewable Energy Act). The regulatory framework for renewable energy is intertwined with energy policies established by the Framework Act on Low Carbon, Green Growth (the Carbon Act), the emission trading scheme and the Act on the Allocation and Trading of Greenhouse-Gas Emission Permits (the GHG Allocation Act), which became effective in 2015. The primary governmental authority responsible for renewable energy-related matters is the Ministry of Trade, Industry and Energy (MOTIE).

The Korean government establishes long-term basic energy plans (the Basic Energy Plan) to promote, among other things, the development, use and diffusion of new and renewable energy. The Basic Energy Plan is published every five years and lays out the country's basic energy policy for the next 10 years.

Since 2012, the Korean government has implemented the Renewable Portfolio Standard (RPS) scheme pursuant to the Renewable Energy Act. The RPS imposes obligations on 21 large power generation companies to generate a certain minimum percentage of gross power generation from renewable energy sources. Failure to meet the obligatory generation quota may result in an administrative fine in the amount equivalent to 1.5 times the average trading price of Renewable Energy Certificates (RECs).

The current renewable generation quota obligations are set out as follows. However, President Moon Jae-in's administration is in the process of revising the ratio and it is expected that ratios will be adjusted to a higher level.

Table 1: annual supply rates

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<td>Ratio (%)</td>
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THE YEAR IN REVIEW

In December 2017, President Moon announced the Korea Power Supply and Development Plan 3020, whereby the government plans to increase the proportion of renewable energy supply to 20 per cent by 2030 and develop new energy industries by expanding in-house
solar power facilities tailored for city uses. In accordance with the Korea Power Supply and Development Plan 3020, the government is contemplating (1) providing support for small-scale power plants (less than 100kW), (2) encouraging investment participation via cooperatives or associations with local residents, (3) developing solar power facilities for rural areas, (4) empowering local governments for self-planning and policies, (5) pursuing large-scale power projects, (6) improving transmission capacities and expanding investments in power facilities, and (7) applying newly developed technologies from the fourth industrial revolution.

III THE POLICY AND REGULATORY FRAMEWORK

i The policy background
Korea introduced the RPS in 2012, converting from the previous feed-in-tariffs (FIT) regime. Additionally, the government required companies with generation capability of 500MW or more to generate at least 5 per cent of gross power from renewable energy sources. Currently, 21 large power companies in Korea are subject to this obligation. However, current policies have been criticised for being disadvantageous to renewable energy companies because the RPS ratios are too low. As new and renewable energy sources are lacking in Korea, some commentators believe that achieving the ratio targets would be practically very difficult. Further, NGOs and renewable power companies also believe that profitability from renewable energy generation and the predictability of the business are uncertain because the REC price is relatively low and the volatility of the business is quite high. Therefore, some critics are not supportive of pursuing renewable energy business in Korea.

For these reasons, the government has implemented its Korea Power Supply and Development Plan 3020, explained above. And MOTIE is in the process of raising the RPS ratio and adjusting RECs in accordance with the government’s policy to expand the renewable energy business.

ii The regulatory framework
Main sources of law and regulation and regulators’ powers and scope of authority
The main sources of law and regulation in Korea are the Renewable Energy Act, the Carbon Act and the GHG Allocation Act.

Pursuant to the Renewable Energy Act, new energy is described as hydrogen energy, fuel cells, energy from liquefied coal and heavy residual oil, and renewable energy, including solar energy, wind power, water power, marine energy, geothermal energy, bio energy and waste-to-energy.

MOTIE is the primary governmental authority responsible for energy-related matters. Although the Energy Committee also plays a significant part in establishing energy-related policies in Korea, MOTIE is the main agency responsible for establishing and implementing energy policies and plans. Ordinarily, MOTIE will review and set a new Basic Energy Plan every five years, which lays out the nation’s basic energy policy for the next 10 years. These energy policies and plans are reviewed by the Energy Committee and then by a cabinet council consisting of ministers of each ministry. Non-governmental organisations do not play a formal role in establishing government policies for renewable energy. However, many activists from NGOs have been working and coordinating with the government recently.
Different institutions regulate different sections of law in Korea, as MOTIE delegates various duties to other agencies. For example, Korea Electric Power Corporation (KEPCO) manages REC matters, the New and Renewable Energy Centre is responsible for reviewing and issuing RECs to eligible companies, and local governments have the authority to issue licences for installation of renewable power plants located in their jurisdiction.

**Renewable Energy Certificates**

Under the Renewable Energy Act, an REC is defined as a ‘certificate authenticating the fact of supply by using new or renewable energy facilities’. An REC is based on each megawatt hour (MWh) of electricity generated from a renewable energy resource. RECs are issued by the New and Renewable Energy Centre and are tradable in Korea. RECs are typically sold to one of 21 large power generation companies that are obligated to generate certain percentage of their generation output from renewable energy source.

The renewable energy is monitored by KEPCO, which verifies the amount of renewable energy generated. If a company produces renewable energy, in addition to RECs, the company can also get a certified emission reduction (CER) credit for greenhouse gas emissions by registering with the United Nations as a clean development mechanism (CDM) project.

The renewable energy is integrated into KEPCO’s electricity grid network because the electricity generated from the renewable source can be sold only through Korea Power Exchange (KPX). In this regard, the Korean renewable energy producers earn revenue by selling electricity to KEPCO through KPX plus additional income by trading RECs with the 21 large power generation companies.

As of the end of 2017, renewable energy companies typically generated revenue of approximately 82,000 Korean won per 1Mwh, and 120,000 Korean won per 1 unit of REC. Subject to fulfilment of certain requirements, such entities may also obtain GHG emission rights by generating renewable energy.

**Regulatory approval and authorisation**

To engage in renewable energy business in Korea, the developer must secure ownership or lease right of the land on which the power plant will be located, and obtain necessary licences from the local government where the land is located. And for large-scale power generation projects (over 100,000kW), an environmental impact assessment must be carried out and approved by the Ministry of Environment.

The time frame for obtaining approval for the development of a utility-scale renewable energy project often depends on the type of renewable source. For example, for onshore wind, the approval process normally takes about four years from filing the application with the government, whereas for solar power, the approval may be granted within a year. In the case of a large-scale project, it may take longer than usual to obtain the approval since it requires an environmental impact assessment.

**Special protocols for intermittent energy sources and environmental concerns**

In Korea, there are special protocols for intermittent energy sources such as wind and solar. When an energy storage system (ESS) is linked to supplement the intermittent energy, additional REC weighting is given in the range of 4.5–5.5 units depending on the type of renewable source. The highest weighting (5.5 units) is given to offshore wind farms linked with an ESS.
The Korean government also seeks to secure commercialisation of ESSs and source technologies to reduce ESS prices by 50 per cent of the current price by 2020. The government also plans to develop technologies that enable early commercialisation of non-lithium storage methods, such as redox flow batteries and sodium sulphur batteries, and operation of a mid-to-large-sized energy storage system of 50–100MW.

Although wind and hydropower are considered renewable energy, the construction of related power plants face difficulties as many environmental organisations and local residents oppose these plants because of potential environmental harm resulting from their construction and operation. In this regard, more investment is made in solar energy because of the comparatively fewer potential environmental problems associated with installation of solar panels in smaller scale solar projects on parking lots, factories, residential roofs and farmland.

In the case of solar power, small and medium-sized projects seem more promising in Korea. This is primarily because in Korea there is limited land space on which large power projects can be built. In recent years, aquatic solar power generation plants have been installed in dams and reservoirs to solve such site problems.

The majority of regions in Korea consist of mountainous terrain, and most areas of flat land suitable for solar power projects have been already developed. Accordingly, it is difficult for developers to procure land suitable for solar power projects (i.e., vast areas of flat land with appropriate amounts of solar irradiance). However, once suitable land is procured, our experience has been that financial institutions in Korea are willing to invest in such solar power projects as stable income is expected over the long term.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

Project financing transaction in Korea

In renewable energy projects, the project operator typically acquires ownership or lease of the project site, ownership of the renewable energy generation and transmission facilities (including transmission facilities up to the point of interconnection with KEPCO’s grid network), and ownership of the electricity sales proceeds and REC sales proceeds. The real property and tangible assets relating to sites and facilities are provided as collateral to the financial institutions that provide the financing. Intangible assets such as electricity sales proceeds, REC sales proceeds and insurance proceeds are also typically provided as collateral assignments to the lenders.

In project finance, the main documents include loan agreements; security documents in respect of the real property, mortgage and equity; pledge agreements with respect to accounts and insurance proceeds; security assignment agreement; and documents regarding disposal of power plants, assignment of licence and approval in the event of default, and credit support provided by majority shareholders. The typical tenor of the term debt is usually 10–15 years.

In Korea, it is common for the contractor that manufactures or installs renewable energy equipment to provide an efficiency guarantee to the lenders. Financing for renewable projects are mainly provided by commercial banks, although it is becoming more common for private equity funds to participate in these types of financing.
The other unique feature of renewable project financings in Korea is that the electricity generated from the renewable energy must be traded in and through KPX. This adds complexity when structuring the project finance, especially in terms of structuring the collateral package, since KPX is a governmental agency.

**Environmental attributes market and trends**

The market for environmental attributes such as RECs and the RPS in Korea has not been active because of various risks and systemic problems. One of the systemic problems is that the regulations relating to renewables (including REC weighting and the mandatory supply ratio under the RPS programme) are not so straightforward and change from time to time at the government’s discretion, making the legal landscape less predictable. For example, when it was determined that the original RPS level was unattainable, the mandatory supply ratio was significantly lowered from the initial target of 3.5 per cent to 3 per cent (for 2015) and from 4 per cent to 3.5 per cent (for 2016). To implement a structured RPS system, the government must set up a system that is clear and enforce it in a consistent manner.

Further, there was no significant government programme to help facilitate investment in renewable energy projects. Aside from governmental subsidies of up to 50 per cent of installation costs for renewable energy equipment (such as solar power), there were no governmental policies that purported to support low-income and marginalised communities, individuals or rural residences. And up until now, the current government did not rigorously enforce relevant rules and regulations. This may account for the slow development in the renewable energy market. For example, if the government determines that mandatory supply ratios are not being met, the government simply adjusts these ratios without imposing penalties for violations. Until 2016, even when the 21 large energy companies subject to the RPS failed to meet the new and renewable energy ratio requirements, the government delayed imposing any fines. However, this delay was a policy decision, taking into consideration aggravation of the power generation companies’ management, rises in electricity prices and the limitations of the renewable energy resources.

Nonetheless, it is expected that the new government will strongly push for the expansion of new and renewable energy. And if the relevant power supply companies do not meet the mandatory 2018 ratios, we expect the government to impose sanctions. The budgets are now allocated by the government for development of agricultural infrastructure, solar and wind power generation projects, development of core technologies for new and renewable energy, energy efficiency projects and trading of emissions.

Further, beginning with the Renewable Energy Act, the Korean government has implemented a low-interest financing support system for businesses that invest in energy-saving facilities and reduce greenhouse gas emissions to streamline energy use and promote greenhouse gas reduction efforts. In addition, Korea has developed a system to provide small-scale renewable energy funding at no cost, and low-interest loans. However, no system exists to fund large-scale renewable energy facilities at present.

When renewables equipment is installed in houses, buildings, local government buildings and social welfare facilities, funding may be provided to businesses that rent out the solar power facilities to the buildings and houses. Further, financial support is provided for the manufacturers of renewable energy equipment and facilities or the companies that install and operate new and renewable energy facilities. The Korean government also supports the Energy Saving Company (ESCO), which is a company equipped with required facilities,
capital and technology and registered with MOTIE pursuant to Article 25 of the Energy Use Rationalisation Act and Article 30 of the Enforcement Decree of the same Act, and which provides loans at lower interest rates than the market rates.

Since 2012, the Korean government has implemented a guarantee system for cooperation agreements for renewables. Under these initiatives, the Korean government uses funds contributed by large corporations, including KEPCO, Samsung Electronics and Hyundai Motors (approximately 103 billion Korean won), to provide loans to renewable energy companies. These loans are guaranteed by the government-owned technology guarantee fund and credit guarantee fund. No government-sponsored green or similar funds have been introduced to facilitate renewable energy projects. However, KEPCO (a public company) announced that it plans to raise about 2 trillion Korean won’s worth of energy funds in 2017. These funds will be invested in renewable energy, energy storage, electric vehicles and smart grids, among other investments.

In Korea, financial institutions, such as bankers’ associations, commercial banks, insurance companies, brokerage firms and fund management companies have created green finance councils to create and operate financial products and provide loans for new and renewable energy. These initiatives support ESCO projects, guarantees, funds and insurance. These green financial products are just one type of financial support system available, in addition to those described above.

In the renewable energy market, the PPP market has not yet been developed in Korea because electricity can be sold only through the electric power market in KPX. PPPs are in use, however, with related renewable energy sources, such as incineration of certain waste and landfill projects, where the government encouraged investors by providing minimum revenue guarantees to promote the business.

ii Distributed and residential renewable energy

Distributed and residential renewable energy

The Korean government seeks to encourage small energy projects. More specifically, to enhance and expand new renewable energy sources, the Korean government provides financial support for installation of household generators (3kW or less) and geothermal heat pumps, among other applications. Currently, the government subsidises 50 per cent of the cost of installing new renewable energy equipment in residences and buildings.

Although there is no system or government policy to support the establishment of a renewable energy company in Korea, the Korean government supports renewables facilities on a small scale by offering financial support for residences, buildings and regions to enhance production and usage of new renewable energy. MOTIE also facilitates leasing of solar energy equipment and related facilities under the Ordinance on the Support of New Renewable Energy Facilities.

Ownership structures of distributed (on-site) and residential energy facilities

In the case of a single-family house in Korea, the owner of the house can install and own a distributed and residential energy facility. However, in the case of multi-unit dwellings such as apartments, the approval of the resident representative meeting must be obtained to install the distributed energy facility on the roof of the building or veranda (in the case of the multi-unit dwelling, the approval of each owner is required). In the case of Seoul, the local governments provide housing subsidies for small, home solar power facilities.
As such, homeowners (co-housing owners or representatives in the case of apartments), local governments and installation companies are the key participants in the distributed energy market.

In Korea, the local governments are expanding their investment in distributed renewable energy in the form of the One Less Nuclear Power Plant campaign, which is one of the major policies of the Korean government. One of the major concerns for Korea is the strong opposition of environmental groups and local residents to the acquisition of land for power plants and development of large utility-scale renewable projects. This is accounted for in part because Korea is a small country, hence the land scarcity.

iii Non-project finance development

In some cases, the investment in new and renewable energy is made with an individual’s or an entity’s own capital (rather than utilising project financing provided by the financial institutions) for the owner developer (rather than the lenders) to secure the GHG emission rights or the RPS. In this case, renewable energy projects are only possible when the ownership or leasehold of the site is secured by that individual or entity.

V RENEWABLE ENERGY MANUFACTURING

In Korea, the solar modules and panels business is relatively more developed than the wind power business. The wind power component industry is relatively less developed than the solar power industry because of the limitations regarding geographical conditions in Korea. In connection with other renewable energy manufacturing, businesses such as photovoltaic parts manufacturing, wind power manufacturing, anaerobic digestion of organic waste, and transmission equipment businesses such as biogas refining, hydrogen production, fuel cell businesses and ESSs are well established in Korea.

To promote and support development of renewable energy or energy-efficient technologies, the Korean government’s efforts include providing financial support, promoting technology development projects, standardising technologies and introducing technology certification systems. The Korean government has also reduced tariffs on equipment for the production of renewables. Furthermore, if a company invests in facilities and equipment to produce new and renewable energy materials and related parts, an income or corporate tax reduction of 10 per cent of the investment amount is made available.

The government has also introduced multiple schemes relating to renewable energy, including (1) a renewable heat obligation policy (mandating a certain amount of thermal energy usage to be supplied by renewable energy); (2) a renewable fuel standard policy (mandating oil refiners, importers and exporters to blend a certain amount of renewables in transportation fuel); and (3) installing new or renewable energy equipment in workplaces with massive energy consumption. The Korean government further plans to expand renewable energy by investing in research and development of relevant technologies and expanding financial support, among other measures.

The Korean government is currently carrying out various technological improvements, including developing high-voltage direct current technology, enhancing technological independence, expanding dispersed-type power sources (in-house power generation for areas of business with massive energy consumption), disseminating new renewable energy and developing microgrid technologies, among other measures.
VI CONCLUSIONS AND OUTLOOK

The development of renewable energy projects in Korea is largely driven by governmental initiatives, such as the RPS scheme, policies and related mandates. The Korean government plans to make significant investments in new and renewable energy going forward. However, significant progress needs to be made to overcome handicaps such as the lack of incentives and scarcity of land.

However, as investments increase and as technologies become more efficient and smaller, we believe that renewable energy use will expand, albeit beginning with smaller installations and improvements. These elements may include solar panel roofs in public highway rest areas and on street lights, panel installations on roofs of public and private buildings, and installations on reservoirs, among others. Thus, the first immediate developments may be realised through less intrusive methods, while development of larger-scale projects will progress more slowly.
I INTRODUCTION

Overview of renewable energy project development and law in Nigeria

Nigeria is a gas-rich nation with proven natural gas reserves estimated at 180 trillion cubic feet, making it the ninth-largest in the world according to the EIA international energy statistics. However, gas production and utilisation has been hindered by several challenges, including a lack of adequate infrastructure to effectively monetise the abundant gas resources, an uncertain regulatory framework and a weak domestic gas market due largely to illiquidity of the power sector, its biggest local major offtaker. Power generation in Nigeria is mainly from hydro and gas-fired thermal power plants, with the hydro plants providing 2,380MW (approximately 16.7 per cent of the total generation capacity) and the thermal plants 10,142MW (approximately 83.3 per cent of the total generation capacity).

In view of the aforementioned challenges, there is a significant need to supplement the grid power with renewable energy. The Nigerian renewable energy market, however, remains largely underdeveloped, although renewable energy project development has been ongoing in Nigeria for nearly two decades.

Historically, Nigeria's main source of renewable energy has been hydropower plants. Over the years, this has gradually evolved to include other sources such as solar – predominantly through small solar street lighting projects and the current trend for distributed energy or stand-alone solutions. This progressive shift has led to the emergence of small-scale solar solutions for residential and commercial users, including banks (solar-powered automated teller machines (ATMs)), petrol stations and mini grids.

In a bid to support the efforts of the Nigerian government and the private sector, international development finance institutions (DFIs), such as the United States Agency for International Development (USAID), the UK Department for International Development (DFID) and GIZ2 have contributed to the growth of renewable energy development in Nigeria.

The US government through the USAID Power Africa programme supports the development of the energy sector through credit enhancements, grants, technical assistance and investment promotion efforts. To date, over $700,000 in grants has been awarded to entrepreneurs for innovative, off-grid energy projects in Nigeria.

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1 Dolapo Kukoyi is a partner and Adeyemi Esan is an associate at Detail Commercial Solicitors.
2 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is a provider of international cooperation services for sustainable development and international education work.
The Solar Nigeria Programme, undertaken by the Nigerian government in collaboration with DFID, was put in place in 2014 to provide solar power to public health and education facilities. The Programme provides credit facilities, grants and technical assistance to companies operating in the solar market. The Programme led to the development of a 5MW solar power project in Lagos, supplying electricity to 175 secondary schools and 11 primary healthcare centres within the state. DFID in collaboration with the Kaduna state government, in 2017, launched the Northern Social Project, an initiative to provide uninterruptible electricity to 34 primary health centres in the state via solar systems generating between 5KW and 25KW of power.

ii Key trends in the Nigerian renewable energy market

The following are recent trends in the renewable energy market over the past couple of years.

**Increasing access to power via renewable energy solutions**

An estimated 27.9 million households and 10.6 million small and medium-sized enterprises (SMEs) have a critical need for access to electricity in Nigeria. With this demand projected to nearly double in the next 10 years, amid rising population density and more consumers having to rely on self-generation using firewood, kerosene, petrol and diesel to supplement their power needs, access to proven and cost-effective solutions are more crucial than ever. As reliance on alternatives (primarily generators) comes at a high cost, consumers (both residential and commercial) are seeking cleaner and cheaper energy sources to supplement their power needs. This has led to the emergence in Nigeria of a number of businesses and non-profit organisations focused on developing projects and products aimed at increasing access to power for homes, communities and businesses.

**Activities of non-profit organisations and pressure groups**

Both local and international non-profit non-governmental organisations (NGOs) and pressure groups have over the years played a prominent role in promoting the development of renewable energy in Nigeria. These NGOs have been able to support the growth of the sector through capacity-building, provision of financing, and promoting public awareness.

All On Partnerships for Energy Access Limited (All On) is a Nigerian off-grid energy investment company that, among other services, provides risk capital, project development support and funding to energy companies in the form of equity investment and grants. Some of the prominent projects All On has engaged in include investing in Lumos Global BV, a global off-grid solar company operating in Nigeria, and the provision of equity and debt funding to Green Village Electricity, Nigeria’s leading mini-grid player, for expansion.

In a bid to support clean energy investments in Nigeria, the Nigerian Energy Support Programme (NESP) was created in 2013 with funding from the European Union (EU) and the German Federal Ministry for Economic Cooperation and Development. Since its inception, the NESP has supported: policy development by collaborating with the federal government to establish a clean energy department at the federal Ministry of Power; rural electrification by developing the Mini-Grid Regulation subsequently issued by the Nigerian

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Electricity Reform Commission (NERC); and capacity development through its training courses in partnership with the National Power Training Institute of Nigeria, particularly in rural regions of Nigeria.

Front-runner solar power purchase agreements

In 2016, Nigerian Bulk Electricity Trader (NBET), for the first time, signed power purchase agreements (PPAs) valued at US$2.5 billion with 14 developers to purchase 1,125MW of solar energy, to be provided to the national grid.

Unfortunately, since the agreements were signed, progress in the execution of the project has been slower than expected because of various issues, including inconsistencies in agreements on tariffs between project developers, NBET and the Federal Ministry of Finance, who would be backstopping the put–call option agreements (PCOA), and on indemnities issued by the federal government. The degree of insolvency in the sector has affected the willingness of the World Bank to provide Partial Risk Guarantees (PRGs) (though a number of projects had been nominated), which are required by both equity and debt providers. This has also delayed the flow of concessionary financing required by these projects, given the high costs and patient capital required.

Influx of solar lightning and cooking appliances, home systems and stand-alone solutions

The Nigerian energy space has in recent years experienced an influx of solar stand-alone solutions – the most prominent of these being the Lumos Smart Solar System, which launched successfully 2016. MTN Lumos, which is a partnership between MTN, Nigeria’s largest mobile network, and renowned solar experts Lumos, has attracted over US$40 million in foreign investment. Also, in 2016, Arnergy Solar Limited introduced the Arnergy Solar Rental Systems, designed to provide electricity for rent to consumers in off-grid communities.

In 2017, the Azuri Quad off-grid solar technology was launched as a solar programme in partnership with the Niger Delta Power Holding Company, a company fully subscribed to by the government to deliver 20,000 solar home systems to rural households living without electricity.

iii Role of government agencies and authorities in fostering the development of renewable energy projects

Government participation in the Nigerian renewable energy market has been minimal, limited mostly to making policies intended to encourage renewable energy project development. However, the Minister of Power, Works and Housing, Babatunde Fashola, in 2016, released a Road Map for Steady, Incremental and Uninterrupted Power Supply, which reinforced the readiness to actively participate in renewable energy projects and to increase generation capacity in the country by the use of renewable energy sources, including solar, wind and hydro. One of the planned projects under the road map includes a 10MW wind farm project to be located in Katsina State.

Also, in 2016, the National Council on Power approved the National Energy Efficiency Action Plan, which sets out the strategy for achieving Nigeria’s electricity vision of attaining...
30,000MW of power by the year 2030 with at least 30 per cent renewable energy in the electricity mix. If the government, relevant agencies and stakeholders follow through with this plan, the renewable energy market in Nigeria will experience unprecedented growth.\(^4\)

In 2017, the federal government with the assistance of the World Bank Group developed the Power Sector Recovery Program (PSRP), a policy initiative aimed at improving the reliability of the power sector in a bid to boost Nigeria's economic prosperity. A core objective of the PSRP is to implement off-grid renewable energy solutions aimed at providing electricity supply to rural communities. Renewable energy development initiatives have been undertaken by the following government agencies and parastatals.

**Rural Electrification Agency**

Flagship initiatives of the Rural Electrification Agency (REA) include:

\(a\) the Energizing Economies Initiative, aimed at providing power to selected economic clusters using renewable mini-grid technology to meet current and future supply requirements with a high level of power reliability for economic growth;\(^5\)

\(b\) the Energizing Education Programme, aimed at providing power supply to 37 federal universities and seven university teaching hospitals across the country, with both projects focusing on adopting renewable energy mini-grid technology. Phase 1 is to be completed in 2018 and will provide power to nine institutions, benefiting over 300,000 students and staff. Seven of the nine planned power plants (10.5MW out of a total of 26.56MW) will be powered by solar energy, in line with the federal government’s energy-mix policy; and

\(c\) establishing an energy database to provide data on key indicators, such as: on-grid infrastructure, off-grid infrastructure, population statistics, availability of resources, and statistics on existing and upcoming amenities that require energy.

**Federal Ministry of Environment**

In fulfilment of Nigeria’s obligation to the United Nations Framework on Climate Change, the Federal Ministry of Environment (FMoE) initiated the Renewable Energy Programme in 2016,\(^6\) aimed at improving the viability of the Nigerian renewable energy market to attract capital to develop renewable energy technologies in Nigeria.

**Federal Ministry of Science and Technology**

The Federal Ministry of Science and Technology has a Renewable and Conventional Energy Technology Department (RCET), which supports the growth of renewable energy in Nigeria through research and development initiatives. The RCET collaborates with the Energy Commission of Nigeria (ECN) on projects aimed at improving the indigenous growth of renewable energy projects.

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Energy Commission of Nigeria
The ECN, like the RCET contributes towards the growth of Nigeria’s renewable energy market through its research and development initiatives, which have led to the establishment of research centres across the country.

iv Legal framework for renewable energy project development.
The following policies and pieces of legislation provide a broad outline of the legal framework for Nigeria’s renewable energy market.

Legislative enactments

Electricity Power Sector Reform Act (federal enactment, 2005)
The Electricity Power Sector Reform Act (EPSRA) is the principal piece of legislation governing Nigeria’s power sector. The EPSRA provides for the establishment of NERC and the Rural Electrification Agency, including licensing provisions and the regulation of the generation, transmission, distribution and trading of electricity in Nigeria.

Environmental Impact Assessment Act (federal enactment, 1992)
The Environmental Impact Assessment (EIA) Act makes it mandatory for an EIA to be conducted for projects that are likely to have significant effects on the environment, including power projects. A power developer seeking to carry out power generation through the use of renewable energy must submit an EIA report to the National Environmental Standards and Regulations Enforcement Agency (NESREA) for screening. It is important to note that the submission of an EIA Approval Certificate is mandatory for an application of a generation licence from NERC.

