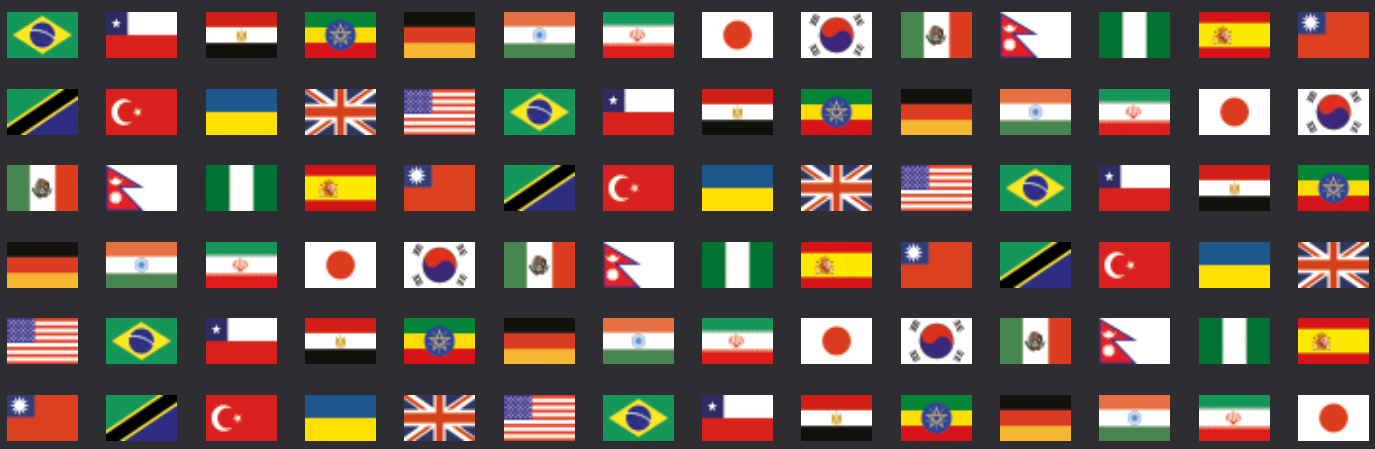
Renewable Energy 2020

Contributing editor
Eric Pogue



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Getting The Deal Through

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Lexology Getting The Deal Through is delighted to publish the third edition of *Renewable Energy*, which is available in print and online at www.lexology.com/gtdt.

Lexology Getting The Deal Through provides international expert analysis in key areas of law, practice and regulation for corporate counsel, cross-border legal practitioners, and company directors and officers.

Throughout this edition, and following the unique Lexology Getting The Deal Through format, the same key questions are answered by leading practitioners in each of the jurisdictions featured.

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Every effort has been made to cover all matters of concern to readers. However, specific legal advice should always be sought from experienced local advisers.

Lexology Getting The Deal Through gratefully acknowledges the efforts of all the contributors to this volume, who were chosen for their recognised expertise. We also extend special thanks to the contributing editor, Eric Pogue of Hunton Andrews Kurth LLP, for his continued assistance with this volume.

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Global overview

Eric Pogue and Mike Klaus
Hunton Andrews Kurth LLP

We are excited to introduce this updated and expanded third volume of *Renewable Energy*.

As will become apparent from a review of the country-specific discussions, renewable energy law continues to evolve in many different directions around the world. Although each jurisdiction is unique, common themes continue to emerge with respect to the legal issues that practitioners face in this space.

One major recent theme in the renewable energy industry, particularly in the United States, is that newly constructed renewable energy projects are often generating revenue under contracts other than power purchase agreements (PPAs) with utilities. Under the traditional model for project finance, a special purpose entity that owns an energy project (a project company) sells electricity under a long-term PPA with a regulated utility that has a monopoly over retail electricity sales in its service territory. Although financing parties generally continue to require a long-term contract that covers the sale of electricity at a fixed price, as a result of new legislation and new demand for renewable energy from corporations and communities, the revenue contract is taking new forms, such as:

Corporate procurement

Many of the largest companies have committed to procuring all of their power from renewable energy. The RE100 initiative keeps an updated list, which at the time of writing identified more than 175 companies that have committed to this 100 per cent goal (see http://there100.org). These include many of the largest and most influential companies in the world, such as Facebook, Diageo, Goldman Sachs, Nestlé, General Motors, among others. Two power purchase models that have emerged for these companies are:

- PPAs for onsite generation. In certain markets, a corporation may enter into a PPA with a project company that constructs and owns an onsite energy project (such as a rooftop solar project), and the corporation purchases electricity from the project company under the PPA to meet a portion of its electricity needs at the particular site. Many states have enacted 'net metering' legislation, which allows a utility customer to sell to the utility any electricity produced by an onsite solar project that exceeds the customer's needs at any time (such as electricity generated during a weekend or another time that the customer does not need all of the electricity that is generated) and receive a credit on its electricity bill from the utility. Under such programmes, the customer pays a net electricity price to the utility, where the value of electricity sold to the utility is subtracted from the value of electricity purchased from the utility. In states with such programmes, the PPA usually requires the corporation to pay to the project company a fixed price for all electricity generated by the project, and then corporation transfers any excess energy to the utility under applicable net metering programmes.
- Hedges or 'virtual PPAs'. For projects that are located offsite, one structure that is being implemented in certain markets is that (i) the project company sells electricity generated by the project into the wholesale market at a floating market price at the grid node; (ii) the corporation purchases electricity for its own needs from the utility at the floating market price; and (iii) the project company and the corporation enter into a hedge agreement, under which the corporation pays to the project company a fixed price per unit of electricity produced by the project, and the project company pays to the corporation the market price at a designated trading hub (or a net settlement payment is paid by one party to the other). Such structures are often referred to as 'virtual' or 'synthetic' PPAs because the arrangement achieves the same result as a PPA – the project company receives a fixed rate for electricity generated by the project and the corporation pays a fixed rate for such electricity over a long term. In addition to supporting the development of new projects by entering into virtual PPAs that make the projects financeable, companies that use large amounts of electricity enter into hedges in order to lock in power prices over 10 to 25 years rather than rely on sometimes volatile market prices from their local utility.

Community solar

Under community solar programmes, which are spreading through the United States, multiple customers participate in a net metering pool and purchase net metering credits from a renewable energy project. State legislation for these programmes typically provides that (i) a renewable energy project delivers electricity into the utility company's grid; (ii) the utility company's commercial or residential electricity customers may purchase, and the project company may sell, net metering credits associated with a percentage of a project's electricity production; and (iii) the customers may apply the net metering credits as an offset against their electricity bill with the utility company. These programmes thus extend the availability of net metering to customers that do not have an onsite project to meet their electricity needs. Key legal issues that arise for project developers and financing parties for these projects include the risk of a change in law, such as a change in the value of the net metering credits or caps on the capacity of projects that are eligible under a specific programme, and rights of a project company to replace customers that default on their obligations to pay for net metering credits.

Community choice aggregation

In California, which represents about 40 per cent of the US solar market, electricity from energy projects is increasingly being purchased by municipalities or groups of municipalities, known as community choice aggregators (CCAs), which may elect to procure electricity for customers within their areas from project companies, while partnering with the local utility company for transmission, distribution and billing services. The aim of CCAs is typically to purchase electricity that is cleaner, and often less expensive, than the electricity that is sold by local utility companies. A CCA's customers generally have the option

to opt out of the programme and revert to purchasing electricity from the local utility company. For project developers and financing parties, one key risk related to these programs is that a change in law or an increase in CCA customer fees may cause customers to opt out of the programme, which could cause the CCA to have insufficient customer revenue in order to continue to make payments to project companies under PPAs between the CCA and project companies. About 60 per cent of electricity load in California is expected to be provided by CCAs by 2020. Seven other states have enacted legislation to allow CCAs, and several other states are considering CCA legislation.

These non-traditional forms of offtake contracts raise new issues for lawyers to evaluate with their clients, such as understanding the laws that enable these new forms of offtake contracts and structuring protections against the risk of a change in law after the offtake contract has been executed. At the same time, lawyers in this market frequently need to interface with organisations or governmental entities that are new to the market, and may need assistance with legal issues that are specific to their participation in the market, including securities reporting considerations or energy regulatory matters.

The global trend of offshore wind energy

Lauren A Bachtel
Hunton Andrews Kurth

With a growing global demand for energy, cost-reductions in fixed-bottom turbines and investments skyrocketing, offshore wind power has experienced rapid global development in recent years. This growth has occurred mostly in Europe, Asia and the United States. This article will briefly highlight the growth of offshore wind development globally, and then specifically focus on the growth trends in Europe, the United States and Asia.

Global growth

The global offshore wind energy market has grown by an average of 21 per cent annually since 2013, with a current estimated capacity of 23 gigawatts (GWs). In 2017 and 2018, more than 4GWs were installed each year, making up 8 per cent of the total new wind energy installations during both years. The past few years have been exceptional for offshore wind because of, among other things:

- the rapid expansion of offshore wind development in Europe, the United States, and Asia;
- the development of plans to build an artificial island in the North Sea that will serve as a hub for more than 100GWs of offshore wind;
- the introduction of new economic regulations that encourage zero-subsidy bids in countries such as Germany and the Netherlands, which are a breakthrough for the cost competitiveness of offshore wind; and
- the ever-evolving technology that continues to make wind power more competitive.

Floating turbine technology will soon allow us to reach the vast potential for global offshore wind resources in waters too deep for conventional bottom-fixed turbines. Notably, the United Kingdom commissioned the first floating offshore wind farm in Scotland, which is comprised of five turbines and totals 30MWs. The floating turbines have an average water depth twice as deep as bottom-fixed offshore wind farms. Floating offshore wind farms will likely remain an important commercial sector in the next 10 years, becoming cost-competitive with fixed wind by the mid-2020s. The International Renewable Energy Agency predicts that the first large-scale floating wind farms could be installed by 2025.

If the fixed-turbine trends continue as is, the global offshore wind industry is expected to install 190GWs of offshore wind by 2030. If the expected growth takes into consideration the many new countries that may join the offshore wind revolution because of floating wind energy technology, global offshore wind could reach 210GWs by 2030. With such massive global growth potential, cumulative investments in offshore wind is projected to reach $350 billion by 2030 and $1.47 trillion by 2050.

The global growth in offshore wind power can be attributed to, among other things, the maturity of the industry, growing investor confidence, cost reductions, and lastly, breakthroughs in turbine technology that generate higher outputs. Offshore wind has been on a strong cost-reduction pathway because of the rollout of competitive tender schemes and improved economics resulting from bigger turbines and better construction knowhow. Offshore wind technology is getting close to matching the cost of energy from its onshore counterpart, due to its near-limitless size potential, proximity to coastal city load centres, exceptional utilisation rates, and subsea grid technology improvements by world leaders.

Trends in Europe

Europe has approximately 18.5GWs of installed offshore wind capacity, with 4,543 grid-connected wind turbines across eleven countries. The UK has the largest amount of offshore wind capacity in Europe with 44 per cent of all installations in MWs. Second is Germany with 34 per cent, followed by Denmark with 7 per cent, Belgium with 6.4 per cent, and the Netherlands with 6 per cent.

Europe's offshore wind industry experienced a peak in 2017, reaching record levels of growth. At the end of 2017, 11 European countries had approximately 84 per cent of the global offshore wind farms. China had most of the remaining 16 per cent, followed by Vietnam, Japan, South Korea, and the United States.

In 2018, Europe added 2,649MWs of net offshore wind capacity, which is roughly 15.8 per cent lower than 2017. However, 12 new European projects reached Final Decision Investment, with investments in new assets amounting to €10.3 billion, up 37 per cent from 2017. Project costs in 2018 were lower than in the previous three years, allowing 4.2GWs of additional offshore wind capacity to be financed. These projects will come online in the next couple of years.

In addition to the rising cost competitiveness of offshore wind energy, there are many factors contributing to Europe's offshore industry growth, including:

- the general trend towards simplification of the licensing process. For example, Denmark and Scotland adopted a one-stop-shop system that centralised the whole licensing process and England reduced the number of licensing bodies and required licences;
- the governments' efforts to study the effects of offshore wind farms on the surrounding environment. For example, the Netherlands took an active role in studying the effects of offshore wind facilities on the marine environment, which will help minimise regulatory uncertainties; and
- the new zero-subsidy economic incentive culture, whereby capital costs fall in all markets and companies are increasingly looking into merchant projects.

Although, in the short term, it is projected that the European offshore market will remain flat with few projects reaching installation during 2020, the cost competitiveness of European offshore will remain a key driver for volume. By 2030, total installed offshore wind capacity for Europe is expected to be 78GW.

Trends in the United States

The United States has one operational offshore wind project (Block Island Wind Farm), which came online in December 2016. The Block Island Wind Farm is a 20MW project with five turbines located three miles off the coast of Block Island, Rhode Island.

The first installation of large-scale offshore wind projects is expected between 2021 and 2023, bringing total installations to 2GWs by 2025 and 10GWs by 2030. The Department of Energy has predicted that the United States has a technical offshore wind potential of 2,000GWs, or nearly double the nation's current electricity use.

The Bureau of Ocean Energy Management (BOEM), the agency within the Department of the Interior that is responsible for overseeing offshore renewable energy development in federal waters, has held eight competitive offshore wind lease sales, received more than $473 million in bids over 1.7 million acres, and issued more than 15 active offshore wind leases with over 21GWs of total capacity. The active leases are for development areas off the states of Delaware, Rhode Island, Massachusetts, Virginia, Maryland, New Jersey, New York, and North Carolina. BOEM is in the planning stages for areas offshore New York, South Carolina, California and Hawaii.

The high volume of planned projects along the East Coast have aroused interest from European developers, manufacturers, and investors in this vast new market. It is estimated that the US offshore wind sector will be boosted by a near-term predicted $300 billion in investments.

The Investment Tax Credit (ITC) is a vital component to the development of offshore wind in the United States. In 2015, the ITC was extended for an additional five years, with a gradual phase-out planned by 2020. Projects that started in 2015 and 2016 were eligible for 30 per cent of the ITC, but the amount declined annually. Projects will receive 24 per cent of the ITC if construction started in 2017, 18 per cent if in 2018, and 12 per cent if in 2019. However, the ITC will expire for all new projects after 2019. Once qualified, projects have several years to reach completion.

US Senators are seeking to extend a 30 per cent ITC for offshore wind through 2025, which would lower the cost of electricity from today's prices of offshore wind power by approximately 1.5 cents/kWh. For many projects, this will make the difference between cost-effective and non-cost-effective electricity supply.

If the ITC is not extended, it will change the 'medium-term future balanced cost of capital' for US offshore wind projects. However, the potential for the shortfall in saving from the low cost of tax equity can be offset from a more robust domestic US supply chain.

'The US is in the most enviable position,' said Ross Tyler, strategy and development director for the Business Network. 'The US has scale, the Europeans have developed the technology and we have lease areas, while states are beginning to issue power purchase agreements. We have the major building blocks, but the most important is the financing which cements them all together.'

Trends in Asia

Asian countries, such as China, India, Japan, South Korea, Taiwan, and Vietnam, are now emerging as the front runners of offshore wind energy growth. Cumulative offshore capacity will increase from 111MWs in 2018 to 19GWs in 2019. Asian has a cumulative 100GWs of offshore wind capacity in the pipeline for 2030.

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The offshore wind industry in China is rapidly expanding. In 2018, China was responsible for almost half of the world's $25 billion investment in offshore wind energy, spending $11.4 billion on 13 new offshore wind projects. China is aiming to install 10GWs of offshore wind energy by 2020 and 30GWs by 2030, up from 208MWs in 2017. The Chinese government reportedly continues to support wind energy through its FiT regime, although the rates are continuing to decline. Since 2017, the tariffs have decreased by 5 per cent to 15 per cent, depending on an area's wind resource. The government is also promoting subsidy-free renewables projects as technology costs fall, with the National Energy Administration proposing to set up an auction system, backed by 20-year offtake contracts, guaranteed grid connections, lower transmission fees, protection against curtailment, and eligibility for an expanded green certificate programme, among other things. The large push is believed to be an effort to switch policy away from coal and towards its United Nations climate commitment.

To date, foreign investors have had little involvement in China's renewable sector, with overseas investment accounting for less than 1 per cent of the total. However, improved market practices and transparency are tempting investors into renewables.

In addition, South Korea plans to install 18GWs of offshore capacity by 2030, Japan plans to install 10GWs, and Taiwan plans to install 5.5GWs. India also has an ambitious target of 5GWs of offshore wind power by 2022 and 30GWs by 2030.

In Asia, offshore wind development has the potential to reach the same cost efficiencies of its onshore counterpart, with prices pushed downward in particular by the upward movement in offshore turbine generation capacity. Successful commercialisation of floating offshore wind will also drive the sector's development in Asia.

Brazil

Fabiano Ricardo Luz de Brito, Giovani Loss, Pablo Sorj, Marina Anselmo Schneider and Ana Carolina Calil

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

In the Brazilian energy sector, there are a few authorities responsible for defining policies applicable for renewable energy, mainly:

- the National Energy Policy Council is responsible for advising the president on the sector's development and to ensure that the country's energy supply needs are met;
- the Ministry of Mines and Energy (MME) is responsible for the general planning of the country's energy sector and monitoring energy supply. Also, the MME plans the occurrence of renewable energy auctions in order to foster the development of the sector;
- the National Electric Energy Agency (ANEEL) is responsible for the regulation and the supervision of the power industry in accordance with MME guidelines;
- the Energy Trading Chamber (CCEE) is an association responsible for registering all power supply agreements, accounting transactions of the spot market, including but not limited to renewable energy transactions and managing certain sector charges. It is also the purchaser in the power purchase agreements (PPAs) 'granted' to bid winners in Reserve Energy Auctions structured by the federal government to balance the grid supply;
- the National Grid Operator (ONS) is an association responsible for coordinating and controlling generation and transmission systems; and
- the Energy Research Company (EPE) is responsible for studies and research to support the planning of the energy sector by the other governmental authorities. EPE also performs a technical accreditation of projects that are willing to participate in governmental energy auctions.

In addition to the main governmental authorities listed above, the government (either federal, state or municipal) also controls certain distribution, transmission and power-producing companies. The renewable energy producers may hold a commercial relation with these companies either through a connection required for the energy delivery or within energy purchases by the distribution companies through public auctions organised by ANEEL.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

According to ANEEL, in June 2019, there were 1980 independent power producers, 58 distribution companies and 224 transmission companies. The private participants are the majority among such players.

Specifically with regard to renewable energy, the significant increase in the number of wind and solar projects in the past 10 years is a result of private investments that have been fostered over recent years owing to incentives created by the federal government (creation of the PROINFA programme, discounts on connection fees and regulation of on-site generation, among others).

Relevant players in the clean energy sector such as CPFL Renováveis, Actis, Votorantim-CPPIB, Contour Global, AES Tietê, Cubico, ENEL Green Power, Rio Energy, CER and Ômega have been strongly investing in the Brazilian renewables sector. Statkraft Energias Renováveis, EDF Energies Nouvelles, EDP Renováveis, Brookfield Renewables and Força Eólica have also made important investments (see the 2016 Review of Three Trends Highlighting the Accelerating Global Energy Market Transformation elaborated by the Institute for Energy Economics and Financial Analysis (IEEFA)).

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

The Brazilian legal framework does not have a legal definition of 'renewable energy'.

Nevertheless, Law No. 9,478, dated 6 August 1997, sets national policies for the rational use of energy resources based on certain principles such as the use of alternative sources of energy through the economic use of raw materials available and the applicable technologies and protection of the environment.

Also, for the purpose of ANEEL's regulation, some renewable energy projects are entitled to obtain a discount applicable to connection tariffs for the use of transmission and distribution systems; namely, hydro power plants with a power equal to or less than 50MW (limited to the amount of 30MW of energy injected 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.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

The Brazilian power sector has two different energy markets: the free market (ACL) and the regulated market (ACR). In the ACL, the generation companies and traders can freely negotiate the price for 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 the auctions. Also, the auctions may be organised only for renewable energies and, in that case, by securing a specific commercialisation environment for renewables and long-term power purchase agreements, the federal government has fostered the development of such market in Brazil.

With the purpose of constructing and operating renewable energy projects, entrepreneurs must obtain licences to be issued by the federal government, represented by the MME or ANEEL.

The licence can be granted through two different procedures:

- an administrative procedure carried out by ANEEL, through which the entrepreneur asks the regulatory agency to issue a specific licence after presenting legal, technical, economic and financial accreditation documents and information; or
- participation in ACR public auctions, after which, in addition to receiving the relevant licence, the power agent executes regulated power purchase agreements (CCEAR) or reserve energy agreements (CER) for the sale of electricity under ACR.

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

In relation to project financing, see questions 29 and 30.

The environmental attributes of the renewable energy projects in Brazil were essentially related to the Clean Development Mechanism (CDM) in order to sell the certified emission reductions (CERs) among the Annex I parties of the Kyoto Protocol. During the enforcement of the Kyoto Protocol, Brazil was allowed to trade CERs with developed countries – and a significant part of these certificates involved renewable energy projects. Currently, taking into account the signature and ratification of the Paris Agreement, a new legal and local framework is due to be approved and, in this case, is closely related to the nationally determined contributions (NDCs) presented by Brazil.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

As described in question 4, Brazil is currently awaiting the enactment of new rules and proceedings owing to the entry into force of the Paris Agreement. Therefore, regardless of specific initiatives, so far we do not have a structured or even established significant market involving the trade of environmental attributes.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

In 2002, the government created a programme to foster renewable sources (PROINFA) with the purpose of increasing the participation of renewable energy sources in the Brazilian power mix through the implementation of small hydropower plants, wind and biomass plants.

Under PROINFA, the commercialisation of energy from such projects is secured by long-term power purchase agreements entered into with Centrais Elétricas Brasileiras SA – Eletrobras, as offtaker of the energy, under fixed and predetermined prices.

PROINFA was executed through a simplified bidding procedure, in which selection criteria included priority for such projects with environmental licences.

By the end of the PROINFA, despite the delays associated with the start of commercial operation, 119 renewable energy projects were constructed and are already in operation.

Regarding other incentives, Law No. 9,427, of 26 December 1996 authorised ANEEL to grant a discount to TUST and TUSD fees (fees for the connection to transmission and distribution systems) for wind, solar, biomass and small hydropower 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 on or after 2016 and the projects were granted with licences during or after 2016.

ANEEL authorised a further discount of 80 per cent for solar plants that begin operations by 31 December 2017, with a reduction to 50 per cent after the tenth year of operation. Nevertheless, as explained in question 9, in accordance with public hearings carried out by MME in 2017, the Federal Government is currently studying the possibility of revoking TUSD and TUST discounts applicable to future renewable energy projects since it understands that the benefit has already achieved its purpose; namely, the growth of the Brazilian clean energy market.

In addition, as mentioned in question 4, the government may organise at its own discretion auctions whereby only renewable producers participate and sell to distribution companies. Auctions of this kind were held in 2007, 2010 and 2015.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Renewable energy policies and incentives are established on a national level by the authorities described in question 1. However, some states have been developing incentives for renewable energies. For instance, some states have been regulating tax incentives for distributed generation, and the State of Pernambuco has carried out solar energy auctions to foster the industry in the Brazilian northeast.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

Private companies may purchase power from renewable energy projects either:

- through renewable energy auctions carried out by the government (the purchase, as highlighted in question 4, is made by distribution companies) or by other private companies;

- by purchasing energy freely from third parties as special or free consumers; or
- through the development of small on site-generation energy projects, in accordance with ANEEL's Normative Resolution No. 482/2012 (REN No. 482/2012).

In accordance with REN No. 482/2012, power consumers willing to implement a small on-site power generation system (which must be qualified as renewable energy or cogeneration projects) are authorised to use net metering systems and to compensate any excess energy with future energy demand hired from local distribution companies.

Large commercial and industrial consumers usually opt to commercialise energy in the free market or become self-producers, in order to cut costs and be able to freely negotiate the energy price.

Legislative proposals

9 | Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The Paris Agreement became nationally enforceable on 6 June 2017, owing to the enactment of Federal Decree No. 9,073/2017 and the prior signature and ratification of the treaty within the local jurisdiction.

The Brazilian government launched a public consultation, which was open until 30 July 2017, that aims at collecting inputs for the national strategy for implementing and financing Brazil's Nationally Determined Contribution (NDC). In this regard, we expect the development of new executive measures to promote programmes, financing and credit lines in order to implement the Brazilian NDC. Additionally, renewable energy projects tend to generate a great market, considering that local NDCs aims to achieve 45 per cent renewables in the energy mix by 2030.

Also, in 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 approached 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 the Brazilian Congress.

The main provisions addressed by the public hearings that affect the Brazilian renewable energy market are:

- change in the tariff benefits related to renewable energy;
- expansion of access to the energy free market. This expansion was already implemented by means of the issuance of MME Ruling No. 514/2018, which provides for the gradual reduction of the access requirements from 2.5MW to 2MW from July 2019 to January 2020; and
- creation of capacity public auctions.

The public hearings recommended the end of discounts applicable over the TUSD and TUST fees for new renewable energy projects. Such recommendation was based on the fact that Brazil has already developed a sustainable and strong renewable energy market. The public hearings also recommended an 'incentive award' that would replace the aforementioned discounts, which would vary according to the amount of energy produced by the plants. The first draft of the Bill of Law prepared after the public hearings accepted the first suggestion but it provided, alternatively, an obligation for the Federal Government to create policies to stimulate the use of renewable energies up to 31 March 2020.

Drivers of change

10 | What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

According to the 2016 Review of Three Trends Highlighting the Accelerating Global Energy Market Transformation of IEEFA, recent projections show that Brazil has the potential for 880GW of wind generation.

The country benefits from wind assets along its long coastline, which ranks Brazil as the fourth in the world – behind the US, China and Germany – in terms of potential to expand wind generation. Over the years, wind projects have grown constantly, reaching 9 per cent of the energy matrix of Brazil today (according to information published by the Brazilian Association of Wind Energy – ABEEOLICA, in 2018 there were 583 wind power plants in the country representing 14.71 GW of installed capacity).

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

In this scenario, we believe the biggest driver for the expansion of renewable energy projects in Brazil in the next few years will be the high number of still undeveloped wind and solar power potential with high favourable (and steady) wind and solar resources, together with a progressively lower availability of huge hydropower potential, which have been historically the main source of power in the country's energy mix.

Foreseeing the changes in the Brazil's energy matrix, ONS is studying how to adapt the system operation, especially now that on-site generation is increasing. Based on the sector's expectations, ONS foresees the necessity to modify the operational dynamics and calculation of the energy spot market price (PLD).

Disputes framework

11 | Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

In the ACR, the conflict will hardly rise from the energy pricing, as the price is set according to the bids presented by energy producers in public auctions. However, the conflict may rise from different understandings in connection with the application of Trading Rules enacted by CCEE or from the failure of any of the parties to comply with their contractual obligations. If this occurs, first the parties will try to solve the conflict amicably and then, if it is not possible to solve the conflict amicably, the parties shall discuss the dispute at the Conciliation and Arbitration Chamber of the Getulio Vargas Foundation (FGV) in Rio de Janeiro.

In the ACL, based on the Trading Convention approved by ANEEL Resolution No. 109/2004, the parties shall also elect the Conciliation and Arbitration Chamber of FGV as conflict resolution mechanism under power purchase agreements.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 | Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

See questions 3 and 4.

Development issues

13 | What types of issues restrain the development of utility-scale renewable energy projects?

In the coming years, the following issues may affect the development of renewable energy projects in Brazil.

In 2016, in view of the downturn that affected the financing ability of development banks and the Brazilian economy in general, entrepreneurs were facing difficulties and struggling while turning to the National Economic and Social Development Bank (BNDES) for financing. Such matters can be resolved through the use of financial instruments in the Brazilian capital market and by improving regulations in order to enable the entrance of foreign investors. In addition, in view of the commercial structure adopted to fund energy projects in the country, it is possible to verify that Brazil still lacks financing through non-recourse project finance structures.

Transmission constraints or lack of transmission capacity may prevent the development of energy plants (including but not limited to renewable energy projects). During 2012, several wind power projects were unable to start their commercial operation due to the failure of certain transmission companies to construct connecting facilities. However, nowadays, projects facing transmission constraints are expressly exempted from liabilities related to regulatory or contractual penalties (when dealing with power purchase agreements executed in the ACR), but they are not entitled to receive revenues until the project is completely connected and operational.

Regarding equipment suppliers, federal and state governments still have to develop mechanisms to attract power equipment suppliers to Brazil. For instance, we have a growing photovoltaic panels market, the development of which could help the reduction of the price of solar energy in the country.

HYDROPOWER

Primary types of project

14 | Describe the primary types of hydropower projects that are prevalent.

In Brazil, hydropower projects are only considered renewable if their power capacity is equal to or less than 50MW, as mentioned in question 3.

The construction and operation of small hydropower plants (PCH) involves certain advantages, especially of socioeconomic and environmental nature, in relation to hydroelectric power plants (HPP), such as:

- greater adaptability to small watercourses, since they have smaller characteristics, which allow the development of simpler projects;
- lower development time;
- reduced environmental impacts; and
- the construction and operation depend only on a licence from ANEEL (as opposed to HPP where the right to construct and operate is granted by means of use concession agreements).

Because of these advantages, PCH projects efficiently expand the energy generation on a rather tight schedule and, therefore, enable demand to be met in rural areas and small urban centres since, in most cases, it is a complementary source of energy.

Legal considerations

15 | What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Hydropower represents a substantial part of the Brazilian energy mix. Therefore, in general, this source is broadly regulated.

Regarding PCH projects, the legal considerations described in relation to licences (see question 4) are applicable.

However, the Brazilian market has been facing a few difficulties associated with the hydropower regulatory model, specifically concerning the limitation of the generation scaling factor's effects and judicial lawsuits discussing such limitation, locking in the accountability and financial settlement of CCEE's spot market, which may trigger a few regulatory and legislative changes in a near future.

DISTRIBUTED GENERATION

Prevalence

16 | Describe the prevalence of on-site, distributed generation projects.

Through REN No. 482/2012, ANEEL regulated micro and mini on-site generation, allowing final consumers to install power generations 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 commercialise the excess energy generated and they may only offset such excess energy with credits from the distribution company.

The on-site generation system may be (i) micro systems that comprise power plants with installed capacity lower than or equal to 75kW or (ii) mini systems that comprise power plants with installed capacity superior to 75kW and inferior to or equal to 5MW.

Types

17 | Describe the primary types of distributed generation projects that are common in your jurisdiction.

After ANEEL's first reviews of the REN No. 482/2012, the number of distributed generation projects has been increasing. Owing to such regulatory changes, the regulation now allows the distributed generation system not to be necessarily installed on-site (therefore, the consumer can install its 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 85 per cent of the distributed generation systems already installed. This high percentage is related to the fact that the majority of the generation systems are located in residential consumer units (corresponding to 73 per cent), followed by commercial consumer units with only 17 per cent.

Aside from these statistics, Brazil has a few examples of distributed generation systems located apart from the consumers units, which are owned by third parties. For example, a relevant player of the Brazilian market 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.

According to ANEEL Technical Note No. 0056/2017-SRD/ANEEL of 24 May 2017, as of 2012 the distributed generation system increased 407 per cent. Today, there are 84,832 distributed renewable energy plants, totalling an installed capacity of 1,037,304.40 kW.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

See questions 16 and 17.

In Brazil, the main obstacle for distributed generation systems is the lack of access to financing. Nevertheless, ANEEL opened a public consultation in 2018 in order to discuss the improvement of regulations applicable to distributed generation and, among other matters, alternatives for the funding of such projects.

In addition, the increase of distributed generation systems may represent a future problem for distribution companies. As opposed to other jurisdictions, in Brazil, distribution companies may not hold power generation assets, therefore, these companies do not participate in the growing market of distributed generation systems, do not benefit from tariff reduction and suffer the financial impacts associated with the decrease in tariff revenues from the development of distributed energy projects. Currently, distribution companies are exploring alternatives; however, a further analysis of the regulatory model may be necessary in the near future.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

See questions 16 to 18.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

Up to now, energy storage technologies have received little investment in Brazil; however, there are a few initiatives regarding their development, such as:

- R&D projects developed by sector players regarding storage alternatives; and
- a storage project with an installed capacity of 0.5MW to be implemented by AES Tietê within UHE Bariri, in the city of Boraceia, state of São Paulo.

Development

21 Are there any significant hurdles to the development of energy storage projects?

In general, the main hurdles to be overcome are the cost of energy storage systems, uncertainties about regulation, performance and safety issues, use of less polluting materials and difficulty in capitalising storage projects.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Foreign investors may directly invest in Brazilian companies through traditional stock exchanges or direct acquisition of power producers.

Nevertheless, the primary means for foreigners to obtain a licence to construct and operate power facilities is to participate in competitive governmental public auctions, in which special obligations must be fulfilled in addition to those required of Brazilian companies, such as:

- if bidding alone, the foreign company will have to incorporate a special purpose vehicle in Brazil in order to receive the auction award, concession or licence; and
- if participating in a consortium, leadership of the consortium must be held by a Brazilian company.

Also, foreign investors can face restrictions in relation to the acquisition of rural properties in Brazil, which may impact the development of renewable energy projects or their acquisition. Despite the fact that power generation should not be considered an agrarian activity and, consequently, the ownership of the land (either to title of through lease agreement) should not be considered as a rural agreement, some entities that are connected to the federal government consider the restrictions established under Federal Law No. 5,709/71, as interpreted by Opinion AGU LA-01/2010, applicable to the lease of rural real properties by Brazilian companies whose majority capital is held, or that are controlled, by foreign entities and persons.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

From a financing perspective, BNDES finances through the FINAME programme the acquisition of domestic and foreign manufactured equipment. Foreign manufactured equipment must be accredited in FINAME to be entitled to the financing (the company may request an accreditation of an equipment before FINAME based on local content percentages). The financing amount depends on the equipment itself, reaching up to 60 per cent of the equipment value.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

See question 4.

Also, ANEEL's prior approval may be required for corporate transactions involving the transfer of renewable energy projects, as described below:

- if the acquisition of a renewable energy project involves the transfer of assets (therefore the transfer of the licence itself), ANEEL's prior approval will be required;
- if the acquisition involves a direct or indirect transfer of majority control of renewable energy projects from solar, wind farms or biomass sources, ANEEL shall only be notified within 30 days after the completion of the transaction; however, no previous approval of the regulatory agency is required in accordance with ANEEL's Normative Resolution No. 484/2012 (REN No. 484/2012); and
- if the acquisition involves a direct or indirect transfer of majority control of hydropower projects (including PCH projects), ANEEL's prior approval shall be required, in accordance with REN No. 484/2012.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

See question 4.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

In the ACR, the PPA is a result of public energy auctions, in which the winning bidders (power producers) and the distribution companies execute a predetermined PPA (part of the tender documentation), denominated CCEAR or CER.

The CCEAR term depends on the auction (usually the supply period is 15 or 20 years), and the revenue structure is associated with the type of power generation, such as wind farms, solar or thermoelectric power plants. Usually, the revenues are divided into fixed and variable instalments calculated monthly according to the amount of energy delivered to the distribution concessionaire.

In the ACL, the PPAs are freely negotiated by the parties. Since the sector players have been facing severe competition within ACR auctions, entrepreneurs are driving their attention to the development of new projects exclusively or partially based in long-term power purchase agreements executed in the ACL.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

See question 4.

Also, pursuant to Brazilian environmental laws and regulations, the location, construction, installation, expansion, modification and operation of activities or projects that cause or may cause any environmental degradation or that use natural resources are subject to environmental licensing requirements – and this rule includes the majority of power projects in Brazil (regardless of whether these projects are related to renewable energy or not). Environmental licences are valid for a specific period and their renewal must be requested in good time. Other environmental authorisations, such as vegetation removal and impoundment of water grants, may be also applicable to power projects.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

There are no specific regulatory requirements for the decommissioning of renewable energy projects in the operational phase. However, if the project is decommissioned during the licence term, penalties shall be applied by ANEEL and CCEE to assure the adequate performance of the power generators and the impacts of such performance on the system.

The decommissioning of renewable energy projects shall naturally occur when the licence's termination date is reached. Such decommissioning shall not be understood as a penalty for infringing legal requirements.

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TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

Brazilian financing structures usually include an initial bridge finance with commercial banks, secured by corporate guarantees by sponsors, followed by a permanent loan in a project finance structure with collateral based on the company's assets, shares and credit rights. The majority of permanent loans in infrastructure projects have participation of public banks such as BNDES and are granted with subsidised rates. Project bonds with public placement have been an increasing alternative for permanent financing, but there is still no relevant secondary market for such bonds in Brazil.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Operational projects are more attractive to the market when it comes to financing as the pre-operational risk no longer exists and revenue collection allows the project a more balanced cash flow.

Nevertheless, the same funding alternatives described in question 29 and, specially, funding from the capital markets, shall be considered for operating renewable energy projects in Brazil.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

At the end of 2017 and in 2018, MME and ANEEL carried out different auctions for the delivery of energy produced by thermal, hydro, photovoltaic and wind power plants within six and four years as of the occurrence of the auction.

However, since the sector players have been facing intense competition within these bids, entrepreneurs are driving their attention to the development of new projects exclusively or partially based in power purchase agreements executed in the free market.

Legislative proposals

32 Describe any notable pending or anticipated legislative proposals.

As mentioned previously, 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 in the Congress.

In addition, ANEEL is currently reviewing the regulation applicable to distributed generation in order to improve the rules associated with the implementation of this kind of project in Brazil.

Chile

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

The public institutions that have a significant role in Chilean electricity industry are:

- the Ministry of Energy, the government institution responsible for developing and coordinating the programmes, policies and regulations for the operation and development of the energy sector, ensuring their compliance;
- the National Energy Commission (CNE), the entity in charge of analysing the prices, tariffs and technical provisions that companies involved in the production, generation, transportation and distribution of energy must follow;
- the Fuels and Electricity Superintendence (SEC), the supervisory body in charge of monitoring and supervising compliance with legal and regulatory provisions and technical standards on the production, generation, transportation and distribution of electricity;
- the National Electric Coordinator is an independent and technical entity responsible for ensuring the continuous operation of the Chilean power supply, ensuring the most economical operation of the electrical system, guaranteeing open access to all electrical transmission systems and preserving the security of the service in the electrical system;
- the Electricity Law Experts Panel is the entity, integrated by expert professionals, whose function is to resolve, through binding judgments, the disagreements and conflicts arising from the application of electric and energy legislation to institutions whose compliance is obligated by law in addition to other issues involving two or more companies in the electricity sector that by mutual agreement abide by its decisions;
- the Environmental Evaluation Service, the public body responsible for managing the environmental impact assessment system, which evaluates a project's compliance with existing environmental legislation, serving as an umbrella evaluation that assesses all environmental impacts;
- the Tribunal for the Defence of Competition, a special court formed by a panel of judges dedicated exclusively to antitrust matters, whose main function is the prevention, correction and sanction of antitrust infringements; and
- local municipalities and the Public Property Ministry, which play less important roles in the regulation of renewable energy; however, municipalities issue relevant permits during the development of projects, and the Public Property Ministry grants concessions to develop non-conventional renewable energy (NCRE) projects on taxable land.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

The Chilean electricity sector is a concentrated market in all segments (ie, generation, transmission and distribution). In the generation sector, ENEL Generación (21 per cent), AES Gener (21 per cent), Colbún (16 per cent), EC-L (5 per cent) and Angamos (5 per cent) contribute 68 per cent of the monthly gross generation of the electricity system as of May 2019. The transmission sector is also concentrated mainly in Transelec SA, Compañía General de Electricidad SA, Inversiones Eléctricas SA (Saesa SA), Transmisora Eléctrica del Norte SA, Chilquinta SA, Celeo Redes Operación Chile SA and Interchile SA. Regarding distribution, owing to its monopolistic nature and also to the existence of large-scale economies, this activity is organised around concessionary companies such as Compañía General de Electricidad Distribución SA, Enel Distribución Chile SA, Chilquinta Energía SA, Saesa SA and Sociedad Austral de Electricidad SA. Some of the players in the generation segment are also renewable energy producers by themselves or with new entrants (local and international) that are making the energy sector less oligopolistic than it was in the past.

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

Chilean legislation on electricity refers to 'renewable energy' or 'clean power' with the term 'non-conventional renewable energy' (NCRE). Chilean legal framework define this concept as the electrical energy generated by non-conventional renewable means of generation, which are those whose primary source is biomass energy, hydraulic energy below 20MW, geothermal energy, solar energy, wind energy, ocean energy and other means of generation determined by the CNE that use renewable energies for the generation of electricity, contribute to diversify the sources of energy supply in the electrical system and cause low environmental impact.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

The legal framework governing the Chilean electricity market consists of the following:

- general regulation of the electric sector: the main regulation is the General Law of Electric Services (Electricity Law), which comprises the incentives for the development of NCRE projects. The Electricity

Law, in its article 150-bis regulates the NCRE attributes. There is a Regulation of the Electricity Law that details the norms contained in the Electricity Law in order to facilitate its application;

- geothermal norms: a separate law that regulates geothermal energy concessions, owing to the fact that a different legal status applies. This is the case because, unlike other renewable energy sources, the legislature considers geothermal energy to be a public asset, and it may only be explored and exploited after a specific concession is granted;
- technical regulations governing the installation, operation and maintenance of electrical facilities: these are mainly the decrees of the Ministry of Energy, as well as the Ministry of Economy, which regulate the implementation of the Electricity Law and similar regulations; but also the technical provisions issued by the CNE, such as the Technical Standard with Safety Requirements and Quality of Service dictated by the National Electric Coordinator, which ensures the coordination of the electrical system;
- regulation of the institutional framework in the electricity sector: this comprises the laws, decree laws and regulations that deal with the existence and functions of the main institutions and authorities involved in the development and operation of the electricity sector, such as the Ministry of Energy, the CNE, the SEC, the Electricity Law Experts Panel and the National Electric Coordinator; and
- other relevant regulations: include the law that regulates the payments for residential generators, the regulation that created a subsidy for transmission lines in order to facilitate access to NCRE projects, the tax exemption for solar collectors; the relevant environmental statutes that must be applied to certain projects, applicable antitrust norms, among others.

Stripping attributes

5 | Can environmental attributes be stripped and sold separately?

The Electricity Law regulates that those who exploit NCRE sources interconnected may benefit from the 20 per cent quota requirement, with the possibility of transferring the surplus to those who cannot comply with their own NCRE quota (which in the market has been referred to as NCRE attributes), even if they belong to different electricity systems. Although the sale value of NCRE attributes is agreed upon on a case-by-case basis between the parties that transfer them according to market criteria, the generators that cannot meet their NCRE quota see the costs associated with the acquisition of such surpluses as an alternative to payment of the fine for such default, which corresponds to 0.4 monthly tax units (approximately US$29) for each MW/hour of deficit in respect to its obligation, which increases to 0.6 monthly tax units (approximately US$43) in cases involving recidivism.

Government incentives

6 | Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

In Chile, a quota system requires electrical companies that have an installed capacity of more than 200MW and that withdraw energy from the electrical systems for trading with distribution companies and final consumers to certify that a certain percentage of their energy withdrawal comes from NCRE sources. This percentage will increase every year until it reaches 20 per cent in 2025. However, this goal has almost been reached since, up to December 2018, NCRE were the 18 per cent of the national energy system. Further, the government has recently launched its decarbonisation programme that aims to replace coal with other sources of energy by 2040, so the 100 per cent of the energy comes from NCRE. This may imply a greater development of hydroelectric plants and energy storage solutions.

Among other relevant issues, the current regulation provides several advantages for NCRE projects over conventional sources. One of those advantages provided to NCRE projects is the exemption from paying tolls for using the main electrical transmission system. NCRE plants that generate less than 9MW are completely exempt, and NCRE plants that generate more than 9MW but less than 20MW are partially exempt.

Additionally, measures were established to facilitate the connection of the electrical system to NCRE plants with a capacity of less than 9MW, guaranteeing their access to the distribution facilities.

An annual tax on the polluting emissions of MP, NOx, SO2 and CO2, produced by facilities that reach a thermal capacity equal or greater than 50 MWt was approved in 2014.

Furthermore, in May 2017, the Public Property Ministry published several general instructions regarding concessions for onerous use of fiscal property in order to incentivise the development of NCRE projects on such public land. The Public Property Ministry may take the necessary measures so that NCRE projects make up 60 per cent of generated electricity by the year 2035 and at least 70 per cent of generated electricity by the year 2050.

Also, the development of NCRE projects has been promoted through the allocation of the Corporation for the Promotion of Production (CORFO) subsidies for conducting investment feasibility studies and following stages of the NCRE projects. In addition, CORFO has approved a long-term credit line for financing NCRE projects with an installed capacity of up 20MW.

Establishing policies and incentives

7 | Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

The laws that create policies for the development of NCRE projects are established at the national level.

Purchasing mechanisms

8 | What mechanisms are available to facilitate the purchase of renewable power by private companies?

Private companies may enter into power purchase agreements (PPAs) with NCRE generators, without the intervention of the authority. Notwithstanding the foregoing, the Ministry of Energy has enabled public biddings organised by private companies, qualified as free clients, to satisfy their energy demand.

In addition, since 2013, the bidding processes called by distribution concessionaires, enables the possibility of bidding in hourly blocks in order to promote the purchase of energy coming from wind and solar power plants.

Legislative proposals

9 | Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

Currently, there are bills of law that aim to encourage the development of NCRE projects are being processed in Congress:

There are several bills under processing that promote the develop of NCRE projects by including:

- promotion by the state of the small companies whose productive processes include the use of NCRE; and

- promotion by Ministry of Energy of the use of NCRE in the economic activities of small and medium-sized companies by granting subsidies to them.

Drivers of change

10 | What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

Promoting policies approved by the state has contributed to the development NCRE; these policies include a reduction in the payment of electricity transmission tolls, the obligation for electricity companies to have a percentage of withdrawals from NCRE sources, the establishment of investment support funds and the establishment of measures to facilitate the interconnection of generating plants, among others.

Nevertheless, it seems that the increase in investments associated with NCRE projects can be mostly attributed to better industry knowledge of the technology used in these projects and more competitive implementation costs. Therefore, in a market driven by competition such as the Chilean energy market, lower costs are the main driver of success.

In addition, Chile has begun to develop NCRE storage projects, which will solve the intermittency problems of this type of energy, and hopefully allow for an even greater consolidation of this type of project in the country.

The entry of these types of projects has had a very positive impact on the electricity market because it has become more competitive, as new players have entered into it, which has greatly decreased the price of electricity for both regulated and non-regulated customers.

Disputes framework

11 | Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

There is a specialised body that solves conflicts related to electrical and gas matters in Chile, the Electricity Law Experts Panel (Panel), whose responsibilities and functions are regulated by the Electricity Law.

When companies require the intervention of the Panel, the latter must issue binding opinions resolving discrepancies and conflicts arising from the application of the electric legislation. This Panel is highly technical, non-jurisdictional, collegiate and independent. It is formed by five engineers and two lawyers.

Some of the most important aspects of the Panel are the short time-frame in which its expert opinions are issued and the very technical approach of these opinions. In addition, the parties may choose to submit their dispute to a common arbitration procedure or to appeal to ordinary courts.

Additionally, the SEC has the faculty of ruling the disputes that arise in relation to the open access principle.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 | Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

As of April 2019, the National Electric System had an installed generation capacity of 24,856.4MW, which corresponds to more than 99 per cent of the national installed capacity (mediums systems such as Aysén and Magallanes and isolated systems are less than 1 per cent). Of the total installed capacity, 47 per cent corresponds to generation technology based on renewable resources, particularly hydroelectric (27.2 per cent), solar PV (10 per cent), wind (7.8 per cent), biomass (1.8 per cent) and geothermal (0.2 per cent), and 53 per cent corresponds to natural gas (19.6 per cent), coal (22.3 per cent) or petroleum derivatives (11.1 per cent) power plants. The size of NCRE projects varies, from small projects of nearly 1MW now being constructed or already operating, up to large plants over 100MW (mainly wind and solar PV).

Development issues

13 | What types of issues restrain the development of utility-scale renewable energy projects?

Current restrains to develop utility-scale renewable energy projects are related to the fact that most photovoltaic projects do not have storage capacity and therefore must inject all the energy generated immediately into the electrical system, producing an oversupply of energy during defined time blocks of low demand. This impacts the price of energy produced by solar plants and generates a dependency on conventional sources of energy that are able to provide energy in higher-demand time blocks.

Another difficulty involves financing, where electricity bids have been awarded for low prices. The lower margins and flows associated with the energy prices offered will affect the debt component, particularly in project finance. Renewable merchant projects are currently difficult to finance.

Primary types of project

14 | Describe the primary types of hydropower projects that are prevalent.

Currently, hydroelectric projects consist mainly of hydroelectric power plants using dams and run-of-the-river hydroelectric and mini hydroelectric power plants.

In 2018, 28 per cent of the hydroelectric projects presented were run-of-the-river, while mini hydroelectric plants has doubled since 2014 and has 495MW of installed capacity along with 749 additional MW which are environmentally approved.

Notwithstanding the above, the contribution of hydroelectric energy to the system has decreased in recent years, reaching 30.2 per cent in 2018. Despite the fact that the installed capacity has reached 6,753MW in 2018, the annual generation did not increase its contribution to the system, which is mainly because of the drought.

Legal considerations

15 | What legal considerations are relevant for hydroelectric generation in your jurisdiction?

A hydroelectric generation plant with a capacity above 3MW must obtain an environmental qualification resolution (RCA), which qualifies the project as being favourable to the environment. Additionally, the RCA establishes the relevant environmental permits necessary for developing the project, depending on its specific characteristics.

The developer of a hydroelectric generation plant may request an electrical concession from the Ministry of Energy, which would allow him or her to impose the necessary electric legal easements on a third party's land for constructing and developing the project. Such concessions can be provisional (for study) or definitive (for constructing the project), and are granted directly to the interested party.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

Usually distribution generation projects have one of two modalities:

- projects developed according to the Law of Net Billing (No. 20,571 of 2012), which allows residential electrical customers to generate energy for their own consumption, to inject the surplus energy into the electrical system, and to receive payments for these injections. The Net Billing Law applies to consumers with regulated tariffs whose installed capacity does not exceed 300kW; or
- small Means of Distributed Generation projects (PMGD, its initials in Spanish) for self-consumption or for commercialising their energy. The PMGDs are a means of generation whose surplus capacity is lower than or equal to 9MW, and which are connected to the facilities of a distribution company or to the facilities of a company that owns electrical distribution lines that use domestic public goods.

Both kinds of projects have almost doubled in their total install capacity in Chile since last year. For example, as of January 2018 to June 2019 installed capacity of PMGD went from 395MW to 653 MW. Regarding Net Billing, install capacity was 24.26MW by the end of 2018, however during 2018 increased 12.4 MW.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

The majority of the distributed generation projects in Chile are photovoltaic projects, because usually the development costs of these kinds of projects are lower than for other technologies.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

There is no specific legislation or regulation on microgrids so far in Chile. However, there are companies that own and operate portfolios of behind-the-meter distributed energy resources, such as peak-demand storage systems, rooftop photovoltaic systems, smart meters and data loggers, which allow such companies to manage and optimise their consumers' demand and create more favourable economic conditions for electricity supply.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

According to the Net Billing Law, payments, compensation or income received by residential customers by virtue of the injection into the electricity system of their energy surpluses do not constitute income, and the relevant transactions are not subject to VAT. Other than in specific cases, this does not apply to first category taxpayers who are obliged to declare their effective income according to the 'complete accounting' system.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

The energy storage systems are mainly based on the use of Li-ion batteries. Such storage technology was used for the first time in 2009 by the company AES Gener SA. In February 2019, ENGIE Energía Chile (EECL) started a pilot plan of a storage energy system based on Li-ion batteries, which has a storage capacity of 2MW.

Other storage projects have been and will be developed, such as the Cerro Dominador project owned by EIG Global Energy Partners, which is a solar thermal energy plant with an installed capacity of 110MW. It uses a thermal storage system with a central tower and molten salt receiver technology, allowing it to operate for 17 hours per day.

Additionally, the Planta de Concentración Solar de Potencia Copiapó Solar project, developed by the Solar Reserve Company, has been operating since 2019. The system was built in the north of Chile and involved the construction of two solar power units with a central tower using molten salt receiver technology, each with an installed capacity of 120MW.

The Espejo de Tarapacá project is also currently being developed and involves a storage system based on hydro-pumped hydroelectricity. The project includes a high-pressure pipeline to transport water, which is connected to a water reserve and a group of pump turbines.

Law No. 20.936 of 2016 regulates energy storage projects generally. In addition, Decree No. 128 of 2016 regulates water-pumping storage projects.

Finally, the Ministry of Energy has announced a bill of law to be presented on the second semester of 2019 regarding storage technologies.

Development

21 Are there any significant hurdles to the development of energy storage projects?

There are no significant obstacles for the development of energy storage projects. However, it is important to emphasise that anyone who operates, by means of ownership, a lease agreement or any other title, energy storage systems that are interconnected to the national electricity system and subject to the coordination of the National Electric Coordinator, must incorporate a company that is domiciled in Chile and whose line of business is the storage of energy. Likewise, the owner, lessee, usufructuary or anyone that operates, under any other title, facilities for supplying services related to the storage of energy interconnected to the national electrical system must incorporate a company domiciled in Chile. Additionally, it is important to note that energy storage systems are subject to the coordination of the National Electric Coordinator.

Likewise, storage facilities shall pay compensation for the unavailability of the supply to end users, which cannot exceed, per event, 5 per cent of the total revenue obtained in Chile the previous year or 20,000 annual tax units (approximately US$17 million).

FOREIGN INVESTMENT

Ownership restrictions

22 | May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Foreign investors may freely invest in renewable energy projects in Chile. It is important to note that according to New Energy Finance Climascope, Chile is one of the countries that has attracted the most foreign investment from overseas financiers since 2010. The publication also highlights that Chile has a stable government and a healthy economy, making clean energy investment attractive. Additionally, it is important to mention that currently Chile has many taxation treaties (32).

In order to protect foreign investment, Law No. 20,848 of 2015 states that foreign investors who make investments in Chile as of January 2016 can request a Foreign Investor Certificate from Invest Chile, which allows them to access the benefits established in that law. Additionally, this Law allows foreign investors to request the signing of a tax invariability contract until 2020.

Besides the aforementioned legal protections, in order to promote foreign and national investment in NCRE projects, resolution No. 367 was enacted in the year 2010, which approved the creation of a hedging instrument or contingent subsidy, through which CORFO grants a complementary coverage of risk for the operation of credit and finance leases destined for the financing of investment projects. Banks with a risk classification of BBB– or higher may grant this coverage to private companies (legal persons or natural persons dedicated to these operations) that manufacture goods and services, for the financing of investment projects in NCRE. The object of this instrument is to partially offset the losses suffered by banks as a consequence of the non-compliance of the obligations from debtors.

However, it is important to note that any owner, lessee, usufructuary or whoever exploits, in any capacity, power plants interconnected to the electricity system and subject to the coordination of the National Electric Coordinator, shall establish its generation companies with domicile in Chile. Likewise, any owner, lessee, usufructuary or any person who exploits, in any capacity, facilities for the provision of complementary services or energy storage systems that are interconnected to the national electric system must incorporate a company domiciled in the country.

Equipment restrictions

23 | What restrictions are in place with respect to the import of foreign manufactured equipment?

As a general rule, the average custom duty (ad valorem) is 6 per cent over its CIF value and the tax to be paid is the VAT (19 per cent). However, Chile has signed a number of trade agreements that abolish ad valorem duties for most items traded between these countries. In addition, there are benefits for investors importing capital goods for energy projects over US$5 million, which will be exempt from VAT, with the prior approval of the Ministry of Finance.

To perform an import, the importer must present an entry statement to the National Customs Service, which is a document that must go through the commercial bank. The commercial forms used by importers are commercial invoices and applicable information on the transaction, such as certificates of origin, bills of lading, freight insurance and packing lists, among others.

PROJECTS

General government authorisation

24 | What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Depending on the NCRE project's characteristics and the environmental impacts that it may generate, it may be necessary to obtain an RCA that certifies the project as environmentally favourable. This resolution will also identify the required permits for the project, depending on its particular characteristics. If the project is transferred after an RCA is obtained, this must be reported to the Environmental Assessment Service.

In addition, the project must obtain other relevant permits such as construction permits for permanent buildings, issued by the Department of Works of the relevant municipality, and the corresponding health and electric permits, issued by the Regional Authority of Health and the SEC, respectively.

If the construction of the project is to be in public areas, it will also be necessary to obtain a concession from the Public Property Ministry, which will enable by way of concessions the use of public lands for these purposes.

In practice, although it is not a requirement for the construction of a project, it is customary to protect the land from third parties by requesting mining concessions where the energy project will be developed, as the mining concessionaire has the ability to impose easements on the area of the concession.

In the case of hydroelectric projects, it is also necessary to obtain water rights for use in the energy generation project and an authorisation from the General Water Direction if it is necessary to build, modify, change or unify a water intake to develop the NCRE project.

Offtake arrangements

25 | What type of offtake arrangements are available and typically used for utility-scale renewables projects?

The energy offtaker concessionaires' distribution companies are those that contract for provisions to supply energy to regulated customers. As a general rule, such contracts are preceded by a public tender procedure called by the energy distributor and supervised by CNE.

The preliminary report of electricity supply tenders for the period 2018-2038 projected an electrical demand for regulated customers of 37,393 GWh for 2025. With this information, the Bidding Bases for Power Supply and Electric Power have been prepared, whose process is in force and will be awarded by the end of 2019.

To participate in the public bidding processes called by the energy distributors, the bidder is generally required to have a risk rating of at least BB+. In practice, that rating is given taking into consideration the sponsor's credit rating.

Clients whose connected power is between 500kW and 5,000kW have the right to choose between being regulated clients or free customers. This right to choose can be exercised once every four years. These clients can freely negotiate electricity prices with energy generators and set supply conditions through PPAs.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

The PPAs for supplying energy to regulated customers are usually preceded by public tender procedures.

On the other hand, as a general rule, non-regulated customers call for public or private bidding processes, whether they have a high demand for supply or they add demand, and subsequently enter into PPAs with the successful bidders from such processes.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

There are no specific government authorisations required to operate renewable projects and sell electricity. Nevertheless, as mentioned above, according to the General Law on Electrical Services, the owner, lessee, usufructuary or anyone that operates power plants connected to the electrical system under any title and subject to the coordination of the National Electric Coordinator must incorporate a company that is domiciled in Chile and whose line of business is the generation of energy.

The energy broker or energy trader is not regulated in Chile; this is the reason generators are the only entities that can commercialise energy to be sold in the spot market to other generators, or in the contract market (either to distribution companies, other generators or non-regulated customers).

Finally it is important to note that, for NCRE projects to be commissioned, they must have been previously declared to be under construction by the CNE, and they must have the authorisation of the National Electric Coordinator to energise the corresponding facilities.

After the energisation and interconnection of the facilities, and after a test period to prove that the power plant does not cause distortions in the electrical system, the National Electric Coordinator will approve the commissioning of the respective NCRE project.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

Once the useful life of NCRE plants has been surpassed, they are dismantled. The process will be carried out in compliance with the measures and procedures set forth in the project's RCA, required by all power plants above 3MW. The cost of implementing such measures shall be considered as one of the costs of the project.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

Although the structure for financing depends on the size and features of the NCRE project, most developers prefer project financing and long-term agreements. The debt-to-equity ratio depends on the specific project; traditionally, it has been 60/40. In order to guard against any construction risk, the financing entity usually requires from the developer a guarantee from the sponsor (ie, a parent guarantee and a fraction in a more liquid instrument) and a regular security package (ie, pledges over the shares of the special purpose vehicle, the assets of the project and the major project documents). In current market conditions, one of the challenges NCRE projects face is to secure a long-term PPA with creditworthy companies that will enable a project finance structure. Normally financing includes a principal facility and another one for VAT. Regarding VAT, it is important to consider that Chilean VAT Law establishes a benefit for companies that invest in fixed assets (eg, energy plants). In this regard, the company is entitled to a reimbursement in cash of VAT paid in the acquisition of goods and services that compose fixed assets.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

To run NCRE projects, the financing structure takes several forms, depending on the commercial needs of the parties and the features of the operating project being financed. As the construction risk is finalised, the financing entity will normally assess the type and age of the plant to evaluate the structure. Common financing structures used in Chile are the term loan and the revolving loan, which can be repaid on demand on an amortisation basis, scheduled, or even by means of a bullet loan, where the entire loan is due at the end of the loan term.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

- With the new transmission line Polpaico-Cardones, developed by Interchile SA, the restrictions imposed by the transmission system were eliminated, making it possible to transport renewable energy produced by wind and photovoltaic sources to large consumption centres in the central zone of Chile. A direct benefit that will be delivered by the double circuit 500kV transmission line is the reduction in discharge (loss) of energy from renewable generators located in the northern zone of Chile that will now be able to inject all the energy they produce, owing to the increased transmission capacity. This new transmission scenario will accelerate the process of decarbonising the country's energy matrix until the eventual closure of all coal-fired power plants, which is expected in 2040, according to the latest announcement by the Energy Ministry
- Regarding distributed generation market, one of the major current discussions in the energy sector concerns PMGD and PMG generators. In April 2019, the government proposed to change the tariff mechanism called Stabilized Price, which in its original conception sought to grant greater certainty to the developers of these generation units in order to access financing. In our opinion, if the government follow such path, it will certainly affect the development of these projects, which have been very active in the last two years.
- Amendments to the General Law on Electrical Services allows some final consumers to negotiate energy supply contracts directly with energy generators. Several public organisms and municipalities have decided to opt for this system, which is a trend that we anticipate will continue because the price offered by the generators

is generally lower than the price offered by distribution companies. This is in addition to the trend in the private sector where actors, in many cases, have chosen the same contractual regime.

- Recently, the government announced its Decarbonization Plan that implies the progressive closure of coal-fired power plants with the objective to permanently close all facilities by 2040. This plan implies the closure of the 28 power plants currently operating in Chile and aligns with the government policy in recent years to promote the development of NCRE projects.

Legislative proposals

32 | Describe any notable pending or anticipated legislative proposals.

The government has announced proposed legislation for the second Congressional term of 2019 that will focus on energy storage. There is currently no specific regulation in place on this subject.

Another piece of proposed legislation aims to modify the Constitution in order to make it a duty of the state to promote the development of smaller companies whose processes favour the use of NCRE and to promote a pollution-free environment.

The Energy Efficiency Law project seeks to increase energy security, reduce global emissions and local pollutants, increase productivity, and contribute to sustainable development. This claims to generate a 7 per cent energy savings with in total consumption by 2035.

Finally, a bill on climate change seeks to set principles, a governance system, management instruments and adequate financing mechanisms to allow the transition to development that produces low greenhouse gas emissions, reduces vulnerability, increases resilience and guarantees the fulfilment of the international commitments assumed by Chile.

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

Egypt mainly has 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 Egyptian Electricity Transmission Company (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 is responsible for overseeing compliance with the existing rules and regulations in the electricity sector.

Egypt aims to gradually replace the current model with a competitive market, based on bilateral contracts, together with spot, balancing and ancillary services' markets. The Electricity Law No. 87/2015 sets 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. The Renewable Energy Law No. 203/2014 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.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

For a long time, the companies operating under the MOERE umbrella dominated the Egyptian electricity market. Private companies are now entering this market, mainly through build, own and operate projects that are particularly seen in the wind and solar PV power fields, or the FIT programme, which alone targeted 4GW of solar and wind capacity in its first and second rounds.

The launch of the FIT programme in late 2014 has positively impacted a renewables market that was rather stagnant, and created an influx of foreign direct investment opportunities in renewables projects that was unprecedented in the Egyptian electricity market. Large foreign utilities, energy providers, engineering, procurement and construction companies, operating and maintenance service providers, development finance institutions and more generally international finance institutions, as well as foreign and local commercial banks, have placed Egypt on their radar for the past four years as a country with large investment potential in renewables.

Smaller scale projects are also being developed, mainly by local companies, to generate electricity for high-level users of electricity from the private sector. The projects are either grid-connected or off-grid.

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

'Renewable energy resources' are defined in the Renewable Energy Law as 'natural sources of energy, which are non-depletable, and which may be used to produce electricity'.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

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

- state-owned projects with competitive bidding for engineering, procurement and construction contracts;
- competitive bidding for build-own-operate contracts;
- feed-in tariff; and
- 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.

The Electricity Law requires projects set up for the generation, distribution or sale of electricity (including under any of the above schemes) to be developed through an Egyptian joint stock company. Generally, these companies must seek a preliminary then a final licence from EgyptERA to be allowed to carry out their activities.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

An Egyptian Designated National Authority is subordinated to the Egyptian Environmental Affairs Agency (EEAA), and includes two branches: an executive branch, consisting of the Egyptian Council for CDM (comprising representatives of certain ministries, including the Ministry of Investment and International Cooperation and the Ministry of Petroleum); and a technical branch, the Egyptian Bureau for CDM (comprising experts providing technical recommendations to the Council), which plays a role in deciding on the issuance of certified emission reduction 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.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

The government of Egypt offers a number of incentives and is putting in place favourable policies to promote the development of renewable energy projects in the country. The Investment Law No. 72/2017 published on 31 May 2017 grants a special investment incentive to new projects that generate renewable energy or that depend on it or the expansion of projects by the addition of new assets that increase the production capacity, 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 (ie, 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 a strategic interest; otherwise, 2 per cent of the production is generally payable yearly for land lease (based on the Renewable Energy Law No. 203/2014).

In 2013, Egypt introduced a net-metering scheme to promote distributed solar power. The scheme allows small-scale renewable energy projects in the residential and the industrial and commercial sectors (with a maximum capacity recently increased from 5MW to 20MW) to feed electricity into the low-voltage grid. 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 the consumers' highest tariff bracket.

In addition to the utility-scale solar projects, the FIT programme 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.

Also, the merchant or independent power producer model provided for in the Renewable Energy Law allows private offtakers to enter into agreements with private power generation companies to secure the purchase of electricity from renewable energy sources.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Renewable energy policies and incentives are established at the national level by the Egyptian government, typically through the Cabinet of Ministers.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

The merchant or independent power producer model provided for in the Renewable Energy Law 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 subject to the Paris Agreement (within the United Nations Framework Convention on Climate Change), as well as for certain commercial electricity users looking to reduce their electricity bill.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The framework for the set-up of commercially viable waste-to-energy projects remains in gestation, as it requires close coordination between the MOERE and the Ministry of Environment, as well as a solution to the lack of an efficient waste collection system. The 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 Egyptian government approved FITs for refuse-derived fuel and electricity generated from solid waste at a preliminary price of E£0.92 per kilowatt hour. It was also reported to have agreed to issue grants to governorates to help subsidise recycling efforts that feed into the programme and facilitate land concessions on a usufruct basis for companies seeking to develop waste-to-energy power plants.

In 2019, NREA formed a committee comprising all electricity sector stakeholders and tasked it with the drafting of the Executive Regulations of the Renewable Energy Law no. 203/2014. The committee is aiming to complete its mandate by the fourth quarter of 2019.

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

The Egyptian government has a long-term plan of diversification of the energy mix and reduction of dependence on fossil fuels, which predates the large Zohr offshore gas discovery. The targeted renewables capacity is 20 per cent by 2022.

Market observers would also identify the extreme power cuts that had affected the country during the summers following the 2011 uprising as being the soft driver behind the strong push for renewables projects in autumn 2014.

It is currently expected that the next revolution in the power sector, which will expand the use of renewable energy in Egypt, will be the wave of transformation to electric mobility.

Disputes framework

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

The Executive Regulations of the Electricity Law, issued by Decree of the MOERE No. 230/2016, provide for the establishment of a committee within EgyptERA for the settlement of disputes arising between the electric utility parties in relation to the utility's activities. The committee is chaired by a state councillor and comprises technical, financial, commercial and legal members, as nominated by prime ministerial decree for a one-time renewable term of one year. The committee's decisions must be succinctly justified, and issued within a period not exceeding 60 days from the date of the substantiated claim. The decision is then presented to the board of EgyptERA for ratification and notified to the parties.

Typical power purchase agreements entered into with EETC as offtaker would however provide for international arbitration clauses referring disputes to arbitral tribunals constituted in accordance with the Rules of the Cairo Regional Centre for International Commercial Arbitration and seated outside Egypt. According to the Egyptian Arbitration Law applicable to most such agreements, the consent of the MOERE on the arbitration clause is required for it to be valid.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

Large-scale 20MW to 50MW renewable energy projects are found under the FIT programme. Furthermore, certain 100MW to 600MW projects are also found in the competitive bidding scheme in the wind and PV power sectors.

Development issues

13 What types of issues restrain the development of utility-scale renewable energy projects?

Not applicable.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

Approximately 8 per cent of Egypt's power comes from hydropower facilities, the first of which was built in 1960, namely the Aswan Dam, which was constructed to control the Nile water discharge for irrigation. In 1967, the 2.1GW High Dam hydropower plant was commissioned, followed by the commissioning of the Aswan 2 power plant in 1985, the commissioning of the Isna hydropower plant in 1993, and that of Naga Hammadi in 2008.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

The Egyptian legal and regulatory framework allowing the establishment of private renewable energy projects is focused on solar (particularly photovoltaic) and wind sources, and does not seem to address hydropower. Existing hydropower projects are built and owned by the Egyptian government, and there does not seem to be a particular drive to date for extending opportunities to develop utility-scale hydro projects to the private sector similar to the solar and wind fields.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

In January 2013, EgyptERA adopted a net-metering policy by virtue of Circular No. 1/2013, that allows small-scale renewable energy projects to feed electricity into the national grid. Generated surplus electricity will be discounted from the balance through the net-metering process. A number of off-grid projects is also being developed by local electricity companies for real estate developers, manufacturing facilities, telecom companies, and other commercial off-takers that want to reduce their electricity bills. Electricity distribution projects in new urban communities are also now attracting private sector investments.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

Rooftop and small-scale solar power generation is being encouraged by the Egyptian government, with the FIT programme launched in 2014 dedicating 300MW of its fixed tariffs to projects of a capacity not exceeding 500kW. All electricity produced is fed into the national grid operated by EETC.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

Off-grid solar power plants are encouraged by EETC, but not widespread. 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 complete lifting of the subsidies on fuel and electricity tariffs by the Egyptian government started in 2016. Their expansion will also depend on the decrease in storage prices.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

As fuel and electricity were largely subsidised by the Egyptian 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 private-owned projects would become more common. The development of independent power producer projects on the distribution level remains challenging owing to the lack of a supporting regulatory framework. EgyptERA is currently working on filling this legislative gap.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

Tenders for CSP projects with storage are being launched by the Egyptian government for limited capacities, most recently for development in the West Nile area in Minya, southern Egypt. The process is, however, currently pending.

Development

21 Are there any significant hurdles to the development of energy storage projects?

Not applicable.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Foreign investors are encouraged to invest in renewable energy projects in Egypt. They are required to set up a project company in Egypt to develop their projects, without any shareholding nationality requirements. In effect, most private players in the Egyptian renewables market are currently foreign investors.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

With the exception of mounting structures and cables in the solar power plants field, and high-voltage electric equipment and switchgear, Egypt is not considered to be a producer of main electricity generation plant equipment. For this reason, the government encourages the import of renewable energy equipment at a discounted unified customs rate of 2 per cent (versus 5 per cent typical rate) applied to all equipment and machinery required for the set-up of the plants. Also, EUR1 certificates allow renewable energy generation companies to import certain equipment manufactured in the EU at nil rate of import duty, such as solar panels, for instance.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Electricity generation projects, including from renewable sources, must be established in the form of an Egyptian joint stock company, to be authorised by the General Authority for Investment and Free Zones, affiliated to the Ministry of Investment and International cooperation. The companies must then obtain a licence from EgyptERA for power generation, and a building permit for the construction of any concrete or fixed installations. An environmental impact assessment, approved by the EEAA, is also required. The generation licence and approval of the EEAA must be maintained valid and effective for the entire duration of the project. The transfer of renewable energy projects requires an assignment of the generation licence issued by EgyptERA, in accordance with the route traced by the Electricity Law and its Executive Regulations to this effect.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

EETC is the typical offtaker for utility-scale renewable energy projects in Egypt. Given that its credit rating is not positive, lenders typically require a sovereign guarantee to be issued by the Egyptian Ministry of Finance to guarantee the payment obligations of EETC under the power purchase agreements it enters into as offtaker.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

Unsolicited tenders are currently not applicable in the renewable energy sector in Egypt. However, competitive bids are from time to time launched by NREA or EETC for the development of electricity generation projects from renewable sources. There is also a FIT programme currently in place.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

See question 24.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

The obligation to decommission renewable energy projects is contractual. The model power purchase agreements developed by EETC and typically used thereby in the projects where it acts as the offtaker, as well as usufruct agreements whereby NREA acts as lessor of land for renewable energy projects, contain decommissioning requirements.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

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 subcontractors. Construction is largely financed by international finance institutions (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 the projects' profits are generated in foreign currency (while 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 dollars).

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

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 development finance institutions, 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- to 18-year tenures. Where EETC is the offtaker, senior lenders now generally require a sovereign guarantee from the Egyptian Ministry of Finance or Central Bank of Egypt for the payments by the transmission company to the seller, as well as a seat of arbitration outside Egypt for the PPA.

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

Government policy in respect of the electricity sector is established by the Ministry of Water, Irrigation and Electricity. The electricity sector is regulated by the Ethiopian Energy Authority (EEA), which is an independent regulatory authority vested with the power to issue licences for the generation, transmission, and distribution of electricity within Ethiopia as well as the import and export of electricity into and out of the country. Ethiopian Electric Power (EEP) is responsible for the generation and transmission of electricity. The Ethiopian Electric Utility (EEU) purchases capacity and energy from EEP and distributes electricity to end users. Both EEP and EEU are public enterprises. They are wholly owned by the government of Ethiopia and governed by regulations issued by the Council of Ministers.

The majority of the energy generated by EEP is generated from hydroelectric resources. A relatively small percentage of power is generated from wind, geothermal and thermal sources.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

Although no independent power production (IPP) project has yet achieved financial close in Ethiopia, Ethiopia has recently determined that it should, as a matter of policy, use what limited financial resources it has available for the development of infrastructure to develop infrastructure in other sectors that are not as capable of generating self-sustaining revenues the electricity sector. As a result, Ethiopia has, over the past few years, begun to examine the legal and regulatory framework in the country in order to:

- determine whether it is capable of supporting an IPP programme;
- identify any changes that should be made to the legal and regulatory framework to facilitate the development of a successful IPP programme; and
- consider how best to approach the development of such a programme.

In part as a result of these efforts, EEP recently entered into two power purchase agreements under which two geothermal power plants will be developed.

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

No.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

The EEA is responsible for issuing generation licences, and would, in the case of an IPP, authorise the project company to generate electricity from a particular generation facility. Given that EEP is responsible for generating (or procuring the generation of) electricity in Ethiopia and that EEU has a monopoly over the distribution of electricity to end users, any IPP seeking to develop a project in Ethiopia would need to enter into a Power Purchase Agreement with EEP. The foregoing applies to renewable and non-renewable projects alike. There is no legal or regulatory framework for selling environmental attributes from renewable energy projects, but the high cost of electricity in Sub-Saharan Africa in general and Ethiopia in particular means that renewable projects have a much easier time achieving grid parity than they would in other markets with lower electricity prices.

The following is a list of the principal legislation governing the development of energy in Ethiopia:

- Energy Proclamation No. 813/2013 (revised but not published);
- Ethiopian Energy Authority Establishment Council of Ministers Regulation No. 308/2014 (this Regulation is currently under review and will likely be amended);
- Electricity Operations Council of Ministers Regulations No. 49/1999 (under revision);
- Geothermal Resources Development Proclamation 981/2016;
- Investment Proclamation No. 769/2012 as amended;
- Investment Incentives and Investment Areas Reserved for Domestic Investors Council of Ministers Regulations No. 270/2012 as amended;
- the Constitution of the Federal Democratic and Republic of Ethiopia;
- the 1960 Federal Democratic Republic of Ethiopia Civil Code;
- Environmental Protection Authority Establishment Proclamation No. 9/1995m as amended;
- Environmental Impact Assessment Proclamation No. 299/2002; and
- National Bank Directives.

Foreign banks can lend to an Ethiopian incorporated company only if they obtain an authorisation from the National Bank of Ethiopia, where the Ethiopian company cannot find adequate funding from Ethiopian banks. The authorisation by the company in Ethiopia to borrow money

from abroad is granted by the National Bank of Ethiopia and is granted on a case-by-case basis.

Stripping attributes

5 | Can environmental attributes be stripped and sold separately?

No.

Government incentives

6 | Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

Foreign investors investing in an approved investment project may benefit from tax incentives depending on the type of investment they intend to make and the area in which the project will be located. An exemption from income taxation for a limited number of years is available to companies that are engaged in the generation of electricity in certain areas. Companies that invest in generation may also benefit from customs duty exemptions for capital goods and equipment. No incentives other than the foregoing are currently in place that would provide for additional incentives for investments in renewable energy projects.

Establishing policies and incentives

7 | Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Ethiopia is a federation made up of nine ethnically based regions or states. The Constitution vests the right of ownership over rural and urban land, as well as of all natural resources, exclusively in the state and the nations, nationalities, and peoples of Ethiopia. The government of Ethiopia has wide-ranging powers deriving from the Ethiopian Constitution in relation to formulating and implementing major policy and institutional reforms aimed at creating an efficient and environmentally sustainable energy sector and at supporting investments in the electricity sector. Regions may enact laws in line with federal legislation and polices to implement the same, but in practice policy in the electricity sector is generally established at the national level.

Purchasing mechanisms

8 | What mechanisms are available to facilitate the purchase of renewable power by private companies?

None have been established to date.

Legislative proposals

9 | Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

Earlier this year, the government adopted Proclamation No. 1076/2018. Proclamation 1076/2018 establishes a framework for the development and financing of public private partnerships in Ethiopia.

In relation to the energy sector, two pieces of legislation are expected to pass in the near future. They are the Draft Council of Ministers Regulation to provide for Energy Operations, and a regulation to implement the Geothermal Resources Development Proclamation.

The geothermal proclamation, which was promulgated in early 2017, aims to stimulate investment in geothermal resources. The development of geothermal resources is currently governed by generally applicable mining legislation, and its use to date has been limited as a result. The new proclamation will, if enacted, set forth the overall framework governing geothermal resources. The draft regulation will implement the proclamation at a more practical level by providing guidance on issues such as how licences should be applied for and issued to IPPs, and the requirements that projects must satisfy in order to qualify for a licence.

Drivers of change

10 | What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

The major source of energy in the country is hydroelectric power. Although hydroelectric power has provided the majority of generation capacity for decades, there is a growing recognition that hydroelectric power alone will not be sufficient to serve the country's growing economy. As is also noted above, there is a growing recognition that private capital will be required in order to make the sizeable investments that will be required in the electricity sector over the near to medium term.

Disputes framework

11 | Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

Ethiopia is not a contracting party to either the New York Convention or the Washington Convention. Nonetheless, foreign arbitral awards are, as a general matter, enforceable under the Civil Procedure Code.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 | Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

In December 2017, EEP entered into a power purchase agreement in respect of the Corbetti Geothermal Project. The project will have a capacity of up to 520MW. Berkeley Energy is the majority shareholder in the project. The project should achieve commercial operations by 2020.

Ethiopia has mandated the International Finance Corporation (IFC) to conduct reverse auctions for up to 500MW of photovoltaic solar on the IFC's Scaling Solar platform. In March 2018, 12 developers were prequalified.

Several other projects are also in development. These include the Tule Moye Geothermal Plant, the Abaya Geothermal Plant and the Metahara Solar Project.

Development issues

13 | What types of issues restrain the development of utility-scale renewable energy projects?

In our view, the principal issues are:

- the lack of a formalised legal framework governing IPPs
- the lack of experience in procuring utility-scale IPPs and in approving the tariffs for such IPPs;
- the lack of a track record in promoting IPPs; and
- a shortage of hard currency.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

EEP owns and operates several large hydropower projects. No hydropower IPPs have yet been developed.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Not applicable.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

The use of solar panels in households and small businesses is becoming more widespread. The legal framework that would be necessary to support net metering is not in place as yet.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

The only type of distributed generation we have seen so far (aside from backup diesel generation, which is relatively common in Ethiopia) involves the Ethiopian government entering into a PPA with an investor to provide energy for off-grid and mico-grid projects, mainly in rural areas.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

No framework for the promotion of micro-grids has been developed to date. Despite the lack of a framework, some communities have taken the initiative and invested in small micro-grids using a cooperative approach.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

Not applicable.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

None.

Development

21 Are there any significant hurdles to the development of energy storage projects?

No.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Investment by international investors in Ethiopia is strictly regulated. Investment by foreign investors in transmission and distribution using the national grid are prohibited. However, private developers are allowed to develop renewable energies in Ethiopia by obtaining a generating licence from EEA and entering into a PPA with EEP.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

Investments in Ethiopia by international investors are subject to strict regulation. However, where they are permitted to invest, investors may be permitted to import equipment (capital goods) needed for their projects free of any import duties. In general, where exemptions are not available tariff rates range from zero to 35 per cent.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

The EEA is the regulator of the electricity sector. Its powers derive principally from the Energy Proclamation. The EEA approves PPAs and has the power to grant generation licences. All foreign investments must first be approved by the Investment Commission or Ministry of Trade, as the case may be.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

Currently, long-term PPAs entered into by EEP.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

No feed-in tariffs have been approved.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

See above.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

In practice, these obligations remain unsettled.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

As we have seen, currently most IPPs are financed through offshore financial institutions (banks and development banks), export agencies, grants given by development organisations and some private investors as well. Foreign banks can lend to a company organised under the laws of Ethiopia only if they obtain an authorisation from the National Bank of Ethiopia, and only if the Ethiopian company cannot find adequate funding from Ethiopian banks. Authorisations to borrow funds from abroad are granted by the National Bank of Ethiopia on a case-by-case basis.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Financing for operating renewable energy projects has primarily come from offshore financial institutions.

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MARKET FRAMEWORK

Government electricity participants

1 | Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

The main regulator for the electricity sector is the Federal Network Agency (BNetzA), an independent higher federal authority based in Bonn. In addition, the federal states each have a local regulator that is competent for a number of tasks relating to smaller distribution networks that do not extend beyond the relevant federal state and to which only a limited number of customers are connected.

The main role of the BNetzA is to ensure non-discriminatory network access and to supervise the grid fees levied by the grid operators. The BNetzA supervises the grid operators with regard to unbundling (of grid and supply activities, as required by law) and with regard to their duties, especially relating to system stability. It also has responsibilities with regard to high-voltage grid planning both onshore and offshore.

In relation to renewable energy, the BNetzA is responsible for the implementation of tenders for remuneration under the Renewable Energy Sources Act (EEG) and the Combined Heat and Power Act (KWKG). It determines the annual rate of EEG surcharge, by which the costs arising from the EEG are rolled to electricity suppliers and end users, and monitors the rolling mechanism. Where the amount of EEG remuneration is subject to the overall growth of installed capacity in a certain period of time, the BNetzA determines and publishes the relevant figures. It has a number of further publication duties regarding renewable energy plants.

The BNetzA does not supervise retail prices; any issues in this regard will be dealt with by the civil law courts or the competition authorities.

A number of other authorities play a role with regard to permitting and planning of grids, as well as generation plants. Permits will be issued by the competent emissions control, construction or mining authorities, depending on the type of project, in the relevant federal state. For offshore wind projects in the German exclusive economic zone, the Federal Maritime and Hydrographic Agency (BSH) is the permitting authority.

Private electricity participants

2 | Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

The principal players can be divided into grid operators on the one hand and electricity producers on the other.

The German transmission system operators are TenneT, 50Hertz, Amprion and TransnetBW. On the level of the distribution grid, there are approximately 900 operators active in Germany. With regard to renewable energy, the grid operators are responsible for connecting new generation plants to the grid and for transporting the electricity, taking into account that the law provides for priority rights of renewable energy over conventional energy. The grid operators also deal with paying out any remuneration under the EEG; they then pass on these costs under the statutory rolling mechanism. If required for system stability, the grid operators may temporarily limit the production of specific renewable energy plants (but will have to pay compensation under the EEG).

The market for electricity production in Germany is liberalised. A large number of producers are active in Germany, ranging from the 'big four' (RWE, e.on, Vattenfall and EnBW) to small players. In renewable energy, the production landscape is very varied and operators range from large utilities to small players like local citizen's initiatives or individual owners. Remuneration under the EEG requires for most plants that the energy is sold, and there are numerous offtakers (known as direct marketing companies in line with the terminology used in the EEG) who purchase the energy under relatively standard agreements and then market it at the electricity exchange.

Definition of 'renewable energy'

3 | Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

According to the legal definition in section 3, No. 21 of the Renewable Energy Sources Act 2017 (EEG 2017), 'renewable energy' is generated by:

- hydropower, including wave, tidal, salinity gradient and marine current energy;
- wind energy;
- solar radiation energy;
- geothermal energy; and
- energy from biomass including biogas, biomethane, landfill gas and sewage treatment gas, and from the biologically degradable part of waste from households and industry.

Framework

4 | What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

Renewable energy in Germany is supported under the EEG. Initially, statutory feed-in tariffs were paid by the grid operators who took off the electricity. Meanwhile, only small plants still benefit from feed-in tariffs, whereas other installations have to sell the electricity and can receive additional support as a 'market premium', namely the difference between the market price and an 'applicable value' under the EEG.

Under the revised EEG 2017, an auction scheme for renewable energy remuneration was introduced, in line with state aid requirements by the EU Commission. For new onshore wind, offshore wind, PV and biomass

plants exceeding a certain minimum capacity, remuneration under the EEG will only be granted if the operator wins an award in the tender proceedings (by offering a low level of remuneration). The successful bid determines the amount of the applicable value for calculation of the market premium. The auction proceedings are organised by the BNetzA. The dates and available amounts of capacity to be tendered for each type of renewable energy, as well as the requirements for participation, are prescribed by law. EEG remuneration is generally granted for a period of 20 years, starting from the entry of operation of the relevant plant. After the expiry of this period, no further EEG remuneration is available, with one exception: existing biomass plants may participate in the tenders under certain conditions and, if successful, can obtain an additional 10-year remuneration.

The EEG also mentions certain 'environmental attributes', but these play a limited role (see question 5).

Apart from the prerequisites for EEG remuneration, there are no specific restrictions on constructing and operating renewable energy plants. Permits must be obtained under general rules, and especially environmental law requirements must be respected. One notable exception is offshore wind: after the expiry of a transitional phase, permits will only be granted to operators that were successful in the tender proceedings.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

For energy remunerated under the EEG, no certificates are granted. Suppliers or end users who have to pay the EEG surcharge that is levied for the cost of renewable energy support obtain in return the right to label a certain amount of electricity as 'renewable energy, financed by the EEG'. However, such a label is not tradeable. In addition, such energy can be labelled as 'produced regionally'; the register for relevant certificates is administered by the German Federal Environmental Agency.

For electricity from renewable sources but not remunerated under the EEG, renewable energy guarantees of origin (GoO) can be obtained. Such GoO are tradeable, the transfer having to be registered in the national register of GoO. Electricity utilities must obtain the relevant amount of GoO if they want to label the electricity they sell as 'renewable energy'. Given that the vast majority of renewable energy produced in Germany is remunerated under the EEG, the trading of GoO is of limited economic importance.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

The main governmental incentive for the development of renewable energy projects is the remuneration of renewable energy plants under the EEG as outlined in question 4. As renewable plants beyond a certain size have to sell the electricity and can receive remuneration as a 'market premium', the grid operators are no longer obliged to purchase the electricity from such plants in the 'direct marketing' regime. However, they are still obliged to connect renewable energy plants to the grid without undue delay, to physically offtake electricity from renewable sources and to distribute it with priority over electricity from other sources.

Further legislation aims at promoting renewable energy from the customer side. For example, there is a renewable heat incentive programme that provides subsidies for exchanging old heating systems for heating systems using solar thermal energy, biomass or a heat pump. The Renewable Heat Act sets out rules on the use of these technologies in new buildings. There are also additional stipulations and funding instruments for the use of renewable heat at provincial and municipal levels. In the transport sector, renewable energy is promoted through minimum quotas for biofuels and through research programmes for alternative propulsion technologies and fuels. For the production of electricity for self-consumption, the EEG surcharge (which is generally levied on all electricity consumption) will be reduced by 60 per cent if the electricity is produced from renewable energy or in a highly efficient combined power and heat plant.

The German promotional bank KfW offers several financing programmes related to renewable energy. Details are available on the bank's website, www.kfw.de.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Energy policies and incentives are generally a matter of federal law and established at the national level. This is especially the case for the remuneration of renewable energy generation in the EEG, which is a national law. European law plays an increasingly important role with regard to energy regulation, as well as with regard to state aid.

Federal states' policies may be relevant for certain aspects of renewable energy projects. For example, some federal states have more restrictive planning rules regarding the minimum distance between wind energy plants and inhabited space.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

Customers are not limited to buying electricity from utility counterparties. Grid owners must not discriminate between customers, so that, in principle, there are no obstacles to direct power purchase agreements. However, direct power purchase contracts with renewable energy producers are not yet commonly seen in the market. In the current market, renewable energy producers usually prefer to sell to direct marketing companies with a view to obtaining the market premium under the EEG. For customers, it is cheaper to buy electricity on the market. However, we expect that direct power purchase contracts will become of more interest in the future, once market prices rise, remuneration under the EEG decreases and the 20-year remuneration period ends for older renewable plants.

With regard to direct power purchase contracts, it is to be noted that certain levies will arise. Grid fees will be payable if the public grid is used. And on any supply to final consumers, the EEG surcharge will become payable if no exemption or reduction applies (eg, for energy-intensive companies as defined in the law). This is also the case for on-site production if the operator of the generation plant and the customer are different entities, even within the same group of companies.

In cases of production for self-consumption, the consumer of the energy must be the operator of the energy plant. This does not necessarily entail ownership, but the operator must bear the economic risks of the operation. In that case, the EEG surcharge is reduced by 60 per cent for energy from renewable sources and highly efficient combined heat and power plants. In certain cases, a full exemption applies – for example, if the consumer only uses energy from its own production and does not request EEG remuneration for any amounts of electricity that exceed his or her needs. The law has become more strict recently, with the aim of distributing the EEG surcharge – that is, the costs of renewable energy support, more evenly among electricity consumers. Some existing delivery relationships still benefit from grandfathering rules.

Buying renewable energy does not necessarily entail buying directly from producers. A number of utilities as well as energy traders offer green energy products.

Legislative proposals

9 | Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The latest major reform of renewable energy law, with the EEG 2017 and the Offshore Wind Act, only entered into force on 1 January 2017. The reforms introduced tender proceedings for renewable energy remuneration, which was a major system change. For the time being, we do not anticipate further major changes to renewable energy law. However, certain adjustments have already been made with regard to details of the tender proceedings, and further adjustments regarding the tender proceedings for onshore wind are currently being discussed. We expect that the developments under the new tender system will be monitored and any unwanted results may trigger further adjustments – for example, relating to the capacities available in the tender rounds.

The coalition parties expressly declared their support for the Paris climate change agreement in their coalition agreement. However, the 2020 goals are not expected to be met. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety has therefore introduced the proposal for a federal climate act that sets out guidelines for reaching the 2030 climate goals. However, political consensus within the governing parties hasn't been found yet. Fixing annual emission quantities per sector, the adoption of the law has yet to be realised.

In addition, a commission established by the German Federal Government has submitted a report that suggests an end to the use of coal by 2038.

Drivers of change

10 | What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

The nuclear disaster in Japan in 2011 accelerated what is known as 'energy transformation', especially the resolution to exit nuclear energy and also the intention to limit fossil energy production in favour of sustainable electricity, heat and mobility. In the following years, there was a boom in renewable energy projects: in the first half of 2018, renewable energy already accounted for approximately 36 per cent of German energy production. The EEG prescribes a further growth to 40–45 per cent by 2025, 55–60 per cent by 2035 and at least 80 per cent by 2050.

The increase in decentralised production, however, entails a need to ensure grid stability and grid capacity. An appropriate response is the ongoing expansion of grid capacity both on the level of the transmission grids and the distribution grids. In addition, there are efforts to increase demand-side management and to make feed-in more flexible, including by using energy storage. Smart technological solutions may be expected to form an essential basis of the ongoing energy transformation. A further goal is sector connectivity; that is, using renewable energy to reduce the CO2 footprint in the heat and mobility sectors.

Disputes framework

11 | Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

Disputes between renewable power market participants are civil law matters. There are no courts specialised in energy matters, so the general civil law district courts have jurisdiction. This includes disputes regarding remuneration under the EEG. As these are paid by the grid operators and not by any authority, such disputes are considered civil law matters.

The EEG provides for a private institution outside the court system known as the EEG clearing house (Clearingstelle), which offers alternative dispute resolution regarding the EEG, the Combined Heat and Power Act and the Metering Point Operation Act. The alternative dispute resolution options include moderated discussions (mediation), assessment of the matters of fact and the legal situation in individual cases ('votes'), and arbitration under the code of civil procedure. The Clearingstelle may further submit opinions to the courts in civil law proceedings, and it may prepare 'indications' or 'recommendations' for the general clarification of questions on the application or interpretation of the law, outside specific court proceedings. In more important proceedings, the Clearingstelle invites comments by industry associations. The alternative dispute resolution offered by the Clearingstelle is regularly used in practice due to its industry experience; in most cases, the outcome is accepted by the parties. The votes, indications or recommendations of the Clearingstelle are not binding on the courts, but provide helpful guidance for private parties as well as the courts.

For disputes regarding decisions of a regulator, the Higher Regional Court has jurisdiction. In the case of the BNetzA, the competent court is the Higher Regional Court of Düsseldorf. Even though the Higher Regional Courts are civil law courts, such disputes are matters of administrative law and in principle follow the rules of administrative court procedure, as specified in the EnWG.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 | Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

Looking at existing projects in terms of energy output, onshore wind is the largest renewable energy source, followed by photovoltaics and biogas/biomethane. In 2017, wind energy onshore and offshore were the most important segments, attracting 67 per cent of total investments in the renewable sector.

Sizes of projects vary considerably. The largest projects are offshore wind farms with sizes of approximately 288W to 500W. However, a number of small onshore wind farms only comprise up to five wind turbines, whereas larger sizes are also common, depending on the availability of suitable space.

Regarding future developments, several offshore wind farms are currently in the planning or construction stage. Also in onshore wind, a considerable number of projects are currently being constructed that may still benefit from EEG remuneration without having to participate in tender proceedings, due to grandfathering rules. In the future, the development of offshore and onshore wind, as well as photovoltaics and biomass at utility-scale, is subject to the development corridors prescribed in the EEG; ie, the installed capacity that is going to be made available in the upcoming tender rounds.

Development issues

13 | What types of issues restrain the development of utility-scale renewable energy projects?

The development of utility-scale renewable energy projects is restrained by the development corridors prescribed by law. Except for offshore wind, capacity could theoretically be built outside the EEG regime. However, in practice, onshore projects in most cases still depend on EEG remuneration and will therefore not be constructed if no award in the tender proceedings is achieved. The limitation of new-build capacity in the EEG is partly due to the costs of the support, and partly to grid capacity restraints, especially in specific regions. The development corridors currently set out in the EEG are:

- onshore wind: additional capacity of 2,800MW annually in the years 2017 to 2019, and 2,900MW from 2020 onwards;
- offshore wind: reaching a total installed capacity of 6,500MW by 2020, and 15,000MW by 2030;
- photovoltaics: additional capacity of 2,500 annually; and
- biomass: additional capacity of 150MW annually in the years 2017 to 2019, and 200MW annually in the years 2020 to 2022.

Further restrictions result from planning laws in certain regions. The federal states are entitled to enact planning restraints by imposing certain minimum distances between onshore windfarms and inhabited areas. Notably the federal state of Bavaria has imposed a minimum distance of 10 times the height of the wind turbine, which makes the planning of new wind farms impossible in large parts of Bavaria. Other federal states have also increased the required distances or are considering such measures.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

Hydropower currently does not play a major role in Germany. Most hydropower plants are run-of-the-river plants. There are also a number of pumped storage plants. In 2018, only 7.3 per cent of renewable electricity production resulted from hydropower. From mid-2014 to the end of 2017, the installed hydropower capacity remunerated under the EEG increased by only 35MW (less than 1 per cent), mainly due to modernisation and capacity increases of existing plants. There may be a certain potential for increase of capacity, especially by modernisation or reactivation of plants. However, the potential is limited, owing to geographical reasons (conditions being favourable mostly in the south of Germany) and to ecological concerns.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Electricity generated by hydropower plants is entitled to remuneration under the EEG without the need to participate in tender proceedings. Smaller plants receive a higher remuneration per MWh than larger plants. New plants will only be entitled to EEG remuneration if they are built in the spatial context of either a dam that already exists in whole or in part, or a new dam that is primarily to be constructed for purposes other than the generation of electricity from hydropower, or if they are built without a complete transversal structure.

Hydroelectric plants require a water law permit. In particular, ecological aspects will be considered in the permitting procedure and may prove to be the most difficult part of the proceedings. Depending on the circumstances, environmental planning may in individual cases exceed the effort needed for technical planning. Other areas of law that may need to be taken into account are spatial planning and construction law and noise protection, which are generally less problematic.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

On-site, distributed generation projects have become increasingly prevalent. This was partly the case because certain ancillary charges could be avoided. However, the law has meanwhile become more restrictive in this regard: if the consumer of the electricity is the operator of the power plant, he or she may benefit from an exemption or at least a reduction of certain ancillary charges such as grid fees and the EEG surcharge, depending on the circumstances. In cases of direct selling where the consumer of the electricity is not the owner of the power plant, there are lesser benefits; in particular, the reduction of the EEG surcharge for genuine self-supply will not apply and the full amount of the EEG surcharge will arise. Self-supply cannot be combined with EEG remuneration if the remuneration requires an award in the new auction system; if a self-supplier has surplus electricity amounts, he or she can sell the electricity, but will not obtain EEG remuneration for feeding such amounts into the grid.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

On-site distributed generation is used by industry and trade as well as by private individuals. The main types of on-site generation projects are combined heat and power plants, especially for industry sites (which may or may not use renewable sources), and photovoltaics. To a lesser degree, other types of renewable energy are also used for self-supply.

For photovoltaic plants of up to 100kW, there is a landlord–tenant privilege: if a landlord operates such plants on residential buildings and sells the electricity to the tenants, he is entitled to extra payments under the EEG for these electricity amounts. In return, the price charged to the tenants must be below the market price. The landlord–tenant privilege was only recently introduced, so it is too early to comment on its success.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

In Germany, the public grid is available throughout the country, and access to the grid is regulated and generally not prohibitively expensive, so electricity microgrids without a connection to the main grid traditionally are not common in Germany. However, 'connected microgrids' are becoming more important owing to the ever-growing number of distributed generation plants. There have been grid design tests where parts of the electricity grid can be isolated from the general grid and operated stand-alone, such as in cases of grid issues or blackouts. Microgrids that are not owned by a grid operator exist at a number of industrial sites, for example.

Certain types of microgrids are not part of the regulated grid. Some types are regulated, but exempted from a number of obligations otherwise applicable to grid operators. Other types of microgrids are part of the public grid and fully regulated. The Federal Network Authority and the regulators of the German federal states have published a joint position paper aimed at clarifying the regulatory position, although difficulties regarding classification and, hence, applicable rules remain in practice.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

The main obstacle for on-site production is the fact that the definition of genuine self-supply has become more restrictive. The consumer must be the operator of the plant, which must be located in the immediate local vicinity of the place of its use. In both regards, there may be questions of interpretation. The Federal Network Authority has published guidelines on self-supply, but a number of questions remain open. If there is a delivery

of electricity other than genuine self-supply, additional charges will become due on the electricity, which makes such models less attractive.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

While large-scale storage technologies have not been widely used for a long time, this is changing owing to the increased use of intermittent renewable energies. Traditionally, pumped storage was the main technology. Meanwhile, the use of battery storage has increased considerably. Battery storage includes larger projects of several MW, and a growing number of smaller storage batteries are used in combination with photovoltaics, especially for home use. Power-to-gas seems to be promising; a number of pilot projects are already in operation. Germany also has a compressed air storage plant, which we understand to be one of only two in the world. Storage can be used for self-supply and to optimise the value gained from feeding into the grid. New business models for larger storage projects include generating income from providing balancing energy to the grid operators. In the context of sector connectivity, there are considerations to use batteries of parked e-vehicles as storage.

Storage technologies are subject to the general permitting rules. From an energy law perspective, certain special provisions exist; for example, if renewable energy is stored and later fed into the grid, remuneration under the EEG is available under the same conditions that would have applied to the relevant energy source without storage (but storage losses are not reimbursed). The rules further aim at avoiding double burdens to storage plants, for example, by providing that EEG surcharge will not be payable twice (namely on the electricity stored in the storage device and again when the electricity is withdrawn and consumed elsewhere). For certain newly built storage plants, the law provides for exemptions from grid fees.

Development

21 Are there any significant hurdles to the development of energy storage projects?

There are no significant hurdles to the development of storage projects. However, further legislative measures seem desirable in order to help with making storage economically viable and to accelerate its development.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Foreign investors may invest in renewable energy projects and, in fact, regularly do so. Only in the case of the acquisition of very large projects by non-EU nationals or companies, the Federal Ministry for Economic Affairs and Energy (BMWi) is entitled to review whether or not the acquisition of such 'critical infrastructure' should be refused for security reasons. For energy generation, the relevant threshold is 420MW, covering, for example, large offshore wind farms. To obtain legal certainty, an investor may apply to the Ministry for a declaration of no objection.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

There are no special restrictions with respect to the import of foreign manufactured equipment to be used for renewable energy projects.

For imports from within the EU, no import duties or tariffs apply. For imports from outside of the EU, the tariff system enacted by the EU will apply. EU anti-dumping measures regarding solar panels expired in September 2018. Importers of electrical equipment such as solar panels have to comply with the obligations under the Electrical and Electronics Equipment Act (ElektroG), such as registration and take-back and recycling obligations.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

For the construction and operation of renewable energy projects, the required permits under applicable law must be obtained. These depend on the type of project – for example, construction permits, permits under immission control law, water law permits or mining permits may be required. If an applicant meets the legal requirements for a certain permit, such permit must be granted. As part of the permitting procedure, an environmental impact assessment may be required.

Transferring or acquiring renewable projects is generally possible without authorisation. However, foreign investment control may apply to large projects (see question 22), and transactions may be subject to the general merger control rules.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

Utility-scale renewables projects will have to participate in 'direct marketing' in order to receive EEG remuneration, as explained in question 4. The relevant agreements with offtakers are not regulated, but certain market standards have evolved over time. The sellers of the electricity will usually review the financial standing of the offtaker, and may request payment securities. In most cases, these are bank guarantees; parent company guarantees may also be acceptable. In cases where utility-scale renewables projects directly sell to an end user, such power purchase agreements are not subject to energy regulation.

If the project receives a feed-in tariff – for example, in case of older projects not subject to the direct marketing obligation – the relevant grid operator is the offtaker. In such cases, no agreement is required. There is no payment security, but given that the grid operator can roll the EEG payments that are paid by end consumers by way of the EEG surcharge, the credit risk seems rather limited.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

Renewable energy projects in most cases do not sell via long-term power purchase agreements. 'Direct marketing' agreements are often not concluded for longer terms. Like other types of power purchase

agreements (which are not yet prevalent in Germany), these are negotiated agreements not subject to energy regulation. Regarding the market premium payable by the grid operator, see question 4.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

The construction and operation of renewable energy projects is subject to the general rules (see question 24). Certain general rules for running a business must be observed, but no specific additional authorisation is required. Electricity suppliers to household customers must submit a notification to the Federal Network Authority.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

The permit of the project may request that a plant is decommissioned if it is no longer operational or if the permit has expired, and it may request security for the expected decommissioning costs. Such security is usually provided as a bank guarantee.

Operators of plants for the generation or storage of electrical energy with an installed capacity of 10MW or more have to notify an intended closure to the transmission system operator and the BNetzA at least 12 months in advance. The transmission system operator can request that the operation continue if the plant is required for the stability of the electricity supply.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

Owing to the EEG remuneration and the stable cash flows that may be expected, renewable energy plants are well suited to debt financing already in the construction stage. In addition, numerous equity investors are active in the market, ranging from large institutional investors and funds companies of different sizes to local citizens' cooperatives. Equity investors may prefer to acquire only after commissioning of the project, but more and more investors are also seen to take construction risks or even development risks. The most common model is a combination of equity investment and debt financing.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

In general, the financing structures during the operating phase are similar to those in the construction phase. A mix of long-term debt financing and equity investment is seen in the market. Some equity investors still prefer to invest only in the operating phase, rather than taking construction risks.