Nigerian Electricity Management Services Agency Act (federal enactment, 2015)
The Nigerian Electricity Management Services Agency (NEMSA) is responsible for the enforcement of technical electrical standards prescribed by NERC, including the testing and certification of electrical installations, electricity meters and instruments.

NERC Regulations

NERC Mini-Grid Regulation (2017)
The Mini-Grid Regulation is aimed at accelerating electrification in unserved and underserved areas – principally but not restricted to rural areas. The regulation is limited to distributed power of less than 100kW up to 1MW.

The Renewable Energy Feed-in-Tariff (REFIT) Regulations aim at enhancing the attainment of the national targets on renewable energy-sourced electricity and encourage as well as support greater private sector participation in power generation from renewable energy technologies.
**Policies**

*National Electric Power Policy (Electric Power Implementation Committee, 2001)*

The National Electric Power Policy outlines the framework for the power reform agenda in Nigeria. It also sets a target of a 10 per cent renewable energy mix for all new connections by 2020.

*Nigerian National Energy Policy (Electric Power Implementation Committee, 2003)*

The Nigerian National Energy Policy acknowledges the importance of the different renewable energy sources and how they can be effectively utilised. However, no concrete targets for renewables were set.

*Renewable Energy Master Plan (ECN, 2005)*

The Renewable Energy Master Plan (REMP) encourages the integration of renewables (with particular emphasis on solar energy). The REMP advocates an increased supply of renewable electricity, from 13 per cent of electricity generation in 2015 to 23 per cent in 2025 and 36 per cent by 2030. The REMP has yet to be signed off by the government or formulated into a law governing renewable energy development.


The Renewable Energy Policy Guidelines (REPGs) articulate policy goals for the development of off-grid independent renewables systems and the setting up of a Renewable Electricity Trust Fund (RETF), as well as cost-effective measures to accelerate renewable projects. The REPGs also include incentives for investors by way of a five-year tax holiday.

*The Renewable Electricity Action Programme (Ministry of Power, 2006)*

The Renewable Electricity Action Programme (REAP) sets out a road map for implementing the REPGs and RETF and further sets out development targets for technology and application. As yet there has been no evident implementation of the REPGs and the REAP.


The National Renewable Energy and Energy Efficiency Policy (NREEEP) was issued by the federal government to foster power generation through renewables and energy efficiency capacity by 2020. The NREEEP was developed as a robust policy document to consolidate the objectives of the aforementioned policies.

## II THE YEAR IN REVIEW

### i Recent developments in renewable energy law

There have been no notable developments in renewable energy law in Nigeria in the past year.

### ii Changes in administrative practice in relation to renewable energy projects

*Increased duty on solar panels and components*

The Nigerian Customs Service recently reclassified solar components and equipment under Harmonised System (HS) Code 8501, which caters for direct current (DC) generators, thereby attracting a 5 per cent import duty and 5 per cent VAT charge on all solar panels,
modules and components imported into Nigeria (including bypass diodes, inverters, etc.). This is a radical change from the zero per cent import duty rate provided under the previous classification,\(^7\) which stipulated that the import duty on solar panels should be zero per cent.

By virtue of the foregoing reclassification, solar panels imported for the purpose of power generation will be classified under HS Code 8501, while panels imported for any other purposes that do not include component parts for electricity generation, such as inverters or bypass diodes, will be classified under HS Code 8541, which is the classification for photovoltaic cells made up into modules not for power generation.

This change is further heightened in view of the existing 20 per cent duty imposed on deep-cycle batteries, which already makes solar energy installation expensive. The new duty may hinder the importation of solar components and also lead to a commensurate increase in the cost of projects and stand-alone solutions, which in turn could have a devastating effect on Nigeria’s solar market, currently valued at 18 billion naira.

**NEMSA certification for bidding for power projects**

The NEMSA Act provides that no person shall be allowed to undertake electrical installation work on any premises unless that person is duly certified by NEMSA. To this effect, NEMSA issues certifications for contractors looking to engage in the business of electrical installations.

The NEMSA certificate is fast becoming one of the compulsory tender documents for contractors looking to bid for power projects in Nigeria. All projects envisaged by the REA in line with its mandate under the EPSRA require contractors to provide, among other documents, evidence of registration with NEMSA as a licensed contractor in the power sector.

### iii Recent trends and market activity

In December 2017, the US African Development Foundation and All On announced the creation of a 15 million-naira partnership with the goal of expanding access to energy for underserved and unserved markets in Nigeria. In line with the trend of expanding energy access, MTN Lumos, in a bid to build on the success of its operations in the Nigeria energy market, is in the process of raising addition capital to the extent of US$200 million.

In the first quarter of 2018, Rensource, a renewable energy provider, has been able to raise US$3.5 million through a round of investments led by Mauritius-based Amaya Capital Partners, with participation from Omidyar Network and Pule Taukobong’s CRE Venture Capital. This also comes on the back of a US$30 million investment by African Infrastructure Managers in Starsight Power Utility Ltd, a Nigeria-based energy services company with clients in the financial services and energy sectors.

## III THE POLICY AND REGULATORY FRAMEWORK

### i The policy background

**Impact of government policy on renewable energy development**

While the policy direction of the government towards the diversification of Nigeria’s energy mix has been largely progressive, the administrative challenges have stifled these efforts, particularly with respect to the cost of importing components and equipment required to develop renewable energy projects. With the current duty and VAT payable on solar

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7 Nigerian Customs Common External Tariff Code 541.4010.00.
equipment (10 per cent) and the additional 20 per cent payable on deep-cycle batteries required for energy storage, growth in the renewable energy sector currently valued at over US$50 million is significantly impeded as most of the projects are not bankable.

**Support for renewable energy technological development**

The government through its agencies and parastatals has put in place several initiatives aimed at supporting the indigenous development of renewable energy technology. A large part of these programmes is aimed at supporting research and development in the area of renewable energy solutions.

The Ministry of Science and Technology, through the RCET, supports research and development activities leading to the local production of solar panels, wind turbines and balancing systems (converters, inverters, controllers and chargers, etc.).

The ECN, in line with its mandate to promote the development of energy resources and renewable energy, has established a number of centres across federal institutions in Nigeria, one of which is the Sokoto Energy Research Centre, at Usmanu Danfodiyo University, Sokoto. Since its inception, the Sokoto Centre alone has been involved in over 60 pilot projects that cut across the various aspect of renewable energy technology. Other centres established in universities across Nigeria include the National Centre for Energy Research and Development, University of Nigeria, Nsukka, and the National Centre for Energy Efficiency and Conservation at the University of Lagos.

In addition to the above, the National Agency for Science and Engineering Infrastructure (NASENI), established in 1992 by the federal government, runs a 5MW solar panel manufacturing plant at Karshi, Abuja, for the production of solar panels and modules for Nigerians. In collaboration with the government, NASENI is pioneering the manufacture of solar plant modules and small hydropower turbines in the northern part of Nigeria; it is anticipated that these will be installed in each of the country’s six geopolitical zones.

**Incentives**

The NREEEP provides incentives centred around renewable energy, some of which include: (1) customs duty exemptions for two years on the importation of equipment and materials used in renewable energy projects, (2) five-year tax holidays for manufacturers from date of commencement of manufacturing, (3) five-year tax holidays on dividend incomes from investments in domestic renewable energy sources, (4) provision of soft loans and special low-interest loans from the power sector development fund for renewable energy supply, and (5) grants to communities to encourage renewable energy projects.

The NERC REFIT Regulations aim at generating a minimum of 2,000MW of electricity from renewable energy by the year 2020. The power generated is accorded priority access to the grid at a guaranteed price through mandatory renewable power purchase obligations on power distribution companies (Discos) and NBET. The Regulations, however, are limited to projects with a capacity of between 1MW and 30MW, and solar projects with a capacity of 5MW and below; off-grid renewable projects do not fall within the ambit of the Regulation.

There are currently no tax credits for renewable energy as the Nigerian market has yet to develop sufficiently to accommodate such initiatives; however, there are plans by the federal government, under the NREEEP, to introduce tax credits for producers of renewable energy appliances and fixtures.
Incentives for solar energy resources

The policies and incentives discussed above are largely applicable to all sources of renewable energy. However, manufacturers of solar energy-powered equipment and gadgets enjoy tax exemption (pioneer status) for an initial period of three years, which is extendable for one or two additional years. This incentive is not available to other renewable energy sources.

ii The regulatory framework

Renewable energy sector regulators and key counterparties

Nigerian Electricity Reform Commission

NERC is responsible for granting all licences and approvals with respect to the entire electricity value chain (generation, distribution, transmission, trading, system operations, metering, etc.).

Transmission Company of Nigeria

The Transmission Company of Nigeria (TCN) is one of the entities created following the unbundling of the power sector. The TCN is currently the only entity licensed for transmission of electricity and consists of the market operator, the system operator and the transmission service provider. Given the TCN’s monopolistic status, on-grid renewable projects require collaboration and contractual arrangements with the TCN. The market operator is also responsible for the administration of the market rules applicable to projects supplying power via the transmission network.

Nigerian Bulk Electricity Trader

Nigerian Bulk Electricity Trader (NBET) is currently the sole holder of a trading licence in Nigeria. NBET enters into bulk PPAs with generation companies and independent power producers (IPPs) for the bulk purchase of power, which is then resold to the relevant Discos in Nigeria under a vesting contract.

Standards Organisation of Nigeria

The Standards Organisation of Nigeria (SON) is responsible for setting the standards of all products and equipment in or brought into Nigeria. SON through its electrical and electronics group certifies products that are imported or manufactured in Nigeria and ensures that all products and equipment are of the correct quality and standards.

Nigerian Electricity Management Services Agency

The Nigerian Electricity Management Services Agency (NEMSA) has responsibility for ensuring the enforcement of technical standards in the power sector and conducting inspections of electricity projects. NEMSA collaborates with SON and other governmental agencies to ensure that all major electrical materials are of the correct quality and standard.

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8 NIPC Pioneer Status Incentives August 2017.
Nigerian Customs Service

The Nigerian Customs Service (NCS) is responsible for implementing and collecting import and excise duties for products and equipment imported into Nigeria. The import duty and VAT currently imposed on the importation of solar equipment and its components is paid to the NCS.

National Environmental Standards and Regulations Enforcement Agency

NESREA is responsible for the protection and development of the environment, biodiversity conservation and sustainable development of Nigeria’s natural resources in general, and for environmental technology in relation to environmental standards, regulations, rules, laws, policies and guidelines.

Environmental concerns

Energy project developers in Nigeria must comply with the provisions of the Environmental Impact Assessment Act. While Nigeria has an Endangered Species Act, there are no specific provisions with respect to the development of renewable energy projects; this Act, however, generally seeks to safeguard the conservation and management of Nigeria’s wildlife, and ensure the protection of species in danger of extinction as a result of over-exploitation, as required under certain international treaties to which Nigeria is a signatory.

Green attributes or renewable energy credits and renewable energy tracking

Nigeria’s renewable energy market is still largely new and not sophisticated enough to ascribe special values to electricity from renewable energy in terms of green attributes or renewable energy credits. However, it is important to note that NREEEP proposes a power production tax credit (PPTC).

The PPTC seeks to incentivise individuals who generate electricity from renewable energy with tax credits. While this has not yet been implemented in Nigeria, it is a step in the right direction towards improving Nigeria’s energy mix, as well as placing value on electricity generated from renewable energy. It is expected that the implementation of the policy and the PPTC will encourage private investment in the industry.

Furthermore, renewable energy power projects in Nigeria are largely off-grid, as the market has not yet developed to the point where several developers can feed power generated from renewable energy sources into the grid. While the government in recent times has shown a keen interest in ramping up renewable energy development in Nigeria, there is no mechanism in place to effectively track such development across the country. However, it is envisaged that the energy database currently being developed by the REA will provide data on renewable energy projects across Nigeria.

Regulatory approvals and timelines

Building and construction permits are issued by the applicable state governments, and timelines for these vary from state to state. The following federal authorities issue regulatory approvals according to the stated timelines:
NERC

a  Generation licence: six months from acknowledgement of the application;\(^9\)
b  mini-grid permit: 30 days from the date of receipt of a completed application;\(^10\) and
c  captive generation permit: three months from acknowledgement of the application;\(^11\)

FMoE

ESIA certificate: between six months and one year.

NEMSA

NEMSA certificate: one month.

IV  RENEWABLE ENERGY PROJECT DEVELOPMENT

i  Project finance transaction structures

The privatisation of Nigeria’s power sector and the acquisition of power assets worth US$3.3 billion was largely funded by local banks through corporate finance structures with guarantees required from the sponsors’ existing businesses. However, Nigeria has yet to record a project financed renewable energy project. To date, the 459MW gas-fired Azura-Edo project remains the first and only successful project financed greenfield power project in Nigeria.

Principal documentation for renewables project finance

Bankability under project finance is largely dependent on proper risk allocation as provided in the suite of agreements to be executed at each stage by the project stakeholders. A broad overview of the agreements and project documents negotiated and executed under the Azura-Edo deal, and the counterparties concerned, is provided below.

Property and land documents

Under the Azura-Edo project, the following property documents were executed between the Edo state government and Azura Power in conjunction with the relevant host communities: Certificate of Occupancy (C of O), Deed of Assignment or Deed of Lease.

Power purchase agreement

A PPA was concluded between NBET and the Azura-Edo IPP.

Finance documents

Some of the finance documents executed under the Azura-Edo project include: security documents such as an account charge agreement; intercreditor agreements; hedging

\(^9\) Section 12(b) of the NERC Application for Licence (Generation, Transmission, System Operations, Distribution and Trading) Regulations 2010. Note, however, that in practice this may take up to 12 months.

\(^10\) Section 10(2) of the NERC Mini-Grid Regulation.

\(^11\) Section 7(b) of the NERC (Permits for Captive Power Generation) Regulations 2008.
agreements; subordination agreement; accounts agreements; DFI loan agreements; local bank
loan agreements; common terms agreement; claims cooperation agreement; and mezzanine
loan agreement.

**Credit enhancement facilities**

A standby letter of credit (LC) was provided by NBET backed by a series of World Bank
PRGs provided by the International Bank for Reconstruction and Development (IBRD).

IBRD also provided political risk insurance cover, which was also contemplated under
the insurance cover provided by the Multilateral Investment Guarantee Agency (MIGA).

Other credit documents and agreements executed under the Azura-Edo deal include:

- A project agreement (debt mobilisation) between IBRD and the Azura-Edo IPP;
- A PRG (debt mobilisation) between IBRD and the lender’s agent (Standard Chartered);
- An indemnity agreement between IBRD and the federal government;
- A project agreement (letter of credit) between IBRD and Azura-Edo;
- A reimbursement and credit agreement between JP Morgan (LC issuing bank) and NBET;
- A MIGA host country approval between the federal government and MIGA; and
- A NBET cooperation agreement between IBRD and NBET.

**Operations and maintenance agreement**

An operations and maintenance (O&M) agreement was concluded with the O&M contractor.

**Engineering, procurement and construction contract**

An engineering, procurement and construction (EPC) agreement was concluded with the
EPC contractor.

**Original Equipment Manufacturer Agreement (OEM)**

An original equipment manufacturer (OEM) agreement was concluded with the manufacturer.

**Put–call option agreement**

The PCOA sets out the terms and conditions by which the investor may sell its interest or
shares in the project company to the federal government in the event of a government or
investor default under the PPA with NBET. In the Azura-Edo deal, the PCOA was entered
into between the federal government, NBET and the Azura-Edo IPP.

**Direct agreements**

Direct agreements give the lenders the right to step into the shoes of the sponsors where
there has been a default. It allows the lenders an opportunity to cure any defect that might
occur as a result of an action or inaction of the project sponsors. This will typically include:
a PPA direct agreement; an O&M direct agreement; an EPC direct agreement; and a PCOA
direct agreement.

**Tenor of renewable energy projects**

There is currently no industry standard for the term of a debt for renewable energy projects
in Nigeria, particularly as there is no recorded project-financed renewable energy project.
Commercial bank loans are typically short-term loans of three to seven years, except in the
case where credit enhancements have been provided to give comfort to the banks, as was
the case in the Azura-Edo deal. The Azura-Edo deal was financed with loans from a range of DFIs, local banks and multilateral agencies. In contrast to commercial bank loans, DFIs typically provide long-term financing for a period of 15 to 20 years.

**Principal participants in project finance transactions**

Within the Nigerian context and using the Azura-Edo project as a benchmark, the participants in a traditional project finance structure will include the following:

- **a** the project sponsor, who typically would be the initial promoter of the project and could be an individual, a company, state or a combination of these;
- **b** co-sponsors, who will typically include bigger project development companies with deeper pockets, more technical experience and access to financing who would join the project at certain stages of the project (depending on their risk appetite); for example, the Azura-Edo project had a total of five sponsors;
- **c** the lenders, who, in a syndicated lending, would include lead arranger, security trustee and facility agent;
- **d** DFIs and export credit agencies;
- **e** guarantors (e.g., MIGA, World Bank);
- **f** advisers, including technical advisers, legal advisers, financial advisers, tax and audit and environmental impact advisers;
- **g** the state or federal government, as applicable;
- **h** the TCN;
- **i** contractors (EPC, OEM and O&M);
- **j** offtakers (NBET in this instance); and
- **k** insurance companies.

**Institutions involved in the financing and offtake of renewable energy projects**

**Financiers**

**Commercial banks**

The commercial banks involved in the Azura-Edo project include Standard Chartered Bank, Siemens Bank, Stanbic IBTC Bank, Rand Merchant Bank and First City Monument Bank. However, we have noted that the commercial banks are hesitant about funding renewable energy projects and we have yet to see any funding structure involving a commercial bank for such projects. We are also aware that some projects may utilise Islamic finance models in their financing structure.

**DFIs**

The DFIs used in the financing of the Azura-Edo project include International Finance Corporation (IFC), FMO, Infrastructure Crisis Facility – Debt Pool, and CDC Group. It is important to note that the IFC and FMO are currently involved with a few of the 14 solar project developers.

**Offtakers**

Several institutions purchase and use renewable energy, mostly as an alternative source of power. For the supply of power on-grid, the offtaker is NBET. As Nigeria’s renewable energy market has yet to be fully developed to accommodate the injection of power from distributed renewable energy sources, most projects that adopt renewable energy operate hybrid systems
with power from renewable energy sources serving as backup to grid or diesel generators. This is typically the case with respect to commercial banks that use solar to power ATMs, or petrol stations that use solar to power their dispensers. Furthermore, residential offtakers, as well as SMEs in the service industries, including small health solution centres, tailors and salons, make up a high percentage of the offtakers that utilise solar energy in Nigeria. In Nigeria, unlike in other countries, there is no market for renewable energy credits.

**Distributed and residential renewable energy**

Distributed renewable energy generation is the most common method of renewable energy deployment in Nigeria, with solar energy being the most prevalent source of renewable energy utilised. The distributed renewable energy providers in Nigeria offer various options for power supply, which entail different ownership structures:

- **a** Outright purchase: energy consumers may acquire the solar energy equipment by outright purchase and install it on their sites for their use. In this case, the electricity consumer takes full ownership of the equipment.
- **b** Lease to own: renewable energy providers also offer lease-to-own schemes that allow the electricity consumer to pay for the equipment over a period while continuing to use it. Ownership remains with the renewable energy provider until payment is complete and it then passes to the electricity consumer.
- **c** Subscription (power as a service): in this arrangement, the solar equipment is installed on the electricity consumer’s site; however, there is no transfer of ownership. Instead, the consumer merely pays a subscription fee to use the equipment. Ownership remains with the energy provider.

The current trend in the Nigerian market is for small-scale solar systems that can be used to either supplement grid power or generators. Companies such as Arnergy Solar and MTN Lumos are prominent players in this space. New entrants to the market such as Rensource, who provide subscription-based power from solar, are expected to help grow Nigeria’s renewable energy market by providing highly competitive prices and flexible power solutions that can be tailor-made to meet the needs of both businesses and residential offtakers.

**Non-project finance development**

Apart from project financing models, other non-project finance structures have been explored for developing renewable energy projects globally. One such structure is crowdfunding, which has helped support a number of projects in Africa, some of which are in Nigeria. While crowdfunding is currently not permitted in Nigeria, developers have been able to take advantage of foreign crowdfunding platforms to finance local projects. A good example of these platforms is Bettervest GBMH, a German company that has publicly expressed interest in the financing of renewable energy projects. Through Bettervest, SOSAI Renewable Energies Company, an indigenous company, has been able to raise almost €450,000 in three investment rounds from over 800 investors around the world.

Investment funds have in recent times been explored to finance renewable projects in Nigeria. CrossBoundary Energy, Africa’s first dedicated fund for commercial and industrial solar, falls within this category. Renewable energy developers have also benefitted from grants provided by DFIs in Nigeria, such as the Bank of Industry, and international DFIs such as the UK DFID.
V RENEWABLE ENERGY MANUFACTURING

While the government has established a number of manufacturing facilities, there are currently no solar panels being manufactured in Nigeria. Currently, most local companies are primarily involved in the assembly of renewable energy equipment, particularly solar panels and other solar energy components and systems. However, through the combined efforts of the RCET under the Ministry of Science and Technology, the ECN through the various research centres spread across the country, and entities such as NASENI, Nigeria is considered to be poised to commence indigenous manufacturing in the very near future.

The federal government, in a bid to encourage local manufacturing and participation within the renewable energy space, introduced several incentives in the NREEEP. The incentives include but are not limited to:

- individuals engaged in the manufacturing of batteries and accumulators are granted a five-year tax holiday, renewable for a period of two years and;
- individuals engaged in the manufacturing of transformers, meters, control panels and other electricity-related equipment are granted a five-year tax holiday, renewable for a period of two years.

While these incentives are aimed at encouraging manufacturing of renewable energy equipment, there are no tariffs with respect to renewable energy equipment.

VI CONCLUSIONS AND OUTLOOK

There are currently up to 14.2 million households and four million SMEs without access to electricity, which translates as over 33 per cent of the population being off-grid. Of the 73 per cent connected to the grid, 43 per cent to 45 per cent receive electricity for less than four hours a day, which means that there is great reliance on self-generation using generators. With the United Nations projecting Nigeria's population to exceed 300 million by 2050, thereby overtaking the United States as the third most populous nation in the world, it is crucial that the current supply outlook is addressed urgently, to match the growing population and its electricity needs.

The federal government, under the NREEEP, plans to ramp up the percentage contribution of solar energy to the energy mix to a minimum of 3 per cent by 2020 and 6 per cent by 2030. Furthermore, once commercial issues are resolved, the prospect of 14 solar PPAs becoming operational, combined with the innovative efforts of the REA to harness renewable power through its special EEI and EEP projects, suggests that Nigeria's renewable energy future is looking bright.

In addition to the above, the rapid growth of stand-alone solar solutions in recent years is also a testament to the opportunities that lie in the energy sector, with more solar companies focusing on providing small-scale solutions to meet everyday household and commercial needs. However, it is important to address the challenges in financing on-grid, off-grid and distributed energy projects in Nigeria, to make attracting investment in such projects more viable.
To move Nigeria's renewable energy sector forward, the government will have to focus on ensuring that the relevant policies to encourage development of renewable energy projects (including manufacturing components locally) are codified and duly enforced by the various regulators and stakeholders. Also, the government must address both the administrative bottlenecks (which often cause delays and stifle investment) and the liquidity issues in the sector by harmonising processes, technical codes and standards to enable capacity development in the sector.
Chapter 12

RUSSIA

Thomas Heidemann and Anastasia Makarova

I INTRODUCTION

After years of being considered an ‘oil-and-gas country’, Russia now has an expanding renewable energy sector following a recent spate of foreign investment, and the installation and construction of several renewable energy projects.

The Soviet Union had a track record of developing renewable energy projects, especially large hydropower projects but also wind energy projects. Nevertheless, since 1970, low oil prices led to the complete abandonment of this sector, which was then neglected by Russian politics.

This situation changed only with the adoption of a national strategy for the development of renewable energy in 2009, such strategy becoming necessary after Russia joined the Paris Climate Agreement and had to meet the obligations in the Agreement to reduce its CO₂ emissions.

As regulatory incentives were poor, the sector only started to develop after a serious shift in stimulation measures for the production of renewable energy in 2013 through the introduction of a capacity-based stimulation system.

II THE YEAR IN REVIEW

2017 saw the largest renewable energy capacity auctions and assignments under the new regulations of Decree 449 dated 28 May 2013 ‘On the mechanism for the promotion of renewable energy on the wholesale electricity and capacity market’ (Decree 449).

As a result of tenders carried out in the wind power industry, wind farms with an aggregated capacity of more than 1,650MW will be constructed in Russia in the coming years. More than eight regions of Russia, including the northern territories such as the Murmanskaya region, will be involved in the implementation of the projects.

PAO Enel Russia, the key Russian company of Enel Group, won the tender for the construction of two wind parks with an aggregated capacity of 291MW. The total investments into the project are estimated at approximately €405 million. One wind park, with 90MW aggregated capacity, will be put into operation in 2020 in the Rostov region. Another wind

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1 Thomas Heidemann is a partner and Anastasia Makarova is a senior associate at CMS Russia.
2 http://gorodn.ru/razdel/novosti_kompaniy/investproekty/18473/.
park, with 201MW aggregated capacity, will commence production in the Murmansk region by 2021. It has been announced that the technological partner of the Murmansk project will be Siemens Gameza, a joint venture by German Siemens and Spanish Gameza.3

AO VetroOGK, a structure controlled by the State Atomic Energy Corporation (Rosatom), was awarded projects with an aggregated capacity of approximately 360MW.4 The wind power plants will be constructed between 2020 and 2022 in Adygea, Krasnodar Krai and other Russian regions. The company has stated that its total investments into the wind projects in Russia may exceed US$1,300 million. The technology for the project will be provided by Dutch Lagerwey.5

OOO Fortum Energy, a joint venture of Fortum and Rusnano, won tenders for the construction of wind parks with an aggregated capacity of approximately 1,000MW.6 The power generation facilities will be put into operation between 2018 and 2022. The two companies have announced their intention to invest approximately €400 million into the wind farm construction projects, which will be constructed in Ulyanovsk, Rostov, Krasnodar Krai and other Russian regions. Danish giant Vestas,7 one of the world’s largest producers of wind turbines, will supply the turbines and components for the projects.

The above shows that legislative changes have succeeded in increasing the attractiveness of the sector for investors. 2018 auctions are currently under way8 and are also expected to be successful.

It appears that a standard structure for renewable energy projects has emerged from recent and current auctions consisting of the creation of joint structures where Russian state entities team up with foreign strategic investors in the renewable energy sector. Combined with localisation requirements stipulated by law, the new regulations have also initiated the creation of local high technology production facilities in Russia.

III POLICY AND REGULATORY FRAMEWORK

i The policy background

In January 2009, the government approved the state policy on energy efficiency improvement (Policy)9. When adopted, the Policy covered the period until 2020 and provided key directions for the development of renewable energy projects in Russia. Later, the Policy was significantly amended. Through these amendments, the government set out the current legal framework based on the state-supported capacity supply system, and extended the effect of the Policy to cover the period until 2024.

In November 2009, the government approved the Russian energy strategy for the period until 2030 (Strategy).10 The Strategy aimed to announce a number of measures to ensure the efficient use of natural energy resources, and to set out key principles of government support

5 https://rawi.ru/ru/novavind-lokalizuet-veter/.
7 http://renewnews.ru/vestas/.
to various energy sectors. In particular, the government announced certain efforts to create an environment that allows the development of renewable energy sources and their increased share in the Russian energy sector.

Through these two documents, the government laid a foundation for the further development of the renewable energy sector in Russia, determined its main directions and created a legal framework for further projects. Both documents became a legislative basis for the adoption of more specific regulations, which created the current legal regime for all activities within the sector.

The Policy, as a key source of basic principles, provided the main targets to be reached in the sector. The initial version of the Policy specified that renewable energy in the Russian energy sector should have reached 2.5 per cent by 2020. Amendments introduced in 2015 changed this target: according to the current version of the Policy, Russia aims to procure a 4.5 per cent share of renewable energy by 2024. The Ministry of Energy was empowered to allocate the targeted capacity among various renewable energy sources, being initially wind, solar (photovoltaic) and moderate-sized hydro sources. Since 2017, it also covers renewable energy facilities functioning on the basis of burning waste for energy. This is a new direction for the development of renewable energy projects. The government has determined the Russian regions where waste-burning plants will first be constructed: Moscow and the Moscow region (approximately 280MW) and the Republic of Tatarstan (55MW).

Russia’s energy policy emphasises the importance of local production development in the renewable energy sector. Russia has been trying since 2012 to replace imports, particularly of technologically complex products, with locally produced products. The government encourages potential investors to run production of high-tech components for power-generating facilities in Russia to develop competitive local technologies and production in the country. A more detailed description of localisation rules is set forth in Section IV.

ii The regulatory framework
Legal framework and existing regulations

Russian lawmakers began focusing on renewable energy as early as 2007 with the passage of an amendment to the Law on Electricity that attempted to connect renewable energy sources into Russia’s electricity generation system. Despite this attempt, a renewable energy programme was not successfully implemented until 2011, when further changes to the Law on Electricity created an incentive scheme for investment in this sector. These changes led to the passage of Decree 449 two years later and the renewable energy developments Russia is seeing today. The basis for the current expansion of Russian renewable energy was the passage in 2013 of Decree 449.

Initially, the government proposed to motivate renewable energy market participants through premium payments. In 2007, amendments to the Federal Law ‘On Electric Power Industry’ introduced a ‘premium scheme’ as a main promotion mechanism. This scheme envisaged that a certain premium on the equilibrium energy price in the wholesale electricity

11 A moderate-sized hydro is a hydro power plant the aggregate capacity of which is between 5MW and 25MW.
and capacity market was to be paid to the suppliers in renewable energy projects. However, this mechanism did not work in practice because of certain legal and technical issues, and the potential impact on prices for end customers.

Subsequently, in 2013, the premium scheme was replaced by the ‘capacity supply scheme’. The government adopted one of the key regulations establishing the existing state support mechanism for Russian renewable energy projects – Decree No. 449.

The key idea of the capacity supply scheme consists in switching from a ‘premium’ component to a consideration payable to the provider of power generation capacity. Such consideration is calculated on the basis of the beneficial fixed tariff.

Applying beneficial tariffs fixed for 15 years allows market players to receive a guaranteed return on an investment made into the construction and operation of a power facility. Such tariffs take into account the capital expenditure amount, currency fluctuations and other factors, and provide a 12 to 14 per cent profit margin.14 We describe the structure of the beneficial tariffs in more detail below. However, to apply such a tariff, suppliers have to comply with the Russian localisation requirements.

Decree 449 deals with solar, wind, moderate-sized hydro and waste treatment power sources, and thus does not cover the entire field of renewable energy sources. Renewable capacities supplied must be equal to or exceed 5MW. Decree 449 is also restricted to the central tariff zone, and does not apply to ‘non-tariff zones’ and isolated territories.

The main mechanism under Decree 449 for encouraging the use of renewable energy is the conclusion of long-term energy capacity supply agreements with renewable energy source operators. A potential supplier is granted the right to enter into such agreements through a tender procedure conducted by the administrator of the trading system (ATS). Under such an agreement, a supplier will be obliged to create the renewable energy facility within a certain time frame and to supply capacity into the Russian energy system. The supplier will be entitled to receive remuneration for its capacity and for the energy it supplies based on 15-year fixed prices.

In particular, the procedure for concluding an agreement on capacity supply includes the following stages. Capacities are offered to potential suppliers once a year in a tender process organised by the ATS. Potential suppliers are invited to submit their bids according to the conditions provided for in Decree 449. Together with a technical description of the project, the bid shall specify the degree of localisation of the renewable energy facility as well as financial guarantees for the potential supplier’s obligations. After the bids are submitted, the ATS will select the tender winners and conclude agreements on energy capacity supply with them.

The main obligation of a potential supplier under the agreement is creating a renewable energy facility within the agreed-upon parameters of capacity, localisation levels and timings. Agreements will always contain provisions on substantial penalties for delays in capacity supply.

Another central element of any agreement will be the localisation requirements. Decree 449 requires establishing detailed lists of localisation percentages for the different elements of renewable energy facilities. In addition, reaching the agreed-upon level of localisation plays an essential role in determining the price for the supplied capacity. If this level is not

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14 Currently an investor may expect a 12 per cent profit margin; a 14 per cent margin was provided to renewable energy projects whose tenders were carried out in 2013 and 2014.
reached, the price will be significantly lower (35 per cent lower for solar power sources, and 45 per cent for wind, small hydro and waste treatment power sources), which will render the relevant projects economically disadvantageous.

After completing construction of a renewable energy facility, the supplier must apply for the recognition of such source as a qualifying generating facility to be able to supply capacity to the market. The qualification process involves both federal authorities (the Ministry of Industry and Trade of the Russian Federation) and the wholesale market organisation (Market Council).

When the supplier applies to the Ministry of Industry and Trade for determination of a renewable energy facility’s degree of localisation, the Ministry will assign this determination to a special commission. Based on the commission’s resolution, the Ministry will submit a statement to the Market Council, which will in turn allocate the renewable energy facility to one of three categories of localisation level: less than 50 per cent, between 50 and 70 per cent, or above 70 per cent. The corresponding price will be based on the Market Council’s qualification.

In addition to incentives provided by Decree 449, the supplier is also entitled to apply for subsidies from the Russian federal budget, provided that it meets certain criteria. Such subsidies could include reimbursement of costs for the technological connection of the generating facility to the electrical power networks.

Institutional framework, and the regulators and their respective powers

The Russian electricity market is a two-level (wholesale and retail) electricity and capacity market. The retail market involves an end-consumers element, while the wholesale market mostly consists of generation companies, retail companies and large consumers.

The wholesale market commodities are electricity and capacity. Acquisition of capacity by an acquirer means that it has a right to demand from the supplier that electricity of a defined quality be generated by his or her generating equipment. Thus, the sale of capacity is in fact an arrangement for the provision of certain volumes of electric power in the future.

Provision of capacity generated through renewable energy sources is one of the mechanisms used in the wholesale capacity market. As already mentioned above, this mechanism is structured through the capacity supply agreements entered into as a result of the tenders for the selection of investment projects in the respective areas.

Such tenders are conducted four years in advance for each type of the generating facilities operating on the basis of different types of renewable energy sources: solar (photovoltaic), wind and water (moderate-sized hydro) energy. Since 2017, a similar procedure applies to waste-burning energy sources.

A first step to enter the market for the potential participant would be to adhere the Rules of Wholesale Electricity and Capacity Market Operation established by Decree No. 1172. Adherence is effected by way of entering into a wholesale electricity and capacity market accession contract and acquiring membership in the non-commercial association, NP Market Council. A mandatory form of accession contract is approved by law, and cannot be renegotiated or amended by the market participants. Once the accession contract is entered into, the market participant is deemed to be involved in the wholesale capacity market.

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The following key entities regulate commercial activities within the market:

- a general regulator: a non-profit partnership association, the Market Council;
- a commercial operator of the wholesale market: the ATS, already mentioned above; and
- a settlement operator: the JSC Centre of Financial Settlements (CFS).

The Market Council:
- maintains the register of wholesale market participants;
- prepares wholesale market regulations and the standard form wholesale market contracts (including amendments to them);
- provides certain supporting services to market participants; and
- acts as a compliance controlling body and pre-court arbitrator in certain cases.

The Market Council also performs some authorities related to using the renewable energy facilities.

The ATS is primarily responsible for conducting state tenders and entering into contracts with wholesale market participants.

The CFS provides settlement services to all market participants and ensures the effective operation of the complex settlement system in the wholesale capacity market.

The activities of all three entities are regulated and controlled by the government.

**Typical project steps, regulatory approvals and time frames**

Based on what has been discussed above, the typical project steps for potential market participants would be as follows:

- entering into an accession contract and acquiring membership in the Market Council. A Russian legal entity will be required to be established for this purpose;
- participating in a tender. The tender procedure, with its specific formal requirements, will certainly be a challenge. Among others, the drafting of a precise bid corresponding to the technical requirements is one of the major tasks;
- in the event of winning the tender, a market participant will automatically become a party to the capacity supply agreement entered into with each of the buyers acting on the wholesale capacity market (currently 240-plus buyers). The form of the agreement is approved by law and cannot be renegotiated by the winner. If the form is amended by the government (which usually occurs several times a year), the amended agreement becomes automatically binding on all market participants;
- building a power generating facility with the technical and production characteristics described in the tender bid and capacity supply agreement;
- going through the qualification procedure and receiving a qualification certificate in respect of the power generating facility from the Ministry of Industry and Trade; and
- putting the power generating facility into operation by the date specified in the respective capacity supply agreements.

Particular time frames for projects are determined by the deadline indicated in the respective capacity supply agreements. In practice, the deadline is usually from one-and-a-half to four years from the date of the tender. If the deadline is missed, significant penalties will apply to the supplier. These penalties will automatically be discharged from the supplier's account,
which is opened in the settlement system by the CFS. Subject to the provision by the supplier of additional financial security, the deadline can be postponed, but for not more than two years overall.

**Recent renewable energy project developments**

As can be seen from the above, there will be no classical project development in the Russian wholesale capacity market, as the activities thereon are strictly regulated by Russian law.

Usually, projects are financed by foreign investors in the beginning. However, Russian market players, being huge and reliable companies, also participate in the financing of projects. After a tender, the initial investors make efforts to attract borrowed financing: for example, it has been announced that Gazprombank will finance the construction of the wind parks by the Rosatom corporation, and that the amount of investment will be approximately 64 billion roubles.\(^{16}\)

Potential capacity suppliers do not go alone into project tenders. The companies combine their efforts and create consortiums that involve global Russian players, foreign investors and local players responsible for issues that may arise in-land. Such structuring allows the creation of a strong team that can effectively resolve arising issues.

### IV RENEWABLE ENERGY MANUFACTURING

**i Localisation requirements**

Russian industrial policy has been trying since 2012 to replace imported materials with locally manufactured ones. This policy is generally described by such terms as ‘import substitution’ and ‘localisation’. Since the Law on Russian Industrial Policy No. 488-FZ\(^{17}\) took effect in June 2015, the public procurement rules for many types of goods have changed, and a new rule requiring such goods to be made locally in Russia was established.

Russia has chosen a similar path for developing its renewable energy sources: both the distribution of capacity and the level of prices for the supplied capacity depend on the degree of the localisation of the power generating facility, namely:

- **within the tender procedure for selecting investment projects involving the construction of power generating facilities using renewable energy sources (tender), the future operator undertakes to generate power using a generating facility whose construction meets a certain percentage of localisation. This obligation is one of the most important preconditions for winning a tender; and**

- **the power generating facility is subject to certification once its construction is completed. During the certification, the competent authorities verify, *inter alia*, the facility’s compliance with the localisation obligations.**

To be admitted to a tender, operators need to register as wholesale market participants. The minimum amount of supplied capacity by operators who are wholesale market participants is 5MW. Specifically, for operators of hydro energy plants, there is an additional maximum limit of 25MW. The volume of supplied capacity is estimated by each operator before the actual construction of the power generating facility by signing contracts on the design and

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construction of the corresponding facilities. The estimates are also set out in the capacity supply agreements that are signed with tender winners. A failure to honour these agreements will trigger contractual penalties.

Furthermore, when planning to participate in a tender, operators have to consider the requirements in terms of the maximum amount of capital expenditures for the construction of the power generating facility, which is one of the tender’s criteria. This amount depends on the renewable energy resource and the year of participation in the tender. For example, the capital expenditures for the construction of solar plants for projects that are selected in 2018 may not exceed, *inter alia*, 105,262 roubles per KW in 2019 and 103,157 roubles per KW in 2020. For wind plants, the upper limit is, *inter alia*, 109,561 roubles per KW in 2019 and 109,541 roubles per KW in 2020. Finally, the upper limit for small hydro energy plants is 146,000 roubles per KW from 2019 to 2022. Therefore, companies participating in tenders only compete on the basis of the amount of capital expenditure that is needed to develop the facility.

As mentioned above, a certain degree of localisation must be reached to win a tender. Power generating facilities and their components and equipment have to be at least partly manufactured in Russia. Since 2016, 70 per cent of the generating equipment for solar energy plants has to be made in Russia. Wind energy plants have to attain a 55 per cent localisation level in 2018, and from 2019 this should reach 65 per cent. For small hydro energy plants, the localisation degree is 65 per cent. Government Decree No. 426 defines the components and operations that are used for calculating the degree of localisation and its rate. Non-compliance with these requirements means that an operator can no longer participate in a tender. The declared localisation degree is also based on operators’ forecasts, the planned local industrial capacity and their contracts with the suppliers or manufacturers of components and equipment. The localisation requirements are rather high and, at the same time, most components and equipment for power generating facilities are still not manufactured in Russia. Tender winners are, therefore, usually confronted with the need to produce such components and equipment themselves shortly after concluding a capacity supply agreement. If a tender winner fails to comply with the agreed timelines and the declared localisation degree, it may be subject to contractual penalties ranging from 85 to 100 per cent of the contract’s total value.

After the construction of a plant, its certification as a power generating facility that uses renewable energy sources is the final step to set the price for capacity. For the purpose of this certification, the operator first has to file an application for the determination of the degree of localisation with the Ministry of Industry and Trade. After receiving this application, the Ministry passes the application on to the Commission overseeing the Determination of the Degree of Localisation of the Power Generating Facilities Using Renewable Energy Sources. After reviewing the submitted documents, the Commission then makes a decision that is used by the Ministry to determine the localisation degree and to send a copy of its decision to the Market Council. Finally, the Market Council classifies the power generating facility into one of three categories, depending on the degree of localisation: less than 50 per cent, between 50 and 70 per cent, and above 70 per cent. The price for the supplied capacity will be determined, in particular, based on its allocated category.

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18 Decree of the Russian Government No. 426 dated 3 June 2008 ‘On qualification of the generating facilities functioning on the basis of the renewable energy sources’.
When establishing whether a certain component is produced in Russia, the general rules for determining the country of origin of goods (as provided for by the customs legislation) will apply, unless a component is produced within the special investment contract (SPIC) framework. This exception to the general rule is expressly provided for by law.

ii  SPICs

Signing a SPIC has proved to be one of the decisive conditions for meeting the localisation requirements, since it enables any operator who has entered into a SPIC to treat imported components as if they had been produced locally in Russia for the purpose of calculating the localisation degree at the initial stages of the implementation of an investment project.

SPICs were first introduced in the Law on Russian Industrial Policy No. 488-FZ.19 Thanks to Government Decree 708,20 which contains, inter alia, a model for SPICs, SPICs eventually became applicable in practice. SPICs can be entered into either at the federal level or with the participation of regional and local authorities. The investor's main obligation under a SPIC is typically to establish or modernise the production of specific goods, including those that were hitherto not produced in Russia, with certain minimum volumes of investment and production in accordance with the agreed business and production plans, which are to be incorporated into the SPIC. The competent authorities control the due fulfilment of the investor's obligations under the SPIC. In turn, the investor is granted certain incentives, usually in the form of tax reliefs and preferences in public procurement, as well as a special regime for determining the localisation degree. The scope of incentives available under a SPIC is limited to those provided by law. SPICs are entered into for a period that is equal to the time frame required to make the project operationally profitable according to the business plan plus five years, but in any case, this should not be more than 10 years.

V  CONCLUSION AND OUTLOOK

Implementing incentive mechanisms for the use of renewable energy in the Russian legal system has created significant activity in this sector, and renewable energy facilities are constantly under construction. Localisation requirements have brought new production facilities to the country, with suppliers able to produce components for renewable energy locally now being in high demand.

We expect the market to further develop and to encompass segments that are currently outwith the scope of Decree 449, such as energy supply sectors in isolated territories. Russian politics are supporting these developments. Today, Russian renewable energy offers more potential and opportunities than ever before.

It should be noted that according to a statement of the Market Council, as at the beginning of 2018, approximately 78 per cent of the targeted capacity has already been awarded to various market players. The awarded capacity was mostly allocated among wind and solar energy projects: if the proposed capacity is successfully awarded throughout 2018 and 2019, 95 per cent of the targeted capacity will already have been distributed in these two

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20 Decree of the Russian Government No. 708 dated 16 July 2015 'On special investment contracts for certain industrial sectors'.
sectors. The market is still awaiting new regulations regarding the period beyond 2024. At present, there is uncertainty regarding future support for the renewable energy sector after the expiry of the current incentives.
INTRODUCTION

The fundamental driver for renewable energy projects in South Africa remains the Renewable Energy Independent Power Production Procurement Programme (REIPPPP) of the Department of Energy (DoE). Prior to the formal launch of REIPPP in August 2011, the local renewable energy market was fairly inconsequential. A lot has changed since then, with REIPPPP being heralded globally as a shining example of how to successfully implement renewable energy auction programmes. The success achieved by REIPPPP has, however, not been without its challenges. Eskom Holdings SOC Limited (Eskom), the state-owned national utility and sole offtaker of electricity from projects under REIPPPP, has refused to sign any further power purchase agreements (PPAs) with independent power producers. Eskom’s position has not been unexpected, with its historical monopoly on generation in South Africa now being gradually challenged by independent power producers that are able to deliver generating assets largely on time and on budget – key features that have been somewhat lacking in Eskom’s skill set for some time, leading to above-inflation increased costs of electricity to the end users (while the tariff prices under REIPPPP continue to drop dramatically in each procurement round).

Eskom’s open hostility to REIPPPP had a dramatically negative effect on the renewable energy market in South Africa, forcing the programme to an unwelcome halt for more than two years. Positive winds of change appeared to be blowing through during the course of 2017, however, with promises from government and Eskom that the much delayed Round 4 (as well as the final remaining Round 3.5 concentrated solar power (CSP) project) would be signed. In the end, the government and Eskom did not deliver on these promises during 2017. While this was a disappointment to the industry, a rather important political event did take place in December 2017, with a new African National Congress leader emerging in the form of Cyril Ramaphosa. Many believe Ramaphosa will play a key role in helping to unblock the issues with Eskom and the DoE’s energy procurement programmes (including REIPPPP) to ensure that the country’s burgeoning renewables market continues; and the local market is confident that 2018 will be an extremely positive year for renewables in South Africa.

There is a small but growing rooftop solar market in South Africa. The regulatory regime in South Africa does not currently allow for excess energy to be sold back into the grid, as is the case in certain parts of the United States. A change in the regulatory regime allowing for this would most likely stimulate the rooftop solar market and allow it to grow far more quickly than is currently the case. In addition, there are currently no significant
tax incentives or other government-led programmes that mirror those in the United States or the EU that have fostered the growth of renewables to such an extent in those markets. Large-scale retailers are now installing large rooftop solar facilities to reduce their reliance on Eskom as a supplier and what is perceived as ever increasing above-inflation tariff costs. Furthermore, reflecting international market trends, a number of international corporate entities are looking at renewable off-grid solutions. We expect this off-grid market to continue to grow, which presents a challenge for Eskom as its customer base continues to shrink.

II THE YEAR IN REVIEW

The year 2017 brought with it significant uncertainty in respect of transformation in the South African energy sector in relation to renewable energy. In February 2017, then President Jacob Zuma announced in his state-of-the nation address that Eskom would sign all outstanding power purchase agreements from Rounds 3.5 and 4 within the coming months. However, as a result of Eskom’s continuous delaying tactics, 27 contracts totalling US$4.7 billion and covering 2.3GW of renewable energy projects were only signed in the first quarter of 2018 because of an interdict brought by the National Union of Metalworkers of South Africa together with Transform SA.

There has been further uncertainty regarding the 20 small-scale projects (with capacity of between 1MW and 5MW and an aggregate capacity of 100MW) awarded through the bidding process under the Small Projects Independent Power Producers Procurement Programme. It is uncertain when these projects would be able to begin operations, as only 10 of the 20 have licences, while the remaining 10 are under evaluation. It is to be noted that the South African government has decided that independent power producers (IPPs) owning generators that do not exceed 1MW are to be exempt from the obligation to apply for and hold a licence (discussed below).

Although coal-fired generation still dominates the energy sector (with a net output of 35.6GW, representing 85 per cent of the South Africa’s total capacity), by the end of 2017, a total of 3.2GW of renewable energy projects had been constructed and connected to the grid. This has brought total investments in renewable energy under REIPPPP to approximately 195 billion rand.2 Further, South Africa was ranked 10th among G20 countries for renewable energy investment conditions by Allianz Climate and Energy Monitor.

III THE POLICY AND REGULATORY FRAMEWORK

i The policy background

Aside from a fairly recent amendment to the Income Tax Act, addressed below, there are very limited government-led regulatory and tax incentives for renewables. As already noted, the current regulatory regime in South Africa does not allow for excess electricity from renewable sources such as residential or rooftop solar to be sold back to the grid, and a reform to allow for this would stimulate and promote faster growth in the rooftop solar market. The situation is compounded by the absence of significant tax incentives or other government-led programmes to foster development of the renewables market. Nor are there

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any tariff top-up arrangements like those seen in renewable energy programmes elsewhere in Africa, such as the successfully implemented GET FiT programme in Uganda. Although feed-in tariffs were initially proposed in South Africa, these were superseded by the auction process now known as REIPPP, which has proved hugely successful, with each further round being heavily oversubscribed.

As from 1 January 2016, Section 12B of the Income Tax Act (South Africa) No. 58 of 1962 (the Income Tax Act) changed the three-year accelerated depreciation allowance on renewable energy (50 per cent to 30 per cent to 20 per cent) to an even quicker depreciation allowance of one year (100 per cent). This accelerated depreciation allowance came about from a proposal in the 2015 draft Taxation Laws Amendment Bill that the definition of solar energy be amended to distinguish between solar photovoltaic (PV) energy of more than 1MW, solar PV energy of less than 1MW and concentrated solar energy. The amended Section 12B provision now provides for an accelerated capital allowance of 100 per cent in the first year, in respect of solar PV energy of less than 1MW.

The reason for the change is to accelerate and incentivise the development of smaller solar PV energy projects, as these have a low impact on water and the environment. This is also intended to help address the energy shortages facing South Africa in a more environmentally friendly way.

Section 12B of the amended Income Tax Act provides for a capital allowance for movable assets used in the production of renewable energy. More specifically, it allows for a deduction equal to 100 per cent in respect of any plant or machinery brought into use in a year of assessment for the first time and used in a process of manufacture or any other process of a similar nature. Notably, the allowance is only available if the asset is brought into use for the first time by the taxpayer. In other words, the allowance is not limited to new or unused assets. The wording merely prevents the taxpayer from claiming the Section 12B allowance twice on the same asset.

With this incentive, companies can deduct the value of their new solar power system as a depreciation expense from its profits.

While there has been a fairly large allocation for CSP technology under REIPPP, it is widely anticipated that the DoE will not continue with the procurement of this technology, given its much higher costs when compared with photovoltaics and wind. The challenge of intermittency is likely to be solved by the ever increasing introduction of battery solutions; it is unclear, however, on what scale this can be financed in the local marketplace.

The regulatory framework

In South Africa, the regulation of electricity from renewable sources falls under the jurisdiction of the National Energy Regulator (NERSA), one of three energy regulators in South Africa established under the National Energy Regulator Act 2004 (NRA), which regulates electricity, piped gas and petroleum pipeline industries. Eskom’s tariffs are regulated by NERSA under the Electricity Regulation Act 2006 (the Electricity Regulation Act). These tariffs are based on Eskom’s costs plus a reasonable rate of return.

The NRA, together with other key legislation regulating the relevant industries (in the case of electricity, the Electricity Regulation Act) establishes the framework for renewable energy regulation in South Africa. That legislation, together with associated regulations, notices, rules and guidelines, grants expansive regulatory power to the regulators, including the powers to issue, amend and revoke licences, as well as to approve tariffs.
Under the Electricity Regulation Act, a licence is required for each operation (i.e., for electricity generation, transmission and distribution facilities, and in respect of the import, export and trading of electricity – collectively, the Licensed Activities), but it provides exemptions for licences in respect of (1) any generation plant constructed and operated for demonstration purposes; (2) any generation plant constructed and operated for own use; (3) any non-grid-connected electricity supply other than for commercial use; and (4) any other activity relating to the Licensed Activities for which NERSA has determined that a licence is no longer required. In relation to the latter exemption, NERSA may require that persons undertaking the activity concerned nevertheless register it with NERSA.

A person obliged to hold a licence in terms of the Electricity Regulation Act must apply to NERSA for the licence in the form, and applying the procedure, prescribed. The application must be accompanied by the prescribed licence fee. The information required for such an application includes, among other things:

- a description of the applicant, including any vertical and horizontal relationships with other persons engaged in the operation of the relevant Licensed Activity;
- the administrative, financial and technical abilities of the applicant;
- a description of the proposed generation, transmission or distribution facility to be constructed or operated;
- a detailed specification of the services that will be rendered under the licence;
- a general description of the type of customer to be served;
- the proposed tariff and price policies; and
- evidence of compliance with the Integrated Resource Plan (IRP).

The process entails publication of notices of the application in appropriate newspapers or other media and the applicant responding to objections to the application being granted, and it culminates in NERSA making a decision on the application within the prescribed period.