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UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

Although additional capacity is still required in order to reach the envisaged production thresholds, the market for onshore wind energy in Germany is currently stalled. The last three auctions regarding onshore wind were all under-subscribed. The backlog is estimated to be about 10MW. The main reason for this are the permitting procedures which now take up to two years (excluding any additional court procedures) and are challenged more regularly. It is being said that it will be most important for the German legislator to find ways to speed up the permitting process in order to overcome the current bottleneck.

Another relevant matter is certainly the European Court of Justice's decision dated 28 March 2019 (C-405/16 P). In this decision, the European Court of Justice annulled earlier decisions of the European Commission and of the General Court, which ruled that the EEG constitutes state aid. The European Court of Justice, however, decided that the EEG was not based on and did not include any state aid. The main argument was that no public resources were involved, but that the state only established the ´rules of the game´ under the EEG. It is in general assumed that Germany (and other member states) gained more flexibility in the design of legal frameworks aiming at avoiding the issues connected with a classification of a renewables promotion scheme as state aid.

Legislative proposals

32 Describe any notable pending or anticipated legislative proposals.

There are currently no such proposals.

India

Dibyanshu, Prateek Bhandari and Shikha Rastogi
Khaitan & Co

MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

The Constitution of India specifies the distribution of executive and legislative powers between the Union and States. 'Electricity' is listed in the concurrent list under the Constitution of India and the Central/Union Parliament and state legislatures have concurrent powers to enact laws on this subject. Therefore, both the Union and state legislatures can enact laws on 'electricity'. However, the laws enacted by the Union Parliament will override the laws enacted by state legislature in the event of inconsistency or conflict. The Electricity Act 2003 (Electricity Act) enacted by the Union Parliament provides the framework for generation, transmission, distribution, trading and use of electricity in India.

The Electricity Act, among other things, provides for the establishment of regulatory commissions at the central level and state level to administer generation, distribution and transmission of electricity. See question 11.

The Central Electricity Authority (CEA) is a statutory organisation that stipulates, inter alia:

- the technical standards for construction of electrical plants, electric lines and connectivity to the grid;
- safety requirements for construction, operation and maintenance of electrical plants and electric lines; and
- grid standards for operation and maintenance of transmission lines.

The Ministry of Power (MOP) is the administrative ministry of the Government of India (GOI) primarily responsible for development of electrical energy in the country. The MOP is responsible for formulation of policies of the GOI, administration of the Electricity Act and planning in relation to thermal and hydropower generation, transmission and distribution of electricity. The Ministry of New and Renewable Energy (MNRE) is the nodal agency of the GOI for promotion of renewable energy, both grid-connected and off-grid. As per the GOI (Allocation of Business) Rules 1961, the MNRE is entrusted with development and matters related to solar energy, bio-gas units, small hydel power, tidal energy, geothermal energy, etc. At the state level, the MNRE's schemes are implemented in coordination with nodal agencies or departments for renewable energy. The MNRE has designated different institutes or agencies to implement the schemes such as Solar Energy Corporation of India Limited (SECI) and NTPC Limited.

SECI is a GOI enterprise which facilitates the implementation of renewable energy projects including the National Solar Mission (NSM). It is responsible for implementation of certain MNRE schemes, the major ones being the viability gap funding (VGF) schemes for large-scale grid-connected projects, solar park scheme, grid-connected solar rooftop scheme, along with several other specialised schemes such as the defence scheme and canal-top scheme.

The Indian Renewable Energy Development Agency (IREDA) is a non-banking financial institution under the administrative control of the MNRE, which provides financial assistance for renewable energy and energy-efficiency projects.

The National Institute of Solar Energy, National Institute of Wind Energy (NIWE) and National Institute of Bio-Energy are autonomous institutions of the MNRE and act as the top national R&D institutions in the field of solar, wind and bio-energy, respectively. The NIWE has also been notified as the nodal agency for development of offshore wind energy in India.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

The Electricity Act, the National Electricity Policy 2005 and the Tariff Policy 2016 (Tariff Policy) encourage private sector participation in renewable energy through measures such as fixing renewable purchase obligations (RPOs) for certain entities that are mandated to comply with RPOs.

Private sector entities are present in the entire value chain of the electricity sector including generation, transmission and distribution of electricity. Private sector entities including foreign investors have set up renewable energy projects and supply electricity to distribution utilities, private consumers or for captive consumption. They account for 94.91 per cent of the installed capacity of the grid interactive power in renewable energy (as of 31 May 2019).

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

While the Electricity Act does not provide a definition of renewable energy, there are other legislation and policies at both central and state level providing the definition of renewable energy sources. Among these, the Central Electricity Regulatory Commission (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations 2017 define 'renewable energy' as grid quality electricity generated from renewable energy sources. The term 'renewable energy sources' has been further defined to mean small hydro, wind, solar including its integration with combined cycle, biomass, biofuel cogeneration, urban or municipal waste and other such sources as may be approved by the MNRE. Also, by way of office memorandum dated 8 March 2019, the MOP has now also classified hydro power project stations with a capacity of more than 25MW as a renewable energy source.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

Pursuant to the Electricity Act, certain state electricity regulatory commissions (SERCs) have issued regulations in connection with RPOs. The SERCs stipulate certain percentages for procurement of energy generated from renewable energy sources on the basis of total consumption of electricity within the demarcated areas for supply by the distribution utilities. These regulations apply to entities that are mandated to comply with RPOs and include consumers owning captive power plants and open access users. RPOs are divided into solar and non-solar. Recently, the MOP notified the long-term growth trajectory of RPOs for 2019–20 to 2021–22 (for 2020–21, the RPOs notified for solar is 8.75 per cent and non-solar is 10.25 per cent). The RPOs can also be discharged by purchase of environment attributes sold as intangible energy commodities called renewable energy certificates (REC). As per the memorandum dated 8 March 2019, the MOP also notified hydro-power purchase obligation (HPO) as a separate obligation within the non-solar renewable purchase obligation. The HPO will be within the existing non-solar RPO however the percentage of the non-solar RPO will be increased so that the existing non-solar RPO for other renewable sources remain unaffected. To operationalise HPO, the MOP is yet to notify the annual HPO targets and introduce amendments in this regard.

Under the REC framework, a developer sells the electricity generated and the environmental attributes associated with clean energy separately. The entities obligated under the RPO regime from any part of India may purchase these RECs to meet their RPO targets. The RECs are issued by the National Load Dispatch Centre on application by the generator equivalent to the amount of electricity injected into the grid as certified by the State Load Despatch Centre, and each REC represents 1MWh of energy injected into the grid from renewable energy sources. In order to ensure compliance by entities obligated under the RPO regime to purchase RECs, MNRE has created the RPO compliance cell, which will coordinate with concerned states, the Central Electricity Regulatory Commission (CERC) and SERCs on matters relating to compliance, including periodic reporting. Further, in the event of default, such mechanism will ensure appropriate actions being taken against defaulting entities promptly.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

RECs can be sold on a market discovered price within a price band fixed by the CERC, from time to time. There are two types of separately priced and traded RECs (solar RECs and non-solar RECs). The RECs are tradable only on power exchanges (Power Exchange India Limited and Indian Energy Exchange) and can be transferred from the renewable energy generators to the purchasing entities, but cannot be further traded by the purchasing entities.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

At central or federal level, the Tariff Policy and the National Electricity Policy 2005 broadly encourage energy from renewable sources. The MNRE launched NSM, the National Offshore Wind Energy Policy, and the Policy for Repowering of the Wind Power Projects as energy source specific policies.

According to the CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations 2017, all renewable energy power plants except biomass power plants with installed capacity of 10MW and above and non-fossil fuel-based cogeneration plants shall be given a 'must run' status and not be subject to 'merit order despatch' principles.

Pursuant to the Tariff Policy, the CERC has exempted payment of inter-state transmission charges and losses for solar and wind energy generators for 25 years from commissioning for projects set up through competitive bidding, based on compliance with certain terms and conditions. Further, in view of shorter gestation period of renewable energy projects, the GOI has issued directions to the CERC to accord early regulatory approval for the transmission system associated with renewable energy projects amounting to 66.5GW.

The National Offshore Wind Policy 2015 empowers the GOI to bundle power generated from offshore wind power projects with conventional power to reduce the cost of power generated. In August 2016, the MNRE released the Policy for Repowering of Wind Power Projects under which turbines with a capacity of 1MW and below are eligible for repowering. Pursuant to the policy, IREDA provides an interest rate rebate of 0.25 per cent for repowering projects in addition to all fiscal and financial benefits available to new wind projects.

The GOI has provided various tax and fiscal incentives to electricity generated from specific energy sources such as accelerated depreciation, etc. There are incentives available to renewable power projects at state level as well. Many of these states have specific policies for the source of energy (such as separate policies on wind and solar), which have high potential in a particular state. Through these policies, the state governments grant various fiscal incentives such as exemption of electricity duty, exemption from cross-subsidy surcharge, exemption from payment of stamp duties and land registration charges and exemption from transmission and distribution charges for wheeling of power. Certain states also provide procedural relaxations such as deemed non-agricultural status of the approved project land. In certain states, open access is given on priority basis or deemed to be given if the application for open access for renewable power projects is not granted within the time frame specified under the regulations. However, in view of the increased generation from renewable sources and the enhancement of technology, there seems to be a reversal in the trend, as it is now being argued that renewable projects can have parity with conventional sources of energy. For instance, in Tamil Nadu and Karnataka, transmission charges, cross-subsidy charges and other charges have been made applicable for new solar and wind energy projects.

The MNRE has issued various schemes and policies in 2018-19 such as, in August 2018, a project titled 'Scale up of Access to Clean Energy for Rural Productive Area' to provide clean energy for rural livelihoods and the reduction of greenhouse gas emissions in areas of Assam, Madhya Pradesh and Odisha. In February 2019, the MNRE issued Payment Security Mechanism Guidelines for VGF Schemes under NSM that stipulate the creation of a payment security mechanism fund of 5 billion rupees to cover delays in payments by the buying entities.

In June 2019, the GOI approved the proposal to make it mandatory for distribution licensees to open and maintain adequate letter of credit as payment security mechanism under power purchase agreements. Further, in relation to specific disputes of time extension, the MNRE, in June 2019, issued an order regarding the setting up of dispute resolution committee to resolve disputes related to:

- appeal against decisions given by SECI/NTPC on extension of time requests based on the contracts executed; and
- requests for extension of time not covered under such contracts.

Establishing policies and incentives

7 | Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Renewable energy policies and incentives are established both at the national level and at the state level. See question 6.

Purchasing mechanisms

8 | What mechanisms are available to facilitate the purchase of renewable power by private companies?

See question 4. To promote renewable energy sources, the Tariff Policy envisages a renewable generation obligation. Pursuant to this, a developer proposing to establish a coal or lignite-based thermal generating station would be required to establish such renewable energy generating capacity or procure and supply renewable energy equivalent to such capacity, as may be prescribed by the GOI. This has also been proposed in the Electricity Amendment Bill 2018. The renewable energy produced by such generator will be bundled with its thermal generation for the purposes of sale. In the event that an entity that is mandated to comply with RPO procures this renewable power, then such entity would be considered to have met the RPO. If an existing coal and lignite-based thermal power generating station sets up renewable energy generating capacity, the power from such plant may be bundled and the tariff of the renewable energy shall be allowed to pass through by the CERC and SERCs. Buying of such power shall count towards the RPO of such entities.

Further, to ensure connectivity to renewable energy sources, CERC approved the detailed procedure made under the CERC (Grant of Connectivity, Long-Term Access and Medium-Term Open Access in Inter-State Transmission and related matters) Regulations 2009 for grant of connectivity to projects based on renewable energy sources to inter-state transmission systems. This is applicable to generation projects based on renewable energy sources, including hybrid projects based on renewables and storage, solar power park developers, wind power park developers, wind-solar hybrid power park developers and power park developers based on hybrids of renewable source and storage.

Legislative proposals

9 | Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The Electricity (Amendment) Bill 2018 provides definitions of 'renewable energy' and 'renewable energy service company' that are not provided for in the Electricity Act. To promote the generation of electricity from renewable energy sources, the Electricity Amendment Bill requires coal (including lignite) thermal generating stations to set up a renewable energy station or procure energy from renewable energy sources, provides for imposition of penalty in case of non-compliance with the renewable purchase obligation, and envisages preparing of National Renewable Energy Policy. Also, the Union Budget for 2019-20 seeks to ensure power availability and connectivity through 'One Nation, One Grid' and removing barriers of cross-subsidy surcharges, undesirable duties on open access sales or captive generation for industrial and other bulk consumers. In addition to this, the Union Budget also envisages considerable structural and power sector tariff reforms.

The MNRE released a draft Renewable Energy Act in July 2015 for comments from various stakeholders. The draft proposes establishment of National Renewable Energy Committee and National Renewable Energy Advisory Group to ensure inter-ministerial coordination and expert assistance. The draft act also defines 'renewable energy sources' as energy derived from non-depleting sources.

Further, the MNRE released a draft Offshore Wind Energy Lease Rules in January 2019 providing a framework of allocation of wind energy blocks to successful bidders through international competitive bidding process. The draft covers installation, commissioning, prospecting of offshore wind energy under lease and also prescribes rights of the lessee and procedure for grant of lease.

Drivers of change

10 | What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

The biggest drivers for development and deployment of new and renewable energy in India are energy security, electricity shortages, energy access and climate change. Additionally, enabling government policy and incentives provided at central and state level as mentioned in question 6 have also provided impetus to the growth of the renewable energy sector in India. To improve rural electrification, which also has an impact on economic and social issues, India has focused on rural electrification and the efforts are currently being undertaken under the Pradhan Mantri Sahaj Bijli Har Ghar Yojana ('Saubhagya', launched in September 2017). The scope of the Saubhagya scheme includes providing solar photovoltaic-based stand-alone systems for unelectrified households located in remote and inaccessible villages and habitations, where grid extension is not feasible or cost-effective.

At the international level, India has been instrumental in the promotion of the International Solar Alliance, a platform for collaboration among sunshine countries seeking to increase production of solar energy. In October 2016, India ratified the Climate Convention at the 2015 United Nations Climate Change Conference (Paris Agreement), which binds parties to take action to reduce greenhouse gas emissions. The Paris Agreement requires parties to propose 'nationally determined contributions' (NDCs) and to base their future efforts on them. One of the key points of emphasis of India's intended NDC for the period 2021 to 2030 is achievement of 40 per cent electrical power installed capacity from non-fossil fuel-based energy resources.

Disputes framework

11 | Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

There are no separate bodies or framework for disputes relating to renewable energy in particular. Jurisdiction over interstate and intra-state electricity regulatory issues is exercised by the CERC and SERCs, respectively. The CERC has the power to adjudicate upon disputes involving generating companies (either owned or controlled by the GOI or that have entered into a composite scheme for generation and sale of electricity in more than one state) or transmission and trading licensees with respect to determination of tariff and regulation of inter-state transmission and trading of electricity. SERCs have the power to adjudicate on disputes between licensees and generating companies within their respective jurisdiction. Both the CERC and SERCs have the authority to refer disputes to arbitration. APTEL is the appellate body and possesses suo moto jurisdiction to examine the validity of any order made by the CERC or SERC. Decisions of APTEL may be challenged before the highest court, the Supreme Court of India. Also, in relation to specific disputes of time extension, in June 2019, the MNRE issued an order regarding setting up of dispute resolution committee to resolve disputes related to:

- appeal against decisions given by SECI/NTPC on extension of time requests based on the contracts executed; and
- requests for extension of time not covered under such contracts.

See question 6 as regards approval accorded to the proposal requiring distribution companies to open and maintain adequate letter of credit as payment security mechanism under power purchase agreements and the MNRE's guidelines stipulating creation of payment security mechanism fund to cover delays in payments by the buying entities.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

Regarding solar projects, most of the schemes under the NSM provide for deployment of solar photovoltaic (PV) technology. Projects selected are technology-agnostic and allow crystalline silicon or thin film or concentrator PV. Generally, the capacity of each project under NSM is required to be at least 10MW. However, the project capacity may be determined by the implementation agency, depending on the plot size and availability of land in the particular state. For example, the latest auction being conducted by SECI stipulates the minimum size a developer can bid for as 50MW. Concentrated solar power projects are at a nascent stage, and two pilot projects of 50MW each are being undertaken by SECI. The GOI has also projected the solar park model. Solar parks are seeing interest from the private sector as developers are insulated from the major risks relating to land and evacuation. In March 2017, MNRE issued the Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects. A total of 41 solar parks in 21 states with an aggregate capacity of more than 26GW have already been sanctioned. The target of installed capacity from solar parks is 40GW by 2022.

As regards wind energy, the latest auction being conducted by SECI stipulates the minimum and maximum size a developer can bid for as 50MW and 300MW, respectively. Certain states also have stipulated the minimum size a developer can bid for in the auctions being conducted by their state nodal agencies. For example, for tenders conducted in 2018, Gujarat stipulated the minimum size of the project to be 25MW, and Maharashtra stipulated the minimum size of the bid to be 25MW for intra-state projects and 50MW for inter-state projects.

Development issues

13 What types of issues restrain the development of utility-scale renewable energy projects?

Land availability risks and issues with respect to procurement of land may delay the project and restrain developers from establishing utility-scale renewable energy projects. Further, given the financial health of distribution utilities in India, the offtaker risk is perceived to be a challenge in the development of renewable energy projects. Another major issue is the availability of transmission capacity or evacuation of power from renewable energy projects. In certain projects, the developer is not entitled to any deemed generation in case of a delay due to non-availability of grid or transmission line.

To offset some of these risks in the solar sector, a solar park and solar zone model (as mentioned in question 12) have been proposed where solar tariffs have reduced considerably thanks to the plug and play model. Moreover, the GOI is working to build a green energy corridor to facilitate grid integration of large-scale renewable energy capacity addition.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

Hydropower plants having capacity of more than 25MW were until recently not considered renewable energy projects. The MOP notified that projects with a capacity of more than 25MW will also be considered as renewable energy. However, the administrative ministry dealing with such projects continues to be the MOP and not MNRE. Owing to the key risks and issues such as deforestation and resettlement, these large-scale hydro projects have a limited private sector participation (restricted to 7.47 per cent of the total participation in the sector). However, small-scale hydropower projects (less than 25MW installed capacity) have the potential to meet the power requirements of remote and isolated areas and have seen increased private sector participation mainly owing to their long useful life and low generation cost. The MNRE has been vested with the responsibility of developing micro (up to 0.1MW), mini (0.101MW to 2MW) and small (2.001MW to 25MW) hydropower projects. Most of the potential from small hydropower projects is in Himalayan areas as river-based projects and in other areas as irrigation canals. Apart from the conventional dams and pumped storage projects, off-grid water mills are prevalent in hilly areas.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Total potential of hydro power in India is 2,41,844MW as of January 2019 including pumped storage scheme, and only 45,399.22MW has actually been utilised. Hydro projects are exempted from competitive bidding until August 2022.

Despite these efforts, growth in the small hydropower sector has been relatively slow as compared to wind or solar. Small hydro projects are set up in difficult terrains and often involve private and forested land. Owing to the location in hilly areas, there is a limited working season and thus a relatively longer gestation period. Natural calamities pose high risks during the construction of these projects. Owing to the terrain, the evacuation facilities are also inadequate.

To set up a small hydropower plant, a developer would have to get the site allotted by the state's revenue department, which can be a time-consuming process. There are several permits or licences required for small hydropower plants that may also delay the construction time of such project and may include:

- techno-economic clearance;
- no objection certificate from state pollution control board;
- no objection certificate from fisheries department;
- water rights by state irrigation department; and
- forest and environment clearance from the Ministry of Environment, Forest and Climate Change.

As per the memorandum dated 8 March 2019, the MOP classified large hydro projects as a renewable energy source. However, large hydro projects will not automatically be eligible for any differential treatment for statutory clearances such as forest clearance, environmental clearance which are available to small hydro projects. While development of small hydro projects is within the purview of the MNRE, the MoP will continue to be the administrative ministry for large hydro projects. Further, the MOP has introduced measures for bringing down the hydropower tariff by providing flexibility to the developers to determine tariff by back loading of tariff after increasing project life to 40 years,

increasing debt repayment period to 18 years and introducing escalation of tariff of 2 per cent.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

To meet certain energy requirements, distributed or decentralised renewable power projects are being established in isolated or areas that have not been electrified. Off-grid or captive power programmes (excluding captive power from biomass non-bagasse cogeneration) account for a total installed capacity of 1.259GW (as of 31 May 2019), which accounts for only 1.54 per cent of the total installed renewable capacity in India. The target from off-grid or captive power (excluding captive power from biomass non-bagasse cogeneration) for the financial year 2018–19 is a mere 0.411GW.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

Solar PV systems (72.82 per cent), waste-to-energy (14.19 per cent) and biomass gasifiers (12.97 per cent) account for the off-grid or captive power programmes (excluding captive power from biomass non-bagasse cogeneration). Family biogas plants, water mills and micro hydel systems, solar street lighting systems, solar lanterns, solar home lighting systems, solar cookers, stand-alone solar or biomass-based power generators and wind pumps are some of the decentralised renewable energy technologies primarily used in rural areas. The MNRE, in August 2018, approved the continuation of the Off-Grid and Decentralised Solar PV Application Programme to achieve an additional 118MWp off-grid solar PV capacity by 2020. This current phase covers the following components: 300,000 solar street lights, stand-alone solar power plants of an individual size up to 25kWp aggregating to 100MWp and 2,500,000 solar study lamps.

In December 2018, the MNRE launched Atal Jyoti Yojana Phase II that proposes the installation of 304,500 solar street lights across India. Further, in November 2018, the MNRE accorded its sanction to implement the central sector scheme, biogas-based power generation thermal application programme and this will be implemented by the agriculture and rural development departments of the states and dairy cooperatives until 2019-20.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

Mini or microgrids are one of the key segments of the Off-grid and Decentralised Solar PV Applications Programme of NSM. Capital subsidy is available to solar PV systems for, inter alia, stand-alone and mini or microgrid solar PV power plants in rural and remote areas. Recognising slow growth in the mini or microgrid segment owing to challenges such as high capital expenditure and irregular tariff collection, MNRE notified a programme under which it proposes to provide central financial assistance to empanelled rural energy service providers implementing mini or microgrids in rural areas.

A draft National Policy for Renewable Energy-based Micro and Mini Grids with the aim of encouraging the growth of mini or microgrids was issued for comments from stakeholders in 2016. Under this scheme, the MNRE has targeted the deployment of 10,000 renewable energy-based mini or microgrid projects across India with an installed capacity of 500MW in the next five years. The draft defines microgrids as renewable-based distributed generation, under 10kW, which can operate on a stand-alone basis or connected to the central grid. Minigrids are the same except for a larger capacity (ie, over 10kW). The draft policy encourages states to refer to the principles stated therein for developing their respective programmes and policies. The government of Uttar Pradesh notified the Uttar Pradesh Mini Grid Policy 2016 to promote the decentralised generation of renewable energy by harnessing renewable energy that provides for government subsidies and VGF. The Uttar Pradesh Electricity Regulatory Commission (Mini-Grid Renewable Energy Generation and Supply) Regulations 2016 were notified in April 2016.

The regulations apply to new and existing mini-grid projects (of installed capacity up to 500kWp) for the generation and supply of electricity to consumers and the sale to the distribution licensee in mini-grid areas in the state of Uttar Pradesh. The regulations govern the supply of electricity in rural areas and areas having an inadequate supply of electricity during peak hours and compulsory supply hours by mini-grid operators. Two other states, Jharkhand and Bihar, have proposed a mini-grid policy and regulations for mini grids, respectively.

Certain challenges that impact development of mini or microgrids in India are substantial investments, a long gestation period and the absence of significant market players. Development of mini or microgrids may also seem unviable owing to the grid reaching the area prior to the mini or microgrids being operational. The Tariff Policy recommends the mitigation of this risk by putting in place a regulatory framework for the compulsory purchase of power into the grid from mini or microgrids at a determined tariff.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

See question 18.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

Batteries (Management and Handling) Rules 2001 under the Environment Protection Act 1986 regulate the manufacture, import, dealing in and recycling of batteries. The Bureau of Indian Standards has issued standards that, inter alia, provide for marking and certification of batteries.

Pursuant to the Bureau of Indian Standards Act 1986, the GOI has notified the Electronics and Information Technology Goods (Requirements for Compulsory Registration) Order 2012, which requires certification for stand-alone UPS or invertors that are less than or equal to 5kVA.

The storage technologies are typically governed by the bid documents. For example, under NSM, SECI invited tenders for setting up grid-connected solar PV projects along with a large-scale battery energy storage system. The selection of the storage system was technology agnostic, that is, the bidders were free to choose any battery storage technology; however, they were required to meet the performance and operating standards as provided in the bid documents, including adherence to international standards.

In September 2017, the GOI notified the Solar Photovoltaics, Systems, Devices and Components Goods (Requirements for Compulsory Registration) Order 2017. The order requires compliance with standards

issued by the Bureau of Indian Standards for certain goods and devices such as PV modules, utility interconnected PV inverters and storage batteries. As per the recent Union Budget, the GOI is planning to launch a scheme to invite companies to set up a mega-manufacturing plant in advanced technology areas such as solar photovoltaic cells, lithium storage batteries, solar electric charging infrastructure and provide them investment linked income tax exemptions and other indirect tax benefits.

Development

21 Are there any significant hurdles to the development of energy storage projects?

Typically, the investment required for setting up a storage facility is considerable. Also, there are environment concerns arising out of the periodical replacement and disposal of chemicals. Further, deployment of large storage systems in urban areas or near sub-stations may bring additional challenges in terms of safety.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

The incentives and initiatives of the MNRE are driven with the aim of attracting more investment for financing and development of the renewable energy market in India, keeping in mind the ambitious target set by the GOI. Pursuant to the existing policy, foreign direct investment up to 100 per cent is permitted for companies engaged in non-conventional energy generation. Also, there are no sectoral restrictions or conditions on the acquisition of interest in renewable energy projects in India.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

Currently, there are no restrictions on importing foreign manufactured equipment so long as it is compliant with applicable laws and standards.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Under the Electricity Act, generation of energy is a delicensed activity. Prior to the construction of a project, certain site-specific approvals may be required (if applicable) such as forest clearance and approvals from defence establishments, the Airports Authority of India and the Archaeological Survey of India.

Projects are required to comply with technical standards prescribed by the CEA, including those in relation to construction, safety and maintenance. In order to commence commercial operations, the following approvals may also be required: electrical safety approval from the CEA; commissioning certificate; and power evacuation approval.

Typically, environmental impact assessment studies are not required for renewable energy projects except for offshore wind power projects, biomass power plants and municipal waste plants exceeding certain capacity. The classification of industrial sectors by Central Pollution Control Board recognises solar power generation through solar PV cells, wind power and mini hydel power as non-polluting industries. Such industries are classified in the 'white' category and thus consents from pollution control boards under the Air (Prevention and Control of Pollution) Act 1981 and Water (Prevention and Control of Pollution) Act 1974 are not required.

Additionally, micro-level corporate, labour and employment and land revenue approvals may be required.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

The largest offtakers in India are the distribution utilities, and one of the key risks for a project developer is the offtaker risk. Certain distribution utilities in India at present do not have good credit ratings and are under financial stress that has led to accumulation of debt. The financial health of distribution utilities has posed an impediment for project developers entering into offtake arrangement. To offset such risks, in one of the tenders for a solar energy park, a state government offered a guarantee to secure offtaker default. The GOI launched Ujwal Discom Assurance Yojana in 2015 for financial turnaround and the operational improvement of distribution utilities. Also, to mitigate such offtaker risk, certain MNRE schemes establish NTPC Limited and SECI as counterparties to the power purchase agreements (PPA), since they have a better credit rating than some of the distribution utilities.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

A renewable energy developer may enter into a PPA with central, state and private distribution utilities, third parties or captive users. Pursuant to the Electricity Act, a distribution utility can either procure power through bilateral or negotiated PPAs or through a transparent process of competitive bidding conducted in accordance with the bidding guidelines notified by the GOI. The appropriate commission is required to adopt the tariff discovered through bidding. In the case of bilateral or negotiated PPAs, the tariff and terms and conditions of sale of power are subject to a prudence check and approval of the appropriate commission.

Long-term offtake agreements through the competitive bidding route are typical for solar power and, to streamline the process, in August 2017, the MNRE issued the Guidelines for Tariff Based Competitive Bidding for Grid Connected Solar Photovoltaic Projects. Generally, wind projects have been awarded based on feed-in tariffs. However, the competitive bidding route has been adopted, at both central and state level, for procuring power. The MOP, in December 2017, issued the Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Power Projects. SECI has been designated as the nodal agency for implementation of the MNRE schemes, from time to time, for setting up wind power projects connected to the Inter-State Transmission System. To date, SECI has conducted or is conducting tendering for 8,500MW capacity of such wind power projects.

The Tariff Policy envisages the procurement of power from renewable energy sources by distribution utilities only through competitive bidding from a date to be notified by the GOI, except for certain projects. The tariff for hydropower developers is determined by the CERC or SERCs on a cost-plus basis, allowing for a fixed return on equity.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

See question 24.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

On decommissioning, all municipal and environmental laws with respect to disposal of equipment need to be complied with. Also, SECI has issued an environmental and social management framework which also prescribes conditions for decommissioning of specific solar and hybrid technology projects. The National Offshore Wind Energy Policy 2015 notified by the MNRE, empowers the NIWE to impose conditions requiring the developer to submit a decommissioning and site restoration programme when granting a lease for a proposed offshore wind farm. The programme is made a part of an environmental impact assessment study, and a deposit or a financial guarantee must be submitted by the developer to ensure proper decommissioning. The Guidelines for Development of Onshore Wind Power Projects 2016 also require a wind power project to have a decommissioning plan. The NIWE is entrusted to formulate guidelines for decommissioning wind turbines.

There are no restrictions on the choice of funding for decommission costs (ie, through a sinking fund or through other credit methods).

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

Equity is one of the major sources of financing the construction of renewable energy projects. The standard bidding documents for solar power issued by central and state nodal agencies prescribe minimum capital to be invested in a solar power project through equity investment. Another major constituent of financing is debt from banks and financial institutions (term loans and external commercial borrowings) and other debt instruments such as debentures. Recently, financing is also obtained by way of rupee-denominated bonds, also known as masala bonds and green bonds.

The GOI also provides financial benefits for specific projects pursuant to schemes such as VGF for certain solar projects. For timely and adequate credit for renewable energy projects, banks in India are required to treat loans up to 150 million rupees as priority sector lending. However, the MNRE is in talks with India's central bank following for removal of the priority sector lending limit for renewable energy sector which will encourage banks to lend more for renewable energy projects and help developers access easy finance. Further, banks and financial institutions are being asked to tie up with SECI for offering predetermined loans to successful bidder.

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Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Working capital loans from banks and financial institutions and internal accruals are the primary structures for financing operating renewable energy projects.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

India has set a target to achieve 175GW of installed capacity of renewable energy by 2022. The total installed capacity of renewable energy projects (including off grid and captive power) and large hydro projects reached 81.72GW and 45.39GW respectively as of June 2019. The GOI has been actively promoting renewable energy sources and has been taking steps to provide enabling framework for the sector. To achieve the target of 175GW, the MNRE, in consultation with the CEA and central transmission utility, has identified transmission schemes for around 66.5GW of renewable energy generation projects, for early regulatory approval by the CERC for transmission. For projects that are yet to be awarded to the successful bidder, prior requirement of long-term access and associated bank guarantees are required to be deferred until such projects are awarded. Pursuant to its order in February 2019, the MNRE issued payment security guidelines to ensure timely payment to developers that sign power purchase agreements with SECI. The payment security fund of 5 billion rupees has been sanctioned to cover energy payment risk of grid connected solar PV projects under the MNRE's VGF schemes.

Also, the MNRE, in June 2019, issued an order regarding the setting up of dispute resolution mechanism to resolve expeditiously, unforeseen disputes that may arise beyond the scope of contractual agreements between solar power developers and wind power developers and SECI

and NTPC. To achieve the target of 100GW of solar energy by 2022, floating solar power projects have also been planned and bids have been invited by SECI.

Further, to boost investment in the electricity sector and specifically the renewable energy space, as per the recent Union Budget, the GOI intends to launch a scheme for setting up manufacturing plants in advanced technology areas such as solar photo voltaic cells, lithium storage batteries, solar electric charging infrastructure (see question 11). While there has been an impetus to promote renewable energy generation, in certain states in India, such as Andhra Pradesh, the distribution companies have expressed their intention to renegotiate the tariff and bring down the costs under the solar and wind power purchase agreements.

Legislative proposals

32 | Describe any notable pending or anticipated legislative proposals.

See question 9.

Iran

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

The principal governmental authority in charge of the power industry (including the renewables) is the Ministry of Energy (MoE). The MoE is primarily in charge of regulating the energy sector; developing the infrastructure for power generation, transmission and distribution; implementing privatisation; developing macro policies for the sector; and devising plans for optimisation of energy consumption.

The MoE has a renewable energy arm called the Renewable Energy and Energy Efficiency Organisation (SATBA). SATBA is in charge of issuing licence for construction of renewable energy projects; It also acts as the offtaker under the government's programme for guaranteed purchase of electricity generated in renewable facilities. Offtaking by SATBA is based on the feed-in tariffs (FIT) applicable at the time of the execution of the underlying power purchase agreement (PPA).

Another affiliate of the MoE, the Production, Management, Transmission and Distribution of Electrical Power Specialised Holding Company (Tavanir) is in charge of transmission and distribution of electricity through its regional power transmission and distribution companies. In addition, Tavanir manages grid connections, and as such is responsible for managing the transmission of electricity generated by renewable energy power plants.

Iran Grid Management Company, also affiliated with the MoE, manages the national grid and is responsible for alignment of supply of, and demand for, electricity across the country.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

The power industry in Iran was a government monopoly until a national privatisation initiative began in 2008, following which private sector ownership in power generation was allowed. Restrictions on private ownership remain in place for transmission and distribution, so private power plant owners may not own transmission or distribution facilities. Private sector participants, however, may be employed as contractors for development and maintenance of power transmission and distribution facilities.

Currently, there are a large number of small and medium-sized privately owned renewable power plants, mainly in the form of solar parks and wind farms. In addition, the private sector has engaged in developing renewable energy projects on behalf of investors, or in anticipation of finding potential investors to acquire a majority or all of the project.

There are also a handful of semi-private companies, such as the project construction company MAPNA, which are indirectly owned or otherwise controlled by state entities. These companies usually participate in large-scale, capital-intensive projects where small or medium-sized private companies cannot or may not participate. Some of these semi-private companies are active in transfer of foreign technologies and in local manufacturing of more sophisticated equipment such as wind turbines.

Private equity investors, banks and other institutional investors also play a role in financing renewable energy projects. Domestic banks that finance renewable energy projects usually act as agent banks for the National Development Fund of Iran, a sovereign wealth fund whose mandate includes project lending, including to renewable energy projects.

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

The terms 'renewable energy' or 'clean power' are not defined in Iranian law. However, the Law on Modification of Energy Consumption Pattern 2011 (LMECP) and SATBA's Founding Statute 2016 list the following as the sources of renewable or clean power:

- wind;
- solar;
- geothermal;
- small hydroelectric (less than 10MW);
- marine and biomass;
- biodegradable components of agricultural products and waste;
- forests and related industries;
- decomposable and industrial and urban waste, that can generate electricity or heat, or produce liquid or gas fuel, or have other useful chemical applications;
- hydrogen; and
- fuel cell sources.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

The main legal framework for developing, operating and selling renewable power consists of LMECP, Regulations of Article 61 of LMECP 2016 and the Sixth Five-Year Development Plan Law 2017 (6th FYDPL). The standard PPA form and the FIT programme provide other details such as term and pricing for the sale of electricity to SATBA.

Development and construction of a renewable energy power plant requires a 'construction licence' (which is akin to a licence to develop) from SATBA. Once this licence is issued, a grid connection permit and an environmental licence must be obtained from Tavanir and the Environmental Protection Organisation respectively. The project land must also be secured, and private land would require an agreement with the owner(s). If the land is public, then further permits from, or agreements with, the relevant government entities would be required. Once all the foregoing licences, permits and agreements are secured, a PPA may be entered into between the project owner and SATBA. Once the PPA is signed, the project owner must complete the construction of the project within the period specified in the PPA. This construction deadline varies based on the type of the project, as well as any relevant stipulation in the PPA. For instance, under normal circumstances, construction of a solar photovoltaic (PV) power plant must be concluded within 15 months of signing the PPA.

There are no laws or regulations specifically dealing with financing of renewable projects. The terms of such financing are usually agreed in negotiated contracts.

The operation of renewable facilities is generally regulated by SATBA and based on its policies and internal regulations.

Iran is a member of the Kyoto Protocol. Therefore, renewable projects can benefit from participation in emission trading once they are registered. At the national level, the Supreme Energy Council has approved the Law Creating the Environment and Energy Optimisation Market 2018, introducing Energy Saving Certificates (ESCs) as an incentive for energy consumers to save energy. ESCs are issued to energy consumers (rather than electricity producers) who have reduced their consumption with confirmation by the relevant assessment entities and final approval of the Commission for Energy Saving, itself an affiliate of the Supreme Energy Council. ESCs can be traded in the newly created Energy and Environment Optimisation Market, which operates under the auspices of the Iran Energy Exchange (IRENEX). ESC holders can use the certificate to fulfil their statutory energy saving obligations. ESC holders may also sell their ESC to others, or receive energy in an amount equivalent to the amount stipulated in the ESC from the governmental supplier, Tavanir.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

ESCs can be stripped and sold separately. At the national level, the Energy and Environment Optimisation Market is intended to act as the secondary market for trading ESCs. However, this Market is not yet operating and ESC trading is pending the approval of trading regulations by the Commission for Energy Saving.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

To promote investment in renewables, the government has introduced a number of incentives including 20-year PPAs for guaranteed purchase of electricity and the FIT programme with built-in annual adjustments intended to hedge investors against inflation and foreign exchange rate fluctuations. A number of tax breaks (extending from five to 20 years depending on the location of project) and import duty exemptions are also available to renewable projects. Access to low-cost government lands for construction of renewable projects is frequently granted. To assure investors with respect to SATBA's credit standing, a sovereign guarantee may be available for large-scale projects.

Furthermore, a number of policies have been devised to promote renewable energies in Iran. Under some of these policies, the government must:

- increase the share of renewable and clean power plants to at least 5 per cent of the country's power production capacity by 2021, with priority given to non-governmental domestic or foreign investments (article 50 of the 6th FYDPL);
- procure 20 per cent of electricity consumption of government entities from renewable energy sources (the Council of Ministers Decree dated 21 September 2016);
- allocate 30 per cent of the net government revenue from implementing subsidy reforms to extending loans or to managed funds (through the banking system) for, among others, improving energy efficiency and expansion of electricity generation from renewable sources (article 8(b) of the Subsidy Targeting Act 2010, its Implementing Regulation 2010 and the Executive Directive on the Procedure for Providing Banking Services in Implementation of Articles 8 and 9 of the Subsidy Targeting Act); and
- increase electricity subscription fees and use the excess revenue for, among other things, generation of electricity from clean and renewable sources (article 5 of the Law Supporting Electricity Industry 2015).

Despite the above policies and with the exception of the last item, implementation details of these policies are yet to be approved.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Energy policies and incentives are established at the national level within the framework provided by law or regulations (developed by the Supreme Energy Council and the MoE through SATBA).

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

There is no specific mechanism to facilitate purchase of renewable power by private companies. In theory, private companies can directly procure their power needs from producers (including renewable power producers) but such choice is not economically justified since Tavanir supplies electricity at a subsidised, lower rate while SATBA purchases electricity from renewable producers at a subsidised, higher rate.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The legal and policy framework for renewables in Iran is evolving, with significant developments having happened in recent years. Further legislation and regulation is anticipated to clarify implementation of government policies to promote renewable energies, some of which are mentioned above.

In particular, under the 6th FYDPL, the MoE is required to transform the current FIT programme into a market-based FIT operation through IRENEX, and to develop the legal framework for implementation of this market-based FIT programme. Also, SATBA and the MoE have long been working to revise the standard PPA to address the current bankability issues and to make PPAs more attractive to local

and foreign investors. SATBA has held several meetings with market players (such as producers, associations, banks and advisers) in this regard. It is anticipated that new legislative or regulatory proposals in relation to at least some of the foregoing matters will be developed in the near future.

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

Power shortage is a primary concern of the government in the energy sector, and has been a key driver of the government policy to promote private sector engagement in generating electricity from renewable sources. The 20-year PPAs and the FIT programme, which offers relatively high offtake tariffs, have played a major role in transforming the renewable landscape in Iran in recent years. However, owing to structural difficulties in financing the construction of utility-scale projects, generation of electricity from renewable sources has so far fallen below expectations and Iran remains dependent on electricity produced from traditional sources.

The re-imposition of US sanctions on Iran in the past year and the resulting devaluation of Iranian rial and absence of adjustments under the FIT programme; the lack of foreign funding; the restrictions on money transfers to Iran; and the underdevelopment of debt market have adversely affected the development of renewable sector in Iran.

Disputes framework

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

Aside from the dispute resolution framework under PPAs, there is no specific legal framework for settlement of disputes among renewable energy market participants, and there is no requirement or set procedure for initiating claims against the government or state-owned entities, whether inside or outside Iran. These disputes are usually resolved in civil courts, unless an alternative dispute resolution mechanism (eg, arbitration) is agreed upon by the parties.

With respect to disputes arising under a PPA between SATBA and an independent power producer (IPP), the parties must first endeavour to resolve the dispute through negotiation, failing which they must refer the dispute to a panel of experts. If the dispute is not resolved by the panel, Iranian courts have jurisdiction to issue a final ruling.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

After the introduction of long-term PPAs and the FIT programme, the number of renewable projects with a capacity of 10MW or more increased. Solar parks and wind farms are the most common forms of utility-scale renewable projects in Iran. Most solar parks fall below 10MW, with very few plants exceeding that threshold. Wind farms usually have a capacity of 50MW or more.

Development issues

13 What types of issues restrain the development of utility-scale renewable energy projects?

Securing financing remains a major impediment to the development of utility-scale renewable projects in Iran. In the past year, foreign financing of renewable projects in Iran has become almost impossible because of the reluctance of foreign financial institutions to finance projects in Iran under the threat of US sanctions, and because of practical difficulties in transferring funds to and from Iran. Local financing has been limited owing to scarce financial resources of Iranian banks and financial institutions. In addition, the standard PPA form presents bankability challenges, as it falls short of the expectations of foreign financiers and banks. The absence of a well-developed grid connection infrastructure increases construction costs for investors, which in turn further exacerbates financing challenges.

As a result, renewable projects in Iran tend to be small-scale projects financed primarily through equity or local financing. Furthermore, the limited number of grid connection facilities dictates available project locations based on vicinity to the grid. If a further but more efficient location for renewable power generation is selected, the developer must build grid connection facilities at its own cost. Finally, the abundance of fossil fuels in Iran and their low price has been a structural disincentive against large-scale renewable power generation projects.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

Conventional hydropower (such as dams) accounts for the bulk of hydropower generation in Iran. Run-of-the-river projects, pumped-storage and urban water pipe power generation have only recently gained attention. This latter group consists of small-scale projects usually with a capacity of less than 10MW and hence classified as renewable energy projects in Iran.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

There is no specific regime applicable to hydroelectric projects. To the extent they are classified as renewable projects, hydroelectric projects are treated like other types of renewable projects, with the caveat that hydropower projects have a lower FIT compared to solar PV, wind and biomass projects.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

Concerns over power shortages has led the government to promote distributed private energy production. SATBA encourages residential consumers and industrial plant owners to generate power to cover part or all of their energy demands and to sell any excess to SATBA. As a result, many small on-site distributed generation projects are being built across Iran. Depending on the current volume of the site's electric meter and whether it uses single-phase or three-phase power supply, an on-site power generation project may be between 3KW to 100KW.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

Solar panels and small wind turbines are the primary types of distributed generation projects in Iran.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

There is no law or regulation specifically promoting the development of microgrids. The main impediment to development of microgrids is the relatively limited private sector participation in renewable projects, and their exclusion from ownership of transmission and distribution facilities.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

No specific legal considerations arise in respect of distributed power generation.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

Energy storage is an underdeveloped field in Iran, with no notable energy storage projects as far as we are aware. The Supreme Council for Science, Research and Technology started an initiative in 2014 to prepare, along with the relevant ministries, the National Regulation for the Development of Electric Energy Storage Systems Technology. Early drafts of this proposed regulation provide for behind-the-meter storage, but this regulation has not been adopted yet.

Development

21 Are there any significant hurdles to the development of energy storage projects?

Energy storage projects are not viewed as commercially attractive by the private sector in Iran. Storage technology is not locally manufactured and the need to import the equipment, such as batteries and installation tools, renders these projects quite expensive and, in light of the US sanctions, impractical in some cases. Moreover, there are legal uncertainties as to whether delivery of electricity to a storage facility by an IPP would qualify for the benefits under the FIT programme.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Foreign investors can invest in renewable power generation projects in Iran with no restriction on ownership.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

Generally, importation of foreign-manufactured equipment (including solar panels, inverters, meters and wind turbines) is subject to import duties. However, there are some exemption for equipment used for renewable energy power plants.

Renewable projects financed by Iranian public banks must generally observe local content rules and may not import equipment that are locally manufactured.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Renewable energy projects require the following licences, permits and agreements prior to construction:

- construction licence from SATBA (which is similar to a licence to develop);
- environmental licence from the Environmental Protection Organisation;
- land agreement(s) with private owner(s) or the relevant government entity;
- grid connection permit from Tavanir (or its regional affiliates);
- PPA with SATBA; and
- a foreign investment licence (referred to as a FIPPA licence) if the equity investment is of foreign origin.

Each licence or permit will be subject to specific terms and conditions. The issuing authority may revoke the licence or permit should the holder breach these terms and conditions. Once the licence or permit is expired, the issuing authority may refuse to renew it.

Before signing the PPA with SATBA, the applicant must have obtained construction, grid connection and environmental licences and secured the project land. Following the execution of the PPA, the project owner has a specified time period to construct the project and achieve commercial operation. This time period varies based on the type of project, as well as stipulations in the particular PPA. For example, the time period for the construction of a solar project is 15 months

After execution of the PPA, any foreign investor will become eligible to apply for a foreign investment licence (known as FIPPA licence) issued by the Organisation for Investment, Economic and Technical Assistance of Iran (OIETAI). Although obtaining a FIPPA licence is not mandatory, in practice, SATBA requires all foreign investors to obtain the licence after the PPA is executed.

A direct transfer of a renewable project to a third party usually requires the prior consent of SATBA. Indirect transfers through selling the shares of a project company is also restricted during the construction phase (that is, prior to the commercial operation date) when investors may not transfer more than 25 per cent of their shares in the project company without SATBA's prior consent. Depending on the version of the PPA used, the 25 per cent restriction may have been extended to the operation phase. To avoid revocation of the construction licence or breach of the PPA, SATBA's consent must be obtained prior to any such restricted transfer.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

SATBA acts as the offtaker of electricity generated from renewable sources on a guaranteed basis and, according to the FIT programme. However, there is no legal prohibition for sale of electricity directly to other offtakers (i) if according to its construction licence the project is set to sell the electricity to other offtakers (such as in case of electricity exporting plants); (ii) if consented by SATBA with respect to the electricity generated within the capacity set forth in the underlying PPA; or (iii) in respect of the electricity generated occasionally in excess of the capacity set forth in the underlying PPA.

As a credit-enhancement measure, Iran has put in place a legal regime for issuing sovereign guarantees through the Ministry of Economic Affairs and Finance (MEAF). For renewable energy power plants, the MEAF is able to guarantee payment obligations of SATBA to the project owner (ie, the seller of electricity). As a matter of policy, however, the government issues such sovereign guarantees only for very large-scale projects.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

Renewable projects are exempt from the bidding process, and SATBA does not hold competitive bids for awarding renewable energy project PPAs, which are the subject of a FIT programme. Instead, the award of licences, which may lead to the signing of PPAs, is based on the qualification criteria of SATBA and at its discretion. Before awarding a project licence or PPA, SATBA may require the applicants to show a track record in developing and constructing similar projects, or to introduce a recognised local or foreign investor whose participation would be expected to help in developing and constructing the project.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

Once a renewable energy project reaches commercial operation, an operation licence is issued to the project company by SATBA (provided that Tavanir or its affiliates confirm the project power production meets the levels stipulated in the underlying PPA).

Electricity generated from renewable projects is sold to SATBA based on the executed PPAs. No further government authorisation for the sale of electricity would be required. Power producers can sell their electricity directly to consumers, or on IRENEX, but the lower prices (compared with subsidised SATBA offtake rates) discourage this practice.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

There is no specific legal regime for the decommissioning renewable energy projects. Decommissioning could become an issue if the project company is required to evacuate the project land, and this aspect of it would be dealt with in the land lease agreement.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

Direct lending (mainly by domestic banks) to the project company and equity financing are the most common structures for funding renewable projects in Iran. The current PPA standard form does not usually meet the expectations of sophisticated institutional investors owing to bankability issues and most notably because of the absence of sound step-in rights in favour of lenders.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Local bank financing for construction of projects usually allows for an interest-free development period and would be structured to cover, together with any operating revenues of the project, the operating costs of the project.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

In the Annual Budget law 1398 (2019-2020), electricity subscription fees have increased by 2 per cent and reached a peak of 10 per cent. As mentioned in question 6, all these amounts will be used for the development and maintenance of rural electricity grids as well as for generation of electricity from clean and renewable sources.

In addition, under the Annual Budget Law 1398, the local banking system has been mandated to provide loans to at least 100,000 individuals – totalling 50 trillion Iranian rial– for funding the setting up of solar power plants each with capacity of at least 5KW in rural and less developed areas. The loans term is 60 months and bear an interest rate of 4 per cent. Granting these loans will be subject to execution of the underlying PPA.

Iran's neighbouring countries are markets for the export of electricity because of low power generation cost in Iran and the higher sale price in the neighbouring markets.

The new conditions for export of electricity generated in renewable power plants is set forth in the MoE directive number 97/22029/20/100 dated 4 July 2018. According to this directive, export of electricity generated from renewables – as well as construction and operation of the renewable power plant – requires obtaining the relevant licences from SATBA, which will be responsible for obtaining the grid connection licence from Tavanir for such electricity exporting plants. In such a case, no PPA will be entered into with SATBA and the exporter is charged for the transmission costs. Subject to compliance with applicable laws, regulations and standards, investors are responsible for the marketing and execution of agreements with foreign offtakers.

Legislative proposals

32 | Describe any notable pending or anticipated legislative proposals.

Although the FIT programme has not changed for 2019, it is expected that the power purchase price will be increased for this year or the coming year owing to the rising inflation rate and the devaluation of the local currency. Therefore, an increase of the current FIT programme or alteration of the formula for adjustment of the FIT programme in favour of sellers is expected.

The MoE has always had the ambition to attract foreign investment by putting in place supporting directives and regulations, such as the above-mentioned directive for exporting electricity. In this respect, additional laws and regulations are expected from the legislature or the MoE.

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

The principal government participants in Japan are the Ministry of Economy, Trade and Industry (METI) and its affiliated agency, the Agency for Natural Resources and Energy.

These authorities are in charge of enforcing the laws and regulations with respect to the energy business, including the electricity generation business from renewable energy sources. In addition, these authorities are in charge of implementing the feed-in tariff (FIT) programme in Japan and issuing certificates that make renewable energy projects eligible for mandatory power purchase arrangements under the FIT programme.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

There are 10 major vertically integrated electric power utilities in Japan, each of them covering a different area of the country. The electricity transmission business is dominated by these 10 utility companies, which also take up a large share of the electricity generation business and electricity retail business.

Regarding electricity generation, in addition to the vertically integrated utilities that are involved in electricity generation business, there are a number of independent power producers in Japan such as trading companies and affiliates of investment funds. Since the commencement of the FIT programme in Japan in 2012, foreign investors have also participated in renewable power generation projects.

The electricity retail business has been fully liberalised since April 2016. Although vertically integrated utilities are still the dominant players in the market, various types of non-utility electricity suppliers are increasing their market share.

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

Under the Act on Special Measures Concerning the Procurement of Renewable Electric Energy by Operators of Electric Utilities (the Renewable Energy Act), which is in charge of the implementation of the FIT programme in Japan, renewable energy is defined as solar power, wind power, hydraulic power, geothermal heat and biomass.

There are statutes that have a broader definition. For example, under the Act on the Promotion of Use of Non-Fossil Energy Sources and Effective Utilization of Fossil Energy Materials by Energy Suppliers, renewable energy includes solar heat and other sources of natural heat, such as the heat in the air, in addition to solar power, wind power, hydraulic power, geothermal heat and biomass.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

The legal framework generally applicable to selling power from renewable energy projects is the FIT programme under the Renewable Energy Act. Under the FIT programme, the owner of a renewable energy project with a certification from METI has the right to request a transmission utility to enter into a power purchase agreement with it and purchase all available electric power at a fixed price (ie, a price set by METI depending on the type of renewable energy source and the output capacity of the project) over a long term (ie, 10, 15 or 20 years depending on the type of renewable energy source). A transmission utility is required to accept such requests unless there is a legitimate reason not to. Legitimate reasons are strictly limited by and defined under the Renewable Energy Act. The utilities that are required to purchase electric power from renewable energy projects have the right to receive a renewable energy subsidy, the cost of which is ultimately borne by the end users who are required to pay renewable energy surcharges under the FIT programme.

The development, financing and operation of renewable energy projects are subject to other general laws and regulations governing each area. Regarding permission for development, some local governments impose specific regulations on the development of renewable energy power plants.

Regarding environmental attributes from renewable energy projects, the following programmes represent the main legal and regulatory framework.

J-Credit

If an entity reduces its emissions of greenhouse gas or increases its absorption of greenhouse gas by introducing energy-saving equipment, providing forest management or the like, along with fulfilling certain criteria, such reduction of emissions or increase in absorption of greenhouse gas can be certified as J-Credit. A holder of J-Credit can sell it to a third party.

Green power certificate

If an entity introduces a renewable energy power project, along with fulfilling certain criteria, the increase in environmental value from the power generation from such renewable energy project can be

certificated into a green power certificate. The initial holder of a green power certificate can sell it to a third party, but the purchaser from the initial holder cannot resell the certificate.

Certificate of non-fossil fuel value

A Non-Fossil Fuel Certificate was introduced in 2018. The Certificate, which embodies the zero-emission value created by a renewable project under the FIT programme, is issued by a governmental agency and sold to electricity retailers at auction. The scope of electricity generators eligible to receive the Non-Fossil Fuel Certificate is expected to be expanded in November 2019 to cover the 'post-FIT' non-fossil fuel power generation, and is also expected to be expanded in April 2020 to cover non-fossil fuel power generation outside of the FIT programme. As such, the industry landscape surrounding the Non-Fossil Fuel Certificate may change in the future.

Local cap and trade programme

The cap and trade programme was established in Tokyo metropolitan and Saitama prefectures. Entities in the Tokyo metropolitan area and Saitama prefectures that reduce greenhouse gas emissions can sell the volume of emissions reduced in accordance with the system established by the Tokyo Metropolitan government or Saitama Prefecture.

Nationwide cap and trade programme

There is no cap and trade programme at the national level in Japan.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

J-Credit, a green power certificate and the environmental attributes under the cap and trade programme in Tokyo and Saitama can be stripped and sold separately.

A purchaser of J-Credit and environmental attributes under the cap and trade programme in Tokyo and Saitama may resell them to third parties. With respect to green power certificates and certificates of non-fossil fuel value, only the initial holder can sell it to a third party, but the purchaser from the initial holder cannot resell it.

Please note, however, that there is currently no active secondary market in Japan for J-Credit and environmental attributes.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

After adopting the Kyoto Protocol, the Japanese government has been promoting the use of renewable energy to reduce greenhouse gas emissions. At one time Japan had an RPS (renewable portfolio standard) programme. Since 2012, however, the FIT programme has replaced the RPS programme and has been bolstering the development of renewable energy projects.

As stated above, the FIT programme, J-Credit, green power certificate, certificate of non-fossil fuel value and the cap and trade programme at the local government level have been established. In addition, the Japanese government also provides tax benefits (such as special depreciation and tax deduction when certain requirements are satisfied) for the introduction of certain energy-saving equipment.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

METI and its affiliated agency, the Agency for Natural Resources and Energy, establish renewable energy policies and incentives, including the FIT programme, at the national level.

While there is no cap and trade programme at the national level, some local governments have introduced cap and trade programmes.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

There are no subsidies or other economic incentives to encourage private companies to purchase renewable power. The Japanese government adopted the FIT programme to facilitate the development of the renewable energy sector, and under this programme, an owner of a renewable energy project can sell all available electric power to transmission utilities at a fixed price over a long term (see question 4). The fixed purchase price under the FIT programme is decreasing every year, but since the fixed purchase price is still higher than the market price of electricity, owners of renewable energy projects are generally more inclined to sell electric power to transmission utilities under the FIT programme as opposed to selling to private companies.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The current FIT programme is a temporary system intended to encourage introduction of renewable energy resources in Japan, and a revision to the fundamentals of the Renewable Energy Act is expected by 31 March 2021. Although the details of the revision have not yet been determined, the government seems to expect that the solar PV and wind power will be power sources competitive enough to survive in the market without the financial support from the government. The Japanese government is positioning renewable energy as the main source of electricity in Japan, and we need to pay special attention to the upcoming amendment to the FIT programme.

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

Owing to the shortage of capacity of utilities' transmission and distribution lines, it is increasingly difficult for utility-scale renewable projects to connect to the grid. METI and the Agency for Natural Resources and Energy intend to revise the rules for grid connection by introducing non-firm grid access so that an increased number of renewable projects can access the transmission grid. Under non-firm grid access, electricity power producers can connect to the grid subject to curtailment without compensation in case of network constraints

Another big driver of change is nuclear power generation. The Japanese government has pledged to reduce its greenhouse gas emissions by 26 per cent by 2030 from the 2013 level, and intends to accomplish this target by increasing the share of renewable and nuclear power in the power generation sector to 44 per cent by 2030. Most of the nuclear reactors have yet to resume operations after the disaster of the Fukushima nuclear power plant in 2011. The longer the operations of nuclear reactors remains suspended, the more renewable energy will be needed to meet the greenhouse gas emissions target.

Disputes framework

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

With respect to disputes regarding utilities' wheeling services and their transmission and distribution lines, the Organization for Cross-regional Coordination of Transmission Operators (OCCTO) was designated as the dispute resolution business operator under the Act on Promotion of Use of Alternative Dispute Resolution. Pursuant to this designation, OCCTO conducts conciliation and mediation proceedings. There is no specific legal framework for resolution for other types of disputes that may arise between or among renewable energy market participants. These disputes are resolved through normal civil judicial proceedings, civil conciliation proceedings or arbitration proceedings.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

After the commencement of the FIT programme in 2012, the number of large-scale solar power projects, such as those with an output of 10MW or more, has increased significantly. In addition, the number of projects involving development of large-scale biomass projects has increased during the past few years.

Development issues

13 What types of issues restrain the development of utility-scale renewable energy projects?

As described in question 10, the shortage of capacity of utilities' transmission lines is one of the major issues that restricts the development of utility-scale renewable energy projects, and the Japanese government is continuing its efforts to increase accessibility to the grid.

In addition, for renewable energy projects of a certain scale, an environmental impact assessment is required before development of the project. Regarding wind projects, for example, an environmental impact assessment is required for projects with an output of 10MW or more. It usually takes five years to complete the process and a large upfront cost is necessary before development. Uncertainty resulting from a time-consuming environmental impact assessment is one of the major issues that restricts the development of renewable energy projects.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

Historically, hydropower generation projects with large-scale dams have been an important source of energy and play a significant role in the renewable energy sector. These dams are developed and owned by vertically integrated utilities. Recently, however, small and medium-sized hydropower projects have also been gaining attention with the support of the FIT programme. Hydropower projects with output capacity less than 30MW are eligible for mandatory power purchase arrangements under the FIT programme.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Although small and medium-sized hydropower generation projects are supported by the FIT programme, other types of hydroelectric technologies, such as electricity generation by wave power and tidal power, are not. To expand the field of hydroelectric power generation to wave power and tidal power, financial support from a governmental programme would be beneficial.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

There are several companies that provide on-site, distributed generation projects (on-site projects provider) for their customers such as the owners of public facilities, factories, plants, airports, railway stations, shopping malls and residential areas. There are currently many on-site distributed generation projects in operation.

As for larger scale projects, there are several substantive microgrid experiments in local cities and remote islands.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

According to the materials distributed by on-site projects providers, there are many solar power plants owned by on-site projects providers (or, to a lesser degree, the offtakers, such as owners of factories or large buildings). These solar power plants are operated by the on-site project providers.

In addition, there are several 'inside-the-fence' distributed generation projects that are used to support factories or plants that require stable and large amounts of electricity (typically, 20MW to 100MW or more). These projects are usually thermal power plants (including biomass power plants) jointly developed by the offtaker (ie, the owner of the factory or plant) and an independent developer.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

We are not aware of any major legislative or regulatory efforts that have focused specifically on the promotion of microgrids. However, there are certain subsidies provided by the government (the Ministry of the Environment) to compensate for the cost of installing microgrid systems that connect public facilities.

Regarding the obstacles to the development of microgrids, unlike the often-discussed technical obstacles, there are no significant legal obstacles to the development of microgrids.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

With respect to rooftop solar projects as distributed generation projects, there are legal issues as to the method by which to perfect the lease of rooftops. Under the current Real Property Registration Act, a part of a building, such as a rooftop, cannot be registered. As a result, the lease

right (as well as the security interest created on the lease right) of a rooftop may not be perfected.

Regarding net-metering, since the owner of a renewable energy project has the right to require a transmission utility to purchase all available electricity at a fixed price (see question 4), the owner of a renewable energy distributed generation project can sell all surplus electric power to the transmission utility.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

While most types of renewable power generation can enjoy offtaking arrangements under the FIT programme, energy storage projects cannot. We have yet to see a commercially feasible stand-alone energy storage project in Japan.

Having said that, recently, large-scale batteries have been used together with utility-scale solar power projects in Hokkaido, the northernmost main island of Japan, at the request of the transmission utility there. However, the batteries are used to mitigate the rapid fluctuation of output from solar modules, not to store electric power. In addition to these behind-the-meter batteries, the transmission utility in Hokkaido is planning to install in-front-of-the-meter batteries to mitigate the fluctuation of the power output from wind power projects. Such batteries are expected to increase the grid connection capacity of the transmission utility.

Development

21 Are there any significant hurdles to the development of energy storage projects?

The most significant issue is the high cost of batteries. In addition, under the current FIT programme, electric power output from an energy store is not eligible for mandatory purchase arrangements even if the electric power is originally created from renewable energy sources such as solar and wind. Due to the lack of long-term stable revenue stream, it is hard for energy storage projects to secure non-recourse project financing.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Yes, foreign investors may invest in renewable energy projects. However, a foreign investor who intends to acquire shares or similar types of equity in a Japanese entity that is involved or will be involved in electricity business (ie, power generation from renewable energy source) is required to submit to the Minister of Finance a pre-filing for approval of such acquisition. A foreign investor may acquire shares or similar types of equity only after approval is given. Approval is typically given after a waiting period of 14 to 30 days. If an electricity business of a Japanese entity is not scheduled to start within six months of the acquisition of shares or similar types of equity by a foreign investor, the foreign investor may first acquire the shares or similar types of equity without making a pre-filing for approval with the Minister of Finance. In such cases, the foreign investor must make another filing to the Minister of Finance for approval during the six-month period prior to the commencement of the electricity business.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

There are no restrictions specifically focused on the import of foreign manufactured equipment. However, the import of foreign manufactured equipment is prohibited, if prohibited materials (such as certain chemicals or toxic materials) are used to manufacture the equipment.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Physical construction of a renewable energy power plant requires various permissions and authorisations related to land use, land development and environmental protection, such as permission for the conversion of agricultural land, forest development permission, a satisfactory result from the environmental impact assessment and notification (the contents of which must be acceptable to the authority) of a large-scale development.

To be eligible for the FIT programme, it is also necessary to obtain a certificate from METI on the renewable energy project in question.

In transferring and acquiring a renewable energy project from one entity to another, the permissions and authorisations together with the METI certificate mentioned above need to be transferred effectively. For such transfers, procedures required by the relevant authorities must be taken, such as notification of the transfer to the authority. In the case that the acquirer is a foreign investor, the acquirer is required to obtain approval from the Minister of Finance as described in question 22.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

Without any restrictions on project scale, a significant number of renewable energy projects are supported by the FIT programme, under which fixed-price (ie, the price set by METI depending on the type of renewable energy source and the output capacity of the project) and long-term (ie, 10, 15 or 20 years depending on the type of renewable energy source) offtaking is required of a licensed transmission utility.

Although credit rating of transmission utilities differs from utility to utility, credit support for a transmission utility (as an offtaker) is not normally required. Without such support, developers, owners, sponsors and financiers of projects normally accept the offtaking arrangement. Even if a transmission utility becomes insolvent, as long as the electricity transmission business in the region continues to operate, the owner of the renewable energy project would be able to enter into a new power purchase agreement with the company that takes over the transmission business. Since the purchase price and term of the offtaking arrangement are legally fixed under the FIT programme, the terms of the offtaking arrangement (except the period that has already expired) should remain unchanged even if the transmission utility becomes insolvent.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

Under the FIT programme, an owner of a renewable energy project with a certificate from METI has the right to request a transmission utility to enter into a fixed-price (ie, price set by METI depending on the type of renewable energy source and the output capacity of the project), long-term (ie, 10, 15 or 20 years depending on the type of renewable energy source) power purchase agreement. A transmission utility is required to accept such request unless there is a legitimate reason not to. Further, legitimate reasons are strictly limited by and defined under the Renewable Energy Act.

Generally, the purchase price under the FIT programme is set by METI annually. Since April 2017, the purchase price for solar power projects with 2MW or more output capacity will be set through a bidding process held by METI. The process includes a semi-annual, nationwide process where a developer may submit a bid for a FIT price (not greater than the maximum price set by METI) applicable to its own project. METI only grants FIT certificates to solar power projects that have secured a FIT price through the bidding process.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

An owner of an electricity generation project with a certain level of output capacity needs to notify METI of its electricity generation business. In addition, in order to sell electric power under the FIT programme, the project owner must obtain from METI a FIT certificate for their renewable energy project.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

Since April 2018, a project owner with a FIT certificate is obligated to hold a certain amount of funds in reserve to secure the costs to decommission its renewable energy facility. This was updated in July 2018 to require a project owner with a FIT certificate to also report a plan on reserving decommissioning costs and the status of the funds held in reserve. METI has commenced investigating measures to secure such reserved funds. METI is currently engaged in discussions on assigning the role of collecting funds for reserves from the sales revenue of each project to the Expense Sharing Coordinating Body, a special entity organised pursuant to the Renewable Energy Act. METI intends to introduce new regulations on this matter by March 2021.

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TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

For equity financing, the Tokumei Kumiai structure is frequently used in addition to normal equity investment in shares of a project company. Tokumei Kumiai is a Japanese silent partnership and has been regularly used in various types of asset financings such as aircraft financing and real estate financing. This arrangement is popular among renewable energy projects owing to its pay-through nature resulting in tax efficiency at the project company level.

For debt financing, non-recourse project financing is usually available for FIT-based renewable energy projects such as solar, wind and biomass projects.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

See question 29. The financing structure is normally designed and put into place at the construction phase to accommodate the operational phase so that there would not be any substantial changes to the financing structure when the project enters the operational phase.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

On 1 April 2019, the Act of Promoting Utilization of Sea Areas in Development of Power Generation Facilities using Maritime Renewable Energy Resources came into force. Under the new Act, METI and the Ministry of Land, Infrastructure, Transport and Tourism will designate specific zones for the promotion of offshore wind projects, and the developer who will construct and operate an offshore wind farm within the zone will be chosen via a public tender offer process. It is anticipated that the first promotional zone will be determined during fiscal year 2019, and the first public tender offer process will take place in 2020.

Legislative proposals

32 Describe any notable pending or anticipated legislative proposals.

On 1 April 2019, METI introduced a new regulation on certain solar PV projects that obtained certificates under the FIT scheme before 31 March 2014 but have not reached operational status. If a solar PV project falls within the scope of the new regulation, the applicable FIT price will be reduced unless the project satisfies certain conditions by the newly introduced deadline, and the applicable FIT period will be shortened unless the project reaches operational status by the newly introduced deadline. Parties that intend to invest in a solar PV project under development need to check if the new regulation applies to the target project.

Korea

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

The principal government participants in the electricity sector in Korea are the Ministry of Trade, Industry and Energy of Korea (MOTIE), Korea Power Exchange (KPX), Korea Energy Agency (KEA), and Korea Electric Power Corporation (KEPCO) and its power generation subsidiary companies. Pursuant to the Electric Utility Act of Korea, MOTIE is responsible for overseeing comprehensive policies for demand and supply of electricity, including renewable energy policies, and formulates a master plan every two years setting forth a national plan of electricity supply and demand for the next 15 years.

In addition, pursuant to the Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy (the Renewable Energy Act), MOTIE also formulates a basic plan for the promotion of new and renewable energy every five years, setting forth objectives for technological development, use and distribution by new and renewable energy source, the target ratio of the amount of new and renewable energy power generated to the total amount of power generated and the target of reducing greenhouse gas emissions, among other things. MOTIE is also in charge of overseeing regulatory authorisations for electricity business and thus supervises the allocation of permits needed for generation business, except for any generation business with a total capacity of 3MW or below, the permits of which are overseen by the head of the provincial government or relevant local administrative agency. KPX, an agency under MOTIE, operates the electricity power market as well as trade market for renewable energy certificates (RECs).

All power generation has to be dispatched through KPX with a few exceptions (eg, generators in island areas) and KPX oversees the bidding, metering, settlements and monitoring of the electricity market. Because KPX is also in charge of the operation of grid connection, it comprehensively manages the total supply and demand of electricity across the nation. KEA, also an agency under MOTIE, is in charge of carrying out business for greenhouse gas reduction, development and promotion of energy technologies, development and promotion of new and renewable energy, and various business related to energy saving or energy efficiency and support and promotion of collective energy projects. The New and Renewable Energy Center is a division of KEA and carries out important works relating to new and renewable energy such as supporting and managing persons or entities that conduct new and renewable energy business, supervising implementation of obligations to use new and renewable energy, supervising implementation of obligations to supply new and renewable energy, and supporting and overseeing the certifying of new and renewable energy equipment, among others. The New and Renewable Energy Center also takes the role of certifying and issuing RECs by reviewing the REC applications submitted by parties that conduct new and renewable energy generation business, as well as administration of REC transactions undertaken as regard generation companies (with installed capacity of more than 500MW) on which the Renewable Portfolio Standards (RPS) obligation is imposed.

KEPCO is a public corporation and has exclusive rights to conduct the transmission, distribution and sales of electricity in Korea. KEPCO has six subsidiaries (Korea South-East Power, Korea Midland Power, Korea Western Power, Korea East-West Power, Korea Hydro & Nuclear Power and Korea Southern Power) that conduct power generation business, and through these subsidiaries, KEPCO retains a quasi-monopoly over power generation. KEPCO makes various new and renewable energy-related investments (especially development of smart grid system and related technologies) and its generation subsidiary companies are obliged to demand renewable energy in order to meet their obligations to use renewable energy for a certain minimum portion (eg, 5 per cent in 2017) of their generation business.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

Pursuant to the Electric Utility Act, all power generators are required to trade through KPX, except for generators in island areas not connected to the grid operated by KPX and electricity generated through new and renewable energy sources with a capacity of 1MW or below. The generated electricity through new and renewable energy power plants with capacity of 1MW or below can be sold through KPX or through execution of power purchase agreements with KEPCO. As of April 2017, there were 18 independent power producers (IPPs) and 1,424 new and renewable energy-related private power generators registered with KPX. Some of the IPPs are POSCO Energy, GS EPS, GS Power, SK E&S, and Pocheon Power. With the RPS having taken effect from 2012, those private power generators with capacity of 500MW or more must also generate a certain minimum portion of electricity from renewable energy, so these private companies (as a primary source of demand for renewable energy supply) have been largely responsible for the majority of renewable energy power generation in Korea. Other private participants in the renewable energy power generation sector are financial institutions providing financing to renewable energy power generation projects and private fund or equity investors participating in renewable energy projects. Apart from power generation, KEPCO has exclusive rights as to transmission, distribution and sales (to end consumers) of electricity, so there are no private participants in those sectors of the overall electricity market.

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

The legal definition of 'renewable energy' can be found under the Renewable Energy Act. Under the Act, the term 'renewable energy' refers to energy converted from renewable energy sources including sunlight, water, geothermal, precipitation, bio-organisms, etc, and such energy as solar, wind power, water power, marine, geothermal, bioenergy converted from biological resources, and energy from waste materials are specifically listed under the Act as renewable energy. It is notable that in Korea, the term 'renewable energy' is normally embedded in the term 'new and renewable energy'. As such, the Renewable Energy Act retains a separate definition for the term 'new energy', which is defined as energy that is either converted from existing fossil fuels or uses electricity or heat generated through the chemical reaction of hydrogen, oxygen, etc, and the Act specifically lists hydrogen energy, fuel cells, energy from liquefied or gasified coal, and energy from gasified heavy residual oil as new energy. Any other energy source could be added as new and renewable energy via presidental decrees, although there has not been any such energy added up to this date.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

The Electric Utility Act is the basic general law that regulates all aspects of electric utility business in Korea, so new and renewable energy projects that generate electricity would be subject to this Act. In particular, the Electricity Utility Act has provisions that prescribe matters relating to granting business licences for electricity generation business, the electricity market and trading of electricity (including matters of KPX). The Renewable Energy Act would be important for new and renewable energy projects, as the Renewable Energy Act has been enacted for development of new and renewable energy technology and promotion of new and renewable energy business and prescribe such key matters of renewable energy business as mandatory supply of new and renewable energy by generation business entities, issuance of renewable energy certificates, and specifications and quality of new and renewable energy equipment, etc.

Under the Act on the Allocation and Trading of Greenhouse Gas Emission Permits, certain business entities that produce greenhouse gas are designated to become eligible for allocation of emission permits and those permits may be sold, bought or otherwise traded. This Act also prescribes matters for certification of greenhouse gas reduction business and conditions for certification of emission reduction records, so renewable energy projects can be used by those businesses eligible for emission permits to utilise those certified emission reductions for conversion into emission permits. The National Land Planning and Utilization Act of Korea regulates all aspects of land development and land use. Especially, this Act is relevant to renewable energy projects as it prescribes matters of land development authorisations and environmental impact assessment.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

Persons engaged in new and renewable energy generation business can receive RECs issued by KEA (through its New and Renewable Energy Center) in respect of electricity generated by new and renewable energy sources and sell such RECs separately from the electricity generated. In addition, those RECs can be freely traded through REC exchange established by KPX. The trading volume of the RECs in the REC exchange has been rapidly increasing, as prices can be adjusted on a real-time basis among trading parties and trades can be quickly consummated with settlement of payment taking only two days for trades executed.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

Pursuant to the Restrictions of Special Taxation Act of Korea, in cases where a business entity or a person invests in an energy-saving facility (including new and renewable energy facility), then a certain percentage of the invested amount (6 per cent in case of a small company or 3 per cent in case of a medium-size company) may be deducted from corporate income or individual income tax amount payable by the relevant entity or individual. However, these tax benefits would be limited to investments made until 31 December 2018. In addition, under the Renewable Energy Act, the new and renewable energy generation projects that were completed before the end of 2011 are subject to the feed-in tariff system, meaning that those renewable energy generators would be guaranteed certain remuneration above actual trading price of electricity generated from the new and renewable energy, which provides long-term security to those producers.

However, from January 2012, Korea has adopted a policy mechanism based on the RPS, and currently six generation subsidiary companies of KEPCO, Korea District Heating Corp, Korea Water Resources Corp, and 10 private generation companies are obliged to supply a specific percentage (10 per cent or more until 2023) of electricity from new and renewable energy resources, Under the RPS system, new and renewable energy generators can no longer receive a long-term guarantee of a certain fixed price but instead can sell electricity generated through KPX (or to KEPCO via PPA) and also apply for and receive RECs, which then can be traded in the REC market established within KPX or sold to entities with RPS obligation. From May 2017, pursuant to the New and Renewable Energy RPS and Fuel Mix Management and Operation Guidelines, a publicly notified rule of MOTIE, the Korean government has also implemented a fixed price contract system whereby new and renewable energy generators can make bidding on the basis of one price combining the electricity price and the REC price and, if selected, enter into a long-term contract (up to 20 years) with entities required to carry out RPS obligation. This newly implemented system is expected to lower the risks of volatility of the REC price and electricity price (system marginal price), thereby promoting investment in new and renewable energy projects.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Renewable energy policies are generally established at the national level. Firstly, pursuant to the Electric Utility Act, MOTIE is responsible for overseeing comprehensive policies for demand and supply of electricity including renewable energy policies, and the minister of MOTIE formulates a master plan every two years for electricity supply and demand after consulting with the heads of relevant central administrative agencies, collecting opinions through a public hearing, and thereafter finalising it following deliberation by the Electric Policy Council. Currently, the supply and demand of electricity in Korea is implemented

on the basis of 8th Master Plan, which was issued in December 2017, and under this latest Plan, the reduction of coal-power generation and the expansion of renewable energy power generation has been emphasised, as was expected from the current Moon Jae-in administration. In addition, pursuant to the Renewable Energy Act, MOTIE formulates a basic plan for the promotion of new and renewable energy every five years, setting forth objectives of the technological development, use and distribution by new and renewable energy sources, the target ratio of the amount of new and renewable energy power generated to the total amount of power generated and the target of reducing greenhouse gas emissions, among other things. The minister of MOTIE would then establish a detailed implementation plan every year to accomplish the objectives set out in the basic plan that pertain to the supply of electricity generated by new and renewable energy.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

Although KEPCO's subsidiary generation companies produce a majority of electricity in Korea, some competition is allowed in the supply side of the electricity market to the extent that generation companies (including IPPs) compete with each other. However, KEPCO still enjoys monopoly over transmission or distribution and remains as the sole purchaser (power sales business), so monopoly is maintained on the demand side of the electricity.

Moreover, since the Korean power system is maintained on a single national grid, there is no regional trading market and only a single power trading market is required to coordinate and manage energy supply and demand across the whole nation. So, given the current structure, there are no mechanisms available for private companies to purchase renewable energy power directly from new and renewable energy producers, other than that small or medium-size private companies may be motivated to invest in energy-saving facilities (including new and renewable energy facility) to gain some reduction on their corporate income taxes.

In addition, pursuant to the Act on the Allocation and Trading of Greenhouse Gas Emission Permits, Korea launched its national emission trading system in January 2015, which covers approximately 525 entities of the country's largest GHG (greenhouse gas) emitters, and certain financial and taxation incentives or subsidies can be provided (to any of those emitters) for GHG reduction achieved through technological development or development or implementation of GHG reduction projects involving new and renewable energy resources.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The key campaign pledges of Moon Jae-in, the president elected in May 2017, included, inter alia, reduced dependence on nuclear power generation and aggressive countermeasures against fine dust. Immediately after his inauguration, he ordered the temporary suspension of decrepit coal-fired electric power plants, which remained closed from June 2017 until the peak season in summer 2017.

The above measure was expected to be followed generally by policies and legislation to increase the target of new and renewable energy supply and to strengthen relevant incentives. Indeed, the Korean government issued the 3020 Implementation Plan for New & Renewable Energy in December 2017, which aggressively elevates the target for power generation and supply of new and renewable energy from the 2017 level of 7 per cent (of total power generation) to 20 per cent by 2030. This implementation plan puts an emphasis on achieving the foregoing target on the basis of a renewable power generation mix that is primarily geared towards solar and wind power generation, and also contains policies intended to induce local communities' participation in renewable energy projects.

Also notable is a new location planning procedure introduced within the implementation plan, aimed at assessing the environmental impact of a renewable project and seeking the local community's opinion on the project at the initial stages. If implemented, the new location planning procedure requires every renewable project to go through a two-stage process of planning permission and development permission, moving away from the current procedure of requiring only one stage of obtaining development permission. At the same time, the REC weighted value applicable to each renewable source of power generation has been adjusted in order to expand renewable energy generation projects. For instance, the REC value applicable to offshore wind power generation has been upwardly adjusted to a range of 2.0 to 3.5.

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

The biggest drivers of change in the renewable energy markets may be Korean government's focus on promotion of a smart grid as part of its green growth strategy, especially as its implementation is towards development of an IT-enabled grid, which then requires development of key smart grid technologies, including smart meters, energy management systems and energy storage systems, battery systems, electric vehicles (EV) and EV charging infrastructure.

In addition, the current Moon administration is expected to further push policies and legislation to increase the target of new and renewable energy supply and to strengthen relevant incentives, with its recent announcement of reduced dependence on nuclear power generation and aggressive countermeasures against fine dust. For instance, the 3020 Implementation Plan for New and Renewable Energy contains certain planned policy changes that will involve the expansion of solar power generation in agricultural land areas, local communities' participation in renewable energy projects from the initial stages and the offering of incentives (such as the introduction of the 'Korean-type feed-in tariff') intended to support small renewable energy projects, among other things.

From this plan, it can be expected that the expansion of renewable power generation in the near future will also be driven by small-scale renewable energy producers, with large-scale renewable projects such as offshore wind projects continuing to be driven by big companies, including the six power generation subsidiaries of KEPCO.

Disputes framework

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

The Rules on the Operation of the Electricity Market (established by KPX) have detailed provisions for resolution of disputes between electricity market participants, including renewable power market participants. The dispute resolution provisions under the aforesaid rules are similar to rules of arbitration in that, upon request by a party of a dispute resolution, the administrative office would form a dispute resolution panel consisting of three qualified persons (consented by the dispute parties) not related to the operation of the electricity market, and such panel would render a decision within 10 days of conclusion of the dispute resolution hearing. If a party to the dispute does not accept the decision rendered by the dispute resolution committee, the party can appeal the decision to the Electric Regulatory Commission pursuant to article 57 of the Electricity Utility Act.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

The largest in terms of generation capacity is power generation using waste (approximately 37 per cent as of 2015), followed by solar (26 per cent), hydroelectric (12.9 per cent), bio (11.7 per cent) and wind (6.2 per cent). However, in case of new and renewable energy facilities, 60 per cent of the overall increase is attributable to solar power plants (as of 2015), which is far ahead of coal liquefaction (IGCC, 20 per cent) or wind (11 per cent) (KEA, 2015 Renewable Energy Supply Statistics). Korea East-West Power Co Ltd, a subsidiary of KEPCO, is planning to build a 17MW solar power plant, with the aim of breaking ground in October 2017, but most solar power projects are 1MW or less because it is difficult to connect to the grid system since the land necessary to build larger power plants can be found only at the outskirts, and it requires more time to obtain permission for development.

The government is planning facility investment with aggressive solutions for stagnation in grid connection, which should contribute to improvement in the environment for solar power generation projects with a capacity of 1MW or more. In the meantime, there is brisk activity in solar power generation projects utilising rooftops of factories in industrial complexes, military bases or educational facilities. A package lease of factory rooftops in certain industrial complexes, military barracks or educational institutions under certain education offices will likely promote large-scale solar power generation and thus achieve scale of economy, and improve profitability since a higher REC weighted average will be applicable than in normal solar power generation. As for wind power generation, which used to be mostly inland, the first commercial offshore wind power plant (30MW) was completed in 2016, and a pilot project for the offshore power plant complex in the southwest sea was to be under way from the latter half of 2017. There is no certain tendency in generation capacity, which varies from 3MW to 30MW (as of 2016).

Development issues

13 What types of issues restrain the development of utility-scale renewable energy projects?

The greatest obstacle to utility-scale renewable energy projects is securing the land. The mountainous terrain makes it difficult to secure large land, which usually is located in remote places, making it difficult to connect to the grid even if secured. Hence the development and operation of power plants is at mostly 1MW level, and the capacity in larger power plants is usually 5MW or less.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

Although the Korean peninsula has a few rivers flowing west and south, which seem advantageous to hydropower generation, the significant disadvantages are high seasonal variations in the weather and the concentration of most of the rainfall in the summer. The installed hydro capacity is about 6,727MW and hydro generation is 7,820GWh (as of 2015). Korea Hydro & Nuclear Power, founded in 2001 and a subsidiary of KEPCO, owns and operates hydropower plants with a generating capacity of 606.7MW, and pumped storage power plants of 4,700MW in Korea. As the potential for conventional hydropower generation is almost fully exploited, Korea has been focusing upon other hydro resources. One such area is power generation from using tidal energy. South Korea has built the largest tidal power plant in the world at the Shihwa dam lake. This tidal lake power plant has a total capacity of 260MW with an annual power generation of 543GWh and is managed and operated by Korea Water Resources Corporation, a government agency that develops and manages water resources and water supply facilities in Korea.

Korea has also undertaken small hydro activities such as building hydropower plants on small rivers where reservoirs are not feasible, and adding generation to existing dams where a reservoir exists but has never been exploited for generating electricity. In addition, with Korea's adoption of a renewable portfolio standard in 2012, the nation's utility companies burdened with the RPS obligation have been looking for interesting opportunities to generate renewable energy, other than from building solar or wind power plants adjacent to their existing conventional power plant sites.

One such idea is to exploit the effluent from their coastal power plants, where artificial flows of water have been created at the outlet of a power plant cooling system. Korea South East Power Co, a subsidiary of KEPCO, owns the Yeongheung Power Station built on an island in the city of Incheon, which is one of the largest coal-fired plants in the world. Korea South East Power has installed several small ocean hydro plants at the unit outlets of Yeongheung Power Plant, with an individual capacity ranging from 3MW to 5MW.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Hydro energy is part of renewable energy as defined under the Renewable Energy Act, which supports and promotes development of new and renewable energy technology and power generation from new and renewable energy sources. Other than the foregoing, there are no specific legal considerations given to hydroelectric generation, although it appears that the Korean government is recently focusing more on the development and promotion of small hydro generation equipment with a capacity of 10MW and below.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

With KEPCO (through its generation power subsidiaries) occupying a quasi-monopoly position over power generation in Korea, distributed generation is still not prevalent. However, to tackle the difficulty in securing new sites for large-scale power supplies and grid construction, the Korean government has set installing distributed generation systems as one of the six key policy tasks in the 2nd Basic Plan for Energy announced in 2014, and has set the goal of expanding distributed power sources, currently comprising 5 per cent of total power, to 15 per cent of total generation by 2035 (MOTIE, 2014). Implementation of distributed generation should also be aided by the government's focus on developing an IT-enabled grid with development of key smart grid technologies, including smart meters, energy management systems and energy storage systems, battery systems, EVs and EV charging infrastructure.

Types

17 | Describe the primary types of distributed generation projects that are common in your jurisdiction.

Fuel cells for power generation have been consistently growing over the years. For instance, stationary fuel cells in the nation are often multi-MW systems deployed at office parks, hospitals and other facilities, where power can be used on-site or fed back into the grid. Most of these deployments are combined heat and power (CHP) systems, which can provide heat to district heating systems or nearby users. Gyeonggi Green Energy, situated in Hwasung City, Gyeonggi Province, is considered one of the largest fuel cell parks in the world, with potential capacity to produce power for approximately 140,000 homes, and recently, Korea completed the 20MW Noel Green Energy Project, located in Sang-am, Seoul.

In addition, KEA has been supporting various schemes whereby distributed generation projects can be promoted. Such schemes include providing financial support of the government to local villages (10 residential homes or more) of which residents want to be self-sufficient in energy supply by building and using solar power, solar thermal or geothermal systems on their homes. One such village is in Kochang, Jeonbuk Province, where 100 residential homes were newly built in 2012 with solar or geothermal-related energy systems that were financed by the government.

Another such scheme is solar equipment lease and installation business that is primarily led by private companies in the absence of government subsidy. Residential homeowners using leased solar equipment for their energy sources would benefit from lower electric utility charges, and private companies designated by KEA as lease operators would gain from lease proceeds and also from selling renewable energy points (REPs) to power generation companies that can utilise those REPs purchased to implement their RPS obligation. In 2017, it was anticipated that this solar equipment lease business would be applicable to about 10,300 homes with a total capacity of 14.5MW. Other examples of on-site distributed generation include setting up eco-friendly towns in Chungbuk Province, building an eco-friendly campus at a sewage treatment facility near a small town using renewable energy hybrid system, and solar thermal systems with seasonal energy storage systems, PVs and fuel cells.

Regulation

18 | Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

The promotion of a smart grid has been a feature of the Korean green growth strategy from its inception (as part of the National Strategy for Green Growth, which had a time span of over 40 years 2009–2050). A National Smart Grid Road Map was launched in June 2009 and the implementation of a nationwide smart grid by 2030 is targeted. The Korea Smart Grid Institute was established by the government to coordinate the implementation of the Smart Grid Road Map. In July 2016, MOTIE announced detailed investment plans focused on the promotion of 'new energy industries' as the next pillar of the Korean economy, with six new energy businesses targeted by officials in the Ministry for the promotion, including integrated energy management systems and independent microgrid businesses.

In terms of microgrids specifically, Korean government has placed emphasis on the development of island-based microgrids (energy self-sufficient islands) as a key component of its smart grid strategy, together with the development of an urban-based smart grid called the 'smart grid station' – a type of microgrid centred on buildings in cities. For instance, Gasa Island, a tiny island off Jindo in South Jeolla Province, is home to the world's first independent microgrid using a Korean-built energy management system (EMS), fully operational from October 2013. The EMS takes power generation mostly from four wind turbines (400kW), four solar panel installations (320kW) and an energy storage system with a 3MW capacity. KEPCO and MOTIE shared the costs involved equally, and Gasa Island is a prototype for as many as 86 other island-based projects planned by KEPCO. As it still retains a firm grip on distribution and sale of electricity to customers, KEPCO has been leading initiatives in development of microgrids, so more competition at retail level of the electricity market may lead to more wide-ranging investments by private companies in the smart grid sector, including microgrids.

Other considerations

19 | What additional legal considerations are relevant for distributed generation?

Distributed generation is being promoted in Korea as part of the government's strategy to develop a smart grid system and related technologies such as government-led development of urban-based smart grids, energy self-sufficient islands and eco-friendly villages. Having said that, however, as most of the distributed generation in Korea is through generation from new and renewable energy sources on a small scale, such generated electricity is not normally considered part of the power trading market required to coordinate and manage energy supply and demand across the whole nation. So there is still a lack of legislative and regulatory support for wide dissemination of distributed generation (with KEPCO retaining a quasi-monopoly over power generation through its six power generation subsidiaries).

ENERGY STORAGE

Framework

20 | What storage technologies are used and what legal framework is generally applicable to them?

In Korea, energy storage systems (ESS) using lithium ion batteries are the most prevalent. This is in part because Korean companies such as Samsung SDI and LG Chemicals operate large ESS production facilities (eg, a capacity of 1.1GW) in Korea (sourced from KEA). In addition, before 2015, ESS was implemented primarily in behind-the-meter form. However, the in-front-of-the-meter-based ESS is rapidly being expanded owing to various price incentives (eg, electricity price discounts depending upon the amount of ESS use and a hefty discount on electric car battery charge fees if charged from ESS) that have been offered from 2015 to promote ESS. It is also notable that trading electricity stored in ESS was permitted within KPX from 2016, and as more weighted value (4.5 to 5.5 times) is given to the RECs issued in respect of the electricity stored in ESS, there is a lot more interest in the development of solar and wind power renewable energy projects linked with ESS. From January 2017, the installation of ESS has become mandatory for newly built buildings intended for use by public institutions.

Development

21 | Are there any significant hurdles to the development of energy storage projects?

The biggest problem is the market which is immature in general, lacking competitiveness in price than other power resources, and challenging to conduct feasibility analysis because it is difficult to evaluate the level of ESS contribution. However, it is drawing more attention from the market participants because lately a fivefold weighted value is being

given at the time of REC issuance if an ESS is installed in renewable energy power facilities.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

There are no restrictions for any foreign investors to make investment in renewable energy projects, nor do any foreign ownership restrictions exist in relation to renewable energy projects.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

No restrictions are placed on importing any foreign manufactured equipment that pertains to renewable energy. Normally about 8 per cent of the import duties are imposed on foreign machinery and equipment coming into Korea. However, under the current import tariff reduction system applicable to renewable energy-related equipment or machinery in four categories (solar heat, solar power, wind power, fuel cell) that are difficult to be manufactured domestically, tariff reduction up to 65/100 may be possible. It is noted that for the import of any renewable energy equipment from any country with which a free trade agreement has been executed with Korea, no import duties or tariff may be imposed on such equipment on the basis of the terms of the relevant free trade agreement.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

For construction of a renewable energy power plant, the following regulatory requirements need to be satisfied:

- obtaining a generation business licence;
- obtaining land development authorisation and an environment impact assessment;
- reporting of an electric equipment installation plan; and
- obtaining approval for the electric equipment construction plan.

In the meantime, approval by the Minister of MOTIE is required in the case of:

- acquisition of whole or part of a generation business;
- split of or merger with an entity engaged in a generation business; and
- acquisition of shares intended to take over control of a generation business entity with a capacity of 20,000kW or more.

Therefore, transferring or acquiring a renewable energy project with a capacity of 20,000kW or more would require approval from the Minister of MOTIE.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

In principle, electricity is required to be traded through KPX in cases of utility-scale renewables projects with installed capacity of more than 1,000kW. The offtakers in such projects are virtually limited to operators of retail electricity business sanctioned by the government and bulk consumers authorised by KPX since (under the Electric Utility Act) those eligible to purchase electricity from KPX are limited to operators of electric sales businesses and electricity consumers with power-receiving equipment of 30,000kW or more. An operator of an electricity sales business has to obtain the relevant licence in order to purchase electricity from KPX. While there is no explicit restriction on the credit rating of such an applicant, a review of its financial status is included in the criteria for examination.

Currently, the only entity sanctioned to be an operator of electric sales business is KEPCO, a public corporation whose credit rating is AAA. In order for a bulk consumer to purchase electricity directly through KPX, it has to provide a financial guarantee for the price of electricity transaction. The financial guarantee may be provided through a cash deposit or guarantee issued by a bank or a financial institution, etc. The required guarantee amount is 40 times the daily average price of electricity purchased by the consumer. KPX will take necessary measures to effect direct settlement of the outstanding electricity purchase price from the financial guarantee provided by the bulk consumer if the bulk consumer fails to pay the price by the applicable due date, fails to provide the financial guarantee or the financial guarantor falls into credit risk.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

Since most operators of electricity generation business sell electricity through KPX, they can stably sell electricity virtually without any restriction on duration as long as they continue to produce electricity. The electricity is required to be sold through KPX for renewable energy generation projects with installed capacity of more than 1,000kW. While it is possible for a power plant with a capacity of less than 1,000kW to supply electricity through direct execution of a power purchase agreement with KEPCO, among others, it is not usually done because far more time is required for the settlement of prices. Therefore, the contract term with the offtakers is usually not an issue in renewable energy projects.

Ultimately, the issue is fluctuation in the price of electricity sold through KPX. The sale of electricity through KPX is made at the system marginal price, which is determined according to the demand and supply of electricity by the time zone, with the unit price of variable costs of the base generator as the ceiling. The specific terms and conditions of transaction are governed by the Rules on the Operation of the Electricity Market established by KPX pursuant to the Electric Utility Act. Recently, a system was introduced to reduce this risk of price fluctuation where the unit price for sale of electricity and REC unit price are combined to be traded at a fixed price for 20 years (see question 6 for details).

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

For commercial operation of a renewable energy project, in addition to obtaining a generation business licence, a renewable energy producer will need to pass inspection by the Korea Safety Electric Corporation (KESCO), report business commencement and undertake registration with KPX for trading electricity. Other than those, no authorisations are required. And, apart from the sale of electricity within KPX, pursuant to the REC Issuance and Trade Market Operation Rules (a public notice of the New and Renewable Energy Center), if a renewable energy producer wants to sell RECs, the producer is required to obtain certification from the KEA's New and Renewable Energy Center for the generation equipment (after passing KESCO inspection), and then apply to the New and Renewable Energy Center for issuance of the RECs within 90 days of producing electricity that was sold to KEPCO or through KPX.

The New and Renewable Energy Center will not accept any REC application that pertains to any electricity produced that has passed the foregoing 90-day period. It will issue the REC within 30 days of its receipt of the relevant application after ascertaining the amount of generated electricity. The RECs issued can then be traded within the REC market operated by KPX, although the renewable energy producer will need to register with KPX for the sale of RECs at least one month before commencing the sale.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

There are no provisions under renewable energy-related laws in Korea that pertain to decommissioning of a renewable energy project. If, however, a renewable energy project is implemented using mountain areas, generally an EPC contractor is required to make a deposit intended for restoration purposes. This deposit can be submitted in the form of an insurance bond, but it will be returned to the contractor upon completion of the construction.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

In Korea, project financing is common for financing of construction of renewable energy projects with limited recourse to project sponsors. In addition to securing the loans with project assets, project completion guarantee from a sponsor (who has provided equity financing to a project company established for the project) is normally submitted to lenders to secure the risk of construction. In Korea, this completion guarantee is provided by an EPC contractor even if the contractor is not one of the sponsors of the project. Lenders for this type of project financing include banks as well as funds established by financial institutions specifically for investment in renewable energy projects. Sometimes part of the financing may come from government policy loans.

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Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Once the construction of the project is completed, then the construction loan would be switched to a term loan, of which the loan and interest payment would be based on projected cash flows of the project. Limited recourse financing for this loan would include provision of cash deficiency support pursuant to which a sponsor would provide additional funds to the project company (in the form of equity or loan) in cases where the project does not generate enough revenue as expected (especially at the beginning of the operations) and so there are insufficient funds to pay the loan principal and such like.

Mexico

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

Until 2013, the generation, transmission, distribution and marketing of electric power for public utility service purposes in Mexico was exclusively reserved for the federal government, through the Federal Electricity Commission (CFE), a state-owned company of the federal government operating as a vertically integrated monopoly. Private participation was allowed only in the generation and transmission of power not intended to provide public utility services, under six types of permits. However, the Mexican energy sector is now subject to a completely new legal framework, enacted in 2014, following a historic constitutional reform passed and enacted in December 2013, that opened up almost all areas of the oil, gas and power industries to private participation and competition, with no foreign investment restrictions (the Energy Reform).

Over the past 20 years, the federal government fostered the participation of private companies in the electricity sector, particularly in power generation, through its independent power production programme (private independent power producers have a generation capacity of more than 14,000MW, a considerable portion of the growing demand) and self-use power generation projects, as those were essentially the only two schemes that allowed private participation; however, as a result of the Energy Reform, the electric power industry (previously vertically integrated and under the Constitution mostly reserved for CFE) is no longer considered 'strategic', and accordingly, all parties are free to participate except in those activities that have been expressly reserved to the state under the new article 27 of the Constitution (namely, nuclear power, power transmission and distribution as a utility service, and the dispatch and operation of Mexico's National Electric System to be controlled by an independent system operator). CFE is no longer considered a public instrument of the federal government and has been transformed into a 'state productive enterprise', a new form of state-owned commercially oriented company, managed by a board of directors and subject to corporate governance principles.

Moreover, for the electric power sector, the Energy Reform created a completely new industry model based on a competitive wholesale electricity market (WEM) operated by the new independent system operator (ISO), while keeping the state's control and ownership of the National Grid and its exclusivity with respect to power transmission and distribution activities, but with the express possibility of entering into contracts with private parties assisting the Mexican state in the development of such activities (including public–private partnership (PPP0 arrangements). The Energy Reform opened the market to merchant power plants that sell their power in bulk, where the ISO dispatches the system on the basis of cost efficiencies, providing market participants with non-discriminatory access to the grid, which is expected to affect the cost of power to the end user, thereby reducing the price differentials that the industrial and residential sectors currently have with respect to other economies.

The Energy Regulatory Commission (CRE) became the regulator of the midstream and downstream oil and gas industry, and all areas of the electricity industry, which turned the CRE into a powerful and vital part of the Mexican government.

Commercially speaking, the Mexican electricity sector is still divided into two main areas: the electric power public utility service, and the activities in which private participation is allowed. The generation, transmission, distribution and sale of power for public utility service purposes, previously reserved to the federal government through the CFE, is still controlled by CFE. However, as one of the most important and first changes resulting from the Energy Reform, the operational control of the National Electric System (SEN, which encompasses the generation, transmission and distribution facilities used in the provision of electric power public utility services) was assumed by the ISO, namely, the National Centre for Energy Control (CENACE), a governmental instrumentality created as a spin-off of CFE, in charge of operating the SEN and dispatching all the power output generated by the CFE and private generators interconnected with this system, provide open access to all market participants, and operate the WEM.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

Private participation in the Mexican electricity industry is mainly concentrated in those activities where private participation was already allowed prior to the Energy Reform, particularly independent power production (IPP) (private generation facilities aimed at supplying all their capacity and power output to the CFE) and self-supply generation (private generation facilities aimed at supplying power for self-supply purposes to the holder of the relevant self-supply power generation permit and its shareholders). However, as a result of the long-term auctions launched by CENACE during the previous presidential administration, some private renewable projects have been developed under the sole generation scheme.

Nevertheless, private participation has grown significantly in all areas of the electricity industry, now that the WEM has initiated operations, allowing private companies to participate in new areas such as power marketing and even public utility services. The new industry design of the sector, as contemplated in the Electricity Industry Law (LIE), includes:

- private and government-owned generators;
- CENACE, as the independent operator of the SEN and the WEM;

- government-owned transporters and distributors, in charge of providing public utility transmission and distribution services through the national transmission grid and the general distribution grids, all to be spun off from CFE;
- private entities participating in transmission and distribution activities as contractors to the government-owned transporters and distributors, under PPP or joint venture schemes;
- private and government-owned marketers, who may participate in the WEM and represent generators and qualified offtakers;
- private and government-owned suppliers, which are marketers that hold a permit authorising them to provide power supply services (classified as basic supply service, qualified supply service or last resource supply service);
- qualified offtakers, which are large offtakers (above 1MW) entitled to acquire energy directly from the WEM, or from a marketer or a supplier; and
- non-qualified offtakers receiving basic supply services from an authorised supplier.

Definition of 'renewable energy'

3 | Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

The LIE defines 'clean energies' as the energy sources and electricity generation processes whose emissions or waste, if any, do not exceed the thresholds established in the guiding regulations, including electric energy generated from:

- wind;
- solar radiation, in all its forms;
- ocean energy in its various forms: tidal, ocean thermal, wave and ocean currents and salt concentration gradient;
- geothermal reservoirs;
- bioenergy sources, as determined by the Law for the Promotion and Development of Bioenergy;
- methane and other gases associated with waste disposal sites, livestock farms and waste-water treatment plants, among others;
- hydrogen through combustion or used in fuel cells, as long as they meet the minimum efficiency established by the CRE and with the emissions criteria based on the life-cycle analysis established by the Ministry of the Environment and Natural Resources (SEMARNAT);
- hydroelectric plants;
- nuclear power;
- agricultural waste and municipal solid waste, when such processing does not generate dioxins and furans or other issues that may affect health or the environment and meets the Mexican official standards issued by SEMARNAT;
- efficient cogeneration plants and sugar mills that meet the efficiency criteria issued by the CRE and the emissions standards established by SEMARNAT;
- thermal power plants with carbon dioxide capture processes and geological storage having an efficiency that is equal or superior in terms of kWh-generated per ton of carbon dioxide equivalent emitted into the atmosphere than the minimum efficiency set by the CRE and emissions criteria established by SEMARNAT;
- technologies considered as low-carbon technologies in accordance with international standards; and
- other technologies as determined by the Ministry of Energy (SENER) and SEMARNAT, based on the parameters and standards for energy and water efficiency, emissions and waste generation, direct, indirect or life-cycle analysis.

In turn, the Energy Transmission Law (LTE) defines 'renewable energies' as those whose source is based on natural phenomena or materials suitable to be transformed into energy usable by the human being, which are naturally regenerated, and therefore are available continuously or periodically, and do not release polluting emissions when generated, including:

- wind;
- solar radiation, in all its forms;
- the movement of water in its natural course or at artificial dams already existing, with a generation capacity up to 30MW or a density power, defined as the ratio between generation capacity and the area of the dam, in excess of 10 watts/m^2;
- ocean energy in its various forms: tidal, ocean thermal, wave and ocean currents and salt concentration gradient;
- geothermal reservoirs; and
- bioenergy sources, as determined by the Law for the Promotion and Development of Bioenergy.