Transfer of control and the assignment of a licence issued in respect of Licensed Activities, including generation licences issued to IPPs, are restricted by conditions imposed on the licensee by NERSA. Accordingly, each licence must be reviewed on a case-by-case basis to determine what specific approvals are required for its transfer. However, the Electricity Regulation Act generally provides that a licensee may not cede or transfer its powers or duties under a licence to any other person without the prior consent of NERSA. The transfer of control and the assignment of licences issued to IPPs are further regulated by the implementation agreement between the South African DoE and the IPP; that agreement provides for, inter alia, government support for the development and financing of relevant IPP projects.

The initial IRP sets out the South African government’s strategy for the establishment of new generation and transmission capacity for the country for the period 2010 to 2030. It calls for the doubling of the country’s electricity capacity from its 2010 level of 238,272GWh, using a diverse mixture of energy sources, mainly coal, gas, nuclear and renewables, and including large-scale hydro to be imported from other countries in the southern African region. The initial IRP further details how this demand should be met in terms of generating capacity, type, timing and cost. The initial IRP also serves as an input to other government

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3 Section 10(2)(a)–(h) of the Electricity Regulation Act 2006.
4 Section 15(1)(k) of the Electricity Regulation Act 2006.
planning functions, _inter alia_, economic development, funding, environmental and social policy formulation. It is also a process by which the requirement for further investment in electricity generation capacity for South Africa is determined.

At the time that the IRP was initially promulgated, the South African government advised that the IRP should be viewed as a ‘living plan’ that would be revised by the DoE every two years to ensure its relevance with regard to (among other things) technological and environmental developments in the global arena. An update to the IRP was provided for public comment in November 2013; however, this document was subsequently gazetted and remains of no binding relevance. On 2 November 2016, the Minister of Energy released drafts of an updated Integrated Energy Plan (IEP) and an IRP on 22 November 2016. The IEP serves as the government’s master plan for the entire energy system, with its focus on the broader objective of reducing the country’s energy footprint overall. The IEP regulates energy industries and promotes electric power investment, greater employer benefits and a more favourable environmental impact. The IRP on the other hand, being subordinate to the IEP, focuses specifically on electricity.

The updated IRP has received attention because the South African government, and Eskom, have promoted the importance of nuclear power within the overall electricity provision forecasts to 2050. The Minister of Energy extended public consultation to 31 March 2017. This allowed the South African government to make the necessary adjustments and promulgate the updated IRP in 2017, once it had been approved by Cabinet. During the consultation process, major issues were raised, particularly in relation to the base case. Some critics believe that the cost assumptions for solar PV and wind were too high and that if proper costs were reflected there would be no need to construct a nuclear plant up to 2050. On 22 August 2017, South Africa’s Minister of Energy reported to the Portfolio Committee on Energy that the Minister anticipates that the upcoming IRP update and the draft IEP will both be finalised before the end of 2018.

The original IRP has only been updated recently, with NERSA holding public hearings as part of a consultation process designed to finalise new rules for small-scale solar PV generators to facilitate the supply of electricity from their households into the grid. The regulator has released a consultation paper titled ‘Small-Scale Embedded Generation: Regulator Rules’ to pave the way for public consultations with the aim of NERSA publishing the new regulatory framework by the end of May 2018. NERSA has published for comment proposed market rules for individuals and organisations who typically generate electricity from their own solar installations. This publication follows a notice published by the DoE in November 2017 that provided for exemption of small-scale embedded generators from the obligation to obtain a licence from NERSA to generate electricity. The rules for registration of small-scale embedded generation published by NERSA provide that every form of home electricity generation – including solar PV panels and backup generators – will have to be registered with the government. Given the current absence of a legal framework for grid-tied rooftop solar, this change is important because it introduces a set regulatory framework that will provide rules for small-scale embedded PV generation.5

The draft rules for registration of small-scale embedded generation leave no room for exceptions in the sense that any form of power generator of any size will have to formally be registered. These rules will apply to both off-grid systems, those with no connection to the

national electricity system, and systems connected to the grid. The significance of this paper, should it be accepted, is that small-scale embedded PV generators will pave the way for the replacement of the current red-tape licensing regime with a registration process that will reduce the regulatory burden on businesses and residential areas seeking to install grid-tied rooftop solar. NERSA further proposes the following considerations: that the current tariff structure be re-evaluated, from fixed network costs to connection and metering costs in the case of import and export credit tariffs, to ensure a balance of revenue for the generator, the distributor and other consumers.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

A large percentage of the project financing activity for renewable energy projects has occurred within the framework of REIPPPP and the Small Projects Independent Power Producers Procurement Programme. While the project finance structure that has been adopted to date follows international norms, there are a number of unique features imposed on sponsors under REIPPPP, including localisation requirements that cover the development of specific categories of people, enterprises and communities or economic sectors. The following broad categories are covered:

a job creation;
b local content;
c ownership;
d management control;
e preferential procurement; and
f enterprise development and socio-economic development.

In terms of documentation, these follow international norms, with financing documentation largely following Loan Market Association precedents. Security packages typically include the following:

a borrower guarantee and share pledge;
b borrower cessions of its rights, title and interests in respect of aspects such as the project documentation, insurance proceeds, claims, licences, permits and authorisations under the transaction;
c general notarial bond, which is a registered security over all the movable assets of the borrower;
d special notarial bond, which is a registered security over specified movable assets of the borrower; and
e mortgage bond, which is a registered security over the borrower’s land rights.

Construction, operation and maintenance agreements also largely follow international norms with engineering, procurement and construction contracts and operation and maintenance (O&M) contracts closely following what one would expect to see in established markets. Internationally accepted standard construction contracts such as a FIDIC Silver Book are common (amended though to tailor for market norms and certain testing and performance complexities relative to each renewable energy technology).

To date, the vast majority of debt has been provided by the large five domestic commercial lenders (Rand Merchant Bank, ABSA, Nedbank, Standard Bank and Investec)
with some participation from development finance institutions and pension funds (DBSA, PIC, IDC, etc). International institutions such as the International Finance Corporation and the Organization of the Petroleum Exporting Countries have also been involved with financing a number of large renewable projects.

Aside from a large number of Enel projects (the Italian national utility) in Round 3 of REIPPPP, almost all projects have been financed on a limited or non-recourse basis.

While debt tenors vary, they are typically around 15 to 17 years (from commercial operation date) and spreads on the Johannesburg Interbank Agreed Rate are between 310 to 400 points (risk premium 250, liquidity 120 and statutory costs 30 points).

### ii Distributed and residential renewable energy

Eskom, in its position as the national utility, is also the primary licensed distributor of electricity in South Africa. As was mentioned above, the current regime does not allow excess electricity to be sold back to the grid from renewable sources as it would be in jurisdictions such as the United States or the EU, and a change in the regulatory regime would stimulate the rooftop solar market and allow it to grow far more quickly. There is also no regulated framework for use-of-system charges for embedded generators (connected to the distribution network). NERSA is, however, in the process of developing a framework for generators.

Generators that wish to wheel energy to third parties face a number of challenges related to the use-of-system charges.

### iii Non-project finance development

The appetite in the market for on-balance sheet, corporate, full equity finance is extremely small. Almost all developers and sponsors of renewable projects in South Africa adopt a project finance structure.

### V RENEWABLE ENERGY MANUFACTURING

The implementation of REIPPPP resulted in a significant portion of the technical equipment being imported from Europe and China. However, the increased local demand has stimulated the desirability and growth of component manufacturing for the renewable energy sector in South Africa. More recently, there has been an increase in the number of wind turbine and solar panel manufacturing plants built in South Africa, and several of these manufacturers have taken full advantage of the benefits offered to entities operating within the specifically demarcated South African Special Economic Zones (SEZs). These specifically demarcated SEZs have been set up to encourage trade and investment that create employment opportunities in South Africa and ultimately benefit the South African economy, and there are SEZs that have positioned themselves for investment in renewable energy power generation and manufacturing plants, such as the East London Industrial Development Zone.

There is a small number of solar and wind turbine equipment manufacturers currently taking advantage of the favourable Special Economic Zone laws. The Coega Industrial Development Zone, which was formed in 1999 and is located 20 kilometres north of Port Elizabeth in the Eastern Cape province of South Africa, has attracted three manufacturers of solar and wind turbine equipment, namely DCD Wind Towers, Electrawinds and Powerway. There are concerns that when these components are exported from these Special Economic Zones into South Africa, the customs and VAT levied on the components will be based on...
the value of the components, including South African raw materials and labour costs. This could result in a higher cost for South African customers as compared with components manufactured wholly offshore and imported directly into South Africa.

The Coega Industrial Development Zone is currently positioning itself to become the solar and wind turbine equipment hub for the Eastern Cape, as there are several renewable energy projects being proposed in the Eastern Cape. The East London Industrial Development Zone is also positioning itself to manufacture and supply electricity from renewable energy sources in the Eastern Cape Industrial Development Zones. This Industrial Development Zone has advertised that it has suitable land for electricity generation from both wind and solar facilities, with established relations with the top 100 users and the local authority for connection of the power plant to the grid and supply of electricity to the nearby Buffalo City metropolitan municipality.

VI CONCLUSIONS AND OUTLOOK

The future looks positive for renewable energy on account of the expectation that South Africa’s new president will be promoting renewable energy to restore investors’ confidence.
Chapter 14

SPAIN

Hermenegildo Altozano

I INTRODUCTION

The political turmoil resulting from the unexpected, and successful, motion of censure (vote of no confidence) on 1 June 2018 – with the ruling conservative Popular Party being replaced by the Socialist Party – is certain to have an impact on a number of legislative measures under discussion affecting the development of renewable energy projects in Spain.

In addition to specific measures relating to the promotion of self-consumption already proposed by the new ruling party (namely the Draft Law on Measures To Enhance Self-Consumption of Electricity) it is expected that the new government will speed up the drafting and approval of the proposed Law on Climate Change and Energy Transition, which is very likely to result in an incentive for renewable energies, to decarbonise energy production to comply with the Paris Agreement and EU targets. The new energy policy is expected to result in the closing of existing carbon power plants.

It is also expected that the new Law on Climate Change and Energy Transition will take into consideration some of the conclusions of the report prepared by the Committee of Experts on Energy Transition appointed by the former Ministry of Energy. Among other relevant measures, the report of the Committee of Experts proposes modifying the current financing of renewable energy projects, by means of a surcharge to be imposed on all sources of energy.

II THE YEAR IN REVIEW

The surprise change of government in Spain has had an immediate impact on the renewables sector.

While the former ruling party had introduced a draft law\(^1\) in the Spanish parliament to prevent the closure of carbon and nuclear power plants with the aim of controlling electricity prices, the new ruling party, together with other political groups, has introduced a draft law to enhance self-consumption of electricity.

These two law proposals are a clear example of the discrepancies between the Popular Party and the Socialist Party in terms of enhancement of renewable energy. As the draft law introduced by the Socialist Party recognises, *inter alia,* ‘this slow development of electric energy self-consumption’ is due principally to the lack of a stable regulatory framework

1 Hermenegildo Altozano is a partner at Bird & Bird. This chapter has been prepared with the assistance of Paloma Belascoain, a senior associate at the firm.

2 Draft law to amend Law 24/2013, of 26 December on the electricity sector, with regard to the authorisation procedure for the closure of electric generation facilities.
and to the existence of a clearly discouraging legal framework, especially the approval of Article 9 of Law 24/2013 on the Electricity Sector and Royal Decree 900/2015, which regulates the administrative, technical and economic conditions of the modalities of supply of electric energy with self-consumption and of production with self-consumption, and which imposes a number of technical, administrative and economic barriers to electric energy self-consumption’. One of the main new measures that the draft law will introduce is the option for various consumers to share self-consumption facilities.

As stated above, it seems likely that the new government will speed up the drafting and approval of the Law on Climate Change and Energy Transition and, following the report by the Committee of Experts on Energy Transition, will seek to reform the financing of renewable energy projects by imposing a surcharge on all sources of energy, comprising the following elements:

a. a first component that will reflect the overrun of the most efficient renewable energy facilities. However, taking into account that the results of the latest auctions indicate that overrun for renewable energy facilities is nil at current market prices, the first component of the surcharge shall be also nil; and

b. a second component, complementing the first, that will reflect the overrun of renewable facilities installed in the past with a higher cost than the actual costs. This component should be financed by the state budget, although if this is not possible, the surcharge may be imposed on all sources of final energy (and thus ultimately paid for by end consumers).

The following points are expected to be the main pillars of the new government’s new energy policy:

a. the closing of carbon power plants;

b. the non-extension of the useful life of nuclear power plants beyond 40 years;

c. the fostering of renewable energy projects. In this context, the revision of the Specific Remuneration incentive for renewable energy plants is expected to be maintained at levels of ‘reasonable return’ similar to those applicable to date, in contrast to the attempt by the Popular Party government to reduce the remuneration for renewable energy plants by about 30 per cent. (See Section III.i for details of the Specific Remuneration incentive scheme.)

Apart from these recently announced developments, the main highlights of the past year in the Spanish renewables sector may be summarised as follows:

a. an increase in the use of the ‘project bond’ mechanism (including green project finance bonds) to finance new renewable energy projects and to refinance existing renewable energy projects;

b. an increase in the number of projects to be financed on a ‘merchant’ basis (rather than on the basis of a feed-in tariff or premium);

b. an increase in the appetite for corporate power purchase agreements (PPAs) to provide certainty regarding monetary flows and to mitigate regulatory uncertainty;

d. an increase in the interest of infrastructure funds in acquiring renewable energy companies or assets in Spain. In this context, the following major transactions are of note:

• disposal by ACS and GIP to Brookfield (through its subsidiary TerraForm) of Saeta Yield (owner of 16 wind farms and five solar thermal plants in Spain);
• disposal by Acciona to ContourGlobal of five solar thermal plants with an aggregate installed capacity of 250MW;
• disposal by Centerbridge to Sonnedix of Vela Energy (a major photovoltaic (PV) solar plant developer and operator with an aggregate installed capacity of over 120MW); and
• as a result of the auctions called by the Spanish government to implement the Specific Remuneration incentive regime for new renewable energy installations, Forestalia, Mirova, General Electric and Engie have announced a joint development agreement for the first 300MW wind farm free of any premiums in Spain. The development shall consist of nine wind farms that follow the first auction of the Specific Remuneration regime. The equity of the project is calculated at €140 million and is shared by Mirova Eurofideme 3 fund (51 per cent), GE Energy Financial Services (25 per cent), Engie (15 per cent) and Forestalia (9 per cent). Debt of €170 million shall be provided as a green project finance loan. Engie shall be the offtaker under a 12-year-term PPA;

coupled with these major transactions, an increasing consolidation of the major players in the renewable energy industry in Spain;

an increase in the interest of oil and gas companies (e.g., Repsol and Cepsa) in the development of renewable energy projects;

the issuing of the report of the Committee of Experts on Energy Transition, which recommends specific measures to ensure compliance by Spain with its obligations under the Paris Agreement on climate change;

the international arbitration awards against the Kingdom of Spain as a result of the systemic change introduced by Royal Decree-Law 9/2013 represent another key landmark. In 2018, three arbitration courts ruled against Spain and in favour of the foreign entities Novenergia, Eiser, Masdar and Antin Infrastructure in relation to renewables incentives; and

the first regulatory period for renewable energy installations receiving the Specific Remuneration incentive will end in December 2019 and, consequently, the parameters for the remuneration structure of renewable energy projects may be subject to revision.

III THE POLICY AND REGULATORY FRAMEWORK

Notwithstanding the changes likely to be pursued by the new government as explained above, the renewable energy sector in Spain is still experiencing the consequences of the changes that followed the radical systemic overhaul of the legal regime represented by the following pieces of legislation:

a Royal Decree-Law 9/2013, of 12 July 2013, adopting urgent measures for guaranteeing the financial stability of the electricity sector (RDL 9/2013);

b Law 24/2013, of 26 December 2013, on the Electricity Sector (Law 24/2013);

c Royal Decree 413/2014, of 6 June 2014, governing the generation of power through renewable energies, generation and waste (RD 413/2014); and

d Ministerial Order IET/1045/2014, of 16 June 2014, establishing the remuneration parameters for installations for the generation of power through renewable energies, cogeneration and waste (Order 1045/2014);
Ministerial Order IET/1459/2014, of 1 August 2014, approving the remuneration parameters and establishing the awarding mechanism of the Specific Remuneration regime for new wind and PV solar installations in the non-peninsular territories of Spain (i.e., Balearic Islands, Canary Islands, Ceuta and Melilla) (Order 1459/2014); and

Royal Decree 900/2015, of 9 October, regulating the administrative, technical and economic conditions of the modalities of supply or electric energy with self-consumption and production with self-consumption (RD 900/2015).

These new regulations, which constitute the regulatory framework for the development of renewable energy projects, mark a significant departure from the legislation that formerly provided the principal legal basis for most of the existing renewable energy capacity in Spain (PV solar, concentrated solar power, wind and biomass principally), namely Law 54/1997 on the Electricity Sector and its implementing regulations, Royal Decree 661/2007, of 25 May, regulating the activity of production of electric energy under the Special Regime,3 and Royal Decree 1578/2008, of 26 September, on payment for the production of electric energy using PV technology.

However, under the new regulatory framework, and specifically Article 12 of RD 413/2014, which establishes that the Specific Remuneration incentive scheme shall be awarded by means of a competitive tender procedure, a number of new installations are already in development following auctions called by the government. The following three auctions have been held to date:

a. Auction carried out pursuant to the Resolution of 18 January 2016, of the General Directorate of Energy Policy and Mines (DGPEM), implementing the Specific Remuneration regime for new installations of production of electric energy with biomass and wind technology pursuant to RD 947/2015, of 16 October. In this auction, 200MW for biomass installations and 500MW for PV solar installations were awarded.

b. Auction carried out pursuant to the Resolution of 19 May 2017, of the DGPEM, implementing the Specific Remuneration regime pursuant to RD 359/2017, of 31 March and Order ETU/315/2017, of 6 April. In this auction 3000MW of new installed capacity (mainly PV solar and wind) was awarded.

c. Auction carried out pursuant to the Resolution of 27 July 2017, of the DGPEM, implementing the Specific Remuneration regime pursuant to RD 650/2017, of 16 June and Order ETU/615/2017, of 27 June.

Main features of the Specific Remuneration

Replacement of feed-in-tariff scheme by the Specific Remuneration

RDL 9/2013 replaced the former feed-in tariff (FIT) scheme with the remuneration complement called the ‘Specific Remuneration’, to be paid on top of the electricity market price. The following are the main differences between the FIT and the Specific Remuneration:

a. While the FIT was applied to the entire electricity production of the renewable plant without any limitation – the higher the production, the higher the revenues – the Specific Remuneration is paid on the basis of the installed power capacity of the PV

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plant and, as detailed below, is limited to the amount necessary to cover the ‘costs required to compete on the market on an equal footing with other technologies, as well as to obtain a reasonable rate of return’ (Article 14 of Law 24/2013).

b The FIT was fixed (subject only to periodic adjustments in relation to the consumer price index) and remained stable for 25 or 30 years from the commercial operation date, depending whether the renewable energy plant was governed by RD 661/2007 or RD 1578/2008 (in the case of PV solar installations). In contrast, the Specific Remuneration is subject to periodic revisions every three and six years following the procedures detailed below, with the next regulatory review due in December 2019.

c Finally, the FIT was determined by the technology and the commercial operation date of each particular installation, while the Specific Remuneration is calculated in relation to a hypothetical determination of the parameters of each installation according to different categories of ‘standard facility’ – a concept that plays an essential role in the calculation of the Specific Remuneration (see below).

The components of the Specific Remuneration

In exchange for the electricity generated from renewable sources, renewable energy installations now receive the market price (payable by the Spanish electricity network upon receipt of the power produced from the plant) plus the Specific Remuneration consisting of:

a A return on investment (RI), which is calculated in relation to the installed power capacity of the plant and enough to cover, if necessary, the investment costs of a standard facility (as detailed below), provided that those costs are non-recoverable through the sale of electricity at market price.

b A return on operation (RO), which will cover the difference, if any, between the operating costs (OPEX) of the standard facility and the revenues of the standard facility from the sale of electricity at market price.

The calculation of the Specific Remuneration is made for the entire regulatory life term of the installation (as set forth in Order 1045/2014).

Reasonable rate of return

The reasonable rate of return is the cornerstone of the Specific Remuneration regime.4 To this end the Specific Remuneration shall not exceed the minimum level necessary to cover the

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4 Under the Special Regime, the ‘reasonable rate of return’ was an undetermined or undefined concept introduced by Law 54/1997, which ensured that the economic regime or FIT would guarantee at least this reasonable rate of return (thus functioning as a minimum threshold). Under the Specific Remuneration, the reasonable rate of return is no longer an undefined term but is now a concrete element of the formula, and one which constitutes a true cap on the regulated remuneration payable to the project. Therefore, once the PV plant has reached the cap fixed at the reasonable rate of return (which is determined by regulation), the PV plant will have no further right to receive the Specific Remuneration.
costs, thus enabling the undertakings or sponsors of renewable energy plants to compete on equal terms with undertakings using other technologies; and this reasonable return is to be calculated in relation to a standard facility.

The reasonable rate of return shall be calculated, before taxes, on the interest rate yielded by 10-year Spanish government bonds plus a given spread.  

**The role of the standard facility**

The Specific Remuneration is not calculated on a case-by-case basis but by reference to a standard facility, which will apply to one or many installations with standard, uniform or similar characteristics.

The different categories of standard facility (referred to as IT categories) and the applicable economic parameters are detailed in Order 1045/2014. These parameters will be different according to the technology, the power capacity, the commercial operation date and other relevant features of the installation.

The Specific Remuneration applicable to a particular installation will depend on the economic parameters corresponding to the relevant IT category.

**The temporary character of the Specific Remuneration: the regulatory periods**

The Specific Remuneration is calculated for a regulatory period of six years, each divided into two regulatory half periods of three years. The first regulatory period runs from 14 July 2013 to 31 December 2019.

During each regulatory half period and regulatory period, the Specific Remuneration is subject to corrections and adjustments linked to different factors, such as the number of operating hours in a given year or the electricity market price. Furthermore, the economic parameters of the Specific Remuneration (always corresponding to an IT category and thus to a standard facility) might be adjusted by the regulator (i.e., the National Commission for Markets and Competition (CNMC)) on an annual basis and reviewed by the government at the end of a regulatory period or regulatory half period – that is to say, every six years or every three years, as the case may be.

**The economic parameters of the Specific Remuneration**

- **a** the RI: calculated per power unit (€/MWh);
- **b** the RO: applicable to those technologies with estimated operation costs per power unit higher than the average market price;
- **c** the regulatory life term: the Specific Remuneration shall be paid during the regulatory life term of the standard facility (as determined in the corresponding IT category). The installation might be still generating power after the expiry of the regulatory life term, but this will only be remunerated at market price (i.e., it will no longer have any right to the Specific Remuneration incentive);
- **d** the net value of the asset: the net value asset is equal to the value of investment of the standard facility per power unit at the initial regulatory half-period life term, and it is calculated according to the methodology included in Annex VI of RD 413/2014; and

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5 The reasonable rate of return shall be determined according to a spread set by means of a law (to be enacted by the Spanish Congress), and which may be subject to review.
the formula for the calculation of the net value of the asset includes the standard value of the initial investment. Order 1045/2014 establishes the value of the initial investment for each IT category, and this value remains unaltered through the entire regulatory life term of the installation. Note that, pursuant to Article 13 of RD 413/2014, the calculation of the net value of the asset does not take into account any costs arising from applicable regulations or administrative decisions issued by the relevant regions or municipalities but not in the whole territory of the Kingdom of Spain. For instance, compensation payable to the municipalities for the use of land protected from urban development, and provided for in regional town and country planning laws, would not be included as a cost for the purposes of calculating the net value of the asset.

**Corrections and update mechanisms of the Specific Remuneration**

The first regulatory period falls between the entry into force of RDL 9/2013 (14 July 2013) and 31 December 2019. Therefore, the first regulatory half period runs from 14 July 2013 to 31 December 2016.

The Specific Remuneration shall be reviewed after each regulatory period and each regulatory half period. In this context, note that all the economic parameters set forth by Order 1045/2014 for each IT category can be modified, with the sole exception of the regulatory life term and the standard value of the initial investment. Note that the reasonable rate of return, although not an economic parameter, is also subject to periodic revision, at the end of every regulatory period. The applicable spread may also be modified by means of a law.

The adjustment mechanisms of the Specific Remuneration set forth in RD 413/2014 are as follows:

- **a** adjustment of annual revenues from the Specific Remuneration as a result of the number of equivalent operating hours; and
- **b** adjustment because of market price deviations.

The periodic review and update mechanisms of the Specific Remuneration parameters set forth in RD 413/2014 are as follows:

- **a** review of the differential applicable for the determination of the reasonable rate of return;†

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6 As part of the formula for the calculation of the RI, RD 413/2014 (Article 16.2) includes the net value of the asset as one of the items to be calculated. Furthermore, the net value of the asset is further calculated pursuant to the formula laid down in Annex VI of RD 413/2014, which takes into account the standard value of the initial investment.

7 Note that the mechanism established by the RD 413/2014 sets forth two types of review and adjustment: (1) adjustments on a yearly basis aimed at correcting annual revenues from the Specific Remuneration (adjustments due to the number of equivalent operating hours for the year and market price deviations); and (2) review after a regulatory half period or regulatory period of the value of certain parameters within the formula for the calculation of the Specific Remuneration. Adjustments will only stand for a year, whereas the reviews will stand for the entire regulatory half period or regulatory period, as the case may be.

8 Note that the application of the mechanism adjustment may result in an increase or decrease of the Specific Remuneration.

9 Note that the differential applicable for the determination of the reasonable rate of return may be reviewed after each regulatory period.
review of remuneration parameters;\textsuperscript{10} and
\item[c] review of the standard income\textsuperscript{11} from the sale of electricity.\textsuperscript{12}

In summary, the adjustments made to the Specific Remuneration on a yearly basis are due to factual matters that occur during the year – that is, the number of equivalent operating hours of the standard facility during the year (e.g., whether the hours are lower or higher than originally expected because of climate conditions) and the market price deviations (e.g., if there is an increase in the market price because of a higher demand for power, the Specific Remuneration should ‘complement’ the price payable for the electricity and not increase it, therefore the Specific Remuneration might be lowered if the price of the electricity increased during the year).

In contrast, the reviews of the Specific Remuneration are aimed at revisiting the parameters of the Specific Remuneration in light of other criteria (irrespective of factual matters regarding the production of energy), such as the overall evolution of the Spanish economy. As the reviews imply a more in-depth analysis of the overall Specific Remuneration, their frequency is limited to three to six years (depending on whether the relevant parameter is to be reviewed each regulatory half period or each regulatory period).

\textbf{ii} The policy background

See the preceding section for details of the policy background.