Framework

4 | What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

Initially, no new statutes were enacted as a result of the Energy Reform to regulate specifically renewable energy sources; however, in December 2015, the new LTE was enacted (and the previous Law for the Use of Renewable Energies and the Financing of the Energy Transition was repealed). This new statute is aimed at promoting the diversification of the energy sources used to generate electricity through the use of renewable energies.

Currently, the following statutes constitute the main regulatory framework applicable to the development, financing, operation and sale of power and clean energy certificates (CELs):

- Federal Constitution;
- LIE and its Regulations;
- LTE;
- the Climate Change Law;
- the Geothermal Energy Law and its Regulations;
- Wholesale Electricity Market Rules and related manuals;
- Guidelines for the issuance and acquisition of CELs;
- the Law of Coordinated Regulatory Bodies for Energy Matters; and
- general administrative provisions, methodologies and other resolutions issued by the CRE (which include, among others, guidelines to determine the rules for the operation of the CELs Management System, as well as the penalties applicable to those entities that fail to secure the required CELs).

SENER determined that the CELs' obligation applicable for 2019 will be 5.8 per cent for those entities identified as obligated entities (e.g. large consumers participating in the WEM, suppliers, and certain generators). The aforementioned obligation will increase to 7.4 per cent in 2020, 10.9 per cent in 2021 and 13.9 per cent in 2022 to comply with an aggressive mandate contemplated under the LTE to generate 35 per cent of Mexico's power from clean sources by 2024.

Stripping attributes

5 | Can environmental attributes be stripped and sold separately?

Yes, CELs may be sold separately from energy and capacity.

CELs are issued by the CRE to new clean energy generators (including all renewable energies), which are entitled to obtain one CEL for each megawatt-hour of electricity that they generate. Special rules

apply to allocate CELs to those clean energy facilities that use fossil fuel within their processes. Those CELs may be sold to large power consumers and suppliers under bilateral contracts, through auctions organised by CENACE, and eventually, through the Clean Energy Certificates Market to be organised by CENACE at least once a year, in the context of the WEM.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

The main mechanism that the Mexican government has chosen to promote clean energies is the requirement imposed on qualified offtakers participating in the WEM that all load-serving entities must acquire CELs representing a certain percentage of their electricity consumption. SENER is the authority in charge of determining the percentage of clean energy that qualified offtakers and other load-serving entities may purchase in the form of CELs (the CELs obligation applicable for 2019 will be 5.8 per cent), which means that these obligated entities shall acquire CELs for at least 5.8 per cent of their total electricity consumption for 2019.

Moreover, the auctions that CENACE has so far carried out have all been directed to clean-energy generators exclusively, as an additional mechanism to both promote the development of clean energy projects and create the conditions to allow the generation from clean energy and the ensuing issuance of CELs, in amounts sufficient to permit qualified offtakers and load-serving entities to comply with their clean energy obligations. Based on the results of the last three auctions called by CENACE, 65 new power plants will be developed within the following three years (40 PV plants and 25 wind farms), which represents an investment of approximately US$8.6 billion. Likewise, the Mexican government intends to carry out a bidding process for the award of geothermal concessions.

With respect to tax incentives for renewable energy projects, the Mexican tax laws contemplate:

- the possibility of applying an accelerated depreciation of the assets used in the generation of electric power based on renewable energy sources;
- exceptions to the thin-capitalisation rules that restrict the ability to deduct, for tax purposes, certain interest payments; and
- the importation of solar panels at reduced or zero per cent import duty rates.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Policies and incentives are generally established at the national level.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

The mechanisms that facilitate the purchase of renewable power by private parties include:

- auctions organised by CENACE, and just recently by private entities where qualified offtakers and private load-serving entities may join as purchasers of either capacity, energy or CELs;
- the ability of large qualified offtakers to enter into bilateral contracts with generators and marketers to acquire capacity, energy and CELs;
- the promotion of distributed generation projects through the implementation of favourable regulation, and investments to identify the most suitable financing scheme to promote these projects; and
- the ability of private parties to produce renewable energy for their own consumption and sell their excess power through the WEM.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

An important regulation that is pending concerns the rules for the functional separation of activities in the energy sector, including the electricity and the oil and gas industries. These rules will regulate the way entities involved in the different segments of these two industries shall implement the functional separation of their various business segments in order to avoid improper practices affecting the efficient development of the market. The functional separation rules are important to contain the market power of the larger participants, CFE and Pemex and, at the same time, give newcomers clearer rules to properly structure their business strategies and operations. Likewise, the government is in the process of setting the rules that will apply to carry out storage activities.

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

The main drivers of change in the Mexican renewable energy market have been the new legal framework that came into effect as a result of the Energy Reform, the long term auctions called by CENACE, the Mexican government's commitment to promote the sustainable development of renewable energy projects in order to comply with the emission reduction and renewable power generation commitments and goals it has assumed, both at the international level and under its own domestic laws, and the increasing cost efficiency of renewable energy. Just lately, the prices offered by developers in the long-term auctions called by CENACE and the reductions in the development and construction costs of the projects have also been critical for the Mexican renewable energy market.

Disputes framework

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

The legal framework applicable to disputes between renewable power market participants mainly depends on the parties involved. If the relevant dispute arises between CENACE and the market participants (ie, producers, suppliers, users, transporters or distributors) or any market participant and transporters or distributors, the Market Rules and the Dispute Resolution Manual shall apply. However, if the dispute arises exclusively between market participants (other than transporters and distributors), such entities are entitled to freely agree on the applicable mechanism. For instance, they may decide to resolve disputes in terms of the aforementioned legal instruments or to use commercial or civil laws, or any other alternative dispute resolution mechanism.

On one hand, if the dispute arises between CENACE and the market participants, the claim shall be filed before CENACE. CENACE will have a term of 10 business days, once the claim has been admitted, to resolve the dispute. CENACE's resolutions may be challenged before the CRE,

which is the agency with the authority to issue a final resolution. On the other hand, if the dispute arises between market participants, and such participants agree, to resolve disputes in terms of the Dispute Resolution Manual (the Manual) and the Market rules, the process will be as follows:

- neither CENACE nor the CRE shall be involved;
- the involved parties shall first try to solve the dispute through a mediation process. The mediator will be appointed between the parties. The terms and conditions applicable to the mediation process are contemplated in the Manual;
- if the parties do not reach an agreement through the mediation process, the dispute will be submitted to an experts' panel. The CRE will prepare and maintain a list of acknowledged experts for this purpose;
- neither the resolution obtained through the mediation nor the resolution issued by the experts is mandatory for the parties; and
- if the dispute remains, the parties shall commence an arbitration process or the corresponding judicial process (depending on the nature of the dispute and terms agreed between the parties).

Owing to the fact that the WEM commenced operations early in 2016, up to this date, only some disputes between market participants and CENACE have been handled through the aforementioned mechanisms.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 | Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

Before the Energy Reform, utility-scale projects were specifically contemplated in the laws as small-scale and independent power producer projects. The small-scale projects shall not exceed, by law, an installed capacity of 30MW, and the PPAs signed under this scheme were negotiated directly between the producer and CFE using a pre-approved form. The IPP projects have no cap on their capacity but the PPA shall be awarded as a result of a public bid called by CFE. The PPA signed between the producer and CFE under the IPP scheme was also a form, but could be revised through the clarification meetings carried out as part of the bidding process.

The IPP projects developed were mostly associated to wind farms, while small-scale projects mostly relate to PV projects. As the small-scale projects needed to satisfy certain requirements to maintain such status (which include, among others, the need to carry out a minimum investment percentage), most of them have been either terminated or migrated to the new regime.

Development issues

13 | What types of issues restrain the development of utility-scale renewable energy projects?

As a result of the deregulation of the energy market in Mexico, there are no special regulations applicable to utility-scale projects. For instance, long-term PPAs were replaced with hedging agreements, which are awarded through CENACE's auction process. All interested producers and load-serving entities may participate in the auctions, as sellers and purchasers, respectively.

HYDROPOWER

Primary types of project

14 | Describe the primary types of hydropower projects that are prevalent.

Hydropower projects in Mexico have been mainly developed under a conventional scheme, which considers the construction of a dam that will be used to store water in a reservoir. The installed capacity for existing hydropower projects is mainly concentrated in the western and south-western regions of the country. The Mexican government, jointly with CFE, has been exploring the possibility of developing offshore hydropower projects in the Baja California peninsula by using the power of waves to generate electricity from seawater.

Based on the statistics provided by the government through the Renewables Energy Prospective 2018–2032, hydropower is the largest source of renewable energy in Mexico. By the end of 2017, there were 85 hydropower plants with an installed capacity of 12,642 MW. Most of the existing power plants (almost 70 per cent) are owned by CFE and used to satisfy the increasing demand of users in Mexico. While there are some plants owned by private entities through the self-supply scheme, such plants are used to supply private offtakers through PPAs agreed between them. The projects owned by CFE were mostly developed by third parties as a result of a bid awarded to them.

Legal considerations

15 | What legal considerations are relevant for hydroelectric generation in your jurisdiction?

The legal framework applicable to hydropower projects in Mexico is generally the same as such applicable for any other power project. However, owing to the fact that (i) national resources are exploited, (ii) works are constructed within national water bodies, and (iii) most of the projects are developed within the coastline or within real property subject to public domain, developers shall consider that some additional permits and authorisations will be required from the National Water Commission or from SEMARNAT. The authorities granting the aforementioned permits may take some time to complete their evaluation since, in some cases, it requires granting a governmental concession for the use of land. Therefore, permit planning and continuous communication with the authorities will be critical for developers. In addition, the Market Rules include some specific planning and dispatching provisions for hydroelectric power plants.

DISTRIBUTED GENERATION

Prevalence

16 | Describe the prevalence of on-site, distributed generation projects.

The distributed generation concept is relatively new for the Mexican energy sector. The regulatory framework that existed for distributed generation projects prior to the Energy Reform was not very clear on the associated benefits, costs and requirements. Despite the aforementioned obstacles, there are some projects either developed or being developed under this scheme, and so the distributed generation in Mexico has increased significantly in recent years. By the end of 2018, there was an installed capacity of up to 282MW of distributed generation.

The existing distributed generation projects include both projects owned by third parties that sell energy to end users and projects that are owned, operated or maintained by end users. Most of the existing projects were developed to satisfy the demand of a group of industrial facilities within an industrial park, a group of residencies within

a major residential development or to offices in buildings. While some of the existing projects are connected to the distribution system, owing to the technical difficulties that this represents, some of them are not connected to the grid. Most of those connected to the distribution system use net metering, since it was the only mechanism allowed before the enactment of the LIE.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

The source mostly used for distributed generation projects is solar (98 per cent). In addition, there are some limited projects using biogas and biomass. Prior to the Energy Reform, these types of projects were developed through a small-scale or self-supply scheme. However, the current legal framework allows third parties to develop different schemes to sell energy through distributed generation projects, such as leases and virtual plants, among others. In order to qualify as distributed generation, electricity shall be generated by a power plant that is not required to obtain a generation permit (capacity below 0.5MW) and is directly connected to a distribution network with high load concentration. Distributed generation projects may be owned and developed directly by users or by third parties, to the extent that the energy is produced and consumed in the facilities of the end users.

Unless distributed generators intend to have a direct participation in the WEM (in which case they shall obtain a generation permit and waive their status of distributed generators), projects developed under this scheme do not require a generation permit from the CRE. Distributed generators are entitled to decide whether they wish to adopt a net metering or net billing consideration scheme.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

SENER and the CRE acknowledge the benefits that the development of microgrids will bring to small communities and rural areas in the country; however, detailed regulation on this matter is pending. Up to this date, the market rules contemplate a chapter setting general provisions for small systems (which include microgrids), but a manual on this matter is to be released by SENER within the following months.

Early this year, the CRE issued a regulation in order to set the rules for end users to sell energy to other end users. Although this regulation may be used for all schemes, it is expected to mainly promote the development of distributed generation projects, as it will allow a single entity to act on behalf of a number of end users to acquire the generated energy from a generator, and in turn, sell it to other end users (eg, industrial parks, residential areas).

Other considerations

19 What additional legal considerations are relevant for distributed generation?

The participation of distributed generators in the WEM will be subject to the reduction of the net demand of load serving entities, and therefore, to the obligations assumed by such entities. In this case, the consideration that distributed generators will be entitled to receive will depend on the status of the entity that acquires the relevant power as follows: if the energy is acquired by basic suppliers, such buyers shall pay a market value consideration determined by the CRE; on the other hand, if qualified suppliers acquire energy from distributed generators, the price of such transactions may be freely agreed among the parties thereto. The CRE has issued certain administrative provisions identifying the applicable models for CFE to acquire the excess energy generated by distributed generation projects, as well as the methodology to calculate the applicable consideration; however, as a result of CFE's lobbying and a number of judicial strategies, there is a proposal to replace such models and rules in order to revise the scope of CFE's obligations and the existing methodology.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

To date, only batteries are used in Mexico to store energy. The existing storage equipment is mainly installed in rooftops. However, there are no significant projects.

Regarding the applicable legal framework, certain administrative resolutions have established a number of limited provisions regulating individual energy storage equipment and energy storage equipment associated to distributed generation facilities represented in the WEM by basic services suppliers. However, despite the existence of certain drafts of legal instruments to approve the products and services that industry participants undertaking energy storage activities will be entitled to offer to the WEM, nothing has been formally issued. Therefore, there is still uncertainty for the implementation of this type of projects.

Development

21 Are there any significant hurdles to the development of energy storage projects?

The market guidelines include limited provisions applicable to energy storage. In fact, such provisions are limited to references to 'energy storage equipment' and are silent with respect to other types of technologies, such as ice or molten salt energy storage, hydrogen storage, thermal energy storage, among others.

The Energy Transition Strategy to Promote the Use of Clean Technologies and Fuels provides, as part of the government's strategies, the creation of a group of entities supporting the development of new storage technologies.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

There are no foreign investment or ownership restrictions applicable to renewable energy projects.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

Some of the equipment typically used in the production of renewable energy is subject to import duties and taxes, which may vary substantially depending on whether the equipment is manufactured or not in one of the many countries with whom Mexico has entered into free trade agreements. However, the Mexican government has established exemptions and specific programmes to allow the import of such equipment at reduced rates. For instance, the importation of solar panels is generally subject to a 15 per cent ad valorem duty. This

duty has been highly debated over the past few years, and as a result of the lobbying efforts of renewable energy industry associations, the Mexican authorities have allowed solar power companies to become registered as beneficiaries of the Sector Promotion Programme, which allows them to import solar panels at a zero per cent duty.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

In order to commence construction works, developers shall obtain:

- SENER's authorisation of the project's social impact assessment;
- SEMARNAT's environmental impact authorisation;
- change of forest land use authorisation;
- clearance from the National Institute of Anthropology and History;
- clearance from the National Water Commission; and
- local land use and construction licences.

In addition, it is advisable to obtain the interconnection studies from CENACE in order to be clear about the feasibility and cost to interconnect the project to the National Electric System.

The authorisations required to transfer or acquire a renewable energy project will depend on the structure of the transaction and the value of the assets. For instance, the transaction may require clearance from the antitrust agency (COFECE), the Energy Regulatory Commission or authorisations from other agencies for the assignment of the existing permits or rights (if the transaction is focused on the acquisition of assets).

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

The available arrangements depend on the type of offtaker. Basic offtakers (those with a demand below 1MW) are only entitled to purchase energy from basic suppliers (by the end of 2018, in addition to CFE, three private entities hold a permit to act as basic supplier) based on a regulated rate determined by the CRE. Qualified offtakers (those with a demand equal or above 1MW) may either purchase electricity and products from a qualified supplier or directly participate in the WEM. If such off-takers decide to participate in the WEM they may participate in the day short-term market or purchase energy through medium or long-term hedging agreements, either awarded as a result of an auction process or directly negotiated.

Offtakers participating in the WEM are required to satisfy certain capital requirements and to post a number of guarantees supporting their activities as market participants. However, there is no sovereign or third-party credit support available to support the payment obligations.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

There are three options available to enter into long-term purchase agreements:

- A non-market participant qualified offtaker may agree with a qualified supplier to enter into a long-term agreement. Under this structure, the tariffs are agreed between the parties.
- The qualified offtaker may become a market participant and either enter into a hedging agreement directly with a producer or a supplier, or participate in the long-term auctions launched by CENACE. If participating in the auction, such offtaker will be entering into a long-term hedging agreement with the clearing house, which will in turn have an executed hedging agreement with the producer. The tariffs will be determined by CENACE depending on the offers made by sellers.
- Transitory provisions of the LIE provide that those offtakers receiving electric energy supply before the enactment of such LIE were entitled to maintain their condition as basic offtakers (despite the amount of their consumption). These 'grandfathered offtakers' may enter into PPAs with producers holding a grandfathered project.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

The most critical government authorisations required to operate are, among others:

- the authorisation from CENACE to interconnect the project to the SEN;
- environmental impact authorisation;
- the generation permit;
- the registration as market participant before CENACE; and
- the municipal operation licence.

Failure to obtain any of the above may result in the facility's closure, suspension of activities or the imposition of fines. Note, however, that, depending on the type of technology, some additional critical permits may be required for operation.

In addition to the above, owing to the restrictions contemplated in the LIE to sell the energy generated in the producer's power plants directly to end users (unless such end users have been registered as market participants and the transaction occurs within the WEM), a structure that considers adding a supplier to the equation shall be considered. This supplier shall obtain a supply permit from the CRE and shall become a market participant.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

Except for the conditions imposed by SEMARANT in the environmental impact authorisation and those determined by CENACE, jointly with CFE, for the interconnection of the project to the SEN, there are no legal requirements for the decommissioning of renewable energy projects.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

Renewable energy projects have access to a variety of financing schemes in Mexico. Depending on their size and characteristics, projects may be eligible to limited-recourse project finance schemes offered by multilateral agencies, export credit agencies and Mexican development banks, which often work in combination with domestic and foreign commercial banks. Corporate loans are also an alternative for smaller projects being developed by financially strong developers.

Likewise, private equity funds are also very active in the Mexican renewable energy market, offering developers access to equity and debt financing schemes.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Bank loans and private equity funds are more customary options to finance operating renewable energy projects in Mexico. Recently, the federal government has announced its intention to implement a programme that would allow end users to have access to distributed generation by accessing loans that will be mainly guaranteed by the national development bank.

Just recently, to promote access to clean technologies for micro, small and medium scale companies, a Mexican development bank, along with the Ministry of Energy and a private association created a program to allow such entities to acquire and install solar PV systems interconnected under the distributed generation scheme.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

As of 1 December 2018, a new administration leaded by President Andres Manuel Lopez Obrador, commenced the implementation of a number of changes in the energy industry, which are reorienting the Mexican government's policies for the energy sector. Most of the changes approved so far, through either resolutions, decrees, or changes in the officers leading the independent regulatory agencies, show the new administration's interest in reaching independence from energy imports and a more state-led approach for the development of energy resources.

With respect to the renewable energy sector, the fourth long-term auction scheduled for 2018 was 'postponed on an indefinitely basis', and no new auctions seem to be in the new administration's agenda. As a result, some private industry players have announced their intention to launch a private auction process, which, despite being allowed under the existing legislation, may be a challenging task. Likewise, the bidding processes called for the development of transmission infrastructure, which is critical to add new capacity in certain areas where wind and solar resources are significant, were cancelled; thus, a material impact on the ability to install renewable projects in isolated areas may also affect the development of these type of projects.

Despite the situation described above, the industry participants are still obligated to satisfy a number of minimum requirements related to supply, power and clean energy obligations, which will be critical to anchor the installation of new projects. In addition, owing to the lack of transmission infrastructure, the energy regulator is trying to provide more clear rules for the development of isolated supply projects and for the sale of electricity from an end user to other end users.

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Legislative proposals

32 Describe any notable pending or anticipated legislative proposals.

New resolutions or legal instruments are expected mainly for distributed generation, storage, and potentially, on CELs (for clarification on the expected obligations).

First, the CRE has issued the draft of the resolutions approving the contract model for suppliers of basic services and the methodology to calculate the consideration applicable to collective distributed generation. This resolution intends to set the rules, terms and conditions that will apply when an 'exempted producer', who is supplying electricity to a group of 'load points'.

On electricity storage, the CRE submitted the draft of a resolution approving the products and services that industry participants undertaking energy storage activities may offer to the WEM, as a way to provide certainty for the implementation of this type of projects. Under the proposed resolution, the CRE confirms that industry participants may undertake energy storage activities, which shall be subject to the requirements set forth under the applicable legal and regulatory framework for their interconnection and operation within the SEN.

Finally, the CRE has issued a resolution to calculate the aggregate amount of CELs available to satisfy the clean energy obligations imposed to the obligors, along with the methodology to calculate the price of the existing CELs. As a result of such calculation, the CRE may resolve to announce the need to apply the flexibility mechanism, which basically acknowledges the right of the obligors to delay 50 per cent of their obligations for a period of up to two years.

Nepal

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

The Ministry of Energy (MoE) is responsible for establishing and implementing policies related to the development of Nepal's energy resources, the regulation of the energy sector, and the conservation and use of energy. The Department of the Electricity Authority (DoED) is a division within the Ministry of Energy that issues the licences and approvals that are required in connection with the generation, transmission and distribution of electricity in Nepal. Note, however, that the Investment Board of Nepal has jurisdiction over the issuance of licences and approvals in relation to hydroelectric projects with a capacity in excess of 500MW.

The rates paid by end users are established by the Electricity Tariff Fixation Committee (ETFC), which is an independent regulatory body established by statute.

The Nepal Electricity Authority (NEA) is a vertically integrated utility that generates, transmits, distributes and supplies electricity. It owns and operates the national transmission system and the distribution systems that are connected to and supplied by the transmission system. Private sector participants also generate electricity, which they sell to the NEA under power purchase agreements.

Two pension funds – the Employees Provident Fund and the Civil Investment Fund – are active in funding the development of power projects through their debt and equity investments.

The government recently enacted legislation to constitute an Electricity Regulatory Commission. The Commission will be an economic and technical regulator that will, among other things, be responsible for approving the prices for capacity and energy that are payable under power purchase agreements and for setting the tariffs that are paid by end users. The government is in process of forming the Commission. The Commission will replace the ETFC.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

The principal private sector participants are independent power projects (IPPs), the developers that develop them, and the banks and other lenders that provide construction loans to fund the development and construction of IPPs.

Several cooperatives organised by communities that are not served by the NEA have been formed to develop, operate and maintain micro-hydro projects and microgrids that have been funded by various development grants.

In terms of lenders, Nepalese banks and financial institutions have made a considerable number of loans to hydropower projects. Nepal Rastra Bank (NRB), which is the central bank of Nepal, has issued directives requiring all banks and financial institutions that operate in Nepal to lend a designated percentage of their newly originated loans to hydropower projects in Nepal. These obligations are enforced with penalties levied on financial institutions that fail to comply with these directives.

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

Hydro, solar and wind power are considered to be renewable or clean energy. However, there is no specific legal definition for renewable energy.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

The MoE issues survey licences, which grant the holder thereof the exclusive right to conduct feasibility studies and environmental impact assessments for renewable energy projects in a designated licence area. Survey licences may have a term of one year or two years depending on the size of the project. They may be extended for a maximum term of up to five years at the discretion of the MoE.

The MoE also issues generation licences, which grant a concession to the holder thereof to construct, operate and maintain a generation facility on a build, own, operate, transfer model. Generation licences may have a term of up to 30 years.

If the construction of a transmission line to connect a generation facility to the NEA's transmission system is necessary, then the project company will need to apply for and obtain a transmission licence. Licences for these types of connecting transmission lines are co-terminus with the corresponding generation licence.

A concession agreement can be signed with the government if required by the developers or international lenders. Locally sourced financing does not require a concession agreement, but local debt markets do not have the depth to provide the quantity of financing or the tenors that are required to finance large IPPs.

Upon completion of the concession period, the project will be transferred to the government at no additional cost to the government. In most cases, however, the power purchase agreements entered into by the NEA have a term of only 25 years from and after the commercial

operations date. No private project has completed the initial period of 25 years.

Stripping attributes

5 | Can environmental attributes be stripped and sold separately?

There is no market in Nepal for the sale of environmental attributes.

Government incentives

6 | Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

The government has offered income tax exemptions (tax holiday) for a period of 10 years from and after the commercial operations date and a 50 per cent exemption thereafter for five years, provided that a developer achieves commercial operations on or before 12 April 2024. The government has also offered a VAT refund of 5 million Nepalese rupees per megawatt for those who achieve commercial operations by that date.

Establishing policies and incentives

7 | Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

All energy policies, including those that relate to renewable energy, are established at the national level.

Purchasing mechanisms

8 | What mechanisms are available to facilitate the purchase of renewable power by private companies?

There is no legal impediment to the development of on-site generation projects other than obtaining a generation licence and building and similar permits.

Legislative proposals

9 | Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

An electricity bill that would replace the electricity act that is currently in force has been before Parliament for some time with little progress. The main objective of the bill is to establish clearer procedures for the licensing of generation projects.

Drivers of change

10 | What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

The two biggest drivers of change are the continuing development of microgrids that are powered by micro-hydro projects or small-scale solar arrays, and the continuing extension of the NEA's transmission and distribution systems to areas that are now underserved.

Disputes framework

11 | Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

The power purchase agreements the NEA enters into typically contain arbitration provisions. Nepal is a contracting party to both the New York Convention and the Washington Convention.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 | Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

Almost all the generation capacity in Nepal is available from hydroelectric projects. Most of these projects are run-of-river (RoR) projects with little or no capacity to store water in a reservoir. The government has, however, realised that there is tremendous potential for the development of large-scale hydroelectric projects with sizeable reservoirs that can be used to store water to reduce seasonal variations in the availability of generation capacity.

Although developers have shown an interest in developing wind and solar projects, they do not yet seem to be cost-competitive given the abundant hydro resources with which Nepal is blessed. We expect the continuing fall in the price of photovoltaic solar to result in rapid change.

Development issues

13 | What types of issues restrain the development of utility-scale renewable energy projects?

The biggest challenges for renewable energy projects in Nepal are:

- the lack of transmission infrastructure and the inability of the NEA to fund the development of the transmission lines that are necessary to connect new projects; and
- the lack of depth in local lending markets combined with the unwillingness of the NEA to enter into power purchase agreements with tariffs denominated in hard currencies and the swift and uneven depreciation of the Nepalese rupee against hard currencies.

The government has attempted to address currency-related issued by encouraging the NEA to pay for electricity in hard currency for the first 10 years from and after the date on which a project achieves commercial operations. The implementation of this policy would, however, effectively limit the tenor of loans denominated in foreign currencies to 10 years. As a result of this and other challenges, this policy has not yet resulted in the development of a project benefiting from a power purchase agreement with a tariff denominated in a foreign currency. The government intends to establish a fund that would have the ability to enter into currency hedges with governmental authorities (such as the NEA) and government-owned and government-controlled companies with significant payment obligations that are denominated in foreign currency. The NEA has indicated its intention to limit its exposure to power purchase agreements with capacity, energy and other payment obligations that are denominated in foreign currencies to those payment obligations that are hedged by the fund.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

Most hydropower projects that are currently in operation are RoR projects. A few of them of them do have storage reservoirs. Earlier all power projects were owned by the NEA. However, in recent years, a considerable number of private developers are also engaged in developing small hydropower projects. The projects owned by the NEA are wholly owned by the NEA. However, in the private projects, 30 per cent of the shares in the project company are floated to the general public, including project-affected people and employees of the developer.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Approvals and clearances are the big challenges for developers. Approvals from multiple government authorities are required to complete feasibility studies and environmental impact assessments and begin construction. A lack of coordination between the authorities has been identified by developers as a constraint on the development of projects.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

Net metering is not practised in Nepal. The NEA has a programme in place to buy excess power from sugar plantations, but this programme has not been put into practice.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

Not applicable.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

Unfortunately, no incentives have been made available to date.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

None.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

There are no energy storage projects in Nepal.

Development

21 Are there any significant hurdles to the development of energy storage projects?

The legal framework that would be necessary to support these types of projects has not been developed.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Yes, foreign investors can invest in renewable energy projects in Nepal, and investment in renewable energy projects by foreign investors has increased significantly in recent years. There is no restriction on foreign investment in renewable energy projects.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

No specific restrictions are in place.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Project licences (survey licence for generation of power, survey licence for transmission of power), generation licences or construction licences for the transmission of power are the main authorisations required for investors.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

The NEA is currently the only utility-scale offtaker in Nepal.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

The tariff that is payable by the NEA under power purchase agreements is established as a feed-in tariff for all projects with a capacity of less than 100MW. For projects over 100MW, the NEA procures power purchase agreements through direct negotiations. The NEA has determined that it will not pay rates that will result in a projected equity internal rate of return in excess of 17 per cent.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

The obtaining of the aforementioned licences is all that is required.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

There is no provision for the decommissioning of projects. This is an outgrowth of the extremely long expected lifetime for hydroelectric projects.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

Bank loans.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Bank loans.

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MARKET FRAMEWORK

Government electricity participants

1 | Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

Prior to the enactment of the Electric Power Sector Reforms Act in 2005 (EPSR Act), the electricity sector was state owned and operated through a monopoly known as the National Electric Power Authority (NEPA). In May 2005, it was restructured along the lines of generation, transmission and distribution under a holding company called Power Holding Company of Nigeria (PHCN) and subsequently unbundled into successor companies of six generation, one transmission and 11 distribution companies (DisCos). The EPSR Act also provided for the establishment of the various government participants in the electricity sector. The Nigerian Electricity Regulatory Commission (NERC) was set up as a transparent and independent regulator of the sector. NERC undertakes the role of technical and economic regulation of the electricity sector. Its functions include promoting competition and private sector participation, when and where feasible; licensing and regulating persons engaged in the generation, transmission, system operation, distribution and trading of electricity: approving amendment of the market rules and monitoring the operation of the electricity market. In specific relation to renewable energy, NERC issues generation licences to applicants in renewable energy, and administers and implements preferential tariffs (eg, the MYTO feed-in tariffs) and issues orders or regulations to govern the market.

The Nigerian Bulk Electricity Trading Plc (NBET), also known as the 'bulk trader', is a government-owned public liability company. NBET was set up to engage in the purchase and resale of electric power and ancillary services from independent power producers and from the successor generation companies. It is the offtaker of electricity in the electricity market. NBET enters into and executes power purchase agreements (PPAs) with power generating companies and resale power to DisCos through vesting contracts. NBET was created primarily for payment guarantee assurance to generation companies for electric power sold to DisCos.

The Transmission Company of Nigeria (TCN) houses three transmission functions, which include the market operator, system operator and the transmission service provider. The system operator is responsible for system planning, dispatch, grid discipline and operation of the transmission system. The market operator is the operator of the wholesale electricity market and is responsible for market settlement and administration of metering systems. The transmission service provider oversees the development and maintenance of the transmission infrastructure. It is responsible for the national interconnected transmission system of substations and power lines and for providing open access transmission services.

In specific relation to renewable energy, the TCN is responsible for determining grid availability and locations for renewable energy evacuation for megawatts (MW) targets and subsequently entering grid-connection agreements with generation companies.

Other agencies of government that perform roles in relation to renewable energy include:

- the Federal Ministry of Power, Works and Housing (FMPWH) plays a role in initiating, formulating, coordinating and implementing broad policies and programmes promoting the development of electricity generation from all sources of energy;
- the Federal Ministry of Environment plays a secondary role as it has no direct mandate in the power sector. However, it prepares policies for environmental impact assessment for developing projects and approves the environmental and social impact assessment report;
- the Federal Ministry of Water Resources (FMWR) formulates national water resources policies towards ensuring adequate water supply for agricultural, industrial, recreational, domestic and other uses. It develops programmes and policies towards surface water storage schemes and guiding principles for dam construction nationwide. In relation to renewable energy, the FMWR plays a role in hydro development (eg, dam construction, hydrological activities, etc). Currently, the FMWR undertakes civil works on hydropower stations in cooperation with the FMPWH;
- the Energy Commission of Nigeria (ECN): the role of the ECN is mainly research, data gathering and coordination. The commission promotes the use of renewables and alternative energies via research, pilot project and strategy development;
- the Rural Electrification Agency (REA), whose core function is to coordinate rural electrification activities in Nigeria and to manage the rural electrification fund. Until recently, the REA has been implementing electrification projects on its own with a focus on grid extension. However, in recent times, the agency has broadened its scope to include the deployment of off-grid renewable energy systems to accelerate the pace of development; and
- the Nigerian Electricity Management Services Agency (NEMSA) was set up to carry out the functions of enforcement of technical standards and regulations, technical inspections, testing and certification of all categories of electrical installations, electricity meters and instruments for the efficient production and delivery of safe, reliable and sustainable power supply in Nigeria.

Private electricity participants

2 | Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

The privatisation of the power sector led to increased private sector participation and competition. The federal government through its

agencies utilised various privatisation strategies to divest its interest to core investors – for the two hydro companies, a long-term concession contract; for the four thermal companies, 100 per cent share sale; for the 11 DisCos, 60 per cent share sale; and up until July 2016, a management contract for the transmission company. The principal private participants are the generation companies and DisCos.

The six successor generation companies created following the unbundling of PHCN are Afam Power plc; Egbin Power plc; Kainji/Jebba Hydro Electric plc; Sapele Power plc, Shiroro Hydro Electric plc; and Ughelli Power plc. The companies generate electricity in accordance with the provisions of their licences and the EPSR Act.

Prior to the privatisation process, some independent power producers (IPPs) owned electric power plants. They include Afam VI managed by Shell, Okpai operated by Nigerian Agip Oil Company, Ibom Power Plant, NESCO and AES Barges.

The 11 DisCos are Abuja Distribution plc; Benin Distribution plc; Eko Distribution plc; Enugu Electricity Distribution plc; Ibadan Distribution plc; Ikeja Distribution plc; Jos Distribution plc; Kaduna Distribution plc; Kano Distribution plc; Port Harcourt Distribution plc; and Yola Electricity Distribution plc. They distribute electricity in line with the provision of their licences and the EPSR Act.

It is worth noting that there has been a lot of investment by the private sector in power generation. Pertaining to renewable energy, most of these investments have been off-grid (with quite a number of mini grids), with the limited capacity of the national grid making them viable means of providing energy in Nigeria. Authorisations and permits are continually being issued to more IPPs.

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

The National Renewable Energy and Energy Efficiency Policy (NREEEP) defines renewable energy as energy obtained from energy sources whose utilisation does not result in the depletion of the earth's resources. Renewable energy also includes energy sources and technologies that have minimal environmental impact, such as less intrusive hydros and certain biomass combustion. These sources of energy normally will include solar energy, wind, biomass, small and medium-sized hydro, geothermal, tide and wave energy.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

The National Electric Power Policy 2001 outlines the framework for power sector reforms in Nigeria. The EPSR Act provides the legal and regulatory framework for the sector. It is the principal law for the regulation of the sector. The fundamental change it birthed was the privatisation of the government-owned electricity company and the process towards a completely liberalised market. The Act encouraged promotion of electricity generation from all sources of energy, including renewable energy by mandating NERC to create a level playing field in the Nigerian electricity market. The Act provides for licensing by NERC for any electricity generation of 1MW and above.

The Environmental Impact Assessment Act makes it mandatory for an EIA to be conducted on projects that are likely to have significant effect on the environment. A power developer who wishes to generate power through the use of renewable energy must submit an EIA report to National Environmental Standards and Regulations Enforcement Agency (NESREA). In obtaining a generation licence from NERC, the EIA approval certificate must be submitted to NERC

NREEEP outlines the global thrust of the policies and measures for the promotion of renewable energy and energy efficiency. It seeks to bring to the attention of policymakers the economic, political and social potential of renewable energy. It also recognises the multidimensional nature of energy and addresses diverse issues such as renewable energy supply and utilisation; renewable energy pricing and financing; legislation, regulation and standards; energy efficiency and conservation; renewable energy project implementation issues; research and development; capacity building and training; gender and environmental issues; planning and policy implementation. This policy on renewable energy and energy efficiency sets out a framework for action to address Nigeria's challenge of inclusive access to modern and clean energy resources.

The Regulations on Feed-In Tariff for Renewable Energy Sourced Electricity in Nigeria (REFIT) provide the tariff framework for renewables. The Regulations apply to renewable energy sourced from wind, hydro, biomass and solar PV with a capacity of between 1MW and 30MW that is connected to the grid or the distribution networks. The REFIT set a target generation output cap from renewable sources at 2,000MW by 2020. The DisCos and NBET are obligated to purchase the power on a 'must buy' basis, thereby providing priority grid access to renewable generators. The projects that exceed the threshold provided by REFIT are to be procured by the bulk trader (NBET) through competitive tendering.

NERC Mini Grid Regulations (2017) aims to accelerate electrification in served and unserved areas but this is not limited to rural areas. The regulation is limited to distributed power of less than 100kW up to 1MW.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

Environmental attributes are currently not stripped and sold separately in Nigeria.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

In recognising the need and value of electric power generation to grow the economy, the government has made certain incentives available in the form of tax reliefs for electricity generation, which also cover renewable projects. These include the Industrial Development (Income Tax Relief) Act geared at attracting foreign investment to Nigeria, where eligible companies can be issued with pioneer status certificates. Therefore, companies involved in independent power generation using gas, coal and renewable energy sources can be conferred with pioneer status, which exempts them from payment of income tax for between three and five years.

The incentives under NREEEP include:

- tax incentives to manufacturers of renewable energy and energy efficient equipment and their accessories to promote widespread use including a five-year tax holiday for manufacturers from the date of commencement of manufacturing; and a five-year tax holiday on dividend income from investments on domestic renewable energy sources; and
- incentives for importers to offer energy-efficient appliances and lighting through exemption from excise duty and sales tax; custom duty rebate for two years on the importation of equipment and

materials used in renewable energy and energy efficiency projects; and provision of soft loans and special low-interest loans from the power sector development fund for renewable energy supply and energy-efficiency projects.

In order to promote renewables the government has over the years drawn up a number of policies.

Renewable Electricity Action Programme 2006
The main focus of this document is utilising all forms of renewable energy sources for electricity generation. It highlights potential gaps, technical assessments and the financial implications of utilising renewable energy and looks at the general overview of the potential for renewable energy technologies, and potential markets, elaborating on the development targets per technology, application and strategies for achievement. It sets out a roadmap for the implementation of the Renewable Electricity Policy Guidelines 2006.

National Biofuel Policy and Incentive 2007
This is meant to support a biofuel programme, with the aim of integrating the agricultural sector of the Nigerian economy, as a means of improving the quality of automotive fossil-based fuels in Nigeria.

NREEEP
NREEEP consolidates the objectives of the Renewable Energy Master Plan (REMP) 2005 and Renewable Energy Policy Guidelines 2006. It is a document developed by the Federal Ministry of Power in 2013 and 2014 and was approved by the Federal Executive Council in 2015 with the objective of developing power generation through renewables and energy efficiency capacity by 2020.

Rural Electrification Strategy and Implementation Plan (RESIP)
This is a follow-up to the Nigerian Rural Electrification Policy. The primary objective is to expand access to electricity as rapidly as possible in a cost-effective manner through the use of both grid and off-grid approaches from renewable and thermal sources in rural areas.

Building Energy Efficiency Code 2017
The national Building Energy Efficiency Code is a set of minimum standards for energy-efficient building in Nigeria. The objective is to reduce energy costs and wastage, and conserve available energy for utilisation where and when necessary in various homes, companies and public buildings.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

The 1999 Constitution of the Federal Republic of Nigeria places electricity generation, transmission and distribution on the Concurrent Legislative list. This allows both the federal and state legislature to make policies to promote the electricity sector. Though electric power falls under the concurrent list shared between the federal and state governments, the delineation of powers is not clear-cut. The existing policies and incentives have been established at national level.

However, state governments play a major role in land acquisition to private investors looking to establish power projects in the state. The key aspects to their role are for acquisition of land, consent for land usage and right-of-way surveys and assessments.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

There are no specific mechanisms to facilitate the purchase of power by private companies. Prior to the Eligible Customer Declaration, the end user could not enter into a direct PPA to purchase on-grid power directly from generation companies. On 19 May 2017, the Minister of Power invoked the Eligible Customer Declaration in accordance with section 27 of the EPSR Act. The eligible customer is defined in the Act as a user customer who is eligible to purchase power directly from a licensee of NERC, other than a DisCo. In other words, once declared an eligible customer, that end user can directly enter into a direct PPA with a generation company.

Further to the minister's declaration, the four categories of end users who are eligible customers are:

- those registered with NERC with a monthly consumption above 2MW and connected to a metered 11KV or 33KV delivery point on the distribution network of an electricity DisCo;
- those with a monthly consumption above 2MW and connected at 132KV or 330KV on the transmission network;
- those with consumption above 2MW and connected at 33KV on the transmission network; and
- those whose minimum consumption is more than 2MW and who are directly connected to the metering facility of a generation company.

Private companies that meet the conditions specified in the declaration may apply for eligible status to enable them to purchase power directly.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

There has been no notable pending or anticipated legislative proposal regarding renewable energy in the past one year.

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

Energy demand
Nigeria, with an estimated population of about 180 million people and its growing industrial clusters and small cottage industries, urgently requires more energy. These businesses require an uninterrupted power supply to function optimally. The power supplied could be generated through fully off-grid power plants. Steps have been taken in this direction for off-grid power generation for industrial clusters in Nigeria.

Access for rural electrification
Another driver of change is the need to spread electrification to rural and underserved areas that do not have access to power. Unserved households in (usually rural) areas that do not fall within a DisCo network can be served by investors who may wish to create off-grid supply over their own local grid. In line with the NERC Regulation for Independent Electricity Distribution Networks (IEDN Regulations 2012), off-grid generation plants require an IEDN (often a mini grid) to supply electricity to end users. Topographical and geographical challenges in rural areas make it uneconomical to extend the grid to such areas. Recently, investors have been developing business models to reach people in these areas. An example is the launch of the pay-as-you-go scheme by Lumos in partnership with MTN, a telecom company in Nigeria, to provide power through solar systems. Numerous developers have taken the initiative to develop off-grid solutions to unserved and

underserved areas, with the regulator keen to ensure an even playing field between developers and users.

Job creation

Increased investment in renewable energy will lead to the development of indigenous expertise in the manufacture, installation and repair of various devices across the country, particularly in rural communities. This will hopefully stem the migration from those communities to urban areas as the needed employment opportunities will be readily available.

Disputes framework

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

Currently, the electricity market is at the transitional stage. For on-grid power, transactions among participants are expected to be contract driven. Disputes arising ideally are to be resolved in line with the terms of the contract. Each contract provides the mechanism for settling disputes that may arise between the parties. However, current liquidity challenges in the sector have stalled this as payment obligations along the value chain are not being met. The government, being aware of the challenges arising from a number of issues including legacy debts predating the privatisation, huge technical commercial and collection losses on distribution network, non-cost-reflective tariffs and so on, has introduced measures aimed at resolving the issues.

Further to the above, the Market Rules establish a governance mechanism and provide a framework for dispute resolution between market participants. These rules have been framed by the market operator in order to establish the electricity trading system for the transitional and medium-term stages in the Nigerian electricity supply industry. The rules provide for a dispute resolution panel, which will be responsible for arbitrating and resolving disputes between market participants. NERC has appointed a Dispute Resolution Counsellor to administer the dispute resolution provisions of the Market Rules and 12 members to the Dispute Resolution Panel to hear and resolve disputes.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

The primary types of renewables in Nigeria are as follows:

- Hydro: currently there is 1.9GW hydropower capacity installed in three large power plants (Kainji: 760MW; Jebba: 570MW; Shiroro: 600MW). The existing plants are hydroelectric dams. In addition to the existing projects, nine upcoming projects have been identified that are still under development with a total capacity of 4,455MW.
- Solar: solar photovoltaic, off-grid or mini grid, is a good alternative in rural communities to which the national grid does not extend and the petrol or diesel necessary to power generators is often difficult to obtain. PV-diesel hybrid systems are already competitive economically, compared with gasoline and diesel-generated power. There are currently some upcoming utility-scale solar PV projects. In 2016, NBET signed PPAs with 14 IPPs for projects with a total capacity of 1125MW.
- Wind: there are no existing wind projects in Nigeria. Based on data gathered from the Centre for Renewable Energy Technology, there are four upcoming wind end energy projects with a total capacity of 128.5MW.
- Biomass: renewable energy can be derived from biomass such as firewood, food waste and agricultural waste. Currently efforts are being made to exploit biofuels on a large scale in rural Nigeria. Based on data gathered from the Centre for Renewable Energy Technology, there are four upcoming waste-to-fuel energy projects and nine biofuel energy projects.

Development issues

13 What types of issues restrain the development of utility-scale renewable energy projects?

There are various issues that restrain the development of renewable energy projects in Nigeria.

Policy and regulation

Although there is a clear-cut framework, more work needs to be done in terms of policy implementation and process flow among the various stakeholders, thereby attracting both local and international investments to grow the market. There is a need to align the policy framework of legal, fiscal and regulatory instruments that would attract domestic and international investments. Clear rules, legislation, roles and responsibilities of various stakeholders along every stage of the energy flow from supply to end use are key elements of the overall policy framework needed to promote renewable energy technologies. A good number of policies have been presented showing the government's plan for the development of renewable energy, but they have not been adequately aligned and actively implemented.

Inadequate transmission infrastructure

The existing transmission system is only able to deliver a portion of the power generated to the DisCo trading points. This is as a result of Nigeria's weak transmission infrastructure, which is on the whole radial, such as a single path of transmission with a power source at one end. This implies that any fault in the path could potentially lead to a collapse of the transmission network. The transmission infrastructure in its current state without an upgrade and improved technology will be unable to accommodate an increase in generation.

Financing and investment barriers

Establishing medium- or large-scale renewable energy installation is capital intensive with a long payback period. Sourcing for finance for these projects, especially early-stage finance for project developments, appears to be limited (unless with some form of government support) with a number of bottlenecks. More work also needs to be done in fine-tuning innovative solutions to reduce these initial set-up costs. Regarding on-grid, feasibility study reports can be carried out by the government, thereby reducing associated development costs and introducing waivers on certain taxes (including customs duty) for necessary equipment. For off-grid, the state government plays a more proactive intermediary role between developers and communities through community engagement, thereby reducing possible altercations that may ramp up development costs.

Liquidity challenges in the electricity sector

The electricity sector since the handover of the successor companies in November 2013 has been faced with liquidity challenges resulting from (among a number of issues) the lack of a cost-reflective tariff. This is clearly a disincentive to investment in additional generation.

Need for incentives

Currently, there is a need to boost the available incentives as a deliberate mechanism to ramp up the deployment of renewable energy. Waivers on taxes (including customs duty) and streamlining of applicable taxes are realistic means that can assist in encouraging the deployment of renewable energy and reduce the end user's tariff.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

The prevalent type of hydropower plant in Nigeria is the conventional (dam). Classification for hydropower plants as categorised by the Ministry of Power shows plants with generating capacity of more than 30MW and 100MW as medium and large respectively, less than 30MW as small; and less than 1MW as mini hydro. Currently, there are 1.9GW of hydropower capacity installed in three large power plants (Kainji: 760MW, Jebba: 570MW and Shiroro: 600MW). The hydro plants were constructed by the government, which divested its interest through a long-term concession to private investors during the privatisation of the electric power sector. They are currently being managed by private participants for a term of 30 years.

The existing hydropower plants are on-grid. NBET as the offtaker in the electricity market purchases electricity from these generating companies via PPAs and resale to DisCos via vesting contracts.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

The following must be taken into consideration for hydroelectric generation:

- Evacuation infrastructure: a private entity desirous of this investment must ensure that there is adequate electric power evacuation infrastructure for on-grid transmission. Therefore power evacuation studies in liaison with the TCN must be carried out.
- Contractual obligations: a PPA negotiation must be commenced with an identified offtaker, or with NBET where a total package on the PPA will be negotiated and signed. Where the project is grid-connected generation, the PPA is with NBET, and for embedded generation where the power generated is within the network of a particular DisCo, a PPA is to be signed with the DisCo, the eligible customer or with the captive customer, as the specifics of the project dictates.
- Regulatory compliance requirements – water licence: every hydro-electric generation project must get a water licence to permit the use of water from the river course for hydro-electric purposes, generation licence regularisation with NERC and necessary permits (environmental and state government).

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

There is a prevalence of on-site generation for the end user. Photovoltaics (PV) are mostly used for distributed generation of solar power. This is domestic-type generation using rooftop solar PV systems. These are usually not for sale, and just for the consumption of the end user.

Stand-alone solutions (SAS) such as solar home systems are used in suburban and rural areas that do not have access to the national grid. SAS provide electricity to households and small commercial enterprises through lease-to-own solar systems with affordable solar kit or a pay-as-you-go payment structure through affordable instalments via mobile phones.

There are also diesel generators. About 86 per cent of companies in Nigeria own or share a generator, and about 48 per cent of their total electricity demand is covered by these private generators.

However, owing to the acute shortage of power and the need to increase generation capacity, there is an increasing need to promote the use of on-site distributed generation. A wind farm with a capacity of 10MW is under construction in one of the northern states. Small wind turbines for water pumping have been installed in some parts of the country for testing.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

The primary types of distributed generation projects are as follows:

- Captive generation is the generation of electricity exceeding 1MW for the purpose of consumption by the generator and which is consumed by the generator itself and not sold to a third party.
- Off-grid (including mini grid projects) may be stand-alone power generation systems. They provide small-scale electricity generation to a single or limited number of customers. This type of project typically provides smaller communities such as rural areas or industrial clusters with electricity through independent electricity distribution network systems or mini grids without connection to the national grid. They could be generated through solar, small wind turbine or a hybrid system. Off-grid electricity is not evacuated on the electricity grid of TCN or a DisCo. The total off-grid electricity generation capacity is still marginal. Considering Nigeria's plans to increase generation capacity in the coming years and the low level of access to electricity in rural areas, there is a need for significant investment in off-grid generation.
- Embedded generation is the generation of electricity that is directly connected to and evacuated through a distribution network. Embedded power currently is almost non-existent in the Nigerian electricity system. However, there are major prospects for embedded power based on various upcoming projects.
- On-grid is generation of electricity that is directly evacuated to the national grid. This is usually used for large-scale power projects and is subject to capacity needs and system constraints.

In terms of the ownership structure, distributed generation is usually owned by private investors or in most cases they are owned by the end user.

In terms of the offtake structure, the end user is the offtaker for power generated through captive generation. For off-grid and embedded generation, the offtakers are commercial consumers or residential customers within a cluster.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

There are ongoing efforts by the government to promote the development of microgrids, also referred to as minigrids or isolated grids. On 24 May 2017, the NERC released a new Minigrid Regulation to govern the development of integrated electricity generation and distribution supply systems of under 1MW either in isolation from the DisCos or interconnected to the DisCos' existing network infrastructure.

The object of this regulation is to accelerate electrification in areas without an existing distribution network and areas with an existing but poorly electrified or non-functional distribution grid. The Regulation seeks to incentivise and simplify the process for private

sector participation in mini grid projects, thereby increasing access to unserved and underserved parts of Nigeria. The Regulation aims to minimise major risks associated with mini grid investments in the country, and ease the administrative process and complexities for mini-grid operators.

Further to the above, the government of Nigeria, through the Rural Electrification Agency (REA) in implementing the Nigeria Electrification Project (NEP) seeks to support the development of private sector mini grids to electrify unserved areas that have high economic growth potential. The Mini Grid Component is expected to electrify 300,000 households and 30,000 local enterprises through solar hybrid mini grids, as well as kickstart the mini grid market in Nigeria. Under this project the REA has launched a competitive tender for mini grid development in rural areas. The REA, with support from the World Bank, will also provide a subsidy to cover part of the capital expenditure to selected bidders to build the mini grids.

REA with support from the European Union and German government through the Nigerian Energy Support Programme (NESP) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) have also launched two projects on isolated and interconnected solar mini grid called Mini Grid Acceleration Scheme (MAS) and Interconnected Mini Grid Acceleration Scheme (IMAS). These schemes are to support the development of solar mini grids in rural under-served communities in Nigeria. MAS seeks to deploy 20 to 40 mini grids to 21,000 customers while IMAS deploys interconnected mini grids to 10 DisCOs regions for 15,000 customers. Both schemes are to be funded by the Rural Electrification Fund (REF) with support from the EU and German government

A significant obstacle to the deployment of microgrids is the access to long–term finance. Companies behind microgrid projects are mostly SMEs, which are not considered credit worthy. Local financiers do have experience with such projects, which are perceived as high risk, yet there are limited risk mitigation mechanisms that address this concern. As a result, mini grids rely mainly on public sector support.

An obstacle to the development of microgrids is the requirement for licensing. Captive power plants only have permits, not licences, to operate. They require licences where they intend to sell stranded power that exceeds 1MW. Captive power plants cannot sell power to willing buyers with their permits, but must obtain generation licences to sell such power. NERC should also consider streamlining the licensing regime process for captive permit holders with excess power (more than 1MW) looking to sell the same to DisCos or eligible customers.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

Regulatory framework

There is still some level of uncertainty with respect to regulation as it relates to off-grid projects. Hence discretion remains with NERC, the regulator of the sector. There should be certainty in the regulations for such projects and clarity with respect to the criteria for generally licensing such projects.

Requirement for licensing

This is an issue for captive power generators that only have permits to operate, and not licences, when they have stranded power. The captive power plant cannot sell power to willing buyers with their permits, but they must obtain a generation licence to sell power.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

There are no significant energy storage projects in Nigeria. The only form of energy storage is battery storage for solar power applications used on the off-grid or hybrid solar electricity system. The batteries are used to store the power generated during the day by the solar panels. Currently, there is no legal framework for energy storage in Nigeria. We believe that as the electricity market advances, the legal framework for energy storage will be created.

Development

21 Are there any significant hurdles to the development of energy storage projects?

Major hurdles to the development of energy storage projects are the lack of technical expertise and the lack of funds to undertake such projects.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Foreign investors are allowed to invest in renewable energy projects in Nigeria. There are no restrictions to foreign ownership; however, a foreigner who seeks to invest must obtain certain approvals prior to commencing business. They include the following:

- Business registration: any company with foreign participation must register with the Nigerian Investment Promotion Council after incorporation of the company before commencing business and obtain a certificate of registration.
- Business permit: companies with foreign participation in Nigeria are required to obtain a business permit from the Federal Ministry of Interior before they can carry on business in Nigeria. This business permit is a further prerequisite for the processing of work and residential permits that entitle expatriates that may be employed by the company to work and live in Nigeria.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

There are no restrictions on the import of foreign manufactured equipment used for the purpose of developing power projects. As an incentive to promote foreign direct investment in the power sector, NREEEP provides incentives for importers to offer energy efficient appliances and lighting through exemption from excise duty and sales tax; and free custom duty for two years on the importation of equipment and materials used in renewable energy and energy efficiency projects.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

- A generation licence, required to operate a renewable energy project and sell electricity;
- an environmental impact assessment performed by the Nigeria Environmental Standards Regulation Enforcement Agency and the relevant state agency where the plant is located;
- an environmental and social impact assessment especially for projects seeking funding from international lenders and development finance institutions (DFIs);
- a building or development permit for the construction of the power project. This is issued by the relevant state building control agency in the state where the power plant is being constructed;
- an evacuation certificate from the TCN for on-grid projects; and
- a water licence for hydroelectric projects.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

The offtaker for on-grid generated power in Nigeria is NBET, also known as the bulk trader, which through a vesting contract carries out the resale of power to the DisCos. By a recent ministerial declaration the eligible customer (end user) can now buy directly from generation companies. NBET enters into and executes PPAs with generation companies and the resale of power to distribution companies through vesting contracts.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

NERC regulations require long-term PPAs to be procured via a competitive tender. A few years ago, realising the need to jump-start greenfield generation, NERC issued a notice allowing for unsolicited tender. This culminated in the signing of a PPA with 14 front-runner IPPs for solar projects with an expected total capacity of 1,125MW. A later notice released by NERC reactivated the provision for competitive procurement with limited exceptions.

Not all renewable projects are subject to feed-in tariffs. The Regulation for feed-in tariffs for renewable energy issued by NERC applies to projects with specific technologies and capacities. Lower capacities below 1MW shall be procured by net metering, while large capacities shall be by competitive procurement. The feed–in tariff is applicable to projects with the following capacity cap: a wind project is 10MW, small hydro is 30MW, biomass is 10MW and solar PV is 5MW. Competitive tenders will be used for capacities above these thresholds and they are to be procured through NBET.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

To operate a renewable project and sell electricity from a renewable project, the government authorisations required are:

- a generation licence, required to operate a renewable energy project and sell electricity;
- an environmental impact assessment certificate;
- work permits and expatriate quota from the Nigerian Immigration Service where expatriates will be employed;
- a certificate from the National Office for Technology Acquisition and Promotion, certifying registration in respect of the transfer of technology contracts;
- compliance with the Market Rules, Grid Code, Metering Code, Health and Safety Regulations and other regulatory instruments issued by NERC; and
- annual compliance audits on the activities of the generation company and reports to be filed with NERC.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

The use of renewable energy to generate power is still in its early stages in Nigeria, and until recently the most prevalent source of renewable was hydropower. Biomass, wind and solar are not being fully utilised. Currently, there are no laid down laws or legal requirement for the decommissioning of renewable energy projects in Nigeria.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

The construction of projects are usually financed through a debt and equity mix. The various types of financing are:

- equity capital, which is typically provided through the sponsor or developer, private equity funds, venture capital and impact investors;
- debt finance provided by a range of financial institutions such as development finance institutions, multilaterals, export credit agencies and commercial banks; and
- domestic and international capital markets are sources of funds for financing renewable power projects. They can be obtained through project bonds, sovereign bonds, refinancing and public offering.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

The operation of projects is usually financed through the same structures as construction financing.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

Nigeria Electrification Project (NEP): development of solar hybrid mini grids for rural economic development

The aim of the NEP project is to the make reliable electricity services available to 75 per cent of the population by 2020, and to 90 per cent of the population by 2030, with at least 10 per cent of electricity coming from renewable energy by 2025. Under the project, the REA intends to increase electricity access to rural areas through mini grids and stand-alone off-grid solutions. The NEP has four components, including one on Solar Hybrid Mini Grids for Rural Eligible Technologies (the Mini Grid Component). As part of this Mini Grid Component, the REA will support the development of private sector mini grids to electrify unserved areas that have high economic growth potential. The Mini Grid Component aims to electrify 300,000 households and 30,000 local enterprises through solar hybrid mini grids, as well as kickstart the mini grid market in Nigeria. The first component of the project, which is the development of Solar Hybrid Mini Grids for Rural Economic Development, will be implemented under a market-based, private sector-led approach to construct, operate, and maintain economically viable mini grids, supported by subsidies. This component consists of a minimum subsidy tender for mini grids and a performance-based grant programme. The REA, with support from the World Bank, will provide a subsidy to cover part of the capital expenditure for the preferred bidder.

On 17 June 2019, the REA opened the initial selection document submissions for solar hybrid mini grids. The purpose of the initial selection document is to assess the eligibility, qualifications and technical capabilities of private sector developers to deliver the project.

Mini grid Acceleration Scheme (MAS)

On 11 February 2019, the REA called for proposal for the Mini Grid Acceleration Scheme, which consist of designing, construction, commissioning, operation and maintenance of isolated mini grids up to 1MW across the six geopolitical zones of Nigeria. Each geopolitical zone represents a lot under the scheme. On completion, the project is to be operated on a commercial public-private partnership arrangement. The scheme is set to disburse €6 million for the six lots and to deploy between 20 and 40 mini grids to 21,000 customers with 3,500 to 4,000 connections in each lot.

Interconnected Mini grid Scheme (IMAS)

In tandem with the MAS, IMAS, its twin project, called for proposals on 6 May 2019 for interested solar mini grid developers to submit proposals for interconnected mini grid projects. The project is to develop interconnected mini grids up to 1MW across DisCos franchise regions. Each DisCo region represents a lot under the scheme. It is also to be operated as a PPP arrangement in collaboration with interested electricity distribution companies.

Transmission Company of Nigeria (TCN)

The TCN recently increased its transmission capacity. From 7,000MW, a further 1,000MW were added, rounding upward to a transmission capacity of 8,100MW. It was reported that, by the increase, the TCN has moved past being the weakest link in the electricity power value chain.

Legislative proposals

32 Describe any notable pending or anticipated legislative proposals.

Regulation on distribution franchising

To satisfactorily meet stakeholders' expectations in the provision of reliable electricity services to all customers within their coverage areas, the NERC has considered a new regulation to allow third parties to take up and maintain parts of the vast electricity distribution networks currently owned by the DisCos. The NERC has drawn up a consultation paper titled: 'Distribution Franchising in Nigeria', which explained that by sub-franchising, the DisCos would authorise third-parties to provide electricity distribution (and other utility services) on behalf of the DisCos, within the DisCo's coverage areas. This franchising arrangement can either be initiated by the DisCos or customer groups within the DisCos' coverage areas.

The proposed models are:

- metering, billing and collection – the outsourcing of the distribution function of metering, billing and collection to the franchisee;
- total management of electricity distribution function – where the franchisee is responsible for maintaining the electricity distribution system; and
- distributed generation-based electricity distribution franchisee – where the franchisee undertakes to procure more energy either through bilateral arrangements over the transmission network or through embedded generation at local distribution networks.

The public consultation for the proposed regulation was held from 23 May 2019 to 4 July 2019 in various locations in Nigeria.

Electric Power Reform Act(amendment) Bill 2018

In January 2019, the House of Representatives initiated the process to pass the Electric Power Reform Act (Amendment) Bill 2018 that prohibits and criminalises estimated billing. The proposed law, which was to be transmitted to the senate for concurrence and subsequently to the President for his assent, compels all electricity distribution companies to give prepaid meters to applicants within 30 days. The law also provides a punishment of a one-year jail term and a fine of 1 million Nigerian naira for defaulters. Currently, a new tenure for the 9th House of Representatives has begun and it is expected that the Bill will be re-introduced to the House as the previous Bill did not scale through the process before the end of tenure of the 8th House.

Regulation to cap estimated billing

In Nigeria, unmetered customers are billed based on an estimated billing, which is still prevalent among DisCos. The proposed regulation seeks to cap monthly estimated bills issued to consumers by the DisCos. Under the proposed regulation, NERC is considering the option of putting a cap on estimated billing based on the projected average monthly consumption of each tariff class in the MYTO model; applying the average consumption of each tariff within a franchise are as the cap for estimated billing of unmetered customers and capping the estimated bill of consumers within a business unit to the average vending of the same tariff class within the area. The public consultations for the proposed regulation were held from 23 May 2019 to 4 July 2019 in various locations in Nigeria.

Bill to criminalise electricity theft

On average, 30 per cent to 35 per cent of energy loss in the country is as a result of electricity theft. NERC had presented a Bill to the senate titled 'A Bill for an Act to prohibit and prevent electricity theft, power infrastructure vandalisation and power company protection 2017'. The Bill intends to amend section 94(3) of the Electric Power Reform Act, 2005

by deterring the illegal and unauthorised use of regulated electricity supply as well as to protect electricity infrastructure. It further intends to impose imprisonment for a period of not less than six months and not more than two years or a fine of 100,000 Nigerian naira or both if found guilty of wilfully tapping, making or causing to be made any connection with overhead, underground or under water lines or cables or service wires, or service facilities of a licensee.

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

At state level, the Ministry for Energy Transition (MITECO) is in charge of proposing and executing government policies in relation to energy.

Among other functions, the MITECO is responsible for adopting the necessary measures to secure the supply of electricity and the economic and financial sustainability of the electric system. The establishment of the National Energy Plan and of an economic regime for those facilities entitled to regulated remuneration are also part of the MITECO's duties. Furthermore, the MITECO's role also includes granting the relevant authorisations for facilities:

- with an installed capacity of more than 50MW;
- when they affect the territorial scope of more than one autonomous community; and
- when they are offshore in the territorial sea.

Broadly speaking, autonomous communities are in charge of developing basic state-level legislation. They also grant the necessary authorisations when the electric infrastructure solely affects their territory unless such authorisations are expressly reserved for the MITECO as explained in the paragraph above.

At municipal level, town councils are in charge of granting the necessary works and activity licences for the installation of the facilities.

The National Commission for Markets and Competition (CNMC) is the independent regulator in charge of supervising and controlling the proper functioning of the electricity sector. The CNMC also oversees the degree and effectiveness of market openness and competition in both the wholesale and retail markets. The CNMC has been vested with several functions for these purposes, the main ones being:

- consultancy functions (it has to issue obligatory reports in relation to regulations, authorisation, amendment or dismantling procedures for electric installations, energy planning, economic regime, quality of supply, etc);
- conflict resolution (access to the network);
- imposing disciplinary measures;
- establishing the methodology and requirements of access and connection to the grid;
- establishing the structure and methodology for the calculation of tolls for access to the electricity networks designed to cover transmission and distribution remuneration;
- establishing the methodology, parameters and asset base for the remuneration of facilities for the transport and distribution of electrical energy in accordance with the energy policy guidelines;
- fixing, where appropriate, the unit values of investment, operation and maintenance and regulatory service life of facilities entitled to compensation in charge of the electricity system of the transmission and distribution companies for each regulatory period;
- fixing the rate of financial remuneration for transmission and distribution facilities for each regulatory period;
- establishing the methodology for calculating the remuneration of the electricity system operator on the basis of the services they effectively provide; and
- approving, by means of resolution, the values of the tolls of access to the electricity network, as well as the amounts of remuneration for electricity transmission and distribution activities.

Red Eléctrica de España, SA (REE) is the sole transmission agent and system operator (TSO) for the Spanish electricity system. Among other duties, it is responsible for guaranteeing the continuity and security of the electricity supply, for ensuring proper coordination between generators and the transport and distribution networks, and for operating and managing the transmission grid. REE is partially owned by the state (20 per cent).

OMI-Polo Español SA (OMIE) is the electricity market operator. It manages the wholesale electricity market for the Iberian Peninsula (Spain and Portugal), where market agents trade the amounts they need (MWh) at transparent prices. OMIE also carries out the invoicing and settlement of the energy traded on these markets and oversees the corresponding financial settlements. In addition, the Iberian Energy Market Operator (OMIP) (Portuguese Division), SGMR, SA manages the futures market (forward and derivatives) on the Iberian peninsula.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

In the liberalised market context of the electricity sector, though subject to a high degree of regulation, all operators are private (except for the 20 per cent stake held by the state in the TSO (REE) as explained in question 1).

The CNMC publishes an annual list of the principal operators in the electricity market; that is, those operators with the five highest market shares. According to its Resolution of 30 October 2018, the principal operators are currently Endesa, SA, Iberdrola, SA, Naturgy Energy Group, SA, Hidroeléctrica del Cantábrico, SA and Viesgo Infraestructuras Energéticas, SL. These are all vertically integrated groups and thus have interests throughout the whole electricity supply chain (generation, distribution, trading, etc).

Other players in the renewable electricity sector are independent generators (not vertically integrated) such as Abengoa, Eolia, Renovalia, Fotowatio, T-Solar, Gestamp, etc. The pioneering development of

renewable energies in Spain has also contributed to the rise of many other Spanish companies that have become world leaders in project development or equipment manufacturing, such as Cobra, Acciona and Gamesa.

Investment funds and investors of a different nature (pension funds, etc) also play a key role by investing in the share capital of generation or distribution companies and traders. These funds and investors include KKR, Brookfield, First State, Macquarie, Oaktree and Cerberus, among many others.

Definition of 'renewable energy'

3 | Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

Article 2 of Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 (Directive 2009/28/EC) defines 'electric energy from renewable sources' as electric energy coming from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases. This definition is further developed in article 2 of Royal Decree 413/2014, which mainly includes the technologies set forth in the Directive.

Framework

4 | What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

Spain's renewable electricity regulations are governed by the common framework for the generation and promotion of renewable energy established by the European Union, mainly Directive 2009/28/EC, which establishes national targets for each member state on renewable energy generation, reduction of greenhouse effect gas emissions and energy efficiency. It also requires member states to introduce support schemes and measures of cooperation between different member states and with non-member states in order to achieve their national targets.

At state level, such policies and legal regimes are mainly implemented in Spain through:

- Law 24/2013, of 26 December, on the Electricity Sector (LSE);
- Royal Decree 413/2014, of 6 June, on electricity generation by means of renewable, cogeneration and waste facilities (Royal Decree 413/2014);
- Royal Decree 1955/2000, of 1 December, on regulation of transport, distribution, commercialisation, supply and authorisation procedure for electricity facilities (Royal Decree 1955/2000);
- Royal Decree 244/2019, of 5 April, regulating administrative, technical and economic types of electricity supply and generation with self-consumption;
- Royal Decree 2019/1997, of 26 December, organising and regulating the electricity production market; and
- Order ITC/1522/2007 of the MITECO, regulating guarantee of origin certificates (Order ITC/1522/2007).

Most autonomous communities have also passed legislation developing several issues of state legislation in relation to the authorisation process in their territories.

Town councils also have their own regulations regarding the issuance of works and activity licences.

Environmental and town planning regulations (which are mainly developed at autonomous community and town council levels) also have to be taken into consideration when developing a renewable energy project.

Stripping attributes

5 | Can environmental attributes be stripped and sold separately?

Regarding environmental attributes, Order ITC/1522/2007 regulates the guarantee of origin certificate, which can be sold to traders to justify the use of renewable energy. Guarantee of origin certificates are issued for each 1MWh and can be transferred by generators to traders or direct final consumers.

According to Order ITC/1522/2007, generators are the only ones that can export these certificates to other countries, but this entails them waiving the economic incentives for the energy produced associated with that certificate.

Government incentives

6 | Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

Yes. In general terms, under the Spanish incentive scheme, renewable power generators:

- sell the electricity they generate into the Spanish wholesale market and receive the market price for such sales; and
- also receive additional regulated payments during their respective regulatory lives (eg, 20 years for wind farms and 30 years for solar photovoltaic (PV) facilities, starting on the commissioning operation date).

Renewable energy generators receive the following regulated payments in addition to the market price:

- remuneration for the investment, which is intended to compensate for investment costs in renewable installed capacity that cannot be recovered through the market price. This remuneration is based on the investment costs that an efficient and well-managed company cannot recover from the market (based on technology-dependent standards). The set of standard parameters includes a standard value of initial investment; and
- remuneration for the operation, which is intended to compensate for the difference between operating costs and operating income. This is also determined by reference to technology-dependent standards, including a standard value of operating costs.

Royal Decree 413/2014 provides for the review of the remuneration scheme by establishing statutory periods of six years. Each statutory period is divided into two three-year regulatory sub-periods. At the end of each regulatory sub-period, the MITECO may amend the remuneration for investment to reflect:

- changes in expected future wholesale electricity prices, with a corresponding adjustment to remuneration for investment; and
- deviations in actual wholesale electricity market prices (as determined and published by the CNMC) as against expected future wholesale electricity market prices as established during the previous regulatory sub-period.

The regulation provides for lower limits (LI1 and LI2) and upper limits (LS1 and LS2), as determined by the MITECO, which govern how potential deviations from the estimated wholesale market price may be reflected in remuneration for investment in subsequent regulatory sub-periods.

Generators bear the market risk with respect to any portion of the actual market price that falls within the first band (between the estimated wholesale market price and LS1 or LI1), meaning that there will

be no adjustment to remuneration for investment for the upcoming regulatory sub-period.

With respect to any portion of the actual market price that falls between LS1 and LS2, half of the difference between the actual pool price and LS1 will be reflected in the adjustment (as a decrease) in the next regulatory sub-period. Conversely, for an actual pool price that falls between Ll1 and Ll2, half of the difference between the actual pool price and Ll1 will be reflected in the adjustment (as an increase) in the next regulatory sub-period.

With respect to any portion of the actual market price that falls above LS2, the full difference between the actual pool price and LS2 will be reflected in the adjustment (as a decrease) in the next regulatory sub-period. Conversely, for an actual market price that falls below Ll2, the full difference between the actual pool price and Ll2 and half of the difference between Ll2 and Ll1 will be reflected in the adjustment (as an increase) in the next regulatory sub-period.

The above-described remuneration scheme is intended to allow each standard renewable facility to achieve a pre-determined pre-tax rate of return over that facility's regulatory life (reasonable return). The specific determination of the reasonable return is fixed in the corresponding regulation approved at the beginning of each regulatory period based on the average yield on Spanish 10-year bonds on the secondary market in the 24 months preceding the month of May prior to the commencement of the new regulatory period.

However, for the first regulatory period (until 31 December 2019), Royal Decree 413/2014 established that (i) the reasonable return for new installations was determined by reference to market yields for the 10-year Spanish government bond calculated as the average of the months of April, May and June of 2013 plus a spread of 300 basis points (which resulted in a rate of return of 7.503 per cent); and (ii) the reasonable return for existing facilities in the first regulatory period was determined by reference to market yields for the 10-year Spanish government bond during the 10 years prior to 14 July 2013, plus a spread of 300 basis points (which resulted in a rate of return of 7.398 per cent).

In addition to economic incentives, other policies that promote the development of renewable energies in Spain are the following rights granted to renewable generators:

- priority of access to the grid. Renewable energy generators have priority over other operators to access and connect to transmission and distribution networks; and
- priority of dispatch of electricity generated in the wholesale market. Under equal market conditions, renewable energy generators have priority over other conventional generators to deliver their electricity in the wholesale market.

Note also that Royal Decree 413/2014 established that the support for new renewable facilities (to be in operation after 14 July 2013) is granted through competitive public tender processes. The remuneration scheme and parameters are the same as those described above. However, through these auction processes, bidders propose the initial value for investment that they will be willing to accept, and the MW auctioned are allocated to the most competitive offers (the lower ones). So far, the Spanish government has carried out three auctions that have ended with a result that no incentive (or a very low incentive) will be granted to the projects, and most of their remuneration comes from the market price. In addition, the new Spanish government has announced its intention to auction new MWs to fulfil EU objectives by 2030, which could amount to up to 40,000MW until the deadline of 2030.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Renewable energy incentives are established at state level (economic incentives, priority of access, priority of dispatch). In Spain, the MITECO is the body with exclusive competence to determine the economic regime for those renewable facilities entitled to regulated remuneration.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

To facilitate and promote the purchase of renewable power by private companies, the European Union enacted Directives 2001/77/CE and 2004/8/EC, which were subsequently transposed into national law by Order ITC/ 1522/2007 of the MITECO.

As explained in question 5, these regulations promote the use of a guarantee of origin certificate, which assures that a certain number of kilowatt hours of electricity produced in a plant within a given period of time have been generated from renewable energy sources or high-efficiency cogeneration.

The guarantee of origin certificate can be transferred to traders, who can justify the 'green' nature of the electricity they sell.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The LSE and Royal Decree 413/2014, which develops the LSE, represent the most notable legislation recently enacted in reference to renewable energies. The approval of the LSE was part of the structural reform of the electricity sector included in the Council Recommendation on the 2013 National Reform Programme of Spain, approved by the Council of the European Union on 9 July 2013.

The LSE and its developing regulation profoundly reformed the previous framework in relation to renewable energy and the electricity sector. The depth of this reform means that there has been no notable pending legislation or proposals since 2014. However, the possibility of further changes cannot be completely discarded. The next piece of legislation expected to be approved before the end of 2019, is a specific regulation to be extended by the CNMC on access and connection rights to the grid by renewable generators.

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

The main driver of change is the progressive decrease of CO2 and greenhouse gas emissions pursuant to the necessary compliance by Spain with its international commitments. Spain must also reach its national targets on installed renewable capacity as established by EU Directives and this could act as an important incentive to the further development of renewable energies. Furthermore, the MITECO approved on 22 February 2019 the Plan Nacional de Energía y Clima (PNIEC) that mainly establishes the several policies of the MITECO in order to achieve EU objectives and a proper transition from a coal-based energy to a renewable based energy.

Among other consequences, these commitments will entail a development of the self-consumption regime, which promotes the installation of small generators that produce renewable energy in venues where there is the capacity to produce energy. These facilities are controlled

by their owners, which often complicates the operation of the regular system. On 5 April, RD 244/2019 was approved to foster consumption facilities.

Renewable energies have achieved a level of maturity that allows projects to be profitable at market price and without the need for regulated incentives, as the latest bid mentioned in question 6 has shown. This, together with the new renewable energies objectives of the European Union (32 per cent by 2030) that the Spanish government is supporting, should result in the fostering of the development of many new renewable energy projects in Spain in the coming years.

In addition, in order to improve efficiency in the sector, Spain also advocated an accounting change that Eurostat adopted in September 2017. From that point on, under the stated conditions, initial public sector investments into renewable energy are not considered as deficit, which will also improve the economic climate and foster government policies for development in the sector.

The MITECO has also turned to the development of the electric vehicles market. Plan MOVALT was approved on 7 November 2017, allocating a budget of around €35 million for economic incentives for both buying electronic vehicles and installing charging facilities. Plan MOVALT foresees the amendment of Royal Decree 647/2011, to simplify the conditions to qualify as charging stations.

The Spanish TSO (REE) is also carrying out significant sustainable energy initiatives that may become an important incentive for the development of renewable energies. In its infrastructure planning for 2015–2020, REE foresees:

- the strengthening of interconnections to improve the guarantee and security of supply and achieve a greater integration of renewables (both internationally and between islands);
- the increase of a safer integration of renewable energies to contribute to the reduction of air pollutant emissions and to reduce dependence on foreign sources of energy;
- the construction of new facilities in order to increase transmission capacity, improve grid meshing and facilitate connections between electricity systems; and
- several other initiatives in relation to energy storage, smart grids and self-consumption.

Disputes framework

11 | Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

Pursuant to the Operation Rules of the wholesale electricity market for the Iberian Peninsula (Spain and Portugal) managed by OMIE, any disputes arising in relation to the application of these rules must be settled through an arbitration proceeding under UNCITRAL rules.

However, the CNMC will resolve any disputes that may arise in connection with access to the transport or distribution network or conflicts related to the technical or economic management of the system.

Market participants may also challenge authorisations, permits and concessions, and any administrative resolutions in an administrative proceeding before either the administrative authority that issued them or the relevant superior administrative body. They can subsequently be challenged before the competent courts, which may be the Superior Court of Justice of an autonomous community, the Supreme Court, or lower courts, depending on the specific administrative resolution being challenged.

Foreign investors may also try to resolve any dispute through arbitration pursuant to the Energy Charter Treaty (ECT), to which Spain is a signatory country. The ECT seeks to protect foreign energy investors against key non-commercial risks (eg, discriminatory treatment, direct or indirect expropriation, or breach of individual investment contracts). The ECT includes a 'fork in the road' provision by which an investor has to choose whether to submit the dispute to a domestic legal proceeding or to an international arbitration proceeding under the ECT.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 | Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

The primary types of renewable energy projects in Spain are wind power and hydropower facilities. Notwithstanding this, hydropower facilities of more than 10MW are not considered renewable for the purposes of Royal Decree 413/2014 and do not have access to the economic incentives established therein.

According to the REE Annual Report of 2018, 19.8 per cent of the total installed capacity in Spain is wind power electricity and 13,7 per cent comes from hydropower facilities (including both mini-hydros (up to 10MW) and larger facilities). Furthermore, solar PV energy amounts to 3.0 per cent of total installed capacity, with solar thermal accounting for 1.8 per cent.

Project sizes vary depending on the renewable technology but it can generally be stated that wind farms, solar thermal and solar PV facilities are usually of a maximum of 50MW (so that the administrative authorisation process is carried out by the Autonomous Community instead of a state level), while hydropower facilities are of less than 10MW (to access economic incentives for renewables).

In terms of the amount of energy that these renewable projects have been able to contribute to the country's energy needs, the percentage of their overall share in demand coverage has gone down from 41.1 per cent in 2017 to 40.94 per cent in 2018. In 2018, the installed combined cycle power has been reduced by 1.5 per cent with respect to the previous year, while new wind, solar PV and other renewable parks have come into service, increasing their installed power by 0.5 per cent, 0.4 per cent and 0.6 per cent, respectively. On the other hand, wind power remained the second force in electricity production after nuclear power and was responsible for 19.8 per cent of the total electricity consumed in 2018. According to REE, renewables as a whole contributed 40 per cent of electricity production in Spain in 2018.

Development issues

13 | What types of issues restrain the development of utility-scale renewable energy projects?

The main issues that may restrain the development and profitability of renewable energies are:

- lack of legal certainty. From 2008 to 2013, different government measures led to a profound reform that affected the remuneration of existing and future renewable facilities, cutting their incentives. This resulted in great regulatory uncertainty and instability and affected investor trust. Some of them have not yet recovered from this situation;
- low regulated incentives. Access to the current regulatory scheme is obtained through competitive public tender processes. The government launches these processes and there is no certainty as to when this will happen. Tender processes to date have ended with a result that no incentive (or very low) will be granted to the projects and most of their remuneration comes from market price, preventing non-mature technologies from being awarded capacity and thus preventing them from being developed;
- installed capacity versus electricity demand. There is currently an excess of installed capacity in Spain, much of which is

underused. This can also slow down the installation of new renewable power; and
- economic context. The development of renewable energy projects may also be affected by general economic conditions that positively or negatively influence electricity demand.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

Large hydropower projects in Spain mainly fall within three categories:

Impoundment plants
Impoundment plants use a dam to store river water in a reservoir. Water released from the reservoir flows through a turbine that activates a generator to produce electricity. Water may be released either to meet changing electricity needs or to maintain a constant reservoir level.

Pumped storage plants
Pumped storage plants are similar to impoundment plants but with the capacity to store energy by pumping water uphill to a reservoir at a higher elevation from a second reservoir at a lower elevation. During periods of high electricity demand, the water is released back into the lower reservoir and activates a turbine, generating electricity.

Run-of-the-river plants
Run-of-the-river plants are those with little or no reservoir capacity, and usually do not require the use of a dam. Only upstream water is available for electricity generation at any particular moment and any oversupply cannot be stored.

The main types of mini-hydropower plant (not more than 10MW) are run-of-the-river plants and impoundment plants, together with hydropower plants on irrigation channels.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

All necessary authorisations from an electricity regulation point of view must be obtained for the construction of a hydroelectric plant, including its evacuation infrastructures (see question 24).

In addition, according to article 52.1 of the Spanish Water Act, the right to private use of the public water domain, whether or not consumptive, is acquired by legal provision or by administrative concession for a maximum term of 75 years.

The specific fees that hydropower plants are obliged to pay represent another relevant issue to take into consideration:
- An annual fee for the use of hydraulic public domain goods (watercourse and riverbed). The amount of this fee depends on whether there is an occupation of the hydraulic public domain soil, or whether there is a use of the hydraulic public domain (non-consumptive use) or a use of public domain goods.
- An annual fee for the use of continental waters to generate electricity (hydroelectric plants), the entity holding the relevant concession at any time being liable to pay such fee. The taxable base of the fee is determined by the River Basin Authority and represents the economic value of the hydroelectric energy produced by the concessionaire through the use of said waters in a given annual taxable period. The annual tax rate is 25.5 per cent, reduced by 92 per cent for those hydroelectric plants with an installed power equal to or less than 50MW and by 90 per cent for pumped-storage hydro-electric plants of more than 50MW.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

The distributed generation system is a set of electrical generation systems that are connected to the distribution networks and characterised by their low power and an energy production plant close to the consumption point. Spain has a highly centralised electrical scheme and distributed generation has so far been developed mainly through small self-consumption facilities.

Royal Decree 244/2019 of 5 April regulates the administrative, technical and economic conditions of the supply of electric energy in relation to production of energy and self-consumption.

The LSE and Royal Decree 244/2019 establish two types of self-consumption model:
- Type 1: Modalities of supply with self-consumption without surpluses. When the physical devices installed prevent the injection of any excess energy into de transport or distribution network; and
- Type 2: Modalities of supply with self-consumption with surpluses. When generation Installations can, in addition to supplying energy for self-consumption, inject surplus energy into the transport and distribution networks. In turn, is divided into (i) modality with surpluses receiving compensation: consumer and producer voluntarily opt for a surplus compensation mechanism; and (ii) modality with surpluses not subject to compensation: consumer and producer opt not to benefit voluntarily from a surplus compensation mechanism or that do not meet the requirements to belong to the modality with surpluses receiving compensations.

Last year, approximately 2 per cent of electricity consumption in Spain was produced through self-consumption. It is also worth noting that several sources cite an annual increase in self-consumption installed capacity in Spain of approximately 50MW. However, after the approval of RD 244/2019, self-consumption installed capacity in Spain is increasing exponentially.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

The main technologies of self-consumption in Spain are PV and cogeneration, with a presence not only in the domestic market but also in agriculture (irrigation systems), livestock, industry, and so on. There are also other technologies used for self-consumption purposes such as wind power or mini-hydro, but their presence is minor in comparison with PV and cogeneration.

Royal Decree 244/2019 allows collective self-consumption (condominiums, buildings), understood as that in which the consumer participates when he or she belongs to a group of several consumers that supply themselves, in an agreed manner, with electrical energy coming from production facilities close to those of consumption and associated with them.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

In this sense, it is important to note that the LSE and Royal Decree 244/2019 are currently aimed at fostering self-consumption.

Royal Decree 244/2019 established a range of measures that facilitate self-consumption and promote renewable energies. The tax on the generation of electricity through the use of solar radiation from PV facilities (the sun tax) is definitively repealed. In addition, self-consumed energy of renewable origin, cogeneration or waste will be exempt from all types of charges and tolls. Furthermore, the EU has agreed to put on hold eventual taxes to self-consumption facilities of certain developers, at least until 2026, allowing thereafter each member state to decide whether or not to introduce such a tax again.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

Significant regulatory development in this area can be expected in the short term. Many operators are already investing efforts and resources in distributed generation issues and regulations should be implemented in short order to provide appropriate incentives for the development of distributed generation. These developments are expected to start being introduced in order to develop the PNIEC.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

Depending on the amount that is intended to be stored, the main ways of storing energy are as follows.

Large-scale storage: reversible hydroelectric (pumping) and thermal storage

According to the Energy Foundation of the autonomous community of Madrid, the total installed capacity of pumping hydroelectric facilities in Spain amounts to more than 8,100MW.

Spain also has thermal storage in CSP cylinder parabolic trough power plants. These plants have a full thermal reservoir that can continue to run turbines at full load for several hours.

Storage in networks and end user storage: batteries, domestic batteries, capacitors and superconductors

REE has implemented the Almacena project as regards batteries, which consists of an electrochemical energy storage solution connected to the general network as well as the installation of a prototype flywheel in the Canary Islands. REE also intends to construct a reversible hydroelectric plant on the island of Gran Canaria between the reservoirs of Soria and Chira.

The regulations applicable to energy storage projects do not differ from the general framework. Storage facilities (both large-scale and end user (batteries, etc)) depend on the power plant of which they are part. Therefore, the relevant authorisations and legal framework are included within the authorisation process for power plants.

Development

21 Are there any significant hurdles to the development of energy storage projects?

In principle, the only hurdle to the development of energy storage projects aside from their cost and financing would be Royal Decree 244/2019, which regulates certain aspects in relation to the self-consumption of energy through solar PV energy and its storage through batteries.

Royal Decree 244/2019 allows for the use of storage batteries. However, batteries cannot be used to decrease the contracted power capacity of domestic consumers and therefore payment for their connection to the grid continues to be obligatory. However, as stated in question 18, Royal Decree 244/2019 self-consumed energy of renewable origin, cogeneration or waste will be exempt from all types of charges and tolls and the tax on the generation of electricity through the use of solar radiation from PV facilities (also known as the 'sun tax') is definitively repealed.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Foreign investments in renewable energies in Spain are not subject to any restrictions and, in fact, there has been a great amount of foreign investment in Spain in this area. Only under very exceptional circumstances (investments in renewables located in the Spanish islands or in non-mainland electricity systems) could the MITECO impose certain obligations on foreign investors to guarantee the supply of electricity.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

It is important to distinguish between imported goods within the European Economic Area and goods from third countries. In relation to imported goods from the European Economic Area, there are no trade barriers or tariffs whatsoever limiting the trade of goods in relation to manufactured equipment.

On the other hand, if goods are imported from third countries, they will be subject to a customs duty once they enter any of the countries that are part of the European Economic Area. This customs duty may differ depending on the commercial agreements (eg, free trade agreements) in force between the European Union and the third country. There might also be specific barriers for equipment manufactured in certain countries (eg, North Korea).

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

As per the provisions of article 111 in conjunction with article 115 of Royal Decree 1955/2000, the construction, expansion, modification and operation of all electricity installations requires the following administrative authorisations:

- administrative authorisation in relation to the preliminary draft of the installation as a technical document to be processed; if appropriate, in conjunction with the environmental impact study;
- approval of the execution plan; and
- start-up certificate, which permits the commencement of commercial exploitation once the plan has been executed. The request of the start-up certificate must be accompanied by a final works certificate signed by a competent technical expert, stating that the installation has been implemented in accordance with the specifications contained in the approved execution plan as well as with the requirements of applicable technical regulations. The relevant authorities issue the start-up certificate within a period of one month from receipt of the request, having completed the necessary technical inspections and verifications of the project.

It is also necessary to obtain a facility transmission authorisation for the direct transfer of any renewable project. The party intending to acquire ownership of the facility must submit the request for such authorisation to the MITECO.

The application must be accompanied by documentation to prove the legal, technical and economic capacity of the applicant, as well as a statement from the owner of the facility expressing its will to transfer ownership.

Upon approval, the applicant will have a term of six months to transmit ownership of the facility. The authorisation will expire after this period. The applicant must notify the MITECO of the effectiveness of the transfer within one month of it becoming effective.

For projects authorised by a given autonomous community, their corresponding administrative bodies must issue the authorisation for the transfer of the facility. If a given autonomous community has not enacted any specific legislation in this regard, Royal Decree 1955/2000 will also apply in that autonomous community.

Royal Decree 1955/2000 does not establish the need for an authorisation for an indirect transfer (eg, by selling shares of the project company) of a renewable facility. However, several autonomous communities (eg, Catalonia, Castilla-León) have also enacted legislation that establishes a requirement to obtain authorisation for both direct and indirect transfers of facilities.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

Operators can resort to offtake arrangements to mitigate the risks of price volatility of the wholesale market. The main arrangements in the Spanish market are forward market organised contracts, bilateral physical contracts and OTC agreements such as contracts for difference.

In Spain, the forward market is managed by OMIP (the clearing house). OMIP has standardised energy values for the contracts according to delivery period (days, weeks, months, quarters, years (up to four years)).

This is a generally available resource for offtakers in relation to the energy acquired on the wholesale market and there is no specificity in relation to renewable energy.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

Long-term PPAs are usually in the form of bilateral physical contracts or negotiated in the financial forward market.

Since forward market agreements have a maximum term of four years, these schemes do not address risks after the fourth year and are also subject to regulatory uncertainties. In Spain, an offtake arrangement usually has a term of one or two years and it has not been common for offtakers to execute long-term PPAs.

These schemes have not been so common in Spain as in other countries, particularly considering that renewable energy projects have been subject to the economic incentives scheme already explained, and the electricity they generate has to be sold on the wholesale market. However, given the maturity of renewable technologies and the profitability of many new projects without the need for regulated incentives, long-term PPA schemes are beginning to be executed in the market (eg, Forestalia has recently executed a 300MW wind energy PPA). PPA schemes will provide more certainty to investors, on the one hand because they eliminate eventual fluctuation of electricity prices at the pool, and on the other hand since it could allow for the bankability of certain renewable projects.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

See question 24.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

The owner of the generation facility has the obligation of dismantling the facility after its definitive closure. A breach of this obligation may lead to the authorities dismantling the plant at the owner's expense.

According to the provisions of articles 135 et seq of Royal Decree 1955/2000, the owner of the facility must request administrative authorisation of closure before the MITECO or the competent body of the autonomous community. The request must enclose a closure plan, which shall contain at least one report detailing the technical, economic and environmental circumstances of the facilities for which closure is sought. Likewise, the plan must include up-to-date blueprints of the facility.

It can be stated in general that there will be no credit enhancements or sinking fund guarantees to be made during the operational phase of the renewable project, given that Royal Decree 1955/2000 does not establish any financial requirements or guarantees for the decommissioning. However, there might be provisions in the relevant administrative authorisation, and regulations from autonomous communities (eg, solar PV installation in Andalusia) that may specify guarantees for dismantling if deemed appropriate.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

Financing is typically provided on a limited recourse basis, with sponsors taking on construction risk through a completion guarantee. The security package also includes pledges over receivables under the EPC agreement and in some (few) cases direct agreements with EPC contractors. Banks also sought some form of performance or revenue guarantee in some older deals structured at a time of greater regulatory uncertainty, although sponsors naturally resisted this. Additional security includes pledges over project accounts, receivables from sale of power and O&M agreements, if any, and shares in the project company. Security over land is uncommon because of its exorbitant tax costs.

Recently, within transactions involving the execution of PPAs, the creation of securities over the credit rights arising under the same has also been standardised, in some cases substituting the credit right completion guarantee.

In terms of financial covenants, debt service coverage ratio (DSCR) is typically tested on the basis of the previous year's audited financial statements (with perhaps an additional semi-annual test); forward-looking testing is rare. Leverage ratios, which were as high as 90 per cent at one point, would now be more conservative.

Facilities are normally syndicated except in the case of smaller deals, which are completed as a club deal or even on a purely bilateral basis. In all but the largest transactions, Spanish law and Spanish courts have been chosen to govern the financing documents.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Operating projects have easier access to financing, particularly those with a strong operating record. Some facilities are more project-finance based in these cases, while others rely more on acquisition finance-type documentation. The security package will typically involve pledges over project accounts, sale revenues, O&M agreements and shares, and no real estate mortgages.

As in the case of greenfield projects, leverage ratios would now be in the 60 to 70 per cent range and DSCR would be tested backwards, annually or semi-annually.

Spanish law and jurisdiction would also be the norm here.

In many cases, projects would be on a portfolio basis rather than a stand-alone basis, allowing stronger projects to support weaker ones (to a certain extent), with cross-guarantees and security overall portfolio assets and receivables.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

See questions 29 and 30.

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Legislative proposals

32 Describe any notable pending or anticipated legislative proposals.

See question 9.

Taiwan

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

The central competent authority of the Taiwan electricity industry is the Ministry of Economic Affairs (MOEA), specifically under the management of the Bureau of Energy (BOE), a department within the MOEA. Pursuant to the amendment of the Electricity Act in 2017, the MOEA will designate an electricity industry regulatory authority to take charge of regulation in the electricity market regulation, the issuance of electricity enterprise licences and the planning of power supply and demand. Currently, the MOEA has not yet done so and the MOEA itself will carry out the responsibilities of the electricity industry regulatory authority before the completion of such designation.

Renewable energy policies and their implementation may also involve several other government authorities. For example:

- the National Development Council assists in coordinating various ministries to promote the Four-Year Wind Power Promotion Plan and the Solar PV Two-Year Promotion Project;
- the Ministry of Science and Technology implements the National Energy Programme, which promotes Taiwan's smart grid and fosters the development of other renewable energy technologies;
- the Financial Supervisory Commission (FSC) implements the Green Finance Action Plan and encourages domestic and foreign financial institutions to grant credit to and invest in the renewable energy industry; and
- the Environmental Protection Administration (EPA) is charged with controlling carbon emissions and the establishment and management of the environmental impact assessment (EIA) procedures for renewable energy power facilities.

Taiwan Power Company (TPC) is a state-owned enterprise and is the only company in Taiwan that is responsible for power generation, power transmission and distribution, and power sales. TPC's role in power transmission and distribution is exclusively mandated under the Electricity Act and the Renewable Energy Development Act, thus it is also responsible for providing renewable energy generation facilities with parallel connections to the grid and engaging in wholesale purchase of renewable energy from those generator facilities. The 2017 amendment of the Electricity Act requires TPC to split its power generation department and its power distribution and sales department into two separate companies by the year 2023. However, the electricity industry regulatory authority to be designated by the MOEA may submit to the Executive Yuan a request for a postponement of implementation of such a measure based on its assessment of the development and condition of the electricity market. The postponement may be requested no more than twice. The first postponement shall be limited to two years and the second to one year. The post-reorganisation power distribution and sales entity will be responsible for the aforementioned parallel connections to the grid and the wholesale purchase of renewable energy.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

Taiwan first started allowing private investment into independent power producers (IPPs) in 1995. However, it was not until the 2017 amendment of the Electricity Act (which divides the electricity industry into power generation enterprises, power transmission and distribution enterprises, and power sales enterprises) that private entities could apply to engage in the electricity retailing business.

Currently, among the private power producer enterprises in Taiwan, nine are based on fossil fuels, three are hydropower, 12 are solar and 14 are wind power, with the fossil-fuel-based enterprises generating the most power. For utility-scale power sales, TPC is still the sole electricity retailing utility enterprise; sales of renewable energy-based power are all still done by renewable energy-based generator enterprises on the side.

For private renewable energy-based generator enterprises, the biggest hydropower company is Chianan Industries, which has three hydropower plants with a total installed capacity of 22.5MW. The biggest solar power company in Taiwan is AU Optronics Corporation, which owns BenQ Solar and Evergen Power; the former has six solar power plants with an installed capacity of 24.3MW, and the latter has six solar power plants with an installed capacity of 20.4MW. The biggest onshore wind power company in Taiwan is WPD Group, which operates more than 388MW onshore wind power.

Additionally, the Taiwan government is actively pushing for the establishment of offshore wind power systems. In 2017, Swancor obtained the first commercial operating licence for an offshore wind power system in Taiwan. In April 2018, the MOEA first announced the selection result of capacity allocation under the Offshore Wind Potential Zones Installed Capacity Allocation Scheme pursuant to the Directions for Allocating Installed Capacity of Offshore Wind Potential Zones (Directions) promulgated by the MOEA in January 2018. Seven developers have been awarded with grid capacity to commission 10 offshore wind farms. Among the seven, five are foreign companies: WPD, Ørsted, Swancor & Macquarie Group, Northland Power & Yushan Energy and CIP. In June 2018, the MOEA further completed competitive bidding process and announced two winners to commission four wind farms pursuant to the Directions, namely Northland Power & YuShan Energy and Ørsted.

As for investment and funding in the renewable energy industry, the Taiwan government has established the Green Bond system, which

refers to bonds that have been certified by the Taipei Exchange (TPEx) as issued by corporations or banks for eco-friendly investment projects. Currently, of the 24 green bonds recognised by the TPEx, 15 are labelled as financing the 'development of renewable energy and energy technology', and are all financial bonds issued by TPC, domestic banks (Taishin International Bank, Hua Nan Bank, E.SUN Commercial Bank, Taipei Fubon Bank, Taiwan Business Bank, SinoPac Bank, KGI Bank and CTBC Bank) and two foreign bank (Export–Import Bank of Korea and Société Générale).

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

The definition of 'renewable energy' is stipulated in the Renewable Energy Development Act as the direct use or processing of energy such as solar energy, biomass, geothermal energy, ocean energy, wind power, non-pumped storage hydroelectricity, energy from domestic general waste and general industrial waste or other sources of energy that is determined by the central authority to be sustainable. Biomass energy refers to energy generated by the direct use or processing of agricultural and forestry plants, biogas and domestic organic waste, while geothermal energy refers to energy derived from the soil, rocks, steam or hot springs that are contained below the surface.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

In Taiwan, the legal basis for the development of and environmental attributes from renewable energy projects is primarily found in the Electricity Act, the Renewable Energy Development Act and the Implementation Regulation Governing Voluntary Renewable Energy Certificates, along with other related rules and regulations.

To promote the development of renewable energy, the Renewable Energy Development Act and related regulations all encourage the establishment of enterprises engaging in renewable energy-based power generation and sales enterprises through a variety of incentives. After the amendment of the Electricity Act in 2017, renewable energy power may be directly sold to end users, detailed rules of which are regulated by the new Regulations on Renewable Energy-Based Power Generation Enterprises Applying for Direct Supply, covering matters such as qualifications and principles of review. For power to be wheeled out through TPC's grid, the Regulations for Favourable Power Dispatching and Wheeling Expenses cover how wheeling fees are to be calculated.

In addition, TPC, as the sole entity authorised to operate the electricity grid, is obliged to apply feed-in tariffs to all electricity generated from eligible renewable energy-based generator facilities. See question 6 for more details.

For environmental attributes, the National Renewable Energy Certification Centre was established in 2017 to formulate and implement regulations in relation to the Taiwan Renewable Energy Certificate (T-REC) mechanism, verification standards and tracking system. After the renewable energy generation equipment and production amount have been verified, the T-REC is the proof for renewable energy usage and environmental benefits. See question 5 for more details.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

Taiwan's current renewable energy certification system is a bundled system. Because current regulations only allow for single-use renewable energy certificates, and the transfer of certificates must be registered with the certification centre, the current certification market only consists of one-time transactions between the renewable energy power generation enterprise and the green electricity consumer.

However, where the installer of renewable energy-based self-use generation facilities is able to obtain a certificate, since the entity could use the power for its own purposes and then sell the undeclared certificate individually to those that need it, this is an exceptional case of an 'unbundled' transaction.

Taiwan's renewable energy certificate transactions are currently only at the demonstration project stage. Whether a secondary unbundled certification trading market will be established in the near future remains to be seen.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

The Taiwan government currently provides the following incentives for renewable energy development.

Feed-in tariffs

The law requires that TPC is obliged to enter into power purchase offtake agreements with entities operating renewable energy-based generators. In principle, the feed-in tariff (FIT) as announced by the MOEA according to the Formula for Calculating Feed-In Tariffs of Renewable Energy Power is applied to electricity generated from eligible renewable energy-based generator facilities except for circumstances prescribed by the law. As examples, for installers of offshore wind turbines, who chose the option of a fixed 20-year tariff, the rate for 2018 is NT$5.84/kWh; for solar PV installers, the rate may vary depending on the type of solar PV and capacity size. Except for circumstances prescribed by the law, these power purchase offtake agreements have a term of 20 years.

Demonstration awards and subsidies

The government provides cash incentives or subsidies for the establishment of specific types of renewable energy-based power generation facilities. For example, the Regulations on the Promotion of Offshore Wind Power System Demonstration in 2012 were implemented by the MOEA, which provided incentives to the demonstration of offshore wind turbine generators for up to 50 per cent of the total installed cost of the turbines. In addition, the MOEA is currently implementing the Regulations on the Promotion of Building-Integrated Solar PV Power Generation Demonstration, and for those who meet the relevant criteria, an award of up to NT$50,000 per kWp can be offered for the purchase of a solar power generator facility.

Tax incentives

The government currently provides tax incentives to entities in the power generation business. For example, when retaining a foreign advisor in providing planning and design services prior to the establishment of the generator facilities, the power generation entity may apply to the BOE for special approval to exempt the foreign advisor from paying income tax on the remuneration received. In addition, regarding the importation of a power generation facility, if the imported equipment

is not manufactured in Taiwan, it may be exempt from customs tariffs, subject to verification and certification by the MOEA; even if Taiwan does manufacture such equipment, the customs tariff may be paid in instalments, subject to verification and certification by the MOEA.

Green Finance Action Plan

The government has implemented several measures encouraging financial institutions to extend credit and invest in the green energy industry. For example, the FSC has lifted the restriction on the annual revenue of the customer to which a Taiwan branch of a foreign bank is extending credit, when such credit is extended for the installation of renewable energy facilities. Also, the FSC allows the Taiwan branches of foreign banks to issue NTD financial bonds to raise funds for financing the green energy industry. In addition, the insurance industry has been able to invest in the renewable energy industry since 2017, subject to special approval from the FSC.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Renewable energy policies and incentives in Taiwan are mainly driven by the national government. In terms of implementation methods, the Executive Yuan sets the overall direction of the policy, which is then implemented by the administrative agencies at various levels under the Executive Yuan. For example, after the Executive Yuan launched the Green Energy Technology Industry Promotion Plan in 2016, the administrative agencies discussed the policy and launched specific promotional plans for solar power and wind power in October 2016 and August 2017 respectively.

The national government provides subsidies to local authorities to incentivise the promotion of renewable energy. For example, the BOE has promulgated the Guidelines for Subsidies in Promoting Renewable Energy at Municipality/City/County Levels, by which local authorities may receive subsidies to investigate the regional feasibility of renewable energy and promote the relevant works. This has led to a clear increase in the number of renewable energy power generator installations.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

Since 2017, the MOEA has implemented the Taiwan Renewable Energy Certificate (T-REC) mechanism as proof of identity for green electricity, which will act as a form of green electricity resumé. Through certificate management, power sources purchased or used by the user can be traced, thus certifying the use of green electricity.