\textbf{iii} The regulatory framework

The general regulation of renewable energy (and particularly the economic regime) is the responsibility of the Spanish parliament and is developed by the central government through royal decrees, and by the Ministry of Energy and Industry through ministerial orders and resolutions. The Spanish autonomous regions are entitled to regulate the development of renewable energy projects and may introduce additional requirements in relation to projects to be developed in the relevant territories.

As provided for in Law 3/2013 of 4 June 2013, the independent regulator, the CNMC, plays a significant role in the development of renewable energy projects. To this end, the CNMC has, \textit{inter alia}, the following authority:
\begin{itemize}
  \item[a] to establish, by means of circulars, the toll calculation methodology;
  \item[b] to supervise the management and allocation of connecting capacity, the time spent by transmission and distribution companies in carrying out connections and repairs, and the mechanisms designed to ease congestion in network capacity;
  \item[c] to supervise the conditions and charges for connection applicable to new producers of electricity;
\end{itemize}

\textsuperscript{10} Note that the remuneration parameters (except the regulatory life term and the standard value of the initial investment) may be reviewed after each regulatory period.

\textsuperscript{11} Note that the ‘standard income from the sale of electricity’ is a pre-estimate of the income that the standard facility (in usual conditions) should receive for the sale of electricity, which is different from the adjustment due to market price deviation, which only takes into account the actual deviations that the price of the electricity has suffered during a given year (as it might have an impact on the actual Specific Remuneration payable in that year).

\textsuperscript{12} Without prejudice to a more detailed description in Table II of Schedule 2, note that the standard income from the sale of electricity may be reviewed after each regulatory half period.
Spain

d  to manage the system for guaranteeing the origin of electricity from renewable sources and from high-efficiency cogeneration;
e  to publish the end prices of the electricity market, based on information from the market operator and system operator;
f  to issue reports in applications for authorisation, amendment or closure of facilities, in the process of energy planning, and in applications for approval or authorisation of economic or remuneration regimes;
g  in relation to legislation on energy, to issue circulars to implement and enforce rules contained in royal decrees and in orders of the Ministry of Industry, Energy and Tourism, which authorises the CNMC for that purpose; and
h  to perform any other functions that may be conferred on it by act or royal decree.

iv  Procedural requirements

The development of renewable energy projects requires fulfilment of the following steps.

Access to and connection permits for transmission and distribution networks

a  Prior to any request for access to the grid, a grid bond should be deposited with the central government or with the autonomous region (as applicable) for an amount of 10€/kW. This grid bond shall be cancelled upon obtaining the relevant authorisation for commissioning.

b  Access and connection permits shall last for five years. If the relevant installation ceases to pump electricity into the grid for more than three years (other than as a result of temporary closure of the facility), the relevant permits shall expire.

Substantive administrative permits

The following administrative permits are required for the construction and commissioning of renewable energy plants:

a  preliminary administrative permit: this permit is managed together with the environmental impact assessment and allows the construction of a specific installation under specific conditions, and establishes the time frame for the request of the approval of the relevant project;

b  administrative authorisation for construction: allows the construction of the relevant installation. The developer should submit a construction project together with a responsible declaration evidencing compliance with the applicable rules. It is possible to manage and obtain the administrative authorisation for construction and the preliminary administrative permit simultaneously. Note that the environmental impact assessment should be granted prior to the administrative authorisation for construction; and

c  authorisation for exploitation: once the project is executed this authorisation permits installations to be connected to the grid and commercial exploitation to commence.

The authority to grant these authorisations lies with the DGPEM in relation to installations with a capacity over 50MW or when they exceed the territorial limits of one autonomous region. In other cases, the authority to grant the authorisation lies with the relevant autonomous regions. The term for the grant of the relevant authorisations is one year for those granted by DGPEM and six months in other cases. If no permit is granted within this term, it shall be deemed that the request has been denied.
Contracts with grid operators
The developers of renewable energy plants ought to enter into a contract to regulate the technical relationship between them and the relevant distribution company. The contract should regulate at least: (1) connection and measurement points; (2) quantity and quality features of the energy supplied (capacity, forecast of production); (3) grounds for termination or amendment of the contract; and (4) conditions for the exploitation of the connection.

Specific Remuneration regime registry
A necessary condition for recognition of the Specific Remuneration regime (RRE) is that the installations are registered with the RRE registry. This registration has two phases: pre-assignment and final. The authority to approve the RRE registration lies with DGPEM. The procedure for registration following the latest auctions has been as follows:

a RRE registration with pre-assignment status: once the result of the auction has been published, the relevant projects should be registered with the RRE provided that the relevant developers have deposited the corresponding guarantee (60€/kW). DGPEM then has three months to dictate and issue the resolution to register the projected installations with pre-assignment status. This term may vary in each auction. The developer then has 12 months to submit the construction authorisation to DGPEM.

b RRE registration with exploitation status: once the plants concerned have been built within the term established by DGPEM, the developers should request RRE registration with exploitation status within one month of completion of construction.

Administrative Registry for Production Installations under the Special Regime
All installations for the production of electric energy (whether receiving the Specific Remuneration or not) should be registered with the Administrative Registry for Production Installations under the Special Regime (RAIPRE). The procedure for RAIPRE registration consists of two phases: the preliminary phase (once the authorisation for provisional exploitation for testing is obtained and the technical contract with the grid has been entered into) and the phase for final registration (once the authorisation for final exploitation has been obtained). Both the preliminary and the final registration shall be agreed within one month of the registration request.

The authority for approval of the registration lies with the same authority that is competent for the granting of the administrative authorisation (i.e., DGPEM or the relevant body in the applicable autonomous region).

In addition to the above requirements, it is necessary to obtain the relevant environmental authorisations and licences to be granted by the relevant autonomous region, as well as municipal licences for works and operation. Depending on the location of the relevant plant, certain additional licences may also be required (e.g., use of public waters, rights of way or passage, easements).
IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

The typical structure for developing renewable projects in Spain consists of the incorporation of a special purpose vehicle (SPV) that will become the holder of the relevant renewable energy project. In the case of a joint project undertaken by a group of entities, a holding structure with a number of SPVs is often used.

Although in the past financial institutions have shown a bigger appetite for projects with a FIT, the change of regime and the increasing number of non-FIT projects have turned the attention to merchant project finance. Increasingly corporate PPAs are used as an additional element to bring stability and predictability in the cash flows and mitigate any potential uncertainty represented by the RRE and the three- and six-year revisions.

In the case of existing projects, the new regime has introduced a number of changes and amendments to existing documentation, although the structure of this documentation (facility agreement, security agreement, base-case and swap agreements) remains similar. Commercial banks and development banks are the main participants providing financing for new projects, although project bonds are an instrument used increasingly by developers.

The main changes under the new regime are as follows:

a Review and amendment of operation and maintenance (O&M) contracts: as some of the regulatory changes have impacted on the customary scope of work for O&M contracts, a review has largely been used to redefine the services required under the new O&M contracts.

b Cash-sweep mechanism: in addition to the payment cascade mechanisms to provide for the retention of any available cash if the debt service coverage ratio falls below the agreed thresholds, a general cash-sweep mechanism has been introduced so that any excess cash (or at least a portion thereof) is retained by the financing entities to be applied to the early repayment of the facility, so that the base case is rebalanced and improved annually. It might be agreed, as an alternative, to limit the cash-sweep mechanism as needed to fulfil the terms of the base case following the review or adjustment of the Specific Remuneration. Through the cash-sweep mechanism, the financing entities would ensure that excess cash (if any) is available following an unfavourable review of the Specific Remuneration.

c Extension of the tenor: depending on the term of the regulatory life of each particular renewable energy plant, the tenor of the facilities may have been extended.

d Review and adjustment of the quotas or instalments at each regulatory half period or regulatory period: as explained above, the regulatory changes have introduced a mechanism for the review or adaptation of the Specific Remuneration at the end of each regulatory half period or regulatory period. By definition, the reasonable rate of return and other parameters may be reviewed and lowered from one regulatory half period or regulatory period to another and, thus, existing projects may have less income available to repay applicable instalments under existing facility agreements for the subsequent regulatory half period or regulatory period if, as a result of the review, the remuneration for the plant is lowered. To avoid any defaulting scenarios, and to increase certainty for the financing entities that the relevant obligor will be capable of adapting to any changes in the Specific Remuneration resulting from a review or adjustment at the end of a regulatory half period or regulatory period, the relevant financing agreements may (1) set out a mechanism for the review and adjustment of the relevant instalments (together with the tenor of the facility) at the beginning of
each regulatory half period or regulatory period and (2) establish a shareholder support mechanism, by virtue of which direct or indirect shareholders of the relevant SPV would commit to repay as needed any shortfall of the instalments (through the regulatory half period or regulatory period) by using (1) any available cash according to the cash-sweep mechanism; or (2) any additional equity that the relevant guarantors should contribute (as subordinated debt or share capital) to the relevant SPV.

ii Distributed and residential renewable energy

Distributed and renewable energy will largely depend on whether the proposed legislation, sponsored by the new ruling party in Spain, will be finally passed, as explained above. Should this be the case, there will certainly be an increased appetite for self-consumption and distributed generation. The principal participants will be the incumbent distribution companies, which will be in a unique position to offer integrated services (installation, operation and financing of new facilities).

V CONCLUSIONS AND OUTLOOK

It is unlikely that the main legislation (i.e., Law 24/2013 and RD 413/2014) will be significantly amended.

Despite the announcements made by the former government proposing to introduce a 30 per cent haircut for the Specific Remuneration applicable to renewable energy installations, as a result of the energy policy of the new government it is unlikely that significant changes will occur in the next revision, due in December 2019.

The need to comply with the Paris Agreement and the EU ‘Winter Package’ regulations will result in an increase in the percentage of renewable energy in the Spanish energy generation mix. In this context, a new set of auctions may be convened, although the growing number of merchant projects, coupled with corporate PPAs, will also contribute to an increase in the number of renewable energy projects. As to project financing, many analysts have pointed out the increased use of project bonds to finance new renewable energy projects.

The development of new renewable energy projects will raise other questions regarding, for example, the need to expand and reinforce the grid and to increase interconnections with Portugal and France.

Self-consumption shall be favoured and carbon power plants are likely to be decommissioned. However, it is uncertain whether the useful life of nuclear power plants will be extended beyond 40 years. The level of energy prices to be paid by final consumers will play a significant role in determining this.
INTRODUCTION

The UK’s energy sector continues to undergo significant change. The 2009 Renewable Energy Directive set a target for the UK to achieve 15 per cent of its energy consumption from renewable sources by 2020. To bolster the UK’s efforts in achieving this, the Energy Act 2013 (the Energy Act) implemented key aspects of Electricity Market Reform (EMR) – a policy initiative pioneered by the UK government to mobilise £110 billion of capital investment required by 2020 to ensure a reliable and diverse supply of low-carbon electricity. Such reforms are vital, as the UK has seen significant power plant closures in recent years; the Energy Act was aimed at ensuring both investment in infrastructure, alongside decarbonisation as more power plants are decommissioned in the UK. Around a fifth of the capacity that was available in 2011 will close by the end of this decade, and demand for electricity is set to increase as major sectors such as transport and heat are electrified.

To allay fears that the EMR target would be lost on the UK’s exit from the EU, in June 2016, the Conservative government announced the ambitious (but legally binding) target of reducing carbon emissions by 57 per cent by 2030. These targets are informed by the UK’s need to develop approximately 59GW of new net capacity by 2025, with as much as 33GW coming from renewables and the remaining 26GW coming from conventional thermal power. In an effort to promote private investment in the development of large-scale infrastructure projects (and in particular, the development of low-carbon technology) in the UK, the UK government has instituted a series of programmes that are specifically designed to stabilise the economics of financing for such projects.

THE YEAR IN REVIEW

The UK’s current electricity mix has changed substantially, and rapidly, over the past couple of years. Most notable is an increase in renewable-generated electricity (a trend in line with global patterns). In 2017, for the first time, Britain generated more electricity from renewable energy than from gas and coal. Renewable sources (wind, solar, hydro and biomass) together contributed just over 29 per cent of electricity generation, up from a quarter in 2016. In comparison, only 21 per cent came from nuclear power. The latest Digest of United Kingdom Energy Statistics, published in 2017, reported that in 2016, 8.9 per cent of total energy consumption came from renewable sources (up 8.2 per cent in 2015). Renewable
electricity represented 24.6 per cent of total generation, renewable heat 6.2 per cent of overall heat, and renewables in transport 4.5 per cent. And, for the second year running, solar photovoltaics was the leading technology in capacity terms at 11.9GW, representing a third of total electricity capacity.

During November 2016, the government published its plan to upgrade UK energy infrastructure, reaffirming its commitment to spend £730 million of annual support on renewable electricity projects, also setting out proposals for the next steps to phase out electricity generation from unabated coal-fired power stations within the next decade. This long-term plan is intended to provide confidence to investors that the UK is open to investment in new, cleaner energy capacity.

The second allocation process for the Contract for Difference (CfD) scheme for renewable generators began in April 2017, aiming to provide support for projects to be delivered between 2021 and 2023. There will be no allocation of CfD budget for onshore wind or solar, consistent with the government's view that these are mature or politically undesirable technologies that should no longer be provided with subsidies. The only technologies supported will be offshore wind, certain forms of biomass or waste-fuelled plant (e.g., advanced conversion technologies, anaerobic digestion, biomass with CHP), wave, tidal stream and geothermal.

In June 2016, the UK voted to leave the European Union. Since then, the Conservative government has been negotiating with the EU, and has tabled the European Union (Withdrawal) Bill, which will replace the European Communities Act 1972 and make other provisions in connection with the withdrawal of the UK from the EU. It is the primary piece of legislation that will determine the UK's position in relation to current EU legislation post exit. It also aims to remove the jurisdiction of the European Court of Justice over the UK courts. It will transfer all current EU law into UK domestic law, so that as smooth a transition as possible is achieved in the immediate aftermath of exiting the EU. It is seen as ‘one of the largest legislative projects ever undertaken in the UK’ by the House of Commons. In addition to the legislative overhaul and regulatory uncertainty, the vote to leave the EU creates uncertainty over the continued access of the UK to European Investment Bank funding, which until the vote had been an important source of funding for smaller-scale UK projects. During the transition period, it is likely that the UK will continue to be subject to EU procurement directives (such as the Public Contracts Regulations 2015 SI 2015/102). This means that organisations under the rules must continue advertising and awarding public contracts in accordance with the EU directives. It is unclear what the position will be regarding procurement post exit and post transition period, but it is unlikely that Parliament will repeal the relevant legislation unless a pressing need arises.

### III THE POLICY AND REGULATORY FRAMEWORK

#### i The policy background

Ofgem E-Serve administers several environmental schemes and consumer and social programmes on behalf of the government, including schemes related to renewable energy.

The Feed-in Tariffs (FIT) scheme is a government programme designed to promote the uptake of renewable and low-carbon electricity generation technologies. Introduced on 1 April 2010, the scheme requires participating licensed electricity suppliers to make payments on both generation and export from eligible installations. The FIT scheme is
available for anyone who has installed, or is looking to install, solar photovoltaic, wind, micro combined heat and power, hydro or anaerobic digestion technology types up to a capacity of 5MW, or 2kW for micro combined heat and power.

The provision of CfDs are one of the key policy measures to incentivise new low-carbon electricity generation. The provision of CfDs is intended to stabilise revenues for investors in low-carbon electricity generation projects such as renewables, by helping developers secure the large upfront capital costs for low-carbon infrastructure. The CfD is a quasi-power purchase agreement. Generators with a CfD will sell their electricity into the market in the normal way and remain active participants in the wholesale electricity market. The CfD then pays the difference between an estimate of the market price for electricity and an estimate of the long-term price needed to bring forward investment in a given technology (the strike price). When a generator sells its power, if the market price is lower than needed to reward investment, the CfD pays a top-up. However, if the market price is higher than needed to reward investment, the contract obliges the generator to pay back the difference. In this way, CfDs stabilise returns for generators at a fixed level, over the duration of the contract. This removes the generator’s long-term exposure to electricity price volatility, substantially reducing the commercial risks faced by these projects. The Energy Act includes a provision whereby a new UK government-owned company (the Low Carbon Contracts Company, or LCCC) will act as the counterparty to eligible generators under the CfD. This mechanism was in direct response to concerns about the ‘credit’ behind the CfD economics. Although a CfD is a private law contract between a low carbon electricity generator and the LCCC, the cost of CfDs will ultimately be met by consumers via a levy on electricity suppliers. Two offshore wind projects were awarded CfDs at £57.50/MWh in the 2017 round. A third round of CfDs is planned for spring 2019, where up to £557 million will be made available for investment.

The Renewable Obligation (RO) scheme is one of the main support mechanisms for large-scale renewable electricity projects in the UK. Smaller-scale generation is mainly supported through the FIT scheme. The RO came into effect in 2002 in England and Wales, and Scotland, followed by Northern Ireland in 2005. The scheme places an obligation on UK electricity suppliers to source an increasing proportion of the electricity they supply from renewable sources. The RO scheme closed to all new generating capacity on 31 March 2017.

The Climate Change Levy (CCL) was introduced in 2001 and is a tax on UK business, collected by energy suppliers, designed to encourage energy efficiency, reduce carbon emissions and promote energy from renewable sources. Businesses were previously able to claim an exemption if they could show a levy exemption certificate, showing that they bought energy from qualifying renewable energy sources. In the July 2015 budget, the UK government announced the removal of CCL exemption for electricity generated from renewable sources from 1 August 2015.

The Offtaker of Last Resort (OLR) is a government scheme that aims to promote the availability of power purchase agreements (PPA). It is intended as a last resort to help renewable generators who cannot get a PPA through the usual commercial means. The OLR scheme is part of the government’s wider programme on EMR.

The Regulatory Framework

The Department of Energy and Climate Change (DECC), formed in 2008, was the ministerial department responsible for making decisions, setting policy and implementing legislation affecting the electricity sector. The corresponding government ministry in Northern Ireland
is the Department of Enterprise, Trade and Investment. Following the EU Referendum held on 23 June 2016, DECC was merged together with the Department for Business and Innovation to create the Department for Business, Energy and Industrial Strategy (BEIS).

The BEIS works closely with and is supported by other agencies and public bodies, including the Gas and Electricity Markets Authority (GEMA) and the Office of Gas and Electricity Markets (Ofgem).

GEMA has primary responsibility for regulation of the energy sector. GEMA’s powers and duties are largely provided for in statute (such as the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Acts of 2004, 2008, 2010 and 2011), as well as arising from directly effective European Community legislation. GEMA’s principal objective is to protect the interests of existing and future consumers in relation to gas conveyed through pipes, and electricity conveyed by distribution or transmission systems. The interests of these consumers are their interests taken as a whole, including their interests in the reduction of greenhouse gases in the security of the supply of gas and electricity to them. GEMA is constituted of individuals who are appointed by the Secretary of State for specified terms of not less than five years.

GEMA delegates its functions to Ofgem and provides it with strategic direction and oversight. Ofgem is also a non-ministerial government department and an independent national regulatory authority recognised by EU Directives. Ofgem states that its principal objective is to protect the interests of existing and future electricity and gas consumers. Ofgem E-Serve, which introduces itself as the ‘delivery arm of Ofgem’, administers environmental schemes and consumer and social programmes on behalf of the government, including schemes related to renewable energy such as the FIT scheme, CfDs, RO, the CCL and the OLR scheme (see Section III.i for more details).

The Environment Agency is responsible for protecting and improving the environment, as well as promoting sustainable development. The role of the Environment Agency regarding electricity is limited to matters related to pollution and therefore mainly relates to conventional generation and nuclear energy.

The Energy Act (together with secondary legislation) implements key aspects of electricity market reform and is a policy initiative pioneered by the UK government to mobilise £110 billion of capital investment required by 2020 to ensure a reliable and diverse supply of low-carbon electricity. This is the applicable regulatory framework for the developing, financing, operating and selling of power and environmental attributes from renewable projects, and the regulation of CfDs.

The RO scheme has created a market for the sale of environmental attributes. Through the RO scheme, the government places an annual obligation on licensed electricity suppliers to source a proportion of the electricity they supply to customers from renewable energy sources. These suppliers are required to meet their individual obligation target by purchasing Renewable Obligation Certificates (ROCs) from renewable generators directly, from the ROCs market or by paying a set amount to government by way of a penalty. Through this mechanism, ROCs have a monetary value (the buyout price for the 2018–2019 ROCs is £47.22 per ROC) and generators have been able to sell (among other things) the electricity generated by their renewable generating stations (and associated ROCs) to licensed electricity suppliers.

A generation licence is required for the sale of electricity and this stipulates compliance with the relevant industry codes. In particular, all licence holders (for example, transmission, generation, supply and distribution) must be registered within the Balancing and Settlement
Code. Certain environmental, health and safety, and electricity quality measures must also be in place for the construction and operation of systems that generate and supply electricity (Electricity, Safety, Quality and Continuity Regulations 2002 (as amended)); these will depend on the relevant renewable project in question.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

As with all energy and infrastructure projects, the financing structure for renewable energy projects depends on the nature of the client and the type of project. In a straightforward project, for example, the funding may come from a combination of equity investment or debt finance (including in some cases, mezzanine finance), through a single lender or multiple lenders and on a non- or limited-recourse basis. Senior lenders can include commercial banks familiar with project financings, export credit agencies, multilaterals such as the European Investment Bank or IFC and the Green Investment Bank. The UK Green Investment Group was launched in October 2012 (at the time, as a non-departmental public body of the BEIS and was sold to Macquarie Group Limited in August 2017) and has since committed over £15 billion of financing to 100 green infrastructure projects, committing £3.4 billion to the UK’s green economy. It is the first investment bank worldwide to invest solely in green infrastructure. The funds have been used to leverage private-sector capital to fund projects in priority sectors from offshore wind to waste and non-domestic energy efficiency.

Private equity funds may be willing to take construction risk and provide additional funding ranking senior to pure equity, which can be contributed at a senior or mezzanine level (depending on the particular project).

Where there are unproven technologies or other uncommon risks that traditional financiers are not willing to take, or where the use of traditional project financing would prove too expensive, certain other sources of funding have been available, such as the EU NER300 fund, direct grants from the government and, in Scotland, the Renewable Energy Investment Fund administered by the Scottish Investment Bank.

Once the ‘risky’ construction phase period has ended and projects are operational, further financing structures become available in addition to those described above. Examples of these are refinancing of construction-phase bank financings by way of capital market instruments and institutional investors such as pension and insurance funds, who do not customarily have an appetite for construction risk, but who look favourably at long-term debt financings with proven and stable cash flows.

In domestic UK project financings, the intention of the parties (and the usual requirement of all types of lenders) is to create security over all, or substantially all, of a project company’s assets. Project finance borrowing vehicles are normally special purpose vehicles (SPVs) with no pre-existing businesses, rights or liabilities beyond those associated with the project. Security is normally granted by way of a general security agreement, such as a debenture, which covers all the SPV’s rights and assets (both pre-existing and after-acquired) or (less commonly) by way of separate security agreements for each type of asset. Lenders will look to achieve ‘going concern’ security on a UK-based project or asset. This is aimed at putting them in a position of default, stepping in if necessary and operating (or selling) the relevant asset as a going concern. Basic legal security is normally insufficient to achieve this type of outcome; conventional legal security is often supplemented by bespoke contractual arrangements providing lenders with specific notice, ‘cure’ and ‘step-in’ rights. Where (as
is very often the case) the viability of a project as a going concern is dependent upon the continuing availability to an operator or owner of permits and licences, special attention will need to be paid to the consequences of default in the wider sense – by way of example, breach of licence conditions or change of control can result in permits and licences being breached or becoming terminable. Certain types of licences and permits are, in effect, personal to the initial licence holder; contractual rights can be expressed to be non-assignable in the absence of consents. A careful analysis of the regulatory and practical conditions applicable to the application for, and maintenance of, permits, licences and key contracts is necessary and will differ on a case-by-case basis.

The main types of securities under English law are mortgages (equitable and legal), charges (fixed and floating), assignments (broadly equivalent to charges), pledges and liens. Mortgages, charges and assignments are the most frequently used forms of security. Assignments may be legal or equitable; the process for enforcement of the two types of security differs. A debenture will include a range of mortgages, charges and assignments depending on the nature of the security assets. Debentures can create legal mortgages and fixed and floating charges over all the borrower’s assets, if agreed, and as set out in the debenture. The debenture is executed as a deed.

ii Distributed and residential renewable energy

Underpinned by general environmental concerns, technological innovation and government policy, the growth of on-site distributed generation projects has been noticeable in recent years. In particular, an uptake in residential use has been seen, with very small-scale projects operated and maintained by residential end users evident across the country. Similarly, businesses and public sector institutions continue to install their own generation projects, whether that be high-street stores, office blocks or public-sector services buildings, such as hospitals.

The types of technologies seen in the residential sector include solar photovoltaic panels, small wind turbines, natural-gas-fired fuel cells and emergency backup generators. In the commercial and industrial sectors, the same technologies exist in addition to hydropower, biomass combustion, municipal solid waste incineration, natural gas or biomass-fuelled fuel cells and reciprocating combustion engines. The uses of such distribution generation projects and the ownership and offtake structure depend largely on the user and their needs. For example, if a hospital has a system, it will seek high reliability and thus high quality, perhaps at the expense of cost. On the flip side, industrial plants may prioritise a low cost system over other factors.

Recently, microgrids have emerged as part of a number of solutions for the UK’s transition from a conventional energy system to one fit for the 21st century and beyond, responsive to changing needs and desires, namely the pursuit of low-cost, efficient energy that has minimal environmental impact. The UK government in particular has encouraged microgrids because, as they work locally, they can be disconnected from the national grid to operate independently where necessary. The importance of their independence cannot be understated, namely because, in the event of a disturbance, microgrids can be isolated to minimise greater disruption. For that reason they are an attractive option for small communities. An example of a scheme is the Flexible Plug and Play initiative, introduced in 2012. This three-year programme delivered cheaper and faster distributed generation connections, as well as enabling such distribution schemes to become active, where previously they were thought to be unfeasible.
The nature of distributed generation is that it allows for self-consumption, offering significant consumer benefits in terms of economics. However, it is particularly important in this context that consumers fully understand the legal backdrop of any electricity generated, especially if they intend to sell the excess electricity generated (e.g., gaining FIT payments). Not only is compliance with the applicable regulations imperative, but there are a number of agreements and contracts that need to be put in place by the distributor, meaning in the residential sector legal and professional advice must be sought, adding to expense. In terms of property rights, it may be advisable for those involved to ensure they are sufficiently protected by obtaining options for leases and options for easements. In addition, the effect of Brexit is unknown, and this uncertainty has a particular impact on distributed generation, an area partially regulated by the European Union.