In addition, some counties and cities have enacted their own regulations requiring consumers with greater electricity needs to install their own renewable energy power generator facilities. For example, Tainan City has already made it mandatory for consumers whose chartered capacity of electricity consumption is greater than 800kW to generate at least 10 per cent of their own power through their renewable energy-based generators; similarly, Taoyuan City requires consumers whose chartered capacity of electricity consumption is greater than 5MW to generate 10 per cent or more of such power requirements through renewable energy.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The Renewable Energy Development Act was just amended and promulgated in May 2019 to incorporate the following new developments:

- a goal of 27GW total renewable energy generation capacity by 2025;
- the simplification of the application procedure for renewable energy power generation facilities with a capacity of less than 2MW;
- the addition of a mechanism allowing for renewable energy-based generation enterprises to choose whether to sell their electricity via direct supply, wheeling or wholesale to TPC; and
- the requirement for heavy electricity users to build a certain capacity of renewable energy-based generator or storage facilities, or alternatively, to purchase a certain amount of T-REC or pay a substitute amount dedicated to renewable energy development.

Currently, the goal of 27GW includes 20GW of solar power, 5.5 GW of wind power, 2.08GW of hydroelectricity and biogas. And the government will stipulate implementation plans and review the same every two years.

Besides, the draft amendment of the Regulations on Renewable Energy Power Generation Facility Installation was announced by the MOEA in December 2018. The key points include:

- the establishment of the recycle mechanism of the PV modules;
- the simplification of the parallel connection review process in specific situation; and
- the special regulation for the installers who install the generation facility only for self-use.

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

As an island nation with nearly zero natural resources for energy production, Taiwan is extremely reliant on imported energy sources. However, public awareness of Taiwan's energy issues has rapidly increased in recent years with ever-rising electricity costs during the summer season, and the aftermath of the Fukushima nuclear disaster in Japan turning a notable portion of the public against nuclear energy, which has since become a politically charged issue. The development of renewable energy-based power has therefore received general support in government and from the people, leading to the aforementioned goal of having 27GW total renewable energy generation capacity by 2025, which is likely to be the biggest driver of change in the renewable energy markets.

Disputes framework

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

There is no specific statutorily mandated forum for dispute resolution between renewable energy market participants. However, for disputes between renewable generator operators and the electricity industry (ie, other generator operators or TPC with respect to power dispatch and sales), there is a compulsory mediation session at the MOEA before the parties may engage in arbitration or litigation. The MOEA mediation session is private, and the MOEA will invite a panel of academics and professionals to participate in the session, depending on the nature of the case.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

Based on the information made available to the public by the BOE, Taiwan's current utility-scale renewable energy sources include hydropower, solar power and wind power.

With respect to solar power, most are small-scale rooftop solar panel installations, and the aforementioned Evergen Power Sixth Phase is the largest plant but has a capacity of only 9.8MW. The government is pushing for more surface solar panel installations in salt work areas, severe land subsidence areas, water space areas and landfills that are difficult for other general industries to use in order to increase power generation. The total solar power capacity in the end of 2018 was approximately 2,738MW and is expected to reach 20,000MW by 2025.

With respect to wind power, currently the main source of electrical energy is the onshore wind turbines in the western coastal areas. The largest is the Luwei ChangBin First Phase Wind Power Station, with a total of 21 wind turbines and an installed capacity of 48.3MW. For offshore wind turbines, two demonstration turbines were completed in 2017, and in 2018 the Taiwan government adjusted upwards the target capacity of offshore wind farms by 2025 from 3GW to 5.5GW. Among the developers selected by the MOEA in 2018 for offshore wind farm development (see question 2), WPD has the highest capacity, with its planned Yunneng Wind Farm off the coast of Yunlin County to have a capacity of up to 708MW.

Development issues

13 What types of issues restrain the development of utility-scale renewable energy projects?

The main factors holding back the development of utility-scale renewable energy projects in Taiwan include:

- EIA policy: the law requires an EIA to be conducted for the installation of any generator facility greater than 2MW in capacity, and this is not an easy procedure to pass in Taiwan. For example, many offshore wind farm projects have been delayed as a result of the EPA's repeated requests for re-examination of the environmental impact assessment process. Even some companies that were originally awarded grants by the MOEA to set up demonstration models of wind turbines eventually lost the opportunity for development because they could not successfully pass the EIA requirements in the requested time frame.
- Financing difficulties: neither the government nor state-owned enterprises participate in sharing the financing risks associated with the renewable energy industry. Currently, there are only fragmented policies encouraging financial institutions to extend credit or invest in renewable energy, and many financial institutions balk at the risk of financing non-traditional and large-scale investments such as offshore wind power projects.
- The slow construction speed of the electrical grid: offshore wind power must be integrated with the relevant transformation and transmission facilities to connect to the electrical grid, but TPC's work on offshore substations and transmission facilities is likely to be outpaced by the construction of offshore wind turbines, which may mean a portion of the completed turbines will remain off the grid by 2025. In response, TPC is making efforts to promote the Offshore Wind Power Electrical Grid Enhancement Project Phase I in order to expedite construction speeds.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

According to the Renewable Energy Development Act, pumped-storage hydroelectric plants are not considered renewable energy-based. Of the 17 hydroelectric plants in Taiwan, most are run-of-the-river, and 12 are owned by TPC, while the remaining five are privately run. As of the end of 2018, the total power output capacity of hydropower is 2,090MW, about 38.9 per cent of Taiwan's renewable energy generation capacity.

As large hydroelectric plants have a significant impact on the neighbouring environment, there are not many places suitable for the construction of large hydroelectric plants. However, Taiwan has a high density of tributaries and streams, along with sharp sloping hills, making it highly suitable for small-scale hydroelectric plants as part of on-site distributed generation. The Council of Agriculture and the Water Resources Agency have chosen appropriate waterways for private evaluation and development. Nonetheless, given the limitation of capacity, small-scale hydroelectric plants will not constitute the main force of renewable energy.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Because of the need to conduct an EIA for large hydroelectric plants and their impact on the neighbouring environment, large hydroelectric plant construction projects face considerable difficulties in obtaining government approval. Other local matters such as geological concerns and irrigation water also require the approval of the relevant departments or agencies, rendering development difficult. As a result, Taiwan's hydropower capacity is only expected to increase from 2,089MW in 2017 to 2,150MW in 2025, which is significantly less than the growth in other types of renewable energy.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

Distributed generation is still very much in its infancy in Taiwan. While the dramatically reduced costs of solar panels in recent years have made solar the energy source of choice in distributed generation, details on cohesive efforts in establishing and maintaining a distributed generation project are sparse.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

The type of distributed generation in Taiwan that has seen the greatest results so far is solar energy. The Taiwan government has provided incentives for using higher efficiency polysilicon and thin-film solar panels certified by the Bureau of Standards, Metrology and Inspection by giving a 6 per cent bonus on the FIT rate for the electricity generated. As installation of rooftop solar panels requires either ownership of the equipment and the rooftop premises to install panels or rooftop space that can be rented out to solar panel operators, and signing promotional offtake arrangements with TPC provides greater incentives than generating solar power for self-use alone, it is not generally

economically feasible to install solar panels for self-use, and most of the power generated from solar power for self-use is still actually sold to TPC under the FIT scheme.

Other distributed generation projects in Taiwan include the aforementioned promotion of small hydroelectric plants, smaller wind farms and biomass generation. As these projects are all mostly in the development stage, capacity and usage are still limited.

Nevertheless, given the use of renewable energy certifications and the promulgation of other incentive policies, the direct supply of power to end users by renewable energy-based power generator facilities (regardless of the energy source) is expected to rise in the future.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

The costs of establishing a microgrid are extremely high and require advanced energy storage capabilities. As a result, current microgrids in Taiwan are experimental in nature and are limited to offshore and emergency and backup generators based primarily on solar or wind power. Since widespread use and commercialisation of microgrids are still some time away, the government has not yet devoted significant efforts to establishing regulations in this area.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

Solar panel installations in Taiwan may be carried out by the owner of the premises, or the owner may rent out the rooftop or other parts of the premises for the installation of solar panels by energy service companies, who will also handle the administrative process on behalf of the owner (see below). However, there is not yet an industry standard prescribing the legal relationship between such an owner and the energy service company installing solar panels, and it remains to be tested how potential contract performance issues, such as the suspension of business by the energy service company, lower than agreed power sales revenue and sharing of solar panel maintenance costs, may be resolved in court.

In addition, the current administrative process for obtaining approval to install renewable energy generator equipment is a time-consuming process. For example, for installing a rooftop solar panel, the user will have to apply for a parallel connection to TPC's grid, enter into power purchase offtake agreements with TPC, obtain certification for the equipment from the BOE or local governments (depending on installed capacity), and then apply for a usage permit from the Construction Management Office. The entire process generally takes several months to complete.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

There are two pumped-storage hydroelectric plants with a total power output capacity of 2.6GW in Taiwan. However, to attain 20 per cent renewable energy overall by 2025, the Taiwan government has set out a NT$1.6 billion, eight-year Regional Energy Storage Technology Demonstration and Certification Plan for the development of distributed energy storage facilities of 1–5MW in capacity installed in-front-of-the-meter in TPC's grid as part of its policy. The government promotion effort will first start in the southern part of Taiwan, where solar power facilities are more prevalent. In 2018, the project had set up two grid storage facility demonstration areas, each with a capacity of 1MW. The battery types involved in the demonstration areas are lithium-ion batteries.

Development

21 Are there any significant hurdles to the development of energy storage projects?

Energy storage facilities are expected to see greater use with the greater power consumption of homes and businesses in the future, but other than the aforementioned promotional efforts in energy storage connection to the grid, the Taiwan government has no concrete plans regarding energy storage for other commercial uses, and it is currently difficult to forecast the future results of industrial movements in this area (eg, the Taiwan Energy Storage System Industry Alliance, which was established in early 2018).

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

There is no restriction on foreign investment in renewable energy-based power generation and sales businesses. However, investors from the People's Republic of China (PRC) may only invest in the manufacturing of electrical power equipment and not in power generation, distribution, transmission and sales businesses.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

There is no restriction on the importation of foreign-manufactured equipment (such as solar panels, inverters and other renewable energy equipment) into Taiwan. However, PRC-manufactured equipment (including renewable energy-based equipment) may not be imported unless the laws have expressly allowed otherwise. For example, foreign-manufactured Wind-Powered Generator Facility Sets (CCC code: 8502.31.00) may be imported to Taiwan, but if they are made in the PRC, they may not be imported. Whether a specific piece of PRC-manufactured equipment may be imported can be determined through searching the CCC code for the item to see whether there is any importation restriction present.

Also note that, according to the Directions for Allocating Installed Capacity of Offshore Wind Potential Zones promulgated by the MOEA in January 2018, those that wish to engage in offshore wind power projects in Taiwan must participate in the selection process. Under the aforementioned selection rules, the winning vendors then need to gradually implement the commitment to localise the supply chain. For example, the vendor must have committed to localise the towers, underwater foundations, power facilities and marine engineering in participating in the selection. As such, entities intending to engage in offshore wind power projects in Taiwan are advised to take note of the above requirements.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Investors wishing to invest in renewable energy-based electricity generating enterprises are required to obtain prior approvals from the Electricity Industry Regulatory Authority to be designated by the MOEA, as well as the local government for the application for an electricity enterprise licence for the installation, transfer and procurement of renewable energy-based power generator facilities.

For the installation, transfer and procurement of renewable energy-based self-use power generator facilities, depending on the capacity of the generator and how the mandate of authorisation is carried out, approval is needed from either the MOEA or from local government.

Depending on the specific circumstances of each case, approvals from other competent authorities may also be required for the installation and transfer of renewable energy-based self-use generator facilities. For example, if the generator is installed on the ground, a written opinion is needed from the local land administration office; if it is installed on the roof, construction or other miscellaneous licences may be needed from the competent authority for buildings. Installation of generator facilities by electricity generation enterprises may trigger the requirement to conduct an environmental impact assessment; installation of offshore wind power generators may involve fishing rights, vessel safety and coastal development, thereby requiring respective approvals from local fishermen's associations, the Ministry of Transport and Communications and the Ministry of the Interior.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

As stated in questions 1, 4 and 6, TPC is currently the only electricity company in Taiwan that is obliged to offtake power from renewable energy under the FIT scheme. See question 6 for more details regarding the offtake arrangements.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

As mentioned in questions 6 and 25, the electricity retailing utility enterprise (currently being TPC) is obliged under law to purchase renewable energy wholesale under the applied FIT scheme. Nonetheless, offshore wind power companies that have won the right to develop on certain wind farms through the price bidding procedures held by MOEA in June 2018 will have to sell the power at their bidding price.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

The establishment of an enterprise intending to operate a renewable energy-based generation business shall obtain the prior approval of the electricity industry regulatory authority to be designated by the MOEA. Additional prior approval is not required for the sale of electricity to TPC under the FIT scheme, or for the sale of electricity to renewable energy-based electricity sellers .

A renewable energy-based electricity generator enterprise may sell power to end users directly by installing connecting powerlines, or indirectly via TPC. Due to concerns regarding the quality of power from the generator enterprise, direct supply requires the approval of the regulatory authority for the electricity industry, while indirect supply does not.

A company limited by shares that has not yet installed generator facilities may apply for an electricity sales licence from the electricity industry regulatory authority to be designated by the MOEA to engage in renewable energy-based electricity sales business. The sale of electricity to users does not require prior approval. Currently, there are no renewable energy-based electricity sales enterprises in Taiwan.

Renewable energy-based generation enterprises intending to sell power through means other than the FIT scheme may sell the Taiwan Renewable Energy Certificate (T-REC). See question 5 for details.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

Renewable energy-based generators and sellers looking to temporarily suspend their business or shut down their business altogether shall, within six months prior to the termination or suspension, submit a termination or suspension plan to the local government for approval. Once the local government approves, the matter will be transferred to the electricity industry regulatory authority to be designated by the MOEA for further review and approval.

Decommissioning of renewable energy-based self-use power generator facilities with a generating capacity of more than 500kW shall apply for the termination of registration from the same competent authority to whom the approval application was originally submitted.

Under the proposed amendment of the Regulations on Renewable Energy Power Generation Facility Installation, it is required to pay a certain amount of fee for recycling PV modules when applying for installing solar power generating facilities or replacing PV modules. The said amendment may come into effect in the near future.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

The renewable energy industry in Taiwan is mainly focused on solar power and wind power at the moment. In addition to its own funds, most projects obtain financing from financial institutions or issue corporate bonds to raise the needed capital. Taking offshore windfarm construction as an example, most projects in the sector are headed by a special purpose business company (SPV) that obtains financing from banks. The ratio of the SPV's own funds versus the amount loaned may be as much as 3:7.

In practice, when deciding whether to finance an SPV company and the collateral to provide, the bank will consider the future earning power of the SPV based on the generation capabilities and the terms of the power purchase contracts. Other factors include considerations of technological skill in the construction work, the procured insurance policies, among others. Most banks will require from the SPV an obligation to notify it of company policy decisions and a veto right on major issues for

the protection of its investment. For collateral, based on publicly available information, there have been some cases in Taiwan where the bank required the parent company of the SPV to pledge its assets up to the entire amount financed, and there have also been cases where letters of credit were issued by the Export Credit Guarantee System, such as the Export Kredit Fonden.

Since local banks have limited experience and foreign banks face certain statutory restrictions with respect to the amount they can loan and to whom they can grant loans, usually a local bank and a foreign bank branch in Taiwan will work together for a renewable energy construction project. That said, as of the end of 2017, banking regulations have been loosened to encourage foreign banks to finance and become the lead banks for renewable energy projects. As an example, a foreign bank branch in Taiwan may now provide financing to a single legal person or affiliate for up to NT$7 billion, or twice the branch's net value, whichever is greater.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Currently in Taiwan, only the solar power industry has matured to the point where operational financing has begun to take shape. Financing is still typically done by bank loans, and the bank will consider a variety of factors that contribute to the ability of the company to pay, such as the solar power generation capabilities, subsidies from the power company, the land use terms and restrictions, vulnerability to natural disasters and other factors to consider the amount of financing to provide and the term of the loan.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

See question 4.

Legislative proposals

32 Describe any notable pending or anticipated legislative proposals.

See question 9.

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

Key government participants in the electricity sector in Tanzania and their roles are as follows:

Energy and Water Utilities Regulatory Authority (EWURA)
EWURA is the energy sector regulatory authority, vested with powers by EWURA Act to issue licences for the electricity supply industry, with a mandate to approve and enforce tariffs and fees charged by the licensees, to approve the licensees' terms and conditions of electricity supply and to approve initiation of the procurement of new electricity supply installations.

Ministry of Energy
The Ministry is mandated to provide supervisory oversight of the electricity supply industry, with powers to develop and review government policies in the electricity supply industry and to promote the development of electricity sub sectors, including the development of indigenous energy resources.

Rural Energy Agency (REA)
The Rural Energy Act established the Rural Energy Board and Agency to be responsible for the promotion of improved access to modern energy services in the rural areas of mainland Tanzania and, through a fund within the Agency, to provide grants and subsidies to developers of rural energy projects and for related and consequential matters. REA was established with the purpose of facilitating the provision of modern energy services in rural areas of mainland Tanzania.

Renewable Energy Fund
Established under REA Act, the fund is responsible for the financing of renewable energy projects in rural areas undertaken by REA.

Tanzania Electric Supply Company Limited (TANESCO)
TANESCO is a vertically integrated state-owned limited liability company, which has the role of a single buyer and is a key national player in the power sector. It is in process of long-term unbundling to generation, transmission and distribution, with interim separation of departments within TANESCO pending full corporatisation. Regulations are generally and slowly being adapted to promote private sector involvement, with a bias towards competitive bidding of some sort for all projects.

National Environmental Management Council (NEMC)
NEMC, through the minister for environmental matters, is responsible for promoting the use of renewable sources of energy by encouraging research in appropriate renewal sources of energy, creating incentives for the promotion of renewable sources of energy, promoting policies and measures for the conservation of non-renewable sources of energy and taking measures to encourage the planting of tree and woodlots by individual users, institutions and community groups.

Ministry of Finance and Planning (MoFP)
The MoFP spearheads financing and the issuing of grants to renewable energy projects and is the key stakeholder in renewable energy policy and its legal and regulatory framework.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

In 1992, the government of Tanzania removed TANESCO monopoly in power generation and distribution in the country. This paved way for private companies, organisations and individuals to play key part in the energy sector of the country.

The main private players in electricity sector in Tanzania are:

- independent power producers, including private companies, organisations such as churches and school, pioneered the establishment of renewable energy projects such as hydro power, the installing of solar PVs in areas that are not connected to the main grid and lobby for the improvement of the legal and regulatory framework in the energy sector;
- service providers (equipment suppliers, construction and engineering services) facilitate the smooth undertaking of energy projects by offering tailor-made services to energy companies and improve renewable energy undertakings by increasing market competitiveness;
- international development organisations – such as the Africa Development Bank, the Sweden International Development Cooperation Agency (Sida) and the SNV Netherlands Development Organisation – implement projects and finance activities that are geared towards improving access to affordable, clean and renewable energy in rural Tanzania households;
- insurance companies, for insuring investments made in energy projects; and
- various non-governmental organisations are active in supporting access to sustainable energy, such as the Tanzania Traditional Energy Development Organization (TaTEDO) and Tanzania Renewable Energy Association (TAREA).

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

There is no specific definition of 'clean power' in Tanzania legislation. 'Renewable energy' is defined under Electricity (Development of Small Power Projects) Rules as energy that comes from natural resources that are renewable.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

The energy sector in Tanzania is regulated by EWURA as a regulatory authority vested with powers:

- to issue licences for the electricity supply industry;
- to approve and enforce tariffs and fees charged by the licensees;
- to approve the licensees' terms and conditions of electricity supply; and
- to approve initiation of the procurement of new electricity supply installations.

Some of the legal and regulatory frameworks applicable to power sector are:

Licensing requirements.

Renewable energy projects generation activities whose installed capacity at a single site is less than 1MW; and off-grid distribution and supply activities where the maximum demand in the off-grid system is below 1MW are exempted from obtaining licences. Exemption is intended to foster rural electrification. EWURA is empowered to make rules on exempted activities and on getting reports. EWURA regulations require all exempted operators to be registered with EWURA and obtain a Registration Certificate after commissioning of the project. EWURA may provide a provisional registration for a small power producer (SPP) or very small power producer (VSPP) that fulfils the registration requirements at any stage before commissioning of the project by way of a letter. Registration is done by filling in application Form 5.

Projects of 1MW and above are required to obtain a licence. EWURA may issue a provisional licence to allow a developer to conduct preparatory activities, such as carrying out assessments, studies and other activities necessary for the application of a licence.

Application for registration is made in a prescribed form indicating the name and address of the applicant, an entity's registration documents (legal identification), description of the geographic area to be served, description of infrastructure (generation or distribution), initial size of the generation facility, description of generation technology, environmental clearance from the NEMC and proof of land use rights.

Minigrid power stations that are built to standards that allow interconnection to the main grid may apply to the authorities to operate as:

- an SPP selling electricity to a distribution network operator (DNO);
- a small power distributor (SPD) purchasing electricity from a DNO (bulk supply) and reselling some or all of the electricity to the SPD's retail customers;
- a combination of an SPP and an SPD;
- notwithstanding the above options, under rule 36(2), the minigrid operator may either remove some or all of its generation and distribution assets; or
- the minigrid operator may sell some or all of its distribution assets to the DNO.

Legal and regulatory framework applicable to financing renewable energy projects

The financing of renewable energy projects is one of the Tanzanian government incentives to promote renewable energy. The Rural Energy Fund, established under the Tanzania Investment Bank (TIB) Development Bank, is a fund manager for a Tanzania Electrification Expansion Programme (TREEP) credit line facility of US$42 million on behalf of the REA. The fund is accessible to participating financial institutions (PFIs) for on-lending to SPPs for power generation and renewable energy companies (VSPPs) for solar distribution and installation. The main purpose of the fund is to support renewable energy sources through the private sector.

The nature of the fund is a refinancing package arrangement to PFIs. The refinancing arrangement is based on the following:

- for SPPs with a capacity range between 100kW and 10MW, the credit range is US$100,000 to US$10 million. The interest rate is 4.37 per cent for US dollar loans and 9 per cent for Tanzania shilling loans; and
- for renewable energy companies (VSPPs), the maximum credit is US$2 million, and the interest rate is 2 per cent for both US dollar and Tanzania shilling loans.

SPPs and VSPPs can access the financing of a project only through PFIs under TREEP. Seven banks have been vetted by Bank of Tanzania and are eligible to participate in the TREEP credit line: CRDB Bank, NBC Bank, Azania Bank, EcoBank, Stanbic Bank, NMB Bank and UBA Bank. The TIB is encouraging more banks to express their interest in order to be eligible to participate in TREEP.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

As per the standardised power purchase agreement (PPA) developed by EWURA, any environmental attributes recognised under any international, national or other laws or regulations associated with the ownership or generation of power from the facility (including but not limited to carbon credits or attributes created pursuant to the Kyoto Protocol or any successor laws) are not included in the energy transferred to the buyer and shall remain the property, and under the control, of the seller.

An SPP developer is required to obtain all the necessary approvals on environmental and social clearance pursuant to relevant laws. An SPP must conduct an environmental impact assessment under NEMC to evaluate the impact of the project on the environment, as well as mitigation of any impact and its management.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

The National Energy Policy 2015 and the Energy Subsidy Policy 2013 have set out strategies to ensure the availability of reliable and affordable energy supplies. These promote efficient energy use in order to support national development goals and focus on renewable energy as a sustainable energy source for rural areas not connected to the main grid, which makes up about 70 per cent of Tanzania population. This includes rural electrification plans and strategies focusing on grid expansion and the development of off-grid electricity supply systems in rural areas including new and renewable energy systems.

The government of Tanzania offers incentives to investors in renewable energy through the Tanzania Investment Centre (TIC), Export Processing Zones (EPZs) and other fiscal laws.

The TIC offers investors a certificate of incentives and strategic investor status for a project worth not less than US$20 million, and the investment enjoys additional fiscal and non-fiscal incentives.

Other incentives are:

- access to services related to permits, licences and approvals in the TIC one stop facilitation centre;
- the recognition of private property and protection against any non-commercial risks. Tanzania is an active member of the Multilateral Investment Guarantee Agency and the International Centre for Settlement of Investment Disputes;
- 10 per cent import duty for semi-processed or semi-finished goods;
- 25 per cent duty for final goods;
- solar energy system parts are exempted from East African Community customs and excise duties;
- VAT exemptions on the supply of solar panels, modules, solar charger controllers, solar inverters, solar lights, vacuum tube solar collectors and solar batteries;
- the introduction of a pay and refund scheme for excise duty paid on fuel purchased by eligible companies participating in renewable energy projects; and
- VAT deferment granted on project capital goods such as plant and machinery.

EPZs offers incentives that include 10 years' exemption from corporate tax and interest, the remission of customs duties, VAT and other taxes on raw materials and goods produced in EPZs, and an exemption from local government taxes and levies on products produced in EPZs.

Through the Rural Energy Fund, the government has put in place a funding mechanism and procedures for the provision of grants and subsidies to developers of rural energy projects.

Photovoltaics (PV) and solar energy system parts are exempt from VAT, customs and excise duties.

Establishing policies and incentives

7 | Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Policy and incentives in Tanzania are generally established at the national level and enforced at every level.

Purchasing mechanisms

8 | What mechanisms are available to facilitate the purchase of renewable power by private companies?

All power purchase in Tanzania is regulated by EWURA. It applies to the electricity sold directly to eligible customers and under the standardised PPAs, including tariffs for small power projects from 100 kW up to 10MW. Any purchasing licensee who intends to conclude a PPA with any other party shall lodge an application to EWURA. EWURA also sets the purchase tariff paid by end customers. Small power project development for hydro and biomass projects together with solar and wind projects of less than 1 MW shall be conducted through executing a letter of intent with a distribution network operator (DNO) that confirms the physical ability of a DNO to purchase electricity from the small power producer delivered at the interconnection point.

Legislative proposals

9 | Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

There have not been any recent major developments in the legislation regulating the renewable energy sector in Tanzania. The government is undertaking the preparation of a geothermal strategy, a legal, institutional, regulatory framework and risk guarantee for the development of geothermal resources and other sources of renewable energy.

Drivers of change

10 | What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

The biggest drivers of change are:

- clear government regulation on renewable energy projects;
- government policy to electrify villages in rural Tanzania;
- investment incentives and availability of funds and grants for rural energy projects, evidenced by programmes such as TREEP;
- increased emphasis on environmental conservation and a ban on cutting trees and using charcoal as a source of energy in Tanzania; and
- in the 2019/2020 budget speech the Minister for Finance and Planning presented that on the Economic Survey for 2018 and the Annual Development Plan for 2019/20, highlighted priorities for 2019/20 which will be implemented with emphasize on environmental protection is the energy sector. The budget focuses on implementation of a number of priorities on improvement of enabling business environment and investment climate through emphasis on energy provision. Among the strategic areas that were financed during the period 2018/19 are the construction of hydroelectric power project at Rufiji River (723.6 billion shillings) and the Rural Electrification Phase III Project under the Rural Electrification Agency (REA) (269.3 billion shillings). In the 2019/2020 period, development expenditure is estimated at 12.25 trillion shillings, equivalent to 37 per cent of the total budget, out of which 1.44 trillion shillings is set for construction of the hydroelectric power project at Rufiji River and some of which will support water projects and REA funds.

Disputes framework

11 | Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

Any dispute between participants in the electricity supply industry or between participants and EWURA or any other government authority relating to the application of the Electricity Act may be brought before the Fair Competition Commission for mediation. Appeals may be made to the Fair Competition Tribunal.

The Electricity (Market Re-Organisation and Promotion) Regulations 2016 also govern disputes. Where procedures are not provided for in these regulations, the minister may do whatever is necessary and permitted by relevant laws to enable any responsible entity to effectively and completely adjudicate on any matter before it.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

Tanzania is reported to have about 109 utility-scale renewable energy projects with a total installed capacity of 157.7MW serving about 184,000 customers. A total of 16 of these plants are connected to the national grid; the remaining 93 operate as isolated minigrids.

The types and sizes are as follows:

- hydro: 49 projects with an installed capacity of 16,003kW;
- biomass: 25 projects with a total installed capacity of 29,174kW;
- solar: 13 projects with a total installed capacity of 234kW; and
- hybrid: three projects with a total installed capacity of 177kW.

On 12 June 2018, Windlab announced the start of construction of the Miombo Hewani wind farm and transmission line project with power production capacity of 300 MW.

As of 2019, the government has started the construction of 2100MW Stiegler's Gorge hydroelectric power station after the award of the construction contract to Arab Contractors Limited of Egypt. Construction is expected to take three years.

Development issues

13 What types of issues restrain the development of utility-scale renewable energy projects?

The issues include:

- inadequate data and power planning tools to integrate renewable options;
- the lack of a specific policy and regulatory framework for renewable energy;
- granting of licences and registration takes a very long time to be completed;
- the lack of enough incentives to develop renewable energy projects;
- unregulated biomass resource extraction from forests defeats the need for locals to opt for available renewable energy options;
- the technical gap in undertaking feasibility studies, detailed design and construction of renewable energy power plants;
- difficulty in securing long-term financing;
- low and cumbersome equity financing of renewable energy projects; and
- high taxes on the development of renewable energy projects.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

In Tanzania, most prevalent hydropower projects are a combination of both run-of-the-river and storage hydropower projects. Most of these are owned by the government through TANESCO, and a few minigrid hydropower projects are owned by churches and local government.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Hydroelectric projects must be registered with EWURA. Among other licensing requirements, hydroelectric generation project applicants need to obtain and submit the following documents to EWURA:

- water rights;
- feasibility studies; and
- an Environmental Impact Assessment Certificate or environmental clearance from NEMC.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

In Tanzania, on-site, distributed generation projects such as photovoltaics (PV) are prevalent in rural households, small businesses not connected to the main grid and in mines owing to the uncertainty of a continuous and adequate power supply from the utility TANESCO. This problem is compounded by the long distances between the main mines and the sources of energy generation.

Solar accounts for the most of the distributed generation projects. However, the amount of electricity generated from these projects is still very minimal and mostly below 1MW.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

Solar PV panel systems are the primary and common type among distributed energy projects in Tanzania. Biomass, hybrid, fossil fuel, gasoline and diesel fuelled power generators and mini-hydro power projects are also common on site power generation projects.

Most rural households in areas not connected to the main grid use solar energy, produced by private entities and institutions such as schools, churches, hospitals and individually owned solar panels. Biomass accounts for 90 per cent of Tanzania's overall energy demand and supply in the form of agricultural residue, forest residue, charcoal and firewood. According to 'Accelerating Mini-grid Deployment in Sub-Saharan Africa: Lessons from Tanzania, 2017', Tanzania has approximately 109 mini-grids, serving more than 180,000 people with 157.7MW of installed capacity.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

EWURA has introduced regulatory exemptions for VSPPs with an installed capacity of 100kWh or less from obtaining licences, tariff approval and environmental impact assessments, among other development requirements. Solar PVs and related products attract 0 per cent import duty and VAT.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

The most significant legal obstacles to the development of microgrids are:

- an incomplete policy and regulatory framework for renewable energy;
- the lack of effective legal penalties for harvesting of charcoal as a source of biomass energy;
- no feed-in tariffs or clear incentives for microgrids; and
- the lack of clear legal certainty of the position of microgrids over the expansion of the microgrid in rural areas.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

There are no common energy storage technologies used in Tanzania other than solid-state batteries mainly used for solar power storage on the off-grid solar systems. There is no any legal framework in place applicable on energy storage and its technologies in Tanzania.

Development

21 Are there any significant hurdles to the development of energy storage projects?

Specific hurdles to storage projects are:

- a general lack of specialised technical expertise on energy storage projects,
- the lack of a specific policy guiding these kinds of projects; and
- a lack of funds channelled to these projects.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Foreign investors may invest in renewable energy projects. There are no specific restrictions on foreign ownership relevant to renewable energy projects in Tanzania. Foreign investors desirous of investing in energy sector are subject to obtaining approvals and licences from EWURA, TIC and related government authorities.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

There are no specific restrictions on the import of foreign manufactured equipment. However, equipment may be subject to taxes and must meet the accepted standards set by Tanzania Bureau of Standards, such as Pre-Shipment Verification of Conformity. When importing solar equipment, it is necessary to include the word 'solar' on all documents such as the packing list, commercial invoice, bill of lading and insurance.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

In Tanzania, titles to land or lease must be acquired on an area where the project is going to be constructed (the major stakeholders are TIC and the Ministry of Lands, Housing and Human Developments and the Tanzania Revenue Authority (TRA); authorisation may also be required from villages that are involved). This may include obtaining:

- local permission to establish an SPP on a specific land parcel;
- permission from the district level;
- permission (and the title deed) from the Ministry of Lands or a Derivative Rights Title from TIC; and
- Tax Clearance Certificate(s) for the directly or indirectly transferring or acquiring a renewable energy project assets depending on the transaction.

Water rights must be acquired for any projects that will involve the use of water, such as hydropower projects in rivers and lake basins.

A letter of intent for small power projects that intend to sell electricity to a DNO do so pursuant to a PPA. The first step toward concluding a PPA is obtaining the letter of intent from the DNO. An letter of intent indicates that the DNO has no objections in principle to interconnecting a power plant of the proposed type, size and power export capacity at the proposed location.

Other authorisations may include:

- business registration, business licence, taxpayer Identification Number and VAT certificate;
- a building permit issued by the local government authority;
- an environmental impact assessment issued by NEMC and social clearances; and
- EWURA licences to provide regulated services in electricity sector or EWURA consents in transfers.

In case of any merger or acquisition of the existing EWURA licensee, clearance from the Fair Competition Commission may be required.

Generally, government authorisations for investors or owners to obtain prior to the construction of renewable energy projects depend on the capacity of energy to be produced in the project.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

Utility-scale renewable projects shall be developed through executing a letter of intent with a public DNO that confirms the physical ability of the DNO to purchase electricity from the SPP delivered at the interconnection point.

The DNO shall, not later than 30 working days after receipt of a request for a letter of intent or after correction of the application, notify the applicant in writing of its decision either to grant or deny such request, provided that no application shall be unreasonably denied. Power projects shall be procured by the DNO by tendering as provided for in the rules and shall be advertised from time to time.

EWURA has developed standardised PPAs for projects of less than 10MW to be used by SPPs and DNOs in executing agreements. SPP developers are allowed to sell electricity to any other entity, subject to the terms and conditions that the parties may agree upon.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

PPAs in Tanzania procured by public DNOs are by way of open competitive tenders. An SPP operator shall charge a feed-in tariff or a tariff that has been approved by EWURA. The feed-in tariff for wind and solar SPPs shall only be applicable to the DNO's isolated minigrids.

A private DNO may procure an SPP using wind or solar technology applying the procedure prescribed under the rules published by EWURA or using their own procedures, provided that such procedures are competitive and approved by EWURA.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

Activities that require a licence are generation, transmission, distribution, supply, system operation, cross-border trade in electricity, physical and financial trade in electricity and electrical installation.

Any person intending to conduct any of these activities shall be required to apply to EWURA for a licence, unless that person or the activity has been exempted by EWURA. A licensee may, under the rules made by EWURA, conclude agreements for the purchase and sale of electricity.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

Energy laws in Tanzania do not directly provide requirements for the decommissioning of renewable energy projects. However, EWURA is mandated to oversee health, environment and security in all energy projects and can impose measures to ensure that decommissioning is done by taking into account the environmental and social impact assessments conducted before or after the undertaking of the project.

After the expiry of an energy project, the proponent or operator shall, at his or her own cost, undertake the safe decommissioning, site rehabilitation and ecosystem restoration before the closure of the site project or undertaking.

The Environmental Impact Assessment and Audit Regulations 2005 require all energy projects to conduct an audit during subsistence of the project or on decommissioning.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

The construction of renewable energy projects in Tanzania mainly undertaken via private funding, loans advanced by project developers, government grants, financing through the Rural Energy Fund and development donor-funds.

The Rural Energy Fund is an autonomous institution established to promote and facilitate access to modern energy services in rural areas by providing grants to qualified developers of energy projects.

The Rural Energy Fund provides grants towards the capital costs of projects implemented by private and public entities, cooperatives and local community organisations, and technical assistance, training and other forms of capacity building to qualified developers by qualified experts related to the planning and preparation of a project prior to an application for a grant and the provision of financial assistance.

Tanzania is currently implementing the TREEP on renewable solar energy projects amounting to US$225 million (see question 4).

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Similar to construction, the financing of operating renewable energy projects in Tanzania is undertaken via private investment, loans from project developers, government grants, financing through the Rural Energy Fund and by donor-funded projects.

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UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

In December 2018, REA offered financial assistance to renewable energy minigrid project developers from the Tier 1 Renewable Energy Project Development Facility (REPDF). The Tier 1 REPDF is designed to support project feasibility studies and other pre-construction consulting services catering for early-stage project development and is available for feasibility studies and other consulting services offering a grant of up to US$100,000.

EWURA passed the Electricity (Generation, Transmission and Distribution Activities) Rules 2019.

During the 2019/20 budget reading by the energy minister, the government announced:

- plans to start the implementation of Tanzania Energy Gender Action Plan;
- plans to generate 200MW of geothermal electricity by 2025;
- a review of Small Power Projects Framework by the introduction of the Electricity (Development of Small Power Projects) Rules 2019 to regulate electricity tariffs by mini grids;
- the expected completion of mini-grid hydro, solar and wind projects by 2020 such as in Lugarawa 1.7MW in Ludewa district; Maguta 1.2MW in Kilolo district; Luponde 1.0MW in Njombe district; Suma 1.4MW in Rungwe district and Mwenga wind project 2.4MW in Mufindi; and
- the approval of the Energy Efficiency Action Plan.

Legislative proposals

32 | Describe any notable pending or anticipated legislative proposals.

According to the Minister for Finance and Planning, in financial year 2019/2020, the Government continue reviewing and strengthening the policy, legal and institutional frameworks in order to attract both domestic and foreign investors. The Government will implement the Blueprint Action Plan exhaustively to improve business environment and provide efficiency. In achieving this milestone, there may be new legislative proposals in the energy sector that will promote the renewable energy sub sector as one of the priority areas mentioned.

Turkey

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

Ministry of Energy and Natural Resources (ETKB)

In Turkey, energy policy is created and implemented by the ETKB. In that respect, ETKB is in charge of setting and implementing long-term plans by determining a strategy in relation to the electricity market based on this task.

Energy Market Regulatory Authority (EMRA)

Law No. 4628 was enacted in Turkey in 2001 in order for the electricity market to be accessible to private entities and for electricity market operations to be conducted under the conditions of a free market economy and Energy Market Regulatory Authority (EMRA) was established to regulate this new structure. Law No. 4628 was renamed the 'Law on Organisation and Duties of Energy Market Regulatory Authority' upon the enactment of the Electricity Market Law (EML) No. 6446 in 2013. Law No. 4628 is still in force as the law that regulates the formation and tasks of EMRA. In that regard, EMRA acts as an independent administrative authority in charge of regulating and auditing electricity market in line with this law as well as the duties and tasks ascribed by the EML.

According to the aforementioned legal regulations, EMRA is the administrative authority primarily responsible for granting licences identifying the operations permissible for legal and natural persons in energy and electricity sectors in addition to their rights and liabilities arising from those activities and drawing up the existing contracts falling under the scope of the transfer of operating right. Furthermore, monitoring the market performance, creating and amending performance standards and distribution and customer services regulations and have such implemented, determining and implementing the pricing principles in the sector and the formulae related to the adjustments to be required because of inflation are among the other matters for which EMRA is responsible. On the other hand, perhaps one of the most important of EMRA's tasks is to audit the market. In that regard, EMRA is responsible for ensuring legal persons operating in the electricity market act in compliance with the laws and regulations in force. In addition to this responsibility, EMRA is authorised to impose administrative sanctions granted to it under the relevant laws in relation to any discrepancies that are ascertained.

General Directorate of Renewable Energy (YEGM)

Article 10/B of the Law on Organisation and Duties of Ministry of Energy and Natural Resources No. 3154 provides that procurement of utilisation of renewable energy resources in Turkey falls under the responsibility of the YEGM affiliated to the ETKB. Pursuant to the duties and powers ascribed under the relevant legal regulations, YEGM is responsible for:

- conducting measurements to determine and evaluate all kinds of energy resources including, especially, the hydraulic, wind, geothermal, solar, biomass and other renewable energy resources in the country, preparing feasibility and sample implementation projects; developing pilot systems in collaboration with research institutes, local administrations and non-government organisations and conducting promotion and advisory activities;
- creating awareness about the efficient use of energy in the industry and buildings and conducting activities to that end;
- monitoring and auditing energy efficiency implementation projects and research and development projects approved by the Energy Efficiency Coordination Authority;
- monitoring and evaluating the studies and developments within the fields of renewable energy and energy efficiency, determining the R&D objectives and priorities in line with the requirements and conditions of the country, performing and having third parties perform R&D activities to that end, disclosing the outcomes of those activities to the public along with the economic analyses; and
- developing projections and suggestions for evaluating renewable energy resources and increasing energy efficiency.

State-owned energy companies

The Turkish Electricity Administration (TEK) was established in line with Law No. 1312 enacted in 1970 with the objective of eliminating the distributed structure in the electricity sector and ensuring operational integrity according to which specified areas of the licensed companies as well as the generation, transmission, distribution and sales of electricity outside the boundaries of municipalities were incorporated under TEK. To offer services more efficiently and effectively in line with contemporary practices and also in compliance with the privatisation policies, TEK was reorganised into two separate state economic enterprises, TEAŞ and TEDAŞ, pursuant to Council of Ministers Decree No. 93/4789 dated 12 August 1993.

In 2001, public electricity assets were organised under three distinct legal entities pursuant to Law No. 4628: the operations conducted by TEAŞ were distributed to three separate companies, namely the Electricity Generation Company (EÜAŞ), the Turkish Electricity Transmission Company (TEDAŞ) and the Turkish Electricity Transmission Company (TEİAŞ).

Electricity Generation Company (EÜAŞ)

EÜAŞ is a state enterprise that aims to deal with generation and selling of safe, sustainable, high-quality, efficient, cost-effective and eco-friendly electricity energy in line with the principles of profitability and efficiency with due regard for public benefit. The share of the company in generation of electricity is reduced in a planned way for the benefit of private electricity companies according to the strategic plan conducted

for rendering a free market, the privatisation plan and relevant legal regulations. Currently, the company operates varying types of electricity plants with an installed power of 18,435MW, 12,772MW of which accounts for hydroelectric plants.

Turkish Electricity Transmission Company (TEİAŞ)

All the electricity transmission in Turkey is operated by TEİAŞ as a result of the state's general energy policy. TEİAŞ is a public economic enterprise that conducts its operations in line with the transmission licence granted by EMRA.

Turkish Electricity Distribution Company (TEDAŞ)

TEDAŞ, one of the companies incorporated as a result of the demerger in 2001, is mainly responsible for performing electricity distribution operations. Notwithstanding the foregoing, Turkey was divided into 21 distribution zones that were entirely privatised under the project for privatisation of public-owned electricity enterprises in order to create a competitive environment in electricity distribution and the retail sales industry and launch the required reforms.

TEDAŞ is still in good standing and fulfils the functions of brokering and auditing the settlement of general lighting expenses ascribed to TEDAŞ under EML in addition to assuming some other tasks such as nationalisation ascribed through relevant legal regulations.

Turkish Electricity Trade and Contracting Company (TETAŞ)

Incorporated as the first and sole public energy wholesale company following the demerger of TEAŞ into three companies under the privatisation initiatives in energy sector in 2001, TETAŞ is an Economic State Enterprise with liability limited with its capital and undertakes electricity trade and contracting activities in line with the general energy and economy policy of the State.

In this context, TETAŞ purchases electricity from energy plants owned by EÜAŞ, plants operated through build-operate, build-operate-transfer and operating right transfer models, other countries under import agreements and balancing markets and sells it to electricity distribution companies, commissioned supply companies, customers with direct connection to the transmission system, other countries within the scope of export agreements and balancing markets.

Energy Exchange Istanbul (EXIST) | (EPİAŞ)

The company was incorporated on 18 March 2015 in line with the provisions of Electricity Market Law No. 6446 of 14 March 2013 and Turkish Commercial Code No. 6102. EPİAŞ is mainly involved in planning, establishing, developing and operating the energy markets included in the market operating licence in an effective, transparent and reliable manner so as to satisfy the requirements of the energy market. It aims to ensure reliable reference price formation without discriminating among equal parties and become an energy market operator allowing for trading activities through market mergers along with the highest level of liquidity based on the increasing number of market actors, product range and transaction volume. It is the sole entity that acts as an energy exchange market in Turkey.

Municipalities

Municipalities are empowered to organise tenders for granting the right to utilise landfill gas to companies intending to establish plants using landfill gas as fuel for biomass plants. In addition, energy plants file applications to the relevant municipalities to fulfil a number of requirements such as a building licence, earthquake resistance certificate, workplace opening and operating licence just like enterprises in other sectors, and they are subject to the supervision of municipalities in such non-sector-specific matters.

Other

Apart from explanations provided above, some of the governmental authorities are critical of allocation of primary resources. For instance, a water utilisation agreement has to be executed with the General Directorate of State Hydraulic Works (DSİ) in relation to hydroelectric plants. Geothermal energy, on the other hand, is under the responsibility of the General Directorate of Mining affiliated with the ETKB. Permits for measurement stations for wind plants and solar plants are granted by the General Directorate of Meteorology. The Ministry of Environment and Urban Affairs is in charge of environmental impact assessment reports, while forestry permits are issued by the General Directorate of Forestry affiliated with the Ministry of Forestry and Water Affairs. The Ministry of Finance conducts the processes for expropriation of the real estate required by the licence holder generation companies.

Apart from those listed above, other public enterprises and organisations may be empowered to issue certain administrative permits according to the type of the primary energy, location of the resource and relevant conditions. For instance, if the project site falls within an area that is entirely or partially under protection, the High Council of Cultural and Natural Heritage Preservation affiliated with the Ministry of Culture shall be involved in the process, whereas the Provincial Directorate of Agriculture shall be responsible for determining and certifying the agricultural attribute of any given land.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

Private generation companies and supply companies operate in line with the (wholesale-retail) licences as per the EML. Also, since the distribution zones are privatised, the distribution activities are currently performed by private companies. The supply company belonging to the same group fulfils the functions attributed to a commissioned supply company and acts as the end resource supplier for supplying electricity to end consumers.

Apart from those companies acting in line with licences issued under EML, private companies especially assume an active role in project development phase.

Despite certain differences in generation levels, private companies may invest in renewable energy by pursuing a licensing process quite similar to that required for a conventional plant. For renewable resources, the tendering process projected for wind and solar plants is different from conventional plants. The winning project is granted a right to connect to the system from the relevant connection point and the project is licensed according to the outcome of the tender.

Besides the foregoing, renewable energy enterprises with an installed power below 1MW are not obliged to incorporate companies and receive licences in Turkey until the amendment on the EML. 1MW installed power restriction has been raised to 5MW with the decision numbered 1044 of President of the Republic, which is published in the Official Gazette dated 10 May 2019 and numbered 30770. Those enterprises are entitled to generate electricity in line with certain conditions and sell the excess power to the grid. Thus, the government encourages small-scale investors to contribute to the system in the renewable energy field. Therefore, those developing projects below 5MW could be considered as participants in the sector. Unlicensed installed power was 5,488.6MW as of January 2019, with a great increase in comparison with the previous year. See www.teias.gov.tr/sites/default/files/2019-02/kurulu_guc_ocak_2019.pdf.

For wind power plants under construction between 2012 and 2018, most investments are made by private companies. Certainly, the most important reason is that the electricity generation sector is

made available to private investments and the government offers incentives for renewable investments by providing purchasing guarantees. Currently, there are 180 wind plants. Approximately 5,386.85MW of the total investment is operated by 21 different domestic and foreign energy companies (see www.tureb.com.tr/files/bilgi_bankasi/turkiye_res_durumu/istatistik_raporu_ocak_2019.pdf).

A similar structure is also encountered with respect to solar power. In 2018, the total number of Installed solar power plants in operation reached 5,868; 4,981.2MW of which is unlicensed and 81.8MW of which is licensed. Almost all of those plants comprise small-scale and unlicensed projects in the private sector.

As for geothermal energy, Turkey hosts an installed power of 1,188MW, almost wholly owned by private companies.

Similarly, biomass and landfill gas plants of nearly 811MW are entirely operated by private companies.

In that respect, private sector participants are entitled to develop projects and make investments through licensed and unlicensed investments to the extent allowed by grid restrictions. There are various private investments made in this way in Turkey. Foreign investors have also participated in most of those investments. There is no restriction for foreigners in that regard. The pace of improvement in wind power investments in Turkey is clearly fast.

Unlicensed electricity generation plants connect to the grid over the distribution voltage level. Therefore, distribution companies assume an important role especially for executing connection agreements for those plants. On the other hand, supply companies are obliged to purchase the electricity generated by unlicensed plants for 10 years pursuant to the legislation on supporting renewable energy resources. Also, they fulfil the financial obligations ascribed to them under the renewable energy supporting mechanism.

Definition of 'renewable energy'

3 | Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

Turkish regulations contain a number of definitions for renewable energy resources and generation plants based on such resources. In that regard:

- the Law on the Use of Renewable Energy Resources for Generating Electric Energy No. 5346 defines renewable energy resources as non-fossil energy resources such as hydraulic, wind, solar, geothermal, biomass, gas derived from biomass (including landfill gas), wave, current energy and ebb tide;
- the Regulation on the Unlicensed Electricity Generation in Electricity Market also defines 'renewable energy resources' same as Law No. 5346; and
- Electricity Market Licence Regulation, on the other hand, defines generation plants based on renewable energy resources as plants based on wind, solar, geothermal, biomass, gas derived from biomass (including landfill gas), wave, current energy and ebb tide as well as channel or river-type hydroelectric plants or those with a reservoir area smaller than 15km² or with pumping storage.

Framework

4 | What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

In Turkey, activities related to electric energy involve generation, transmission, distribution, wholesale or retail sale, import, export and market operations of electricity and EML No. 6446 sets forth the rights and obligations of all real and legal persons related to those activities. Pursuant to the relevant law, generation, transmission, distribution, wholesale, retail sale, market operations, import and export of electricity activities may only be pursued if the required licence regarding the relevant activity is obtained.

EMRA is in charge of providing all kinds of permits, approvals and conducting audits for all activities to be undertaken in electricity markets. Distinct licences are required for each activity in electricity market and also for each plant if any activity is performed in more than one plant and the eligibility criteria to obtain licences are provided in the EML and Electric Market Licence Regulation.

Under this law, legal persons shall receive a permit known as a licence in order to operate in the electricity market. In addition to this permit, it is obligatory to secure the necessary environmental impact assessment resolutions rendered by the Ministry of Environment and Urban Affairs in order to perform the above-mentioned operations and receive licences for electricity markets.

Law No. 6446 also provides that legal persons intending to generate electricity shall have to secure a specific permit known as a preliminary licence that is valid for a specific duration so as to receive the approvals, permits, licences and so on, required for initiating the investment for generation plants. Preliminary licences could be defined as a preparatory permit issued for allowing persons to complete the required procedures in the course of the licensing process.

There are a number of exceptions to the licence and preliminary licences to be granted for renewable energy. In that, it is not necessary to receive a preliminary licence and licence for generation plants with an installed power up to 5MW or the cap determined by means of a decree of the President of the Republic and using all the energy generated in the plants based on renewable energy resources without feeding any of the energy to the transmission or distribution system and having the generation and consumption at the same measurement point. According to the article 28 of Regulation on the Unlicensed Electricity Generation in Electricity Market: 'The energy produced by natural or legal persons at their generation facility established in a distribution place can be consumed in a consumption facility provided that it is owned by the same person and in the same distribution place.'

Licences are issued for a period of minimum 10 years and maximum 49 years with due regard for the attributes of the activity. The term of generation licences granted for renewable energy resources, however, is 30 years.

Apart from preliminary licence and licence, EMRA issues a renewable energy resource certificate (YEK certificate) to the legal person holding a generation licence to allow for determination and follow-up of the resource type during trade of electric energy generated through renewable energy resources in national and international markets. Besides the above-mentioned use of the YEK certificate, it is also used for practices under the renewable energy support mechanism (YEKDEM) for electricity generated through renewable energy resources in generation plants under the licence, and determination and follow up of resource type in the sale of electricity in renewable energy generation plants in markets under the emissions trading scheme.

Apart from YEK certificate, legal persons generating electricity from renewable resources are entitled to receive a Certificate for Generating Electricity from Renewable Resources from the ETKB as per Law No. 6446.