At the end of 2016, there were 27 installed energy storage projects in the UK, with a total capacity of around 33GWh. These storage projects consist in the majority of lithium-ion battery, lead-acid battery, open-loop pumped hydro storage, closed-loop pumped hydro storage and modular compressed storage. Electricity storage is treated as a form of electricity generation and, as such, the applicable legal framework to electricity storage is currently the same as that applicable to electricity generation.

The classification of electricity storage as generation (and therefore the application of the legal framework applicable to generators) has been seen to be a significant hurdle to the development of energy storage projects in the UK; this has been acknowledged by Ofgem, which has committed to work together with the government to provide greater regulatory clarity. Some of the key concerns are that certain licensed operators, such as distribution licence holders, are restricted from holding a generation licence and therefore from operating electricity storage. The requirement for electricity storage operators to hold a generation licence is administratively burdensome for the operators, as it imposes on them all the regulations and codes that apply to electricity generators. In addition to the above, the current regulatory regime also treats electricity storage operators as consumers as well as electricity generators, resulting in electricity storage operators being charged double for using the electricity grid – once as a consumer when electricity is taken from the grid for storage and again as a generator when exporting electricity to the grid (they also potentially face double-charging of various government levies to fund low-carbon incentive schemes where the levies are themselves added to electricity costs).

### iii Non-project finance development

In the UK, the divide between conventional project finance and the bond and leveraged finance markets continues to narrow. The market saw a continuation of diversification of both sources and types of project-related debt. As with the project bonds market, the trend comes in part from the United States; 2016–2018 has seen a number of infrastructure and energy sponsors experimenting with Term Loan B structures – sometimes as refinancing tools, sometimes to sit alongside conventional financings or less conventional financings – for example, inventory and receivables financings.

There are no legal requirements that apply exclusively to project companies seeking to issue bonds or similar capital markets instruments. Any project company seeking to issue debt instruments (securities) on the London Stock Exchange (LSE) must comply with the Listing Rules of the UK Listing Authority (UKLA) (the Listing Rules). The UKLA, a division of the Financial Conduct Authority, is the body responsible for regulating all securities listed on the LSE. The Listing Rules contain (1) the rules and regulations for listing debt
securities, and (2) the continuing obligations that apply to issuers and bondholders for the duration of the listing. The Listing Rules cover principles ranging from corporate governance and executive remuneration to accounting standards and full disclosure of information to prospective investors. Debt securities admitted to the Main Market of the LSE must be listed in accordance with Chapters 2 and 17 of the Listing Rules. Debt securities admitted to the Professional Securities Market must be listed in accordance with Chapter 4. All debt securities admitted to trading must comply with the LSE’s Admission and Disclosure Standards and the relevant Disclosure and Transparency Rules.

Rules may differ according to the issuer’s market sector. Rules may also differ according to the issuer’s investor base. For example, an issuer will be subject to more stringent obligations if marketing its securities to retail investors as opposed to solely professional investors.

V RENEWABLE ENERGY MANUFACTURING

As the EU is a customs union, UK companies can buy most goods from other member countries without restrictions – although VAT and excise duty will normally still apply. If a UK company imports from outside the EU, it may have to comply with import licensing requirements and with common customs tariffs that apply across the EU. Apart from the general restrictions concerning materials that are deleterious to health and safety and the environment, there are no legal restrictions or controls that apply exclusively to importing construction equipment. It is not yet known whether the UK will remain part of the EU Customs Union following the UK’s exit from the EU on 29 March 2019.

VI CONCLUSIONS AND OUTLOOK

As the UK emerges from the economic slowdown and moves into a period of economic growth, there is considerable demand for upgrading existing infrastructure or investing in new, greenfield projects. The Conservative government expects that over the next decade to 2027, total public and private investment in the sector is expected to reach around £600 billion. Already, public and private infrastructure investment has gradually increased over the past three decades (since 2010, 4,500 infrastructure projects have been delivered). The two largest sectors, energy (which boasts investment of £191,338.5 million from 2017/2018 to 2020/2021) and transport (£135,276.9 million from 2017/2018 to 2020/2021), account for 70 per cent of the infrastructure pipeline’s total value.

The UK government’s commitments under the Paris Climate Agreement, together with its obligations under the 2009 Renewable Energy Directive, coupled in turn with the political and legislative uncertainty resulting from the UK’s referendum vote to exit the EU, are likely to be biggest drivers of change in the renewables energy market in the short and medium term.
Chapter 16

UNITED STATES

*Karen B Wong and Henry T Scott*

I INTRODUCTION

The renewable energy industry in the United States has adjusted to a rapidly changing political landscape. Long-standing state and federal policy drivers, emerging and improved technology, and momentum conducive to the development of renewables have resulted in the US renewable energy industry faring better than many expected over the past year. This chapter contextualises these developing policies and trends by providing a brief and focused overview of renewable energy from the US perspective. First, this chapter summarises major developments over the past year in the US renewable energy industry. Second, this chapter discusses the policy and regulatory framework underlying the development of renewable energy in the United States, project development through common sources of debt financing, and federal renewable energy tax credits and the associated tax equity project finance structures. This chapter also discusses distributed renewable energy and various forms of non-project finance renewable development, such as utility-owned projects and non-profit projects. Lastly, this chapter discusses trends and changes within renewable energy manufacturing, with focus on recent policies affecting domestic solar manufacturing.

II THE YEAR IN REVIEW

Despite lingering uncertainty with respect to changes in tax law and change of government administration in Washington, renewable energy in the United States has been in good health. Renewables surged to 18 per cent of the overall energy mix in 2017; 7,017MW of wind energy capacity and 10,608MW of solar energy capacity (including approximately 6.25GW of utility-scale solar installations) were installed last year, while approximately 13,332MW of

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wind and 6,400MW of solar capacity were still under construction at the end of the year.\(^3\) Additionally, hydroelectric capacity is slated to grow from 101GW to approximately 150GW by 2050, thanks not only to new power plants, but also to upgrades to existing plants and increased pumped storage hydropower capacity.\(^4\)

This growth has been propelled by extended federal incentives, advances in green technology and congenial state policies. Twenty-nine states, three territories and the District of Columbia have enacted mandatory Renewable Portfolio Standards (RPS), while eight other states and Guam have voluntary renewable energy standards or targets.\(^5\) Hawaii was the first state to adopt an RPS that mandates that its electric utility companies acquire 100 per cent of its net electricity sales from renewable energy sources by 31 December 2045 and Vermont currently boasts an RPS that mandates 90 per cent of net electricity sales from renewable energy sources by 2050.\(^6\) California, which has one of the nation's most ambitious RPS programmes, requires utilities to derive 33 per cent of their energy from renewable sources by the end of 2020, 40 per cent by the end of 2024, 45 per cent by the end of 2027 and 50 per cent by the end of 2030.\(^8\) Although three of the largest California investor-owned utilities have enough renewable energy capacity under contract to meet the 2020 and 2024 thresholds, and one already has enough contracted capacity to reach the 2027 target,\(^9\) there will still likely be a need for additional renewable energy generation in California for the other two investor-owned utilities to meet the 2027 target and if the California legislature enacts Senate Bill 100 that was proposed in 2017,\(^10\) which would increase the state's RPS to 100 per cent by 2045.

Renewable energy projects in the United States continued to rely on the federal production tax credit (PTC) and investment tax credit (ITC) in 2017, with approximately US$6 billion of tax equity investment in wind and $4 billion of tax equity investment in

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3 See American Wind Energy Association, 'US Wind Industry Fourth Quarter 2017 Market Report – AWEA Public Version', available at the American Wind Energy Association website, http://awea.files.cms-plus.com/FileDownloads/pdfs/4Q%202017%20AWEA%20Market%20Report%20Public%20Version.pdf. See the Solar Energy Industries Association website: https://www.seia.org/research-resources/solar-market-insight-report-2017-year-review. The decrease in solar power investment over the 2016 level may be explained in part by the unusually high level of activity in 2016 given the large number of projects that were in advanced stage of development at the end of 2015 to take advantage of the investment tax credit (ITC) that was set to expire at the end of 2016 (as noted below, the availability of the ITC for solar projects was subsequently extended).


8 See the California Energy Commission website: www.energy.ca.gov/portfolio/.

9 See the California Public Utilities Commission website: www.cpuc.ca.gov/RPS_Homepage/.

10 See https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100.
solar, respectively.\textsuperscript{11} Under the Protecting Americans from Tax Hikes Act of 2015, the PTC was extended to 2020 for eligible wind projects and the ITC was extended to 2022 for eligible solar projects.\textsuperscript{12} While there was no direct change to either the PTC or the ITC under the Trump administration's tax plan that passed on 22 December 2017, the reduction in the minimum corporate tax rate from 35 per cent to 21 per cent, the new base erosion and anti-abuse tax, and the ability to elect 100 per cent bonus depreciation under the new tax plan will have a significant impact on projects financed under these tax credits. Further, the imposition of tariffs on imported solar cells and modules of 30 per cent in January 2018 is anticipated to raise prices for the $28 billion solar industry, which relies on panel imports for 80 per cent of its supply.\textsuperscript{13}

Similarly, buoyed by state mandates and favourable IRS rulings regarding the applicability of the ITC, the advent of large-scale energy storage could fundamentally change the US renewable energy industry. Storage offers valuable flexibility and resiliency; it can be used to throttle demand, alleviate transmission congestion and increase system reliability.\textsuperscript{14} Importantly, it plugs gaps in reliability by making renewable energy available at any hour of the day, fixing the timing imbalance between renewable energy generation and use (referred to colloquially as the ‘duck curve’).\textsuperscript{15}

The private sector's march towards clean power is emblematic of current trends. An ever growing list of the world’s most influential companies, including institutions such as Bank of America, large retailer Walmart and Silicon Valley giants Apple and Google, have committed to sourcing 100 per cent renewable power.\textsuperscript{16} Indeed, large companies are driving demand for renewable energy: American corporations signed a record 2.8GW of power purchase agreements in 2017; Apple signed the largest ever power purchase agreement between a corporation and a utility: a 200MW agreement with NV Energy to purchase energy from the Techren Solar project.\textsuperscript{17}

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III POLICY AND REGULATORY FRAMEWORK

i The policy background

Recent regulations from the US Environmental Protection Agency (EPA) aimed at limiting greenhouse gas emissions from existing fossil fuel-fired electric generating units have potential to spur substantial growth in renewables, despite changing political attitudes towards renewable energy. The EPA rules set state-specific goals for reducing emissions from the power sector, the wind and solar sectors are poised to help states meet the proposed compliance plans. The final rules were released in August 2015 (the Clean Power Plan) but faced immediate legal challenges from a large number of affected states, state agencies, utility companies and energy industry trade groups. After an emergency stay was granted by the US Supreme Court, the US Court of Appeals for the DC Circuit heard oral arguments on the merits of the case in September 2016. In March 2017, President Trump issued an executive order setting forth his administration’s policy to promote energy independence and economic growth, and ordered the EPA to review the Clean Power Plan for consistency with the new policy. Subsequently, at the EPA’s request, the US Court of Appeals held the case in abeyance and last extended that status on 26 June 2018 for an additional 60 days. On 16 October 2017, the EPA proposed the repeal of the Clean Power Plan and opened a public comment period that ended on 26 April 2018, and a repeal of the Clean Power Plan is expected before the end of 2018. A repeal of the rules may delay anticipated retirements of coal-fired power plants and curb the need for replacement from cleaner energy generation sources.

ii The regulatory framework

Renewable energy regulation in the United States is centred on the regulation of electric generation and transmission. The applicable regulatory areas for electricity from renewable sources consist of a number of distinct subjects, including: (1) the ‘siting’ of generation projects – regulation by state authorities of the energy facility’s initial construction and operation; (2) the interconnection of generation projects to an electric grid; (3) the rates at which generators sell electric output; (4) the financial, corporate and organisational regulation of generation companies; and (5) the regulation of electrical reliability.

Regulation of electric generation is the responsibility of both state and federal governments. First, electricity generators must obtain certification from state entities to construct and operate generation facilities. Traditionally, states exercise siting regulation through state laws that require a generation project to obtain a certificate of public

18 See the US Environmental Protection Agency website: https://www.epa.gov/cleanpowerplan/clean-power-plan-existing-power-plants.
21 82 FR 48035 (16 October 2017).
22 83 FR 4620 (1 February 2018).
convenience and necessity (CPCN), which allows the certificate holder to exercise a right of eminent domain to obtain property necessary for the energy project. More recently, in most (but not all) states, laws have been enacted relaxing the need for a CPCN for some or all generator facilities.

Second, renewable energy is regulated when it is transmitted to an electric grid. Here, the generation project sells electricity to a service provider, typically a local utility or an independent system operator (ISO). While the service provider is the entity that must comply with interconnection regulations, the generation project is still affected. The Federal Energy Regulatory Commission (FERC) has asserted jurisdiction over interconnection to the high-voltage transmission grids (typically 100kV and above, but sometimes lower voltages too) where such grids allow power flows across state lines. State regulatory authorities control the interconnection process in Hawaii, Alaska and Puerto Rico, and in the Electric Reliability Council of Texas, which occupies most of central Texas and is not synchronously interconnected with the rest of the United States. Service providers in FERC jurisdiction offer interconnection agreements to generation projects, to which the parties file the agreements with FERC.

Third, the regulation of electric utility rates is the heart of the regulatory framework. FERC has jurisdiction over wholesale rates for electricity in interstate commerce; it controls the prices at which generating facilities sell power to utilities ‘for resale’ to customers in any part of the United States where power flows across state lines. FERC has two different methods for determining the rates at which wholesale electricity can be bought and sold: market-based rates and cost-based rates. Cost-based rate regulation is the older system, typically applied to traditional vertically integrated utilities with captive customers and to independent transmission companies. Here, rates are based on accounting costs that comply with FERC’s Uniform System of Accounts, including an allowed rate of return on invested capital. Conversely, market-based rate regulation is used by FERC for companies that do not have market power or that have mitigated their ability to exercise market power. Once a generator obtains market-based rate (MBR) authority from FERC under Section 205 of the Federal Power Act, the generator may sell wholesale electric energy, capacity and ancillary services (as specified in the MBR tariff) at market-based rates.

Fourth, FERC’s corporate regulation of utility mergers and consolidations, and leases and sales (or other dispositions) of jurisdictional facilities under Section 203 of the Federal Power Act is a significant aspect of electric regulation. FERC has to approve any transaction in which the ownership or control of jurisdictional facilities will change. In deciding whether or not to approve a change of control, FERC considers four factors: the effect of the proposed transaction on competition, the effect on rates, the effect on regulation, and the possibility of any cross-subsidies between cost-based and market-based utilities.

Finally, FERC has imposed electrical reliability standards, pursuant to which it reviews generation facilities’ reliability, imposing fines and requiring remedial actions for violations.

This regulatory framework underlies the broader pursuit of renewable energy development in the United States. The National Renewable Energy Laboratory notes that the

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24 This includes sales of equity interests of 10 per cent or more, directly or indirectly, in any public utility. It should be noted that ‘jurisdictional facilities’ include both physical facilities such as transmission or interconnection facilities, and ‘paper facilities’ such as contracts, rate schedules or a tariff (including an MBR Tariff) that have been accepted for filing under FPA Section 205.

25 This last factor was added by the US Congress pursuant to the Energy Policy Act of 2005.
aim of renewable energy regulation is fourfold: facilitating new renewable energy generation, ensuring adequate grid infrastructure, ensuring a secure short-term electricity supply and ensuring long-term electricity security.26 These goals can only be understood and achieved through a regulatory framework that works in conjunction with national and foreign policy, tariffs and project development of renewable energy.

IV RENEWABLE ENERGY PROJECT DEVELOPMENT

i Project finance transaction structures

Consistent with project financing transactions worldwide, the use of a special purpose vehicle (SPV), known as the ‘project company’ is commonly used in the US project finance transactions. Moreover, many project sponsors will develop multiple projects using different single-purpose project companies with separate financing transactions for each project.

Limited liability companies (LLCs) are the most common type of business organisation used for project companies because an LLC offers limited liability protection similar to that of a corporation but can be treated as a disregarded or flow-through entity for US federal tax purposes. The flow-through nature of an LLC enables gains, losses and depreciation from a project to be passed to the holder of an ownership interest in an LLC, referred to as a ‘member’, and avoids the double taxation that would result when using a traditional corporation. This is particularly advantageous in the renewable energy sector when the sponsor of a renewable energy project cannot efficiently or fully utilise the tax benefits from PTCs or ITCs. By utilising an LLC entity, parties can structure the management and ownership of a project company to facilitate a tax equity transaction, in which management rights can be vested in the strategic developer but ownership can be shifted to passive tax equity investors, who can avail themselves of the PTCs to be generated by the project or the ITCs associated with the project. In addition, parties can agree on adjustments to the allocations of gains and losses as necessary to address different risk allocation factors.

Generally, the bank market and the private placement market provide the primary sources of debt financing for US renewable energy projects. Banks typically provide project companies with construction and term loan facilities for the development, construction and operation of a renewable energy project, as well as letter of credit facilities to enable project companies to satisfy certain credit support obligations required under project contracts. In addition, banks often offer other specialised debt facilities, such as equipment supply loans to facilitate the purchase of wind turbine generators prior to a project’s completed development and final permitting. Often construction and term loan facilities will refinance these turbine supply loans. Sometimes banks will provide equity bridge loans to support the project’s equity contribution commitments. A unique bank product that has developed in the renewable energy industry is a ‘back-leveraged term loan’, which is essentially a term loan made at a level above the project company and is secured by the membership interests owned by a project developer in the parent of a project company (and not the direct assets of a project company). Back-leveraged term loans have evolved to minimise interparty negotiations with

tax equity investors when a ‘partnership-flip’ structure has been implemented. Banks also offer back-leveraged term loans to project holding companies, which include the partnership-flip structure discussed below.

Institutional investors that participate in the private placement transaction also offer a source of debt financing with fixed interest rates. Here, projects are financed through the issuances of bonds in capital markets, which are offered under Section 4(2) or Rule 144A of the Securities Act of 1933. Private placements under Section 4(2) are typically made only to accredited investors, such as a pension fund or an insurance company. Offerings in the bond market under Rule 144A are made only to qualified institutional buyers, which are sophisticated purchasers with over US$100 million of qualifying assets. While Section 4(2) private placements are usually made to a very small number of accredited investors through an administrative agent mixed with bank transactions, Rule 144A offerings are usually sold to a large number of investors administrated by a trustee under an indenture on behalf of qualified institutional buyers. Rule 144A transactions typically require less oversight and consent requirements than traditional bank transaction and Section 4(2) placements and offer a less onerous covenant package, given that waivers and modifications are harder to obtain when the transaction has been widely syndicated.

PTCs and ITCs have also changed the landscape of renewable energy project finance structures to the extent that a tax equity investor must own the renewable energy project to avail itself of these tax credits and other tax benefits. The partnership-flip transaction is a popular vehicle for project companies to implement to monetise their PTCs and ITCs and other tax benefits. In this structure, a tax equity investor enters into an equity contribution agreement or a membership interest purchase agreement prior to or during the construction phase of a project, pursuant to which the tax equity investor commits to contribute capital contributions or to purchase a membership interest in the project company (or parent) at the time (or immediately before in the case of a project monetising the ITCs) that the project is placed in service. The proceeds from the tax equity investment are applied to repay the construction debt. There are variations to this structure, known as the pay-as-you-go, or PAYGO, structure, in which the tax equity investor contributes less than 100 per cent of the equity provided under a traditional partnership-flip structure and agrees to make ongoing contributions during the operational period of the project as PTCs are generated.

The single investor lease or a leveraged lease transaction is an alternative structure used to monetise the ITCs associated with a renewable energy project. In a lease structure, a tax equity investor acquires the project and its tax attributes, and then leases the asset back to the developer, who operates the project and pays rent to the tax equity investor–lessor.

ii Distributed and residential renewable energy

Distributed generation covers technologies that generate electricity at or near where it will be used. In the United States, distributed energy is comprised of microgrids – such as structures on residential homes, industrial facilities or college campuses – that feed into larger electrical grids maintained by utility companies. Distributed generation capacity, which is 90 per cent sourced from solar panels but also relies on wind, fuel cells and heat power, amounts to

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nearly one-sixth of the nation’s capacity from existing centralised power plants. While some distributed generation systems are isolated from any centralised electrical grid, almost all distributed generation systems allow for net metering – connecting customers to a centralised grid from which they can purchase power when they are under-producing and to which they can sell any excess power generated.

The emergence of significant distributed generation installations in the United States has sparked policy debates over the price customers are compensated at for sales of energy to utility companies. As of October 2016, 45 states and the District of Columbia compensated customers for distributed energy, though rates and prices varied greatly. Some states use set scales to compensate customers at the same rates they pay for consumption of energy, others impose lower rates for energy produced versus consumed, and others still impose special ‘standby’ charges for the right to sell energy. For states imposing lower rates for energy produced by distributed generation installations, the lower prices are justified by utility companies as an ‘avoided cost’ – the costs the utility company would have incurred in producing the energy itself. While there is no federal policy on distributed energy pricing, there is proposed US Senate legislation, backed by environmentalists and renewable energy supporters, that would regulate and standardise rates and prevent unjustified utility charges. Likewise, utility companies have largely opposed distributed energy because of concerns over lost profits, resulting in many utilities lobbying states for decreased compensation. Regardless, standardised regulation will be necessary to support the continued growth of distributed energy.

iii Non-project finance development

While the vast majority of renewable energy projects are developed through project finance structures sponsored by private SPVs, utility-sponsored projects and non-profit sponsored projects have grown in popularity in recent years.

Utilities have sponsored community solar projects funded through upfront or ongoing payments directly from community ratepayers. The customer buys, from the utility or a third-party owner, the rights to the benefits of the solar energy produced by the community project. Utility-sponsored programmes can make solar power more accessible for residents – as opposed to distributed generation or residential solar – because it requires less purchase power per resident and allows customers to purchase solar electricity in monthly increments.

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28 See EPA, Distributed Generation Electricity and Its Environmental Impacts, https://www.epa.gov/energy/distributed-generation-electricity-and-its-environmental-impacts#ref1. Distributed generation estimated at about 200 gigawatts in a 2007 study by the Federal Energy Regulatory Commission (FERC). The total nameplate capacity of US centralised power plants was more than 1,100 gigawatts as of 2012, according to the US Energy Information Administration.
30 Id. at 46.
31 Id. at 47.
32 Id.
33 Id. at 47.
34 Id. at 48.
Two examples of such projects are the Sacramento Municipal Utility District’s Solar Shares and Tucson Electric Power’s Bright Tucson programmes. Electric co-ops, municipal utilities and public utility districts cannot benefit from renewable energy tax incentives for their community solar projects, since these entities do not pay federal taxes; however, they can take advantage of Clean Renewable Energy Bonds, which are not available to private entities. Since 2008, private and investor-owned utilities have qualified for the PTC or the 30 per cent ITC by meeting certain requirements.

Non-profit organisations have also created successful renewable energy projects financed through tax-deductible community donations. These donations are used to cover project construction costs, in which the donors receive tax deductions – if the donors receive a return benefit, such as electrical savings, their donation would constitute a quid pro quo contribution and their donation would not be tax-deductible. The generated energy is sent directly to the non-profit, such as a school or church, which is connected through a distributed generation model to a utility. The non-profit uses the electricity directly or receives compensation for over-production. While the non-profit is not eligible for federal commercial ITCs, it is eligible for other grants and funding not available to public utilities or private entities. The non-profit model has been successful throughout the country for small-scale projects, such as the community solar project in Bainbridge Island, Washington, in which 26 community organisations and individuals donated to the cost of construction of solar panels that support the local school’s energy needs.

Feed-in tariffs have also been introduced, albeit on a relatively limited basis, in the United States. These policies provide guaranteed payments to renewable energy producers (including individual homeowners) for the actual amount of energy they produce. This makes renewable energy investments far more attractive to homeowners and other investors, as feed-in tariffs can be used to guarantee a reasonable rate of return on the levelised costs of energy for a project. Further, data from Europe (where feed-in tariffs are more widely implemented) tends to show that feed-in tariffs are more cost-effective per kWh than upfront rebates and net metering, and encourage faster renewable energy uptake than these other options.

V RENEWABLE ENERGY: MANUFACTURING AND OUTLOOK

Renewable energy manufacturing in the United States has dramatically shifted over the past year in the wake of the Trump administration’s policies. An ‘America first’ protectionist stance on trade, significant funding decreases to the Office of Energy Efficiency and Renewable Energy, and Trump’s administration’s repeal of Obama-era renewable and clean energy goals has focused the Trump administration’s energy policies on non-renewable energy sources such

38 Section 45 of the Internal Revenue Code of 1986, as amended.
39 Section 48 of the Internal Revenue Code of 1986, as amended.
41 Id.
42 Id.
The most dramatic effect of changing policy priorities has been on US manufactured solar panels. More than 80 per cent of US solar installations use imported panels, with most manufactured in Asia. The Trump administration placed a 30 per cent tariff on all imported solar panels, falling to 15 per cent over a period of four years, which was levied in response to competition from Chinese manufacturers. The 30 per cent tariff has added about 10 cents per watt to the cost of solar energy in the United States, and while it has generally helped US manufacturers, including FirstSolar and Tesla, it has not slowed the dominance of Chinese solar panel manufacturers and exporters. Indeed, Jinko Solar, JA Solar and Longi Green Energy already had plans to build US factories. Ironically, many of the US solar manufacturers that have benefited from the tariff are not American; Suniva is majority-owned by a Chinese investor and SolarWorld is the US subsidiary of a German company – at least until SunPower (the dominant US Solar manufacturer) acquires SolarWorld later this year. With manufacturing only accounting for 14 per cent of jobs in the solar industry, the most pronounced effect of the tariff and shifting US priorities for renewables is the increased cost of solar panels, triggering a possible slowdown in future solar deployment and innovation.

Despite energy policy shifts away from renewable energy sources, renewable wind and solar energy has hit a record high of 10 per cent of total monthly electrical generation in March 2017, in the United States. This increase in generation has been attributed to continued growth of US wind turbine and solar panel manufacturing. With more than 500 US manufacturing facilities specialising in wind power components, centred mostly in the east and north-east United States, costs for commercial and distributed wind technology have dramatically dropped, with exports and domestic sales doubling from 2014 to 2016.

Further opportunities and challenges abound in the electrification of the transportation system. The ongoing succession of petrol-powered vehicles by plug-in electric vehicles (EVs), an ongoing trend that is projected to continue, entails a concomitant increase in electric energy demand. In fact, EVs could create up to 774TWh of electricity demand (on par with the entire US industrial sector); electricity consumption from EVs is projected to rise from 6TWh in 2016 to 800TWh by 2040. The conventional wisdom from the previous decade has been that night-time charging would alleviate strain on the electric grid. Yet, recent experience has been that solar energy production in the middle of the day has outstripped demand in areas with high solar retention. Plug-in electric vehicles, and other forms of electric storage, are a congenial solution to the problem of overproduction during peak solar

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hours, by providing a way to ‘store’ excess solar energy remotely. Accordingly, policies (from those that determine charging station locations to time-of-use rates for electricity) aimed at having consumers charge EV batteries with energy from renewable sources would do well to track this relationship.

VI CONCLUSIONS AND OUTLOOK

As renewable energy in the United States approaches grid parity – in which the cost of electricity generated is as affordable as electricity purchased from the grid sourced from fossil fuels – the continued success of the robust renewable energy industry is facing some uncertainty in the wake of shifting national policy priorities away from clean technology and expiring government subsidies and tax credits.50 Furthermore, the US electrical grid has constrained renewable energy growth in areas that have seen success internationally. For example, in the United States there is currently only a single 30MW offshore wind project in operation compared to the 10GWs of electricity in Europe sourced from offshore wind projects.51 However, new advances in predicting wind patterns offshore through experimental aircraft and satellite weather modelling have made offshore projects more viable in the very near future, and a number of offshore wind projects are currently under development.

Looking to the future, any increase in renewable capacity must account for the challenges of lower demand for electricity for industrial and commercial customers, and those posed by the mass adoption of plug-in EVs. The electrification of the transportation sector requires utilities to increase capacity, upgrade infrastructure and adopt demand-management techniques,52 such as time-of-usage rates, to support the influx in demand and prevent displaced fossil fuels from being replaced by dirty ‘peaker’ plants.53 The marriage of renewable energy and the electrification of transportation will be supported by the country’s increased funding for electric transportation research54 and states’ growing Renewable Portfolio

Standards. In addition, the deployment of energy storage and other technology advances in the renewable energy industry will help transform the intermittent nature of wind and solar resources to enable these low-cost renewable energy sources to ultimately function as more reliable baseload facilities. Moreover, given that renewable energy projects are now lower-cost generation resources than ageing coal and oil-fired plants, market forces will likely continue to drive investments in clean energy projects despite the phase out of current US federal tax benefits.

I INTRODUCTION

Vietnam is facing the issue of national energy security because it is changing from an energy exporting country into an energy importing country. In addition, serious environmental issues arise in relation to Vietnam’s use of coal-fired power plants over the past 10 years. Therefore, the government has set out a strategy and policy to improve efficiency in the use of energy and to utilise domestic renewable energy.

The government still plays a vital role in terms of investment into the energy sector by using state capital in state-owned enterprises (such as Electricity of Vietnam, PetroVietnam and Vinacomin) and by mobilising capital from the private sector, including foreign investment, in its energy development strategy. Vietnam has to continue formulating legal frameworks and appropriate regulations to create a competitive investment environment to attract and encourage the application of new and modern technologies to balance the demand for environmental protection with national energy security.

On 25 November 2015, the Prime Minister approved ‘Vietnam’s Renewable Energy Development Strategy up to 2030 with an outlook to 2050’, which sets out an ambitious plan for the country to achieve by 2050: total power generated from renewable sources to account for 44 per cent of total generated electricity. The Strategy recommends that the government:

a initiate a renewable energy market;
b introduce reasonable feed-in tariffs (FITs) and investment protection policy;
c set out applicable renewable energy standards;
d regulate the net-metering mechanism;
e grant incentives for development and use of renewable energy (e.g., import tax, corporate income tax and land use rights); and
f impose an environmental protection fee on energy projects using fossil fuels, to provide a fund for the development of renewable energy.

II THE YEAR IN REVIEW

On 18 March 2016, the Prime Minister issued Decision No. 428/QD-TTg (generally referred to as the Revised Power Development Master Plan VII (the Revised PDP 7)). The Revised PDP 7 contemplates that total installed capacity of electricity generated from
hydroelectric facilities will be up to 21,600MW by 2020 and 27,800MW by 2030; from wind it will be 800MW (2020) and 6,000MW (2030); and from solar it will be 850MW (2020) and 12,000MW (2030). The ratios of hydroelectric, wind, biomass and solar power in relation to total power generated in 2030 will be 15.5 per cent, 2.1 per cent, 2.1 per cent and 3.3 per cent respectively. At the time of writing, the Ministry of Industry and Trade (MOIT) was updating the Revised PDP 7, with more renewable energy projects in the centre of Vietnam (including Binh Thuan and Ninh Thuan provinces).

Since 2014, the central government, provincial and city peoples’ committees and the relevant ministries have been regulating the legal framework step by step to promote the development of renewable energy in Vietnam, including specific feed-in tariffs, exemptions and reduction of corporate income tax and import duty for project companies, and exemptions or reductions of land rental charges.

Notably, in 2017 the Prime Minister issued Decision No. 11/2017/QD-TTg and the MOIT issued new regulations on the promotion of solar power and standard PPAs. In January 2018 alone, domestic and foreign investors registered investments of a billion dollars in the wind farms in Bac Lieu, Soc Trang and Ca Mau provinces.\(^4\)

### III THE POLICY AND REGULATORY FRAMEWORK

#### i The policy background

Despite good natural conditions and huge potential for the application of wind and solar energy, the country’s renewable energy capacity is still limited to 5 per cent of the total generation capacity. The MOIT pointed out that the regulatory barrier is one of the reasons for the low application of renewable energy. In particular, Vietnam has not completed a national master plan for the development of renewable energy. The current incentives are not attractive enough to investors. Also, the current low FIT does not encourage investments into wind and solar energy.

Under the current procedure, the provincial peoples’ committees propose plans for renewable energy projects in their province. Given the lack of transparency and the low management capability at local government level, this decentralised planning procedure has resulted in a short-term and limited local approach to renewable energy in Vietnam. Binh Thuan province alone registered 70 out of the 100 solar power projects in Vietnam.\(^5\) This fact highlights the short-term and incomplete nature of planning for wind and solar power projects in Vietnam.

In general, Vietnam grants ordinary but not special incentives for renewable energy projects, in the same manner as it does to encourage other investment projects in other sectors. This policy of ‘ordinary incentives’ does not make the project viable from the developers’ and lenders’ point of view. The most critical issue regarding renewable energy projects in Vietnam would appear to be the need for a special subsidised FIT for wind and solar power projects. However, Vietnam does not yet have approval for the use of the environmental protection fund to subsidise a FIT for wind and solar power projects.

Renewable energy projects are governed by two levels of laws: general requirements for all types of energy projects and specific regulations for each type of renewable energy.

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Like other energy projects, renewables projects are obliged to comply with regulations on (1) power development plans, (2) the power purchasers and power purchase agreement (PPA) execution process, and (3) approvals and consents from the authorities.

Grid-connected renewable energy projects must be included in a regional or national power development plan before reaching the implementation stage. This step is required to ensure that there is enough land for the project. Furthermore, depending on the installed capacity of the project, the Prime Minister, or the MOIT, has to approve such projects for inclusion in the relevant power development plans. For example, solar and wind power projects with capacity equal to or greater than 50MW will be approved by the Prime Minister, while those with capacity below 50MW will come under the authority of the MOIT. The regulatory body authorised by the MOIT to deal with renewable energy projects is the Electricity and Renewable Energy Authority of Vietnam.

Regarding power purchasers, it is important to note that, subject to certain exceptions, at present, Electricity of Vietnam (EVN) remains the sole offtaker for all renewable energy projects, and Vietnam still operates a monopoly ‘single-buyer’ electricity market. Specifically, EVN will authorise its subsidiary company Electric Power Trading Company to negotiate and execute the PPAs with project developers. Corporate renewable-power purchase agreements, subject to certain exceptions, are technically not possible at present, although petitions have been raised on some occasions.

Furthermore, as standard practice, renewable energy project developers must obtain the necessary approvals and consents to implement a power project. These include agreements on grid connections, supervisory control and data acquisition systems, and metering; environmental impact assessment approvals; fire prevention and firefighting scheme approvals; and electricity operation licences and electricity generation licences.

ii The regulatory framework

There are the following specific pieces of legislation on renewable energy:

\[ a \] Decision No. 37/2011/QD-TTg (issued on 29 June 2011, and effective as of 20 August 2011) and Circular No. 32/2012/TT-BCT (issued on 12 November 2012, and effective as of 27 December 2012) on wind energy;

\[ b \] Decision No. 24/2014/QD-TTg (issued on 24 March 2014, and effective as of 10 May 2014) and Circular No. 44/2015/TT-BCT (issued on 09 December 2015, and effective as of 25 January 2016) on biomass power;

\[ c \] Decision No. 31/2014/QD-TTg (issued on 05 May 2014, and effective as of 20 June 2014) and Circular No. 32/2015/TT-BCT (issued on 08 October 2015, and effective as of 7 December 2015) on solid-waste power; and

\[ d \] Decision No. 11/2017/QD-TTg (issued on 11 April 2017, and effective as of 1 June 2017) and Circular No. 16/2017/TT-BCT (issued on 12 September 2017, and effective as of 26 October 2017) on solar power.

In addition to this specific legislation, renewable energy projects fall within the scope of legislation applicable to all types of energy projects in Vietnam – that is, laws on electricity, construction, environment and so on – and in the adoption of such laws Vietnam has scope to develop a distinct legal framework for renewable energy projects.
Regulators
The main regulator for renewable energy is either the MOIT (via the Electricity and Renewable Energy Authority (EREA)) or the provincial departments of industry and trade, subject to the capacity of the projects. While the Electricity Regulatory Authority of Vietnam manages the development of all power projects, the EREA has authority and responsibility for regulating FITs for renewable energy.

The Ministry of Natural Resources and Environment (MONRE) and the provincial departments of natural resources and environment approve the environmental impact assessments.

The provincial people’s committees and district people’s committees are heavily involved in not only the provincial renewable-energy development plans, but also the whole development of the projects.

Investment incentives
Overall, renewable-energy projects in Vietnam have been granted incentives as follows:

a. exemption from import duties applicable to the imported materials, equipment and facilities forming the fixed assets of the renewable-energy project;

b. the same corporate income-tax exemptions or incentives as those applicable to projects in other investment priority sectors in accordance with prevailing tax laws and regulations;

c. solar power projects, transmission lines and substations connected to the power grid are exempted from or subject to the same reduced land-use fees, land rent and water surface rent as those applicable to projects in other investment priority sectors in accordance with prevailing tax laws and regulations;

d. capital mobilisation will be made in accordance with prevailing laws and regulations; and

e. in addition to the aforementioned incentives, each particular type of renewable-energy project enjoys distinct and special treatment (see below for details).

EVN offtake obligation
As stated above, subject to certain exceptions, at present, EVN is the sole offtaker for all renewable energy projects, and Vietnam still operates a monopoly single-buyer electricity market.

Corporate renewable-power purchase agreements, subject to certain exceptions, are technically not possible at present, although petitions have been raised on a number of occasions.

Power purchase agreements
The model power purchase agreement (PPA) for renewable energy projects is mandatory, with different kinds of projects using the same template with minimal changes to specific incentives for each type of project. Furthermore, the bankability of these model PPAs is another critical issue that developers must consider carefully.

The fixed term of the PPA is 20 years from the date of commercial operation, following which the parties may agree to extend the term or sign a new PPA under the existing regulations.
Solar power

Solar power is the latest renewable source to be promoted by specific legislation, and assurances have been given that it will be the focus of further attention in the future.

On 11 April 2017, the Prime Minister officially approved Decision No. 11/2017/QD-TTg (Decision No. 11) to promote solar energy in Vietnam. Decision No. 11 regulates solar power projects that generate electric power through the use of solar panels to directly convert energy from sunlight into electricity (i.e., the conventional solar photovoltaic (PV) power system). Other types of solar power generation, such as thermal or concentrated solar power or hybrid solar power systems, are not subject to this regulation.

The MOIT subsequently issued Circular No. 16/2017/TT-BCT (Circular No. 16) to guide the implementation of Decision No. 11. Circular No. 16, together with Decision No. 11, constitutes the prevailing legal framework for solar energy development in Vietnam.

Before the issuance of the Revised PDP 7, most solar installations in Vietnam were small scale, with a limited electric generating capacity of less than 5MW. Now, with the government having given the green light to investment incentives, many large-scale solar energy projects have been commenced, including Fujiwara Binh Dinh solar and wind power project (a 64MW solar power plant initiating operation in the first quarter of 2019) and Thanh Hoa 1 (160MW developed by BS Heidelberg Solar).

The following are highlights from the specific regulations on solar power projects.

Types of solar PV projects

Decision No. 11 classifies two types of solar PV projects: (1) roof-mounted and (2) grid-connected solar projects. Roof-mounted projects are clarified as those that use solar panels made up of photovoltaic cells installed on the rooftops of residential or commercial buildings, or around the premises of those buildings, and that connect to the national grid or the EVN electric grid. Projects that are connected to the national grid or the EVN electric grid but are not roof-mounted projects are classified as grid-connected projects.

FIT

For grid-connected solar projects with solar-cell efficiency greater than 16 per cent or solar-module efficiency greater than 15 per cent, a FIT will be fixed at 2,086 Vienamese dong/kWh (equivalent to US$9.35 cents/kWh, exclusive of VAT) for generating electricity at the delivery point.

Regarding roof-mounted solar projects, a FIT of 2,086 Vienamese dong/kWh (equivalent to US$9.35 cents/kWh, exclusive of VAT) theoretically applies to excess generation as compared with electricity consumed during the relevant year, which is also known as a net-metering scheme. This mechanism calculates the energy used and produced by using a single, bidirectional meter. In a payment cycle, if electricity generated is greater than that consumed, the balance will be transferred to a subsequent payment cycle. At year end (or when the relevant PPA is terminated), the excess electricity generated will be sold to EVN at the FIT price.

However, the FIT price for both types of solar project is only applicable to projects with a commercial operation date (COD) before 30 June 2019; however, the FIT price remains in effect for 20 years from these CODs.
Other requirements

Both types of solar PV projects whose capacity is equal to 1MW or higher must comply with the national or regional power development plans and are required to fulfil the MOIT licensing requirements. Additionally, the land used must not exceed 1.2ha/1MW.

Wind power

As with solar projects, wind power projects in Vietnam possess huge potential for growth. According to a report by the Vietnam Energy Association (VEA), coastal cities and provinces in Vietnam have recognisable development potential for wind power installations on land of a capacity of up to 40,000 to 50,000MW. When counting in the installation of offshore wind power projects, this could increase to 100,000MW of total installed capacity. Additionally, the MOIT has approved master plans for wind power developments in some regions in Vietnam. For instance, by 2030, the Ca Mau wind power installation is tentatively expected to be developed to a capacity of 3,607MW; the projected figure for Binh Thuan province is 2,500MW; and so on.

In the period 2010–2012, wind energy projects were the hot trend for investors. At that time, the government quickly adopted a legal framework to promote the development of such projects. Special incentives for wind power were provided primarily through the following three documents:

a. Decision No. 37/2011/QD-TTg of the Prime Minister on the mechanism supporting the development of wind power projects in Vietnam, dated 29 June 2011 (Decision No. 37);

b. Circular No. 96/2012/TT-BTC of the Ministry of Finance providing guidelines for a financial mechanism to support the electricity price for grid-connected wind power projects, dated 8 June 2012 (Circular No. 96); and

c. Circular No. 32/2012/TT-BCT of the MOIT providing regulation on implementation of wind power project development and power purchase and sale contract forms for wind power projects, dated 12 November 2012 (Circular No. 32).

The huge potential for wind, together with the incentives, has encouraged developers to undertake large-scale projects: for example, Bac Lieu (Cong Ly Phase 1 and Phase 2) project (with total installed capacity of over 99MW), Huong Linh 2 project (30MW) and Dam Nai Phase 2 (40MW in total).

The most notable incentives and the requirements for wind power are as follows.

FIT

The government has set an incentive for the electricity selling price for grid-connected wind power plants. Decision No. 37 stipulated that purchasers have responsibility for

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7 Decision No. 1402/QD-BCT dated 11 April 2016 providing masterplan for wind power development of Ca Mau province until 2020/2030.

buying the whole electricity output from wind power projects, at the electricity buying price of 1,614 Vietnamese dong/kWh (exclusive of VAT, equivalent to US$7.8 cents/kWh). Additionally, the government supports purchasers with a subsidy of 207 Vietnamese dong/kWh (equivalent to US$1.0 cents/kWh) of the price for the purchase of the whole electricity output from wind power plants through the Vietnam Environment Protection Fund (VEPF). This electricity price support will be applied in the PPA for a 20-year period.

Notably, the government is considering a request from the MOIT to raise the electricity selling price from US$7.8 cents/kWh to US$8.77 cents/kWh (for onshore power plants) and US$9.97 cents/kWh (for offshore power plants) and apply these prices until 2021.9

Requirements
Wind turbines deployed in projects must not have been used before and their production date must not be more than five years old; if used turbines are proposed, the developer must apply to the MOIT for review and approval.

The land used for the project must not exceed 0.5ha/MW (0.7ha/MW for temporary wind power projects). In special cases (e.g., difficult location makes transportation of turbines and other equipment problematic, and therefore site needs improved), the maximum land used can be extended to 1ha/MW.

Biomass power
As a developing agricultural country, Vietnam produces a vast number of agricultural products, such as rice, sugar cane and coffee. As a result, millions of tons of waste are created, such as straw, rice husks, bagasse, coffee husks, coir, wood or wood residues, and other agricultural or industrial by-products, and these constitute a very valuable biomass resource. The latest statistics from the MONRE anticipate an annual production totalling 170 million tons of biomass, the benefits of which are acknowledged as a decrease in CO2; a rise in income for farmers as they can sell farming waste to biomass electricity producers; and support for Vietnam’s sugar cane sector against competitors from ASEAN countries. Therefore, on 24 March 2014, the Prime Minister promulgated Decision No. 24/2014/QD-TTg on Support Mechanism for Development of Biomass Power Projects in Vietnam (Decision No. 24), which was followed and facilitated by Circular No. 44/2015/TT-BCT on Biomass Power (Circular No. 44), and Decision No. 942/QD-BCT of the MOIT on Promulgation of Regulation on Avoided Cost Tariff for 2016 Biomass Power Projects dated 11 March 2016 (Decision No. 942).

Types of biomass power projects
Circular No. 44 classifies biomass electricity projects into two types, based on whether the biomass project is built and connected to the national power grid or not. A grid-connected biomass project can supply power partially or wholly to the national grid. Distinct from grid-connected biomass electricity projects, a non-grid-connected biomass power project is

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a biomass power plant project built to supply its entire power output to households in certain areas not connected to the national power grid, and the pricing of the electricity from these non-grid-connected projects is not strictly regulated by the Vietnamese authorities.

Electricity and heat cogeneration, or combined heat and power (CHP), is another type of biomass power project that falls within the remit of the MOIT. Defined as biomass power projects that simultaneously provide heat and electricity, CHP projects are sometimes called co-firing biomass power projects. This type of biomass electricity project is widely expected to be deployed in future not only in new biomass projects, but also in existing thermal electric power plants in Vietnam.

FIT

Decision No. 24 sets out the electricity selling price for grid-connected biomass power projects as follows:

a for combined heat and power projects: 1,220 Vienamese dong/kWh (excluding VAT, equivalent to US$5.8 cents/kWh). Electricity selling prices are adjusted according to fluctuations of the Vienamese dong/US$ exchange rate; and

b for other biomass power projects: according to the Avoided Cost Tariff (ACT) for biomass power projects issued by the MOIT annually. On 11 March 2016, the MOIT promulgated the ACT regime applicable to biomass projects, excluding thermal power cogeneration projects, as mentioned above, and power generation projects using bagasse with back pressure for sugar plants (Article 9, Circular No. 44). This tariff provided three very similar prices for biomass power projects for three different regions in Vietnam. The average electricity selling price derived from the ACT is US$7.462 cents/kWh (excluding VAT).

A new ACT is announced annually. Where the tariff applicable to biomass power projects has not yet been announced, the tariff of the previous year shall be temporarily used until the tariff applicable to the new biomass power projects is announced. The difference between the calculation under the old tariff and the new tariff shall be refunded to buyers or sellers, whichever is appropriate, in the first payment following application of the new tariff.

The government provides assistance with the electricity price for non-grid-connected biomass power projects subject to the principles set out in Circular No. 44. The investor shall prepare a dossier regarding assistance with the electricity price for off-grid biomass power projects and submit it to the General Directorate of Energy and, if necessary, go through an assessment and obtain approval from the Prime Minister. To apply for assistance, a project must have finished the development phase, and have specifically obtained and investment certificate and executed a PPA.

Solid-waste power

Given that Vietnam’s population, calculated as of 19 March 2018, stands at over 95 million, the country generates a huge amount of solid waste. The amount of solid waste generated
nationally is estimated at about 70,000 tons per day. In large cities such as Hanoi and Ho Chi Minh City, this figure can be 7,000 to 8,000 tons per day.\(^\text{10}\) Therefore, Vietnam has a great potential for solid-waste power (or waste-to-energy).

The government has also identified solid waste as a source of renewable energy to be promoted. According to plans scheduled up until 2050, most of Vietnam’s urban solid waste will be used to produce electricity.\(^\text{11}\) On 5 May 2014, the Prime Minister issued Decision No. 31/2014/QD-TTg (Decision No. 31) on Supporting Mechanism for Development of Power Generation Projects Using Solid Waste in Vietnam. Then, on 8 October 2015, the MOIT promulgated Circular No. 32/2015/TT-BCT (Circular No. 32/2015) to clarify provisions under Decision No. 31 and issue a model PPA. Together, they constitute a legal framework to promote the development of solid-waste energy projects in Vietnam.

**Types of solid-waste power projects**

Under the laws of Vietnam, there are two types of solid-waste power whose development the government is promoting. In the first type of project, solid waste is directly incinerated to produce electricity. The second type produces electricity from combusted gas collected from solid-waste landfill sites.

**FIT**

For projects producing electricity by directly incinerating solid waste, the FIT price is at 2,114 Vietnamese dong/kWh (equivalent to US$10.05 cents/kWh, exclusive of VAT). For combusted-gas projects, the FIT price is at 1,532 Vietnamese dong/kWh (equivalent to US$7.28 cents/kWh, exclusive of VAT). The above prices are adjusted with the fluctuation of Vietnamese dong/US$ exchange ratios.

**IV RENEWABLE ENERGY PROJECT DEVELOPMENT**

In Vietnam, most power projects need to be financed. Overall, senior debt is the most common type of financing for renewable energy projects. Currently, there are numerous stakeholders from various sectors interested in renewable energy projects in Vietnam, such as development banks, commercial banks, funds, governments and strategic investors.\(^\text{12}\) The specific mechanisms for solar and wind projects legally require developers to maintain equity percentage of at least 20 per cent of the total project capital (i.e., the debt or other finance support must not exceed 80 per cent of the total investment capital).

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\(^{\text{12}}\) Aurélien Agut, Tran Truong Han, Vu Chi Mai, Peter Cattelaens, Wind Power Investment Guidelines for Vietnam (July 2016), MOIT/GIZ Support to the Up-Scaling of Wind Power in Viet Nam.
Additionally, the development of distributed and residential renewable energy in Vietnam is in the early stages. The year 2017 was the first in which a net-metering scheme applied to roof-mounted solar projects was introduced; therefore, as yet there is no official data or related information available.

V RENEWABLE ENERGY MANUFACTURING

The government exempts taxes for imported goods that are used to constitute the fixed assets of renewable-energy projects. Therefore, imported wind turbines, solar panels, etc. for project construction are exempted from tax.

Domestic manufacturers of renewable-energy products also enjoy government incentives, similar to incentives for preferred and promoted investment, such as incentives on taxes and land.

However, the interpretation of tax regulations may vary in different provinces, albeit the laws are the same. Therefore, whenever such inconsistencies occur, guidelines and official instruction from the state’s tax authority are needed to provide clarification.

VI CONCLUSIONS AND OUTLOOK

Going forward, we believe that renewable energy will form an essential part of a diverse energy mix of available low-carbon generating technologies in Vietnam.

However, the support system for the deployment of renewables generation (including solar energy, onshore and offshore wind, and biomass energy) has left a lot to be desired from the perspective of project developers and financiers. The principal issues are FITs and critical PPA contractual terms, to facilitate the development and financing of long-term utility-scale renewable energy resources.

Although the mechanisms of renewable energy have been adopted, the development of projects and fulfilment of the 2030 target are facing numerous challenges.

Regarding solar projects, the FIT price is only applicable to projects with a COD before 30 June 2019. The FIT after this date is still unknown, and developers are worrying that the FIT after 30 June 2019 may be lower.

In respect of wind power, the actual installation of wind power projects has not reached the projected goal because of the pace of the installation work; therefore high input costs lead to high calculated electricity prices while the FIT is fixed.

Although Vietnam has potential for the development of solid-waste power projects, about 85 per cent of solid waste is currently buried in landfills, which represents a massive wasted resource.13

The government is finding ways to deal with these challenges. Currently, the government is considering an increase in the FIT rate and other mechanisms for wind power projects (e.g., auction schemes). In particular, the MOIT suggested, and recommended, that the government consider and approve an increase of the FIT to US$8.77 cents/kWh for onshore wind power plants, and to US$9.97 cents/kWh for offshore wind power plants.

The government is considering the suitability of wind energy auctions as a support mechanism for Vietnam. Using the auction mechanism, the energy market would be more

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13 Phuong Nhi; see note 7.
Vietnam

competitive, if also more complicated and with increased risks for investors. However, although using the auction mechanism would provide an increased measure of control in the planning and deployment of renewable energy, this is not a primary objective in Vietnam and lower electricity procurement costs would be the most significant benefit. In the case of Vietnam, an immediate shift from FITs to auctions is not recommended as it is necessary to first establish certain preconditions in the coming years. FITs could continue to be used for onshore wind energy (a mature technology). However, auction-based support can be used for near-shore wind energy projects, since calculating costs for these types of projects and setting FIT rates is more challenging. A suggested timeline for introducing auctions is:

a 2018–2020: amending the FIT system;
b 2018–2023: preparing for auctions implementation; and
c 2020–2023: parallel use of FITs and auctions for existing projects.

Meanwhile, solutions for solar and biomass are still in question. We expect the government, in cooperation with international experts, will find the best way to develop renewable-energy projects in Vietnam, contributing both to the development of a new era of the economy and taking a new generation another step closer to a widespread application of renewables technologies.
SIMONS ADAMS
_HFW_
Simon Adams specialises in commercial law with particular emphasis on energy and competition law.

Simon has extensive experience in the energy industry, particularly electricity and gas. He advises on all aspects of the power industry, both renewable and conventional, including facility construction, operation and maintenance, power procurement and retail sales, electricity network access and services, metering and regulation. In the gas sector, he advises on gas procurement and transport, pipeline construction and access, gas tolling, storage, aggregation and retail arrangements.

He also acts on energy disputes and has been appointed to the legal panel of the Western Australian Energy Review Board.

Simon's previous experience includes acting in-house as senior legal counsel with a state-owned electricity and gas retailer. He recently acted on the merger of that entity with the state-owned generator.

He has also acted for various regulators, including the Australian Competition and Consumer Commission, the operator of the Western Australian Wholesale Electricity Market and the Western Australian Economic Regulation Authority.

Simon's understanding of the electricity regulatory regime of Western Australian has benefited from his role in assisting drafting key pieces of Western Australian legislation regulating the electricity industry, including the Metering Code, amendments to the Electricity Networks Access Code and the Wholesale Electricity Market Rules, including the introduction of two new markets.

Simon is qualified in Western Australia (Australia).

HERMENEGILDO ALTOZANO
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Hermenegildo Altozano is a partner and heads Bird & Bird’s energy and utilities practice in Spain.

He specialises in energy law, regularly advising on projects and transactions in Spain and Latin America, and has broad experience in investment protection and arbitration in Latin America.

Hermenegildo joined Bird & Bird from Hogan Lovells, where he headed the energy and natural resources practice in Spain. Before that, he was a partner in the energy
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Herменegildo is considered by the main international law directories (including Chambers & Partners) to be the top expert in foreign investment in Cuba, where he regularly advises key market players in the energy (power, oil and gas), natural resources, aviation, agribusiness, tourism, food and infrastructure industries. He formed part of the legal team that first designed the rules governing the electricity market in 1997. He has also advised private investors in conflicts relating to the energy industry in the Dominican Republic, Nicaragua and Cuba. He is currently participating in several investment arbitration proceedings pursuant to the Energy Charter Treaty.

He is co-director of the Energy and Regulation Forum of the Foundation for Research on Law and Business (FIDE), director of the energy law programme at IE Business School, Madrid and associate professor of private international law at Francisco de Vitoria University, Madrid. Hermenegildo regularly takes part in the radio programme La Tertulia Capital on Capital Radio (103.2 FM).

He received the International Law Office’s Client Choice Award as best energy lawyer in Spain in 2010, 2011 and 2013–2016. He was also voted lawyer of the year for the natural resources industry by Best Lawyers in 2012 and 2016. In 2012, Hermenegildo’s team was voted best energy law firm in Spain by Acquisition International.

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Luciana Bellia is a senior attorney based in the Italian offices of Cleary Gottlieb. Her practice focuses on European and Italian competition law, in particular merger notifications and antitrust law, including vertical and horizontal agreements, cartels, abuse of dominance, and state aid. She has experience in a number of industries, particularly energy and chemicals. She has been involved in a broad range of merger-control and abuse-of-dominance proceedings before the European Commission and the Italian Antitrust Authority. She graduated with honours from the LUISS Guido Carli University School of Law in 2001. While at law school she was a visiting student at Georgetown University Law Center for a semester on a scholarship granted by the University of Rome. She obtained an LLM in advanced European legal studies from the College of Europe, Bruges in 2006. She is a member of the Palermo Bar.

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Fabiano Brito’s practice is fully dedicated to the electricity sector and he has extensive experience in regulatory and transactional matters regarding all types of power companies (i.e., distribution, transmission, independent producers and trading companies).

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Laura De Deyne focuses mainly on administrative, environmental, energy and constitutional law.

She obtained her Master of Laws degree in 2012 from the University of Ghent, with a specialisation in international and Belgian public and environmental law. Laura earned a doctoral degree in January 2017 from the University of Hasselt and the Transnational University in Maastricht. The title of her dissertation was ‘Legal Characteristics of Legitimate Market Supervision in the Energy Sector’.

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Naoaki Eguchi is head of the the Baker & McKenzie banking and finance practice group in Tokyo. Naoaki is a member of the Japan Wind Power Association's offshore wind power task force. He has also been a special member of the Cabinet Office's PFI Promotion Committee since 2010.

Naoaki focuses his practice on project finance, infrastructure PPPs – especially in relation to airport and renewable energy. He has been involved in project finance for more than 150 solar power projects of over 2,000MW, and project finance for more than 15 wind power projects of over 280MW. He worked for MUFG, DBJ, Mizuho Bank and SMBC on a US$2.6 billion project finance arrangement for an integrated coal gasification combined-cycle (IGCC) power plant of 540MWx2 in Fukushima, Japan in 2017. He also
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She was admitted to the Egyptian Bar in 2007, and is a member of the International Bar Association (IBA), Women in Clean Energy Egypt (WICE), the local chapter of the initiative launched by the Clean Energy Business Council (CEBC) and the Association of International Petroleum Negotiators (AIPN). Donia regularly speaks at conferences in and outside Egypt, particularly on clean energy.

She holds an LLM in international financial law from King’s College London (UK), a master in international and European business law from Paris I Panthéon-Sorbonne University (France) and an LLB from Cairo University (IDAI) (Egypt).

Donia is recommended by The Legal 500 particularly for energy and projects and infrastructure. She is ranked as a ‘Leading Individual’ and noted as ‘one of the best specialist partners in the energy sector’, and as a ‘talented partner’, who is ‘responsive and accurate’ and ‘highly knowledgeable’. She is also noted as ‘a rising star in the renewable energy market’, as ‘hardworking and diligent’ and for ‘always going the extra mile’.

ADEYEMI EDWARD ESAN

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Adeyemi Esan is an associate at Detail and a core member of the firm’s power practice. Adeyemi is an astute lawyer, well versed in the legal aspects of the power sector and with a passion for providing pragmatic solutions to clients. His transactional experience includes advising the Central Bank of Nigeria and the Nigerian Electricity Regulatory Commission (NERC) on the 213 billion-naira intervention fund for the Nigerian electricity supply industry; advising PTRM Power 1 on a bid for an IPP solution for supply of power to Société AngloGold Ashanti de Guinée valued at US$45 million; advising Lagos State government on the legal and regulatory framework of the Lagos State power sector reform (Light Up Lagos); and advising the Nigerian Energy Support Programme and NERC on a regulation for mini-grids. Adeyemi holds a law degree from Babcock University, Ogun State (2010) and an LLM, with a specialisation certification in energy, environmental and clean technology law, from Boalt Hall – the University of California, Berkeley, School of Law (2014).
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Jo Garland has extensive experience in the energy and resources, special projects and climate change fields. Jo has worked on projects at all levels of the supply chain, including one of Australia’s largest natural gas projects, a world-leading off-grid solar project, numerous international resources joint ventures and large energy acquisition projects.

Jo has a detailed understanding of the Western Australian electricity market, having acted for the state-owned electricity generator and retailer on numerous matters.

Her climate change experience includes acting as the lead lawyer for the government on the implementation of the emissions trading scheme and later acting for private entities on the introduction and then removal of that scheme.

Jo is qualified in Western Australia (Australia) and New Zealand.

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Dr Thomas Heidemann is a Russia and Eastern Europe expert. He is based in Düsseldorf and Moscow, where he advises on complex transactions in Russia and in central and Eastern European countries. Given his good 20 years of experience, Russian and international clients trust him when it comes to cross-border investments from and to Russia. He works on industrial developments, joint ventures and private equity deals, with special know-how in the automotive sector, and he also advises on investments in renewable energies and other Russian industries.

Thomas heads CMS Russia’s German desk in Moscow and the Russian desk in Düsseldorf and, as such, coordinates the German–Russian work in these offices. Before joining CMS, he worked for a large German law firm, where he managed the Russia and Ukraine practice, with offices in Moscow, Saint Petersburg and Kiev.

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Naoki Ishikawa is an associate in the Baker & McKenzie banking and finance practice group in Tokyo. Naoki’s practice focuses on project finance, financial regulations and other corporate law matters.

He has been engaged in renewable energy projects, lease structuring, PFI arrangements and various domestic and cross-border transactions. He has also been involved in cases requiring surveys of Japanese regulations – including regulatory frameworks for electricity charging businesses, solar and onshore and offshore wind power projects, maritime transportation, and fund transfer services.
He has worked for MUFG, SMBC, Mizuho Bank, Wells Fargo & Co, Maybank MYX, Sumitomo Mitsui Finance & Leasing, Sumitomo Mitsui Trust Bank, Japan Wind Development, Marubeni Corporation, Mitsui & Co and Porsche AG, among others.

Prior to joining Baker & McKenzie, Naoki worked at a maritime law firm, where he advised clients on a wide range of maritime matters, such as domestic and international contracts of carriage of goods by sea, bills of lading, charter parties, sales and purchases of ships, and maritime accident disputes. He also completed a secondment with a major shipping company in Japan.

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DONG EUN KIM
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Dong Eun Kim leads the project and energy practice group at Lee & Ko. He has a wealth of experience and expertise drawn from advising for over 20 years on all kinds of inbound and outbound transactions related to social overhead capital, energy and real estate development, construction, operation, financing, investment and restructurings. Mr Kim has experience representing all important project stakeholders, such as major project investors, syndicated lenders, project companies and governments. Since 2014, and over a three-year span, he has provided advice on about 125 large inbound and outbound projects related to social overhead capital, energy and real estate.

Notable examples of the aforementioned projects include domestic public–private partnerships (PPP), such as the West Suwon–Osan PPP, the Yongin–Seoul PPP, the Eulsukdo Bridge PPP, the Busan New Port PPP, as well as overseas PPPs, such as the Ivory Coast Abidjan Metro project, Çanakkale Bridge and Highway Project, Kuala Lumpur–Singapore High-Speed Rail project, Eulsukdo Bridge PPP, the Busan New Port PPP, as well as overseas PPPs, such as the Ivory Coast Abidjan Metro project, Çanakkale Bridge and Highway Project, Kuala Lumpur–Singapore High-Speed Rail project, Tukai Kartanegara coal terminal development project, New Intercity Fleet project in New South Wales, Australia and Thi Nghe wastewater project in Ho Chi Minh City, Vietnam. Also worth mentioning are domestic energy-related projects, such as the Poseung community energy project, the Pyeongtaek–Gimcheon–Jeonbuk energy project, the Jangmun combined-cycle power plant project, the Goseong coal power generation project and the Jeollanam-do Shinan wind power project; as well as overseas energy-related projects, which include about 10 Japanese solar projects in Hitachi, Kirishima, Wakayama and Hamada, among others. Mr Kim also advised on the wind power project in Tafila, Jordan, the hydroelectric power project in Athmuqam, Pakistan and the solar power projects in Guam, United States; domestic real estate projects, such as the Pyeongchon G Square complex acquisition, the Capital Tower sale and overseas real estate projects, such as the real estate development projects in Business Bay and Culture Village, Dubai and Bason City, Vietnam, are also to be noted.

Mr Kim has been selected on numerous occasions as a ‘leading lawyer’ in the fields of project finance, energy and real estate by the top legal ranking institutions, such as Chambers Asia-Pacific and The Legal 500, and he is regarded as one of the finest experts in those practice areas.

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Dolapo Kukoyi is a partner at Detail and leads the firm’s power practice. She is one of the leading lawyers in Nigeria’s power sector. Her transactional experience includes advising the
Central Bank of Nigeria and the Nigerian Electricity Regulatory Commission (NERC) on the 213 billion-naira intervention fund for the Nigerian electricity supply industry; and advising clients on the privatisation of the Power Holding Company of Nigeria (PHCN) and National Integrated Power Project (NIPP) assets in the Nigerian power sector. Dolapo advised the Nigerian Energy Support Programme (NESP) and NERC in drafting the regulation for mini-grids below or equal to 1MW, and also advised the NESP on structuring mini-grid pilot projects in five states in Nigeria (Niger, Ogun, Sokoto, Cross River and Plateau). She is currently advising the Lagos State government on the Light Up Lagos project to facilitate the delivery of 3000MW through embedded power generation. Dolapo serves as lead for the Climate Change thematic group of the Sustainability Policy Commission of the Nigerian Economic Summit Group and is an advisory board member of the Renewable Energy Association of Nigeria. Dolapo earned her law degree from the University of Ibadan in 2001 and holds a diploma in intellectual property law from the International Bar Association and the College of Law of England and Wales (2007).

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Dr Stefan Lampert is a member of the regulatory team and specialises in public and administrative law. Stefan focuses on construction law, planning and zoning, and environmental law, as well as on energy regulatory issues. He frequently advises clients in relation to environmental impact assessments or conservation issues and has particular experience in connection with renewable energy, especially wind energy. Before joining Wolf Theiss, Stefan worked in the regulatory and administrative teams of other well-known Austrian and regional law firms. Stefan is admitted to the Bar in Austria.

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Anastasia Makarova specialises in corporate law, mainly in mergers and acquisitions (M&A), including transactions in energy sector. She has extensive experience in preparing documentation on structuring and execution of M&A transactions, including control proceedings at Russia’s Federal Antimonopoly Service conducted on the basis of antitrust law and strategic investment law. Anastasia is also experienced in advising on issues of corporate governance, energy and subsoil legislation, as well as providing ongoing support in energy companies’ business activities and due diligence in relation to companies with a different asset structure.

She has participated in large M&A projects in the renewables, oil and gas, metal, and automotive sectors, as well as in large investment projects connected with wind and solar energy.

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Nguyen Hong Hai is a partner at Lexcomm Vietnam LLC and is head of the renewable-energy practice. He is highly regarded for his enthusiasm, distinctive vision, proactive approach and versatility as a young yet experienced corporate and commercial attorney, principally focused
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Hai also has extensive experience in litigation and alternative dispute resolution and has represented many foreign corporate clients dealing with cross-border disputes between international clients and their Vietnamese business partners, as well as dealing with shareholder disputes among international investors in joint-venture businesses in Vietnam. Hai’s litigation experience involves both mutual conciliation and litigation at courts in Vietnam, as well as arbitration at SIAC and VIAC.

Hai holds a Bachelor of Laws from Hanoi Law University and a Master of Laws (LLM in international law) from the Transnational Law and Business University, South Korea.

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Nguyen Viet Ha is a partner at Lexcomm and the head of the mergers and acquisitions, real estate and construction, technology, media and telecoms, and intellectual property practices with more than 24 years of legal practice.

In 1994, Ha commenced his legal career, joining Freehills at its Hanoi Branch, as one of the first Vietnamese lawyers in a foreign law firm in Vietnam.

Ha has practised actively in the IT, media and telecoms sector for 20 years. In his role as in-house counsel with Vietnam Post and Telecommunications Group (VNPT), he appeared as lead counsel in charge of many large-scale foreign investment projects (including business cooperation contracts with Telstra, France Telecom, NTT, Korea Telecom, Comvik and Vinasat 1) in Vietnam’s telecoms sector from 1994 to 2005.

Ha was also the head counsel for Vietnamobile, a brand of Hutchison Telecom International providing mobile phone services in Vietnam.

Ha is admitted to practise in Vietnam as a qualified lawyer of the Hanoi Bar Association and a member of the Vietnam Bar Federation. He is also a member of the New York State Bar Association.

Following his successful participation in a nationwide legal competition in 2002, Ha was awarded a full scholarship to read a Master of Laws (LLM) at the School of Law, Niigata University (Japan). During the years 2002–2005, Ha focused mainly on e-commerce and M&A in the IT, media and telecoms and energy sectors.

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Insan Pratama is an associate at Assegaf Hamzah & Partners (AHP). For the six years prior to joining AHP, he worked as an in-house counsel for the largest oil and gas company in the world. With his extensive experience in the areas of upstream, downstream, and midstream LNG, he has developed not only a breadth of knowledge of oil and gas regulatory regimes, but also a deep-rooted understanding of their commercial context and industry drivers. As an active member of the Association of International Petroleum Negotiators (AIPN) with
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Insan earned his LLM in business and taxation law from the University of Cergy-Pontoise, France with the support of the scholarship programme of French oil and gas giant Total SA, following his two bachelor’s degrees, one in law from the Islamic University of Indonesia and one in international relations from Gadjah Mada University. He passed the bar exam of the Indonesian Bar Association (PERADI) in 2014.

Insan is currently a member of the AHP banking, finance and project team, and deals with project finance for geothermal power plant projects, as well as providing legal services for several oil and gas clients.

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During her time at AHP, Theodora has been involved in a broad spectrum of mandates, including national flag carrier Garuda Indonesia’s US$382.8 million IPO in 2011. She has also gained a wealth of practical experience by carrying out legal research, drafting opinions and conducting legal due diligence exercises on firms operating across a wide range of sectors, including aviation, financial services, manufacturing and energy. She is currently working on several public–private partnership projects, construction projects and project finance matters.

Theodora holds a Bachelor of Laws from Parahyangan University, Bandung (2010). She is a fluent English speaker and was an enthusiastic participant in moot court competitions while at law school, receiving awards for her efforts in both the Philip C Jessup International Law Moot Court Competition and the Asia Cup International Law Moot Court Competition.

KANYA SATWIKA
Assegaf Hamzah & Partners

Kanya Satwika is a partner at Assegaf Hamzah & Partners (AHP) and is recommended for projects and energy by The Legal 500 Asia Pacific (2016). She was made a partner at AHP in 2015 and now heads the projects group in the firm’s banking and finance department. She has been involved in several of the power-plant projects being developed as part of the Indonesian government’s power-sector expansion programme, while also playing a leading role in a number of renewable energy initiatives. She has also been recognised internationally by International Financial Law Review (IFLR) for her expertise in M&A and Islamic finance and she advised the government of Indonesia on the country’s first sovereign global Islamic bond in 2009 and its subsequent issuance in 2011, 2013 and 2015.

A licensed advocate, Kanya holds a Bachelor of Laws, majoring in transnational law, from the University of Indonesia, and an LLM in oil and gas law from the University of Aberdeen in Scotland. She is a member of the Indonesian Bar Association (PERADI).
HENRY T SCOTT

Milbank, Tweed, Hadley & McCloy LLP

Henry Scott is a senior associate in Milbank’s global project finance group in the Los Angeles office. Mr Scott’s experience includes project finance, asset-based financing and general corporate work. He has experience representing both financing parties and sponsors in debt and equity financing transactions involving wind, solar and geothermal generation projects, coal gasification facilities and onshore LNG terminals, as well as rail and road PPP infrastructure projects. He regularly advises buyers and sellers in the acquisitions, workouts and dispositions of energy and infrastructure assets.

TONG KEUN SEOL

Lee & Ko

Tong Keun Seol is a partner at Lee & Ko. His practice primarily focuses on environment and general corporate matters involving commercial law and labour issues. Since joining Lee & Ko in 2010, Mr Seol has successfully represented clients in numerous civil, administrative and labour litigations. He is a former Secretary of the Special Environment Conservation Committee of the Seoul Bar Association and his in-depth experience in environmental matters covers all aspects of climate change, including emission trading, clean development mechanism (CDM) and renewable energy projects. Mr Seol has also advised and represented a number of CDM projects and disputes in the distribution of certified emission reductions (CERs). Mr Seol received his LLB degree from the Korea University school of law in 1993 and was admitted to the Korean Bar in 2001.

TOM SHIN

Lee & Ko

Tom Shin is a partner at Lee & Ko and one of the leading banking and finance lawyers in Korea. He is recognised by both peers and clients as one of the foremost lawyers in projects, power, infrastructure and renewable energy in Korea. He has been profiled in The Legal 500 (2005–2008 and 2012) as a leading lawyer in project finance and, more recently, Chambers Global (2010–2017) and Chambers Asia-Pacific (2010–2017) named him a ‘highly regarded deal maker, particularly in the field of project finance’ with ‘years of cross-border expertise’; he has also been nominated as a leading lawyer by International Financial Law Review (2010–2014). Mr Shin’s expertise also includes securities regulation.

Mr Shin concluded a number of landmark projects, including the Mong Duong 2 power project in Vietnam by POSCO Energy, the Sinan photovoltaic power plant – at that time the largest in Korea, financed by Standard Chartered Bank; a ground-breaking wind farm project in Kangwon Province arranged by Korea Development Bank and Mizuho; Busan New Port Phase 1-1 arranged by a syndication of European and Korean banks; the first Korean won-denominated project finance relating to an independent power plant sponsored by Sithe Energies; and the first asset-backed securitisation in Korea by KAMCO.

Mr Shin acted as lenders’ counsel in major international infrastructure projects sponsored by multinational companies, such as the Seoul Beltway project and the Daegu–Busan Expressway project, which included offshore financing from a group of Japanese banks. He was also the principal attorney for captive power plant projects, water treatment facilities,
cogeneration power plants and petrochemical plant financing. Additionally, he acted as the Korean sponsor’s counsel in cross-border power plants and desalination projects by Korean companies in Latin America, central Asia and Australia.

In recent years, Mr Shin has been leading the way in new and renewable energy finance in Korea and has concluded a number of solar photovoltaic and wind farm projects in Korea and abroad. He successfully advised a major Korean bank in the project financing for a major wind farm project in Oklahoma, United States, and in a major light-rail train project in Korea. He has also advised one of Korea’s state-owned power companies in the matter of its investments in a wind farm in Pakistan and in a coal-fired power plant in Chile.

He has also represented clients in a number of export credit agency (ECA) transactions in major overseas projects, such as the Eurasia Tunnel in Istanbul; PT Krakatau Posco steel mill in Indonesia; Hermes covered financing for Posco Energy; and other ECA-financed transactions; and also represented clients in the EBRD-financed Gaziantep Health Campus PPP project in Turkey.

PABLO SORJ
Mattos Filho, Veiga Filho, Marrey Jr e Quiroga Advogados
Pablo Sorj’s practice focuses primarily on the representation of financial institutions, developers and private equity firms in a wide range of oil and gas, power, renewable energy, mining and other infrastructure-related projects in Brazil. He has particular expertise in multi-sourced financings (including those with the Brazilian Development Bank) and the representation of investors focusing on project development and M&A activities in the energy and infrastructure sectors. He is a member of the Stanford Law School’s Board of Visitors and a board member of the Brazilian Institute of Business Law (IBRADEMP).

Pablo holds a Bachelor of Laws from the Pontifical Catholic University of Rio de Janeiro, a Master of Laws (LLM) from Stanford Law School and an executive MBA from the Brazilian Institute of Capital Markets (Ibmec).

TRACY TANIA
Assegaf Hamzah & Partners
Tracy Tania is a senior associate at Assegaf Hamzah & Partners (AHP). She has naturally gravitated towards banking and finance and project finance since commencing her practice at AHP – areas of the law that provide her with the sort of challenges she relishes. She has been involved in significant projects, including the 8.8 trillion rupiah syndicated financing for PT Lintas Marga Sedaya, holder of the Cikampek–Palimanan toll road concession, a US$2.5 billion notes offering by the government of Indonesia, and several other financings for power project companies – most recently the US$147.5 million financing for the development of the Hasang hydroelectric power plant project.

Tracy has an outstanding academic record and holds a Bachelor of Laws from the University of Indonesia and a graduate degree from New York University, United States.
ROELAND VAN CLEEMPUT  
_NautaDutilh_

Roeland Van Cleemput is an associate in the NautaDutilh Brussels public and regulatory law practice group. He advises both public authorities and companies on administrative, energy, environmental and public procurement law. He has substantial experience in representing energy companies in urban planning litigation. Roeland earned his law degree from the Katholieke Universiteit Leuven (KUL) and holds an LLM from the College of Europe in Bruges.

VERA VAN THUYNE  
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Vera Van Thuyne is a member of NautaDutilh's public and regulatory law practice group and specialises in urban planning and environmental and energy law. She holds a law degree from the University of Ghent (2017) and was admitted to the Brussels Bar in 2017.

SHARON WING  
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Sharon Wing is a corporate and project finance lawyer in Covington's Johannesburg office. She has experience in traditional and renewable energy projects, corporate transactions, and various renewable energy and mining projects across Africa.

KAREN B WONG  
_Milbank, Tweed, Hadley & McCloy LLP_

Karen Wong is a partner in the Los Angeles office of Milbank, Tweed, Hadley & McCloy LLP and a member of the firm’s global projects, energy and infrastructure finance group. With over 31 years of practice, Karen has spearheaded the development and financing for some of the largest thermal and renewable energy power projects in the world, including innovative concentrated solar power projects and coal gasification facilities involving carbon capture and sequestration projects, amounting to tens of billions of dollars across the United States, as well as in China, South East Asia and South America. Several of her transactions warranted ‘deal-of-the-year’ accolades by industry publications. Ms Wong was named ‘Best in energy, natural resources & mining’ at the 2018 Euromoney Legal Media Group Americas Women in Business Law Awards, and was also named in the inaugural Women’s Power List, published in 2017 by wind industry intelligence service A Word About Wind, and is a well-recognised specialist in the renewable energy sector. She has been selected as one of the _Daily Journal’s_ ‘Top 25 Clean Tech Lawyers’ in California, featured as one of the state’s ‘Top 75 Women Lawyers’ and was included in _Institutional Investor’s_ ‘Guide to the World’s Leading Project Finance Lawyers’. She is ranked by the 2018 edition of _Chambers Global_ and _Chambers USA_ for projects, _IFLR1000_ and _Who’s Who Legal: Project Finance_, and is listed in _Expert Guides: Project Finance_ and _Expert Guides: Women in Business Law_.

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ZHANG LIBIN
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Zhang Libin is a senior partner at Broad & Bright specialising in cross-border M&A and dispute resolution, with a focus on energy matters. He is licensed to practise in the PRC and the State of New York. Mr Zhang holds a JD degree from the University of Texas School of Law. He has worked in several prestigious US law firms as an associate and partner. He gained experience in leading M&A at Siemens Ltd, China as the head of legal M&A for Asia and Australia. Mr Zhang is an arbitrator at the China International Economic and Trade Arbitration Commission (CIETAC) and Beijing Arbitration Commission/Beijing International Arbitration Center. Mr Zhang is also a member of the Association of International Petroleum Negotiators (AIPN). He is on the advisory board of the Kay Bailey Hutchison Energy Center of the University of Texas School of Law, and is also the deputy director of PKU Energy Law and Policy Research Institute.

FEI ZHOU
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Fei Zhou is an associate in the Baker & McKenzie banking and finance practice group in Tokyo. Fei focuses her practice on banking and finance and other cross-border investment matters. She has been engaged in renewable energy projects in Japan, solar projects in Taiwan and various domestic and cross-border transactions. She has also been involved in cases requiring surveys of Japanese regulations regarding regulatory frameworks for electricity charging businesses, solar and onshore and offshore wind projects, and cross-border payment and fund transfer services.

She has worked for MUFG, SMBC, Mizuho Bank, Wells Fargo & Co, Macquarie Capital Securities, Sumitomo Mitsui Trust Bank, Japan Wind Development, Tokyo Century Corporation, Total Solar SAS, Porsche AG, China Eastern Airlines and Nord/LB, among others.

Prior to joining Baker & McKenzie, Fei worked for prominent law firms in Shanghai, Tokyo and New York, where she advised clients on a wide range of cross-border investment matters.

Fei is a member of the American Bar Association and a guest lecturer at Temple University.
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