Stripping attributes

5 | Can environmental attributes be stripped and sold separately?

The increasing public awareness on climate change and its impacts and the acceptance of the fact that carbon equalisation is a reliable

precautionary strategy have contributed to the rapid development of voluntary carbon markets in recent years.

Voluntary carbon markets are developed independently from governmental objectives and policies to struggle with climate change and are open to contribution of all segments of the community from the business world to local administrations, NGOs and individuals with respect to carbon equalisation.

Companies intending to equalise greenhouse gas emissions arising from their activities calculate the emission volumes and purchase the carbon certificates generated in line with the projects aimed at reducing and equalising such emissions within the frame of social responsibility principle. The emission certificates traded in this market are called voluntary emission reduction certificate.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

Turkey plans to increase the rate of benefit related to renewable energy resources by 30 per cent as per its energy policy. In that respect, a number of regulations are put in force in order to offer an incentive for the use of renewable energy resources.

First of all, plants generating electricity based on renewable energy resources in Turkey enjoy exemption from value added tax and customs duty. Besides, the EML No. 6446 provides that the annual licence fee will not be collected for generation plants using domestic natural resources and renewable energy resources for the first eight years as from the completion of the plants indicated in the relevant licence.

Also, the YEKDEM has been launched based on the Law on the Use of Renewable Energy Resources for Generating Electric Energy No. 5346. YEKDEM aims to offer incentives to persons involved in generating electricity based on renewable energy resources in Turkey and support generation of electricity based on renewable energy resources. This system sets forth distinct prices, terms and payment methods to be utilised by legal entities generating electricity based on renewable energy resources under generation licences themselves or through supply companies for persons generating electricity without generation licences. Generation plants registered in the system are entitled to benefit from YEKDEM for 10 years and sell electricity at the fixed prices as specified in the Law (see table below) until the amendment mentioned above on Law No. 6446.

Schedule No. I (provided in Law No. 6094 dated 29 December 2010)

Applicable prices (US dollar, cent/kWh)	
Hydroelectric generation plant	7.3
Wind-based generation plant	7.3
Geothermal-based generation plant	10.5
Biomass-based generation plant (including landfill gas)	13.3
Solar-based generation plant	13.3

Decision dated 10 May 2019 regulates that; provided that the installed capacity of the generation facilities subject to YEKDEM, which is entitled to receive a connection agreement call letter, is limited to the connection agreement contract power of the consumption facility; the retail single-time active energy price of its subscriber group announced by EMRA shall be applied to the surplus electricity generated for a period of 10 years from the date of commissioning of the facility for the following: (i) up to 10 kW (including 10 kW) for residential subscribers, with production and consumption at the same measuring point; (ii) and solar and power generation facilities with roof and facade applications for industrial and commercial and lighting subscribers as well as electricity consumption facilities based on other renewable energy sources.

Thus, investors are protected from market risks for 10 years and they are given due support by elimination of any ambiguity. This also provides an additional security for the funding of the project. YEKDEM is considered to be the most important incentive for renewable energy resources in Turkey. Therefore, the figures provided below that amount to a purchasing guarantee are extremely important for domestic and foreign investors.

The incentives provided for renewable energy investments are not limited to those indicated above. The ratio of domestic parts incorporated into the equipment used for investments is also important. According to the system known as the domestic contribution, the prices available in Schedule No. I are increased in the form of domestic contribution for five years according to the ratio of domestic contribution in the equipment based on the ratios provided in the Law (Schedule No. II provided in Law No. 6094 dated 29 December 2010). In that manner, incentives are offered for research and development activities and localisation that are critical for the development of renewable energy. Currently, hydroelectric power plants have the largest share on the list of plants benefiting from YEKDEM as there are 465 plants. Also 160 wind plants, 98 biomass plants, 45 geothermal plants and nine solar plants are known to benefit from YEKDEM (see www.enerjiportali.com/wp-content/uploads/2018/12/2019-Y%C4%B1l%C4%B1-Nihai-YEK-Listesi.pdf). As of the end of 2016, 21.98 billion Turkish liras was paid for 62,474,456.66MWh electricity generated in plants with installed power of 88,438MW under YEKDEM. Hence, YEKDEM became very attractive for investors in Turkey in recent years.

Another incentive method called the renewable energy resource area (YEKA) has come under the Regulation on Renewable Energy Resource Areas, which came into the force on 9 October 2016. This regulation defines YEKA as an area, on either property belonging to the public or Treasury, or privately owned property, which has a high potential for at least one renewable energy resource. The purpose of this new method is creating large-scale YEKA areas for the efficient use of renewable energy resources. To achieve this goal, this new regulation aims to determine these YEKA areas, to allocate connection capacity for these areas, to determine the conditions of the tender for the participating legal persons and the licence application process for tender winners, and also to determine the procedures regarding the sale of the electricity generated in YEKAs. Under the regulation on YEKAs, the use of both domestic equipment and domestically manufactured equipment for YEKA projects is also ensured. YEKA has already become and will continue to be an important development platform for large-scale big-ticket projects.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

In Turkey, renewable energy policies and incentives are regulated at the national level. In that regard, ETKB prepared a National Renewable Energy Action Plan to increase the share of renewable energy resources in energy generation portfolio.

The National Renewable Energy Action Plan is also an international document available to public opinion that transparently describes the development objectives of Turkey, as well as the measures intended to be taken in line with such objectives as a document issued in compliance with the Directive 2009/28/EC of the European Parliament and of the European Council of 23 April 2009 on offering incentives for the use of energy from renewable resources.

Regional administrations or municipalities do not have any role in any part of energy market policies and incentives that are administered and audited by national state mechanisms (eg, the ETKB, EMRA).

Nevertheless, a number of regional tax rebates and similar incentives are introduced from time to time to eliminate the inequality among the regions in the country under regional investment incentive programmes.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

YEKDEM requires supply companies to fulfil the financial obligations ascribed to them. The cost of YEKDEM is distributed among supply companies by the market operator. On the other hand, unlicensed electric generation plants connect to the grid over the distribution voltage and commissioned supply companies arising from segregation of distribution companies are obliged to purchase the electricity generated by unlicensed plants for 10 years.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

As a party to the Paris Convention, Turkey has provided intended national contribution declarations. Accordingly, Turkey declared that it shall reduce greenhouse gas emissions calculated based on the reference scenario by 21 per cent in 2030. Several planning and strategy documents were prepared in order to realise the contribution declarations made by Turkey under the Paris Convention. Such documents include different action plans on matters such as climate change, industry, energy efficiency, recycling and transportation systems. Although those documents do not have the force of law in legal terms, they could be considered as indicative of the contents of legislative proposals that might be presented in the near future. It is reasonable to anticipate that Turkey shall continue to offer certain incentives in the renewable energy field. There is no public draft or legislative proposal that aims to alter the foregoing status quo (especially with respect to YEKDEM and domestic contribution model).

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

Energy demand in Turkey is increasing rapidly, which has led the government to focus on both primary energy resources and supply safety for electric energy.

Given the primary energy type of installed power in existing generation plants, Turkey is dependent on foreign countries in terms of electricity generation operations. Most of the electricity is still generated in natural gas plants (29.8 per cent according to 2018 data, see www.enerji.gov.tr/en-US/Pages/Electricity). Therefore, one of the most important causes for upward change in the renewable energy market in Turkey is reducing the country's dependence on foreign resources for energy by decreasing energy import.

Also, another important reason for the changes effectuated in the renewable energy field is that the technological developments facilitate generation of renewable energy, thus lowering costs to affordable levels. In addition to the reduction in the cost of generating electricity with renewable energy resources, the international conventions to which Turkey is a party, which provide for increases in the fossil fuel costs through carbon trade, carbon tax and similar mechanisms, have contributed to the increasing popularity of renewable energy.

On the other hand, Turkey is much more advantageous in terms of renewable energy potential compared to fossil resources. In particular, Turkey hosts a high potential of hydraulic, wind, solar, biomass and geothermal energy resources. At this point, it might be reasonable for Turkey to enrich its resource variety with renewable resources to the extent possible in order to ensure effective use of resources.

Hydraulic energy is one of the most important resources with the highest potential in Turkey. The country enjoys a gross hydroelectric potential of 433 billion kWh/per annum, technical potential of 216 billion kWh/per annum and economic potential of 164 billion kWh/per annum.

As for the potential of wind power, Turkey's size is 784.347km² and it enjoys a significant wind potential owing to its climatic characteristics. The wind energy potential of the country is marked with some differences in certain regions according to the wind velocity and continuity. The Electric Works Survey Administration (EİE) conducted a study for determining the wind potential of Turkey resulting in the creation of a Wind Potential Map of Turkey (REPA) in 2006. Based on those studies, the potential wind power that could be used for generating electricity in Turkey was calculated by taking into consideration the wind velocity of 7m/sec and above and it turned out that the country has a total capacity of 47.849MW made up of 10.463MW for sea and 37.386MW for land. REPA indicates that the Aegean and Marmara coasts have the highest wind potential in Turkey.

With respect to solar power, the annual average sunshine duration is 2,640 hours (7.2 hours on a daily basis) in the country, while annually the average solar radiation value is 1,311kWh/m² (3.6kWh/m² on a daily basis). In terms of monthly average sunshine duration, July (365 hours), August (343 hours) and June (325 hours) have the highest potential respectively. EİE prepared a Solar Energy Potential Map of Turkey in 2010. This study indicates that Turkey enjoys a solar power potential equivalent to approximately 56,000MW of thermic plant capacity and it could be possible to generate around 380 billion kWh of electricity per annum if this potential were duly utilised.

Turkey is expected to continue its economic development and thus the increase in energy demand is also expected to continue. In that respect, it is essential for Turkey to commission new plant investment and to maximise the variety of energy resources (eg, requirement for domestic and renewable resource) along with energy efficiency. The government is taking steps to encourage alternative solutions fundamentally based on renewable energy with a view to preventing the risks arising from a high level of energy dependency and developing a sustainable energy model.

Disputes framework

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

Under Turkish law, there is no provision stipulating specific dispute settlement between renewable power market participants and that requires an application to be made to an arbitration or mediation procedure before filing a lawsuit.

However, regarding the settlement of certain disputes, an option to apply to EMRA is provided under the legislation. For example, pursuant to the Electricity Market Licensing Regulation, concerning the resolution of disputes related to connection and system usage agreements, transmission and distribution licence holders may apply to EMRA or EMRA may act as a mediator for disputes arising from concession and application agreements. Nevertheless, litigation is always possible for the parties despite applying to EMRA.

With respect to disputes to be resolved via litigation, the legal status of the renewable power market participants has an important role in the determination of whether administrative or legal jurisdiction

will be pursued. In the event that one of the parties to the dispute is an administrative body and an administrative act is established, it shall be applied to administrative jurisdiction. Such disputes arise in the renewable energy sector mainly because of the inability of generation companies to benefit from YEKDEM or from incentives provided within the scope of promotion of domestic components.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

The fundamental projects based on renewable energy resources in Turkey could be listed as projects for hydroelectric, wind, geothermal, solar and biomass plants. Turkey does not plan to engage in concentrated solar power, offshore wind power and ebb-tide, wave and other marine energy projects until 2023.

According to 2018 data, which can be obtained from www.tureb.com.tr/files/bilgi_bankasi/turkiye_res_durumu/istatistik_raporu_ocak_2019.pdf, there are 180 wind power plants in Turkey. These are terrestrial wind plants. Of those 180 plants, 154 are licensed and 26 are unlicensed. When all the wind power plants that have been granted licences and preliminary licences by EMRA are commissioned, 7.9 per cent of the total electricity requirement in Turkey will be met by wind power plants.

According to 2018 data, there are 564 solar power plants in Turkey in total, 549 of which are unlicensed and 15 are licensed. The installed power of those generating electricity with a licence is around 17-18MW.

In addition, according to 2018 data, there are 636 licensed hydroelectric plants in Turkey. According to 2018 data, 11 hydroelectric plants above 250 MWe are currently under construction. The total installed power of hydroelectric plants regarded as renewable energy resources in Turkey is 27,912 MW as of the end of June 2018 (see www.enerji.gov.tr/en-US/Pages/Hydraulics).

Finally, there are 115 geothermal power plant projects in Turkey and 527 geothermal plants are currently under way.

Development issues

13 What types of issues restrain the development of utility-scale renewable energy projects?

The most important physical obstacle for renewable energy projects in grid scale is Turkey's infrastructure deficiencies. In particular, a lack of capacity in connection points is the most important drawback not only for the development of potential projects but also increasing the capacity of existing projects. Therefore, a lack of infrastructure seems to be an important factor that could deter the private sector from investing in the industry.

Another important point is that EMRA makes frequent use of its power to issue secondary regulations as the sectoral regulator in the electricity market. This leads to a certain ambiguity for private sector participants that conduct feasibility studies and plan projects, which has been a source of complaint by market actors from time to time.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

In general terms, hydropower plants could be classified as conventional hydropower plants and pumped-storage hydropower plants. Still, it should be noted that hydropower plants are divided into two according to their storage structure in Turkey, namely storage (reservoir) and river-type (regulator) hydropower plants.

For reservoir hydropower plants, the river is blocked with a 'dam' structure and a reservoir is created on the rear side of the dam. Reservoir hydropower plants allow for adjusting flow rate. Therefore, those plants are capable of generating electricity even in the arid and dry season.

River-type hydropower plants, on the other hand, lack storage structures. These are solely constructed for generating electricity. River-type hydropower plants also do not allow for adjustment of flow rates, thus the amount of power generated by the plant differs according to the season. Electricity generation in the rainy season may increase with higher flow rates, while potentially no electricity may be generated in the dry season.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Persons intending to operate in the energy market in Turkey are obliged to meet the eligibility criteria specified in the EML and Energy Market Regulation. Eligible persons are obliged to file an application for a preliminary licence or licence in line with this law and regulation and to become operational as soon as the relevant processes are completed.

A company must be incorporated with the purposes to deal with power generation in compliance with Turkish Commercial Code in order to file an application for a preliminary licence or a licence. Preliminary licensing and licensing processes (see question 4) are also applicable for this question. Nevertheless, there are several different terms and conditions for hydropower plants.

First of all, persons filing an application for a preliminary licence or licence to use hydraulic resources are required to prove that they have executed or become entitled to execute a Water Use Rights Agreement with the DSİ. The lists of hydropower plant projects developed by DSİ and legal persons and available for application shall be continually announced and updated on the DSİ's website, according to the project phases. As provided below, presenting documentary proof as to the execution or being eligible for execution of water use rights is a preliminary condition for filing an application for a preliminary licence or licence. Nevertheless, it is essential to draw up a water use rights agreement and submit the same to EMRA before starting to invest in the generation plant during the term of the preliminary licence.

Also, it should be noted that the most important condition for a water use rights agreement is that the applicant is obliged to ensure sustainability of natural life in the river bed and leave a sufficient amount of water to meet the requirements of water rights to the river bed continuously without variation. The volume of water to be left to sustain natural life must be a minimum 10 per cent of the average flow rate of the past 10 years forming the basis of the project. This volume can be increased but not decreased.

In addition to the requirement to signing a water use rights agreement, it is obligatory to obtain a positive decision via an environmental impact assessment or else a decision that an environmental impact assessment is not required under the Environmental Impact Assessment Regulation with respect to wind, solar, hydraulic, geothermal or domestic resource (listed in the regulation) based generation plants.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

The requirement for receiving a preliminary licence and licence is not applicable for generation plants based on renewable energy resources of installed power up to 5MW and generation plants using all the energy generated in the plants based on renewable energy resources, without feeding any of the energy to the transmission or distribution system and having generation and consumption at the same metering point. Such plants are called unlicensed power generation plants.

Wind and solar power plants with installed power below 5MW especially have lately gained popularity in the country. As has already been indicated in question 12, 15 of the power plants are currently licensed.

Anyone who is a subscriber to electricity services, regardless of whether they are a real or legal person, can establish an unlicensed power generation plant. These persons must be in possession of at least one consumption facility that subscribes to electricity services. Persons without a subscription cannot establish an unlicensed power generation plant.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

The majority of relevant investments are photovoltaic solar systems below 1MW (both roof applications and outdoor systems). Nevertheless, there are also wind plant investments. In addition, there are cogeneration and micro-cogeneration plants operated through various types of fuel. Those using renewable energy resources are entitled to sell the excess energy to third parties based on the YEKDEM system, which is explained in detail above. The plants owned by private sector investors connect to the grid over the distribution voltage level. Therefore, distribution companies assume an important role, especially for executing connection agreements for those plants. In addition, supply companies are obliged to purchase electricity generated by unlicensed plants for 10 years pursuant to the regulation on supporting renewable energy resources. Also, they must fulfil the financial obligations ascribed to them under YEKDEM.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

Where our response to question 16 for promoting the development of small integrated generation projects is applicable, the EML, the Regulation on Unlicensed Power Generation in Electricity Market, which was enacted in line with the aforementioned law, and the Regulation on Certifying and Supporting Renewable Energy Resources include a number of provisions to that end.

Nonetheless, obligation regarding small integrated generation projects to incorporate a company in compliance with the Turkish Commercial Code does not apply as opposed to licensing requirements. Anyone who is a subscriber for electricity services may engage in unlicensed power generation activities without incorporating a company, and meet their own energy requirements in that manner. This practice aims to ensure effective use of renewable energy resources and reduce the costs arising from transmission and grid lines.

Also, commissioned supply companies are obliged to purchase the redundant electric power fed to the system after being generated by real or legal persons that establish a generation plant based on renewable energy resources under unlicensed generation practices in their respective zones. The purchasing guarantee is limited to 10 years. This obligation is the outcome of the YEKDEM system. Even though there is no restriction as to sales processes, the consumption facility associated with the generation plant under the subscription must be marked with a continuous consumption trend. Still, it should be noted that the government does not purchase the redundant electricity but guarantees the functioning of the system through YEKDEM.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

As indicated in question 18, supply companies purchase the redundant electricity generated by unlicensed power plants for 10 years under YEKDEM. However, the regulation does not regulate what will happen to the redundant electricity after the 10 years. This shall be ascertained through a legal regulation yet to be introduced.

In addition, the provisions of legislations concerning, especially, small unlicensed generation are amended frequently. Introduction of amendments to the legislations frequently create unease among parties intending to engage in generating electricity. Lack of information and ambiguity created for investors planning to establish small-scale plants are a cause for anxiety and helplessness owing to the lack of clarity, as a result of which they tend to avoid making such investment. Therefore, it is essential to adopt stable legal regulations, amended only as a result of national and international developments in the industry.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

Currently, Turkey does not have any commercial technology for storing energy like the rest of the world. Therefore, there is no legal regulation for electricity that cannot be stored.

Still, it is possible to store primary resources and, if required, to generate electricity from such primary resources in our country. With respect to the renewable energy resources, only reservoir hydropower plants are capable of storing energy. In other words, another way to store energy is to store water in a reservoir located high above whenever the power demand of the system is low and to derive hydroelectric power from the stored water at varying and suitable intervals.

Development

21 Are there any significant hurdles to the development of energy storage projects?

There is no energy storage project undertaken and commercialised by public or private sector in Turkey. In that respect, it is of utmost importance to ensure that private investors focusing on this field develop necessary technologies in addition to securing a well-planned governmental subsidy to that end. There are several projects developed in this respect by the Scientific and Technological Research Council of Turkey, which is a government entity.

FOREIGN INVESTMENT

Ownership restrictions

22 | May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

There is no obstacle for foreign investors intending to invest in renewable energy projects in Turkey. Yet, the preliminary condition for engaging in licensed electric generation operations in Turkey is to ensure that the licence holder either possesses or enjoys the usufruct right of the site where the plant is to be established. The preliminary licence issued by EMRA entitles investors to initiate the processes before relevant institutions and organisations in order to gain title to or usufruct right of the site.

Foreigners may gain title to or usufruct right of the site subject to provisions of applicable legislations.

As for 'foreign capital companies' incorporated in Turkey with foreign investors having 50 per cent or more of the shares of the company individually or jointly, or despite not having the majority of shares as provided above, enjoying the right to assign or dismiss the majority of officers, such companies may obtain possession of real estate or limited real rights on the real estate and use them in order to conduct the operations specified in their articles of association. If those companies are shareholders in any other company incorporated in Turkey directly or indirectly, the same principle shall be applicable to the extent that the final shareholding ratio of the foreign investor in the relevant affiliate is equal to or above 50 per cent, the foreign investors acquire 50 per cent or more of the shares of the domestic companies possessing the real estate directly or indirectly and the shareholding ratio of foreign investors in existing foreign capital companies possessing the real estate reaches 50 per cent or above as a result of the share transfer. Provided that the terms and conditions of the Law on Military Forbidden Zones and Security Zones No. 2565 are adhered to, the acquisition of real estate by companies within the zones specified in article 28 of the relevant law in addition to military forbidden zones and military security zones shall be subject to the permission of the Chief of General Staff or the military commands to be assigned by the Chief of General Staff, while the acquisition of real estate in special security zones shall require the permission of the relevant governorate.

Nevertheless, foreign capital companies incorporated in Turkey with foreign investors having shares less than 50 per cent individually or jointly may acquire real estate based on the same terms and conditions applicable for domestic companies.

Equipment restrictions

23 | What restrictions are in place with respect to the import of foreign manufactured equipment?

There is no restriction with respect to the use of foreign manufactured equipment in plants in Turkey. On the other hand, the communiqués issued for Prevention of Unfair Competition in Import provide a number of anti-dumping precautions for wire to be imported from China for electric arc welding purposes. Also, as a result of the anti-dumping investigation initiated by the Ministry of Economy about the products allegedly causing unfair competition, solar panels (photovoltaic (solar) modules and panels) manufactured by 16 companies in China were subject to an anti-dumping duty worth US$20 to 25 per square metre, as those companies were found to have created a negative impact on domestic manufacturing operations.

Although there is no restriction for foreign manufactured equipment, if the licence holder legal entities use mechanical or electromechanical equipment manufactured domestically in their generation plants based on renewable energy resources commissioned prior to 31 December 2015, the electric energy generated in those plants and fed to the transmission or distribution system shall be entitled to benefit from incentives under the Law on the Use of Renewable Energy Resources for Generating Electric Energy. Such incentives are not relevant for unlicensed generation plants.

PROJECTS

General government authorisation

24 | What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Provided that the response to question 4 is also applicable for this question, it should be noted that legal persons that engage in electricity market operations shall be able to initiate their activities only after securing a separate licence for each activity and for each plant if those activities are to be conducted in more than one plant.

All legal persons subject to private law provisions have to be incorporated as a joint stock company or limited liability company under the provisions of Turkish Commercial Code No. 6102, and all shares of joint stock companies have to be registered, apart from the public companies traded in exchange markets under the capital market legislations.

The company's articles of association shall be submitted, indicating that the minimum equity capital of the company has been increased by five per cent of the total investment amount anticipated by the authority for the generation plant. If the legal person is a joint stock company, the articles of association for the relevant company must include a provision that all the shares are registered and the company shall not be entitled to issue bearer shares with the exception of public companies traded in exchange markets under capital market legislations as well as a provision that the company shall not make any variations in the shareholding structure during the preliminary licensing period and the company shall seek the approval of EMRA if it intends to amend the articles of association in order to reduce the equity capital.

Also, legal persons acting in the market are obliged to obtain the permission of EMRA for any processes and transactions that shall lead to change in the title to or usufruct right of the plants.

Offtake arrangements

25 | What type of offtake arrangements are available and typically used for utility-scale renewables projects?

See questions 4 and 6 for the special regulations on renewable energy field. Plants that are not included in YEKDEM system and those for which YEKDEM liabilities have expired may sell electricity to supply companies or end users through bilateral agreements subject to the provisions of private law just as conventional power generation plants. Also, they may engage in trade activities in day-ahead and day markets.

Procurement of offtaker agreements

26 | How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

The long-term bilateral agreement market is open to development in Turkey. The general trend is to trade the electricity in day-ahead and day markets or evaluate it under the YEKDEM system for renewable energy plants.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

The roles of private and public sector institutions with regard to both licensed and unlicensed projects have been detailed above and the fact that it has been guaranteed for the electricity to be sold over the amount stated under the list attached to the Law on the Utilisation of Renewable Energy Sources for Electricity Generation No. 5346, and the relevant rights and obligations of the parties was emphasised. Apart from this mechanism, there is no other obligation against any government entity with regard to establishment of a renewable energy plant and sale of electricity produced in such plants.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

If a licence holder legal person intends to terminate its operations under the licence, a written application before EMRA shall be filed, along with the justifications for termination at least six months before the intended termination date, whereas distribution companies and commissioned supply companies shall be required to make the relevant application at least 12 months before the intended termination date. Nevertheless, EMRA may, at its sole discretion, not require observation of this notice term based on the impact of the intended termination on the market. Under this application, it is mandatory to list the obligations of the licence holder legal person as of the intended termination as well as the measures to be taken for fulfilling those obligations.

If EMRA confirms the termination request as a result of the assessment, the licence shall be terminated on the date specified in the resolution rendered by EMRA. If EMRA becomes convinced that the termination will give rise to any condition that will be to the detriment of consumers and market conditions, it may deny the request or postpone the termination by duly informing the licence holder legal person of the justifiable reasons for the decision.

If any legal person holding a distribution licence intends to terminate the licence prematurely, the licence shall not be regarded as terminated until a new legal person receives a licence for conducting the operations indicated in the licence.

Decommissioning is not yet explained in detail in Turkish legislation. Therefore, this regulation is open to development for both renewable energy investments and conventional plants.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

The most commonly used structures for funding renewable energy projects in Turkey are known to be project finance and structured finance. Project finance is a funding resource in which lenders make the loan repayment and capital profitability calculations based on the cash flow to be created by the project when such lenders intend to provide financing for economically separable investment projects.

With respect to project finance, first of all, a separate company must be incorporated for the project in line with the provisions of the Turkish Commercial Code. After that, banking institutions provide loans fundamentally based on the project's cash flow. Some 95 per cent of the project financing in Turkey is made by domestic banks. Apart from banks, leasing companies provide a small amount of financing especially for wind power projects.

While evaluating the projects for project finance purposes, the owners of the project, their background, good standing and financial facilities are reviewed. In addition, before providing loans banks take into account the project excess and delay risks in hydraulic and geothermal projects, and capacity utilisation risk and environmental risks for wind and hydraulic projects while making a loan assessment.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

Project funding, commercial loans and equity of investors are the fundamental funding tools for such projects.

Loans commonly used in this respect are as follows: Islamic Development Bank Loans for Renewable Energy and Energy Efficiency Projects, KfW (German Development Bank) loans for renewable energy and energy-efficiency projects, European Investment Bank (EIB) loans for small and medium-sized enterprises, EIB loans for environment and energy projects, World Bank loans for renewable energy and energy efficiency projects, EIB loans for renovation and energy efficiency projects in tourism industry, KfW loans for infrastructure projects, Turkish mid-sized sustainable energy financing facility (aiming to finance mid-sized investments in renewable energy, waste-to-energy and industrial energy efficiency). Apart from these, projects are financed through renewable energy equipment suppliers via loans provided by finance corporations of relevant countries and Eximbank.

Also, different business models involving consumer-investors and operators are being rapidly developed for projects below 1MW.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

As per the article of the law published in the Official Gazette dated 19 July 2019, an additional 120 days was granted for the projects that lost consumption-production ties or that have an expired connection agreement. All unlicensed electricity generation projects that could not be implemented, regardless of the reason, will benefit from such law. For the projects whose connection agreement period has not expired yet, the deadline will be extended until the expiration date provided in the law. As the end of the 120-day period coincides with the end of the week, the extension will expire on 18 November 2019.

Legislative proposals

32 Describe any notable pending or anticipated legislative proposals.

According to the relevant regulations, YEKDEM will end after December 2020. With that said, plants that are accepted to the system before 31 December 2020 will continue to benefit from YEKDEM. While it is not clear what will be the way to support renewable energy projects, the sector expects that the Turkish government will continue its support under an alternative scheme. Market players and banks plan to offer a new incentive model to the Ministry of Energy to enable sustainable financing models for future projects. Sources close to the Ministry of

Energy highlight the possibility of a new model, which will support the projects with respect to the locally manufactured equipment rate. Therefore, any development on this issue is highly anticipated.

Additionally, the industry expects an increase in capacity regarding wind power plants as the law published in the Official Gazette on 28 February 2019 authorises the EMRA to issue a regulation that allows capacity increases in wind power plants provided that they do not benefit from YEKDEM.

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

The principal government participants in the electricity sector of Ukraine, in addition to the main legislative body (the Verkhovna Rada of Ukraine) and the main executive body (the Cabinet of Ministers), are:

- the Ministry of Energy and Coal Industry of Ukraine shapes and ensures the implementation of the state policy in the electricity sector;
- the National Commission for State Regulation of Energy and Public Utilities (NEURC) performs state regulation to achieve the balance between the interests of consumers, business entities operating in the energy sector, and the state, to ensure energy security and European integration of the Ukrainian electricity markets. It is the main body that facilitates relations between the state and private participants in the energy sector, in particular, in the renewable energy sector. It is also engaged in licensing activities in the energy sector, exercises state control and takes measures of influence. In addition, the NEURC is responsible for converting the feed-in tariff (the 'green' tariff) into the national currency of Ukraine (hryvnia);
- the State Agency on Energy Efficiency and Energy Saving of Ukraine (the Energy Efficiency Agency) implements the state policy in the field of efficient fuel and energy resources usage, energy saving, renewable energy sources and alternative fuels. In addition to implementing the state policy in the respective field, it is also responsible for increasing the share of renewable energy sources and alternative fuels in the energy balance of Ukraine. The Energy Efficiency Agency also conducts qualification tests for combined heat and power generation units, issues documents certifying that a particular fuel type is classified as an alternative fuel, keeps a register of alternative fuels and the state register of liquid biomass fuels and biogas producers;
- Energorynok is a state-owned company, performing the role of the wholesale electricity supplier. It is the manager of the settlements system, the manager of funds of the Wholesale Electricity Market (WEM), the Secretariat of the WEM Council, the main operator of the commercial electricity metering system and the party to the agreement between the WEM participants that is responsible for the support of the WEM functioning. In addition, Energorynok has a special branch, a 'guaranteed buyer', which is obliged to buy all the electricity generated by the energy facilities from renewable energy sources from the business entities for which feed-in green tariff was set. Thus, the presence of the 'guaranteed buyer' additionally stimulates the renewable energy sources development, since it guarantees the purchase of all the produced electricity;
- Ukrenergo is a state-owned national transmission grid company, performing the functions of operational and technological management of the Ukrainian United Energy System (UES) and electricity transmission through the main electrical grid from the generation point to regional electrical grids of power supply companies. At the regional level, the transmission systems are managed and the electricity supplier functions are performed by Oblenergos,joint-stock companies with a state-owned interest, which are the main electricity suppliers to the population. Such companies are located in each *oblast* (administrative division of Ukraine). In addition, Oblenergos are responsible for organising the connection of energy facilities of newly established electricity producers to the electrical grid; and
- the State Agency of Ukraine on Exclusion Zone Management manages the Chernobyl zone, where it plans to construct solar power plants.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

The following private participants can participate in the production, distribution and consumption of electricity generated from renewable energy sources:

- producers of electrical and thermal power from renewable energy sources;
- energy conversion and transportation companies and organisations (energy suppliers);
- traders, purchasing electricity solely for the purpose of its resale, except the sale under the agreement on electricity supply to consumers;
- transmission system operator, ensuring the operation, dispatching, maintenance, and development of electricity transmission systems;
- distribution system operator, ensuring the operation, maintenance, and development of the electricity distribution system;
- market operator, ensuring the functioning of the day-ahead market and intraday market and the organisation of electricity purchase and sale in these markets; and
- consumers.

Renewable energy producers are in a more favourable position with respect to other participants for the following reasons:

- the feed-in (green) tariff was established to develop this sector (for more details, see question 6);
- there is a guaranteed buyer for the purchase of electricity generated from renewable energy sources, which is obliged to offtake all the power generated from renewable energy sources that is being sold to the guaranteed buyer;

- the number of authorities exercising control over the activities in the renewable energy sector was reduced due to less hazardous conditions of electricity generation; and
- 'green' auctions have been introduced for the development and maintenance of renewable energy projects (for more details, see question 6).

Definition of 'renewable energy'

3 | Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

Pursuant to the Law of Ukraine On Alternative Energy Sources, renewable energy sources are defined as renewable non-fossil energy sources – namely, solar, wind, aerothermal, geothermal, hydrothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment gas and biogas.

Moreover, according to the law, renewable energy sources include secondary energy resources, such as blast furnace and coke oven gas, methane gas from coal beds and waste to energy conversion technologies. However, the feed-in (green) tariff is not applicable to these energy sources.

Framework

4 | What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

The following legislative acts make up the principal legal framework regulating electricity market activities:

- the Law of Ukraine On Electricity Market No. 2019-VIII dated 13 April 2017 is the principal law regulating relations in the electricity market;
- the Law of Ukraine On Alternative Energy Sources No. 555-IV dated 20 February 2003 is a special legislative act regulating the renewable energy itself and sets tariff rates and premiums;
- a number of legislative acts adopted by the NEURC:
  - the Transmission System Code (Resolution of the NEURC No. 309 dated 14 March 2018);
  - the Distribution Systems Code (Resolution of the NEURC No. 310 dated 14 March 2018);
  - the Market Rules (Resolution of the NEURC No. 307 dated 14 March 2018);
  - the Code of Commercial Metering of Electricity (Resolution of the NEURC No. 311 dated 14 March 2018);
  - the Day-Ahead Market Rules and the Intraday Market Rules (Resolution of the NEURC No. 308 dated 14 March 2018);
  - the Retail Electricity Market Rules (Resolution of the NEURC No. 312 dated 14 March 2018); and
  - the Procedure for the Power Purchase under the Feed-in (Green) Tariff (Resolution of the NEURC No. 641 dated 26 April 2019). These legislative acts are the main secondary legal instruments applicable to the new electricity market functioning;
- the Resolution of the NEURC On Approval of the Procedure for Setting, Reviewing and Terminating the 'Green' Tariff for Electricity for Business Entities and Private Households No. 1421 dated 2 November 2012 lays down the details in relation to the procedure for determining and setting the feed-in tariff; and
- the Resolution of the NEURC On Approval of the Licensing Conditions for the Performance of Business Activities on the Generation of Electricity No. 309 dated 22 March 2017 establishes a list of documents to be submitted to obtain a licence for the performance of electricity generation activities and determines a list of requirements, conditions and rules that are binding during the performance of these activities.

Apart from the above-mentioned legislative acts, the orders, regulations, and rules adopted by the NEURC, the Ministry of Energy and Coal Industry of Ukraine, and the Energy Efficiency Agency for each specific area and type of energy facilities are also applicable to regulating activities in the renewable energy sector.

As for the 'environmental attributes', it should be noted that currently Ukrainian law does not define this concept.

Stripping attributes

5 | Can environmental attributes be stripped and sold separately?

Given the fact that there is no statutory definition of 'environmental attributes', currently environmental attributes cannot be stripped and sold separately in Ukraine.

Government incentives

6 | Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

Renewable energy in Ukraine is promoted through fixing the main mechanisms of stimulating renewable energy producers at the legislative level. These are:

- the feed-in (the green) tariff; and
- 'green' auctions

Promotion through the feed-in tariff consists of the guaranteed obligation of the state to purchase the generated 'clean' electricity from its producers as well as establishing a significant number of additional benefits for such electricity producers.

A feed-in tariff is a special tariff for the purchase of electricity produced by electricity generating facilities, in particular by the commissioned construction units of power plants (launch complexes), from renewable energy sources (as regard hydropower, it is applicable only to hydropower plants up to 10MW).

Both industrial companies and private households may take advantage of the feed-in tariff.

At the same time, the feed-in tariff shall be set for each business entity generating electricity from renewable energy sources for each type of renewable energy, for each energy facility or for each construction unit of the power plant (launch complex).

The feed-in tariff for electricity produced by generating units of private households is set for each type of renewable energy source.

The feed-in tariff is fixed at the legislative level in euros until 31 December 2029. The NEURC converts the feed-in tariff into the Ukrainian national currency on a quarterly basis at the average official exchange rate of the National Bank of Ukraine. The feed-in tariff is paid on all electricity generated, excluding electricity generated for own needs.

The feed-in tariff rates vary depending on the date of the energy facility commissioning, including the construction unit of the power plant (launch complex) that generates electricity from renewable energy sources.

The data on the feed-in tariff rates are provided in euros in the table below.

Type	Capacity (kW)	Commissioning date					
		2019	2020	2021	2022	2023–2024	2025–2029
Ground-mounted solar installations		0.1502	0.1126	0.1088	0.1050	0.1012	0.0975
Roof- or facade-mounted solar installations		0.1637	0.1228	0.1185	0.1147	0.1104	0.1066
Wind power (capacity of individual wind turbines)	⩽600	0.0582	0.0517	0.0506	0.0495	0.0490	0.0452
	>600 - ⩽2,000	0.0679	0.0603	0.0592	0.0582	0.0571	0.0528
	>2,000	0.1018			0.0905		0.0792
Biomass, business entities					0.1239		
Biogas, business entities					0.1239		
Hydropower, business entities	⩽200	0.1745			0.1572		0.1395
	>200 - ⩽1,000	0.1395			0.1255		0.1115
	>1,000 - ⩽10,000	0,1045			0.0942		0.0835
Geothermal power		0.1502			0.1352		0.1201
Roof- or facade-mounted solar installations, private households	⩽50	0.1809			0.1626		0.1449
Wind power, private households	⩽50	0.1163			0.1045		0.0932
Combined solar and wind power systems, private households	⩽50	0.1637			0.1228		0.1066
Roof- or facade-mounted solar installations, private households or energy cooperatives	⩽150	0.1637			0.1228		0.1066
Wind power, private households or energy cooperatives	⩽150	0.1163			0.1045		0.0932
Combined solar and wind power systems, private households or energy cooperatives	⩽150	0.1637			0.1228		0.1066
Biomass, households or energy cooperatives	⩽150				0.1239		
Biogas, households or energy cooperatives	⩽150				0.1239		
Hydropower, households or energy cooperatives	⩽150	0.1745			0.1572		0.1395
Geothermal power, households or energy cooperatives	⩽150	0.1502			0.1352		0.1201

Regarding the 'green' auctions, this is a novelty of the Ukrainian laws aimed at reducing the costs for consumers and the state for renewable energy development.

With effect from 1 January 2020, the promotion of companies intending to generate electricity from wind or solar energy will only be possible subject to their participation in the auctions for quota allocation and winning that auction. The capacity requirements for renewable energy facilities to participate in the auctions are as follows:

- wind energy facilities with a capacity of more than 5MW. In this case, the limitation does not apply to facilities with one wind turbine, regardless of the installed capacity of such a wind turbine; and
- solar energy facilities (solar power plants) with a capacity of more than 1MW.

Other business entities intending to generate electricity from renewable energy sources, regardless of the facility's installed capacity and the renewable energy source (except for blast furnace and coke-oven gas, and in case of hydropower use with only micro, mini and small hydro plants), may participate in the auctions voluntarily. At the same time, such business entities may not participate in the auctions for quota allocation for those energy-generating facilities, for which a feed-in tariff has been previously established or which have been granted support as a result of an auction.

The new support system advantage over the existing feed-in tariff system lies in the following aspects:

- a longer support period (20 years after the renewable energy facility commissioning); and
- guaranteed off-take of the electricity generated by the electricity producers at a price that depends on the auction results (auction price).

The auctions will be launched on 1 July 2019 and will be conducted until 31 December 2029. The auctions shall be held twice a year, but not later than 1 April and 1 October.

The existing feed-in tariff scheme is guaranteed until 2030 and applied to:

- producers, already receiving the feed-in tariff, and economic entities that will construct and commission renewable energy facilities before 1 January 2020 (regardless of the installed capacity and renewable energy source);
- economic entities, which will sign a preliminary power purchase agreement under a feed-in tariff with the guaranteed buyer before 31 December 2019 and will construct and commission the respective facilities within two years (for solar power plants) or three years (for facilities generating electricity from other renewable energy sources);
- economic entities that will construct renewable energy facilities after 1 January 2020, where the installed capacity is less than the capacity for which the auctions are mandatory; and

- electricity consumers, including energy cooperatives, having installed energy-generating installations with a capacity of up to 150KW and selling surplus electricity at a feed-in tariff rate once they use the energy for their own needs. In this case, the feed-in tariff for installations generating electricity from solar energy (except for combined systems) may be established only subject to installing them on buildings and roofs and/or facade structures.

A yearly quota (a capacity of renewable energy facilities for the respective year, within the limits of which the economic entities will be provided with state support) shall be allocated through the auctions. Every year, on 1 December at the latest, the Cabinet of Ministers of Ukraine shall establish the yearly quotas for the next five years, which should provide the market players with predictability in planning and implementing renewable energy projects.

The yearly quota shall be split as follows:

- solar – not less than 15 per cent;
- wind – not less than 15 per cent; and
- other renewable energy sources – not less than 15 per cent.

To protect competition in the auctions:

- the capacity, for which the auction participants are granted support, may not exceed 80 per cent of the total capacity proposed by all the auction participants for quota allocation with regard to the relevant type of renewable energy technologies;
- an auction participant, individually or jointly with other participants with whom they have the same ultimate beneficial owner, may be awarded with no more than 25 per cent of the yearly quota;
- the procedure for conducting the auctions should provide for a mechanism of protecting competition in the event that during the auction it is established that competition is insufficient.

To ensure a fair competition among bidders, the law prescribes that bidders have to submit an irrevocable bank guarantee to participate in the auction and an additional bank guarantee on top in the case of winning the auction as a performance bond to secure the obligations under the contract concluded with the guaranteed buyer.

The bank guarantee amount to participate in the auction shall be €5 per 1KW of the facility capacity, for which the business entity intends to obtain support. In this case, the facility capacity, for which the business entity intends to obtain support, may not exceed the facility capacity to be connected to the grid in accordance with the connection agreement.

The additional bank guarantee shall be €15 per 1KW of capacity, in relation to which the auction winner guarantees the performance of the obligations to the guaranteed buyer.

The use of equipment of Ukrainian origin by investors is stimulated by the relevant premium to the feed-in tariff (throughout all the term of its validity), if the electricity objects are commissioned by 31 December 2024.

Therefore, if equipment of Ukrainian origin is used at least on the level of 30 per cent, the premium to the feed-in tariff shall be 5 per cent. If equipment of Ukrainian origin is used at least on the level of 50 per cent, the premium to the feed-in tariff shall be 10 per cent.

The level of use of equipment of Ukrainian origin at power plants generating electricity from alternative energy sources is defined as the sum of respective percentage of specific items of equipment. The Law of Ukraine On Alternative Energy Sources provides an exhaustive list of equipment for each type of alternative energy source that qualifies for the feed-in tariff premium. The Ukrainian origin of equipment shall be confirmed by the appropriate certificate issued by the Ukrainian Chamber of Commerce.

However, such a premium to the feed-in tariff is not applicable to electricity objects of private households.

Furthermore, the law provides that the premium for the use of equipment of the Ukrainian origin applies both to the feed-in tariff and to the auction price. Such a premium shall be credited in cash by the guaranteed buyer on a monthly basis when calculating the price of the guaranteed buyer's service for ensuring an increase in electricity production from renewable energy sources.

In addition, Ukraine has certain international obligations, as it is a member of the European Energy Community. Moreover, on 5 December 2017, Ukraine acceded to the Statute of the International Renewable Energy Agency (IRENA).

Nevertheless, some tax benefits are still available for renewable energy producers. Thus, pursuant to the Tax Code of Ukraine, no VAT is applicable to transactions on import to the territory of Ukraine of:

- equipment, functioning on the basis of alternative energy sources, energy saving equipment and materials, means of measuring, control and management of energy resources, equipment and materials for production of alternative types of fuels or electricity from renewable energy sources;
- materials, equipment, components for manufacturing equipment, functioning on the basis of renewable energy sources; raw materials, equipment and components for production of alternative types of fuels or electricity from renewable energy sources; energy saving equipment and materials, products whose operation provides saving and rational use of energy resources; means of measuring, control and management of energy resources.

In addition, pursuant to the Customs Code of Ukraine, the above mentioned goods are exempt from import and export duties, provided that the taxpayer uses them for own production and that no identical goods with the same qualities are produced in Ukraine.

Nevertheless, this tax benefit, while being settled on paper, cannot be implemented in practice due to the failure of the Cabinet of Ministers of Ukraine to approve the list of such goods with specification of codes under the Ukrainian Classification of Foreign Economic Activity Products. However, this tax benefit applies only to the projects implemented within the framework of cooperation between the central executive authorities of Ukraine, the Ministry of Economy, Trade and Industry of Japan and the New Energy and Industrial Technology Development Organization.

Also, the Tax Code of Ukraine provides that any transactions concerning sale of electricity generated by qualified cogeneration units and / or from renewable energy sources are not subject to excise tax.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

The state policy for the development of renewable energy projects is established at the national level and does not depend on the construction region.

However, special construction conditions may be established by local urban development regulations (in the case of construction of renewable energy facilities for households or within cities).

In addition, the following matters fall within the competence of local self-government bodies and executive authorities:

- approval of the issues related to locating energy facilities on the territory controlled by them, taking into account the local community interests;
- participation in the drawing up of plans for the electricity distribution systems development on the territory controlled by them;
- participation in the development and implementation of a system of measures related to the electricity-generating facilities operation

in the event of an emergency situation in the Ukrainian United Energy Systems.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

'Clean' power may be sold by its producers under bilateral agreements on the day-ahead market, on the intraday market and on the balancing market at the prices established on the respective markets or at the feed-in tariff prices.

Electricity producers for whom the feed-in tariff was set have the right to sell electricity generated by the renewable energy facilities at the feed-in tariff prices (subject to the premium paid on top of the feed-in tariff) to the 'guaranteed buyer', who, in turn, is obliged to buy all 'clean' electricity.

The 'green' auction winners are supported through guaranteed off-take of the electricity generated by the electricity producers at an auction price taking into account the premium for the use of equipment of the Ukrainian origin, on the basis of the power purchase agreement concluded between the guaranteed buyer and the auction winner.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

Among the changes adopted in 2018-2019, the following are worth mentioning:

- the Law On Electricity Market No. 2019-VIII dated 13 April 2017 regulating electricity market activities, construction and connection of the electricity-generating facilities to the grid. The Law takes effect in stages and, according to the plan, will come into full force on 1 July 2020;
- the Law On the Regulation of Urban Development Activities No. 3038-VI dated 17 February 2011 underwent changes regarding technical conditions. Since the introduction of the 'green' auctions, the new technical conditions for renewable energy facilities shall have the following validity periods: for solar power facilities – no more than two years after the date of issue, regardless of the change of the principal; for facilities generating electricity from other renewable energy sources – no more than three years after the date of issue, regardless of the change of the principal. The technical conditions already issued shall be valid: for solar power facilities – no more than until 22 May 2021; for facilities generating electricity from other renewable energy sources – no more than until 22 May 2022. In case the principal is a business entity awarded state support through an auction, the technical conditions for a renewable energy facility granted to this business entity shall be valid for the duration of the obligation to construct and commission the respective renewable energy facility;
- the Law On Amendments to Certain Laws of Ukraine on Ensuring Competitive Conditions for Electricity Production from Renewable Energy Sources No. 2712-VIII dated 25 April 2019, introducing the 'green' auctions and changing the feed-in tariff rates;
- the Resolution of the NEURC No. 641 dated 26 April 2019, approving statutory acts regulating the activities of the guaranteed buyer and the purchase of electricity at the feed-in tariff prices. This Resolution approved the Procedure for Electricity Purchase at the Feed-in Tariff Prices, the Methodology for the Guaranteed Buyer Cost Estimation, the Model Power Purchase Agreement under the Feed-in Tariff between the guaranteed buyer and the business entity generating electricity from renewable energy sources, the Model Agreement on the Provision of Services to increase the share of renewable energy in electricity generation. The Resolution came into force on 1 July 2019. This Resolution also repealed the Resolution of the NEURC No. 1314 dated 11 October 2012 On Approving the Model Agreements with Producers Generating Electricity from Renewable Energy Sources; and
- a number of legislative acts adopted by the NEURC:
  - the Transmission System Code (Resolution of the NEURC No. 309 dated 14 March 2018);
  - the Distribution Systems Code (Resolution of the NEURC No. 310 dated 14 March 2018);
  - the Market Rules (Resolution of the NEURC No. 307 dated 14 March 2018);
  - the Code of Commercial Metering of Electricity (Resolution of the NEURC No. 311 dated 14 March 2018);
  - the Day-Ahead Market Rules and the Intraday Market Rules (Resolution of the NEURC No. 308 dated 14 March 2018); and
  - the Retail Electricity Market Rules (Resolution of the NEURC No. 312 dated 14 March 2018).

On 18 April 2018, the Transmission System Code, the Code of Commercial Metering of Electricity, the Distribution Systems Code, and the Retail Electricity Market Rules were officially published in the Uriadovy Kurier governmental newspaper and came into force on 19 April 2018.

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

Ukraine has certain international obligations, as it is a member of the European Energy Community. On 5 December 2017, Ukraine also acceded to the Statute of the IRENA. Through cooperation with these organisations, investors in renewable energy can receive funding for renewable energy projects in Ukraine under special conditions.

A lot of banking institutions in Ukraine, both public and private, implement programs to finance the construction of renewable energy facilities. International financial institutions also finance the development of renewables. Such institutions include, inter alia, the European Bank for Reconstruction and Development, the World Bank, and the Overseas Private Investment Corporation (OPIC).

Financial institutions also finance the construction and development of projects with a capacity of more than 100MW.

In addition, according to the Energy Strategy of Ukraine, the share of renewable energy is to increase to 12 per cent of the total primary energy supply and at least to 25 per cent by 2035 (including all hydropower generating facilities and thermal energy).

Disputes framework

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

The legal framework applicable to disputes includes the Law On the Electricity Market, the Codes of Ukraine, in particular the Code of Administrative Procedure, the Commercial Code, the Civil Code and the Land Code, as well as antitrust laws.

Furthermore, the Verkhovna Rada of Ukraine is currently developing the Draft Law On the Energy Ombudsman. According to the Draft Law, it is planned to appoint an authorised person to be responsible for the protection of consumer rights in the energy market.

Complaints and disputes between electricity market participants are handled by the Regulator – the NEURC. The Regulator shall, within the specified time limit, adopt decisions binding on the market participants they relate to. Such decisions must be published on the

Regulator's official website, except those parts of the decisions which contain the confidential information. At the same time, the Regulator's decisions may be challenged in court.

To resolve these issues, the NEURC developed and adopted the Resolution On Approval of the Rules for Considering Consumer Inquiries regarding the Actions of Business Entities Operating in the Energy and/or Public Utilities Sectors and Dispute Settlement. This regulation determines the priority actions to be taken by the entities and the order of consideration of disputes between market participants.

In addition, according to the model agreement with Energorynok, in case the producer is a foreign investment company, any disputes arising out of or in connection with the agreement shall be resolved in arbitration under the Arbitration Rules of the International Chamber of Commerce (ICS) or, with the consent of the producer, in the Commercial Court of Ukraine. The arbitral tribunal is to consist of three arbitrators appointed in accordance with the aforesaid Arbitration Rules. The place of arbitration shall be Paris, France. The language of arbitration shall be English. The governing law of the agreement shall be the substantive law of Ukraine.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 | Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

The major utility-scale renewable energy projects in Ukraine are solar and wind power projects.

The total capacity of all energy generating facilities commissioned in Ukraine in 2018 reached 742.5MW, which is 2.8 times more than in 2017. At the same time, solar and wind energy facilities account for 96 per cent of the installed capacity. The commissioned installations can be divided into the following groups:

- 163 solar power facilities;
- 11 wind power facilities;
- 12 small hydropower facilities; and
- 16 biomass and biogas power plants.

Average unit capacity of the renewable energy facilities commissioned in 2018 is 3MW.

However, in the first quarter of 2019 alone, renewable energy facilities with a total capacity of 861.1MW were put into operation. That means that capacities with a total output of 115.97 per cent compared to the full year 2018 figure were commissioned over the first three months of 2019.

Development issues

13 | What types of issues restrain the development of utility-scale renewable energy projects?

Utility-scale renewable energy projects do not experience any significant problems (different from other projects) associated with their development.

HYDROPOWER

Primary types of project

14 | Describe the primary types of hydropower projects that are prevalent.

Hydropower makes up around 8 per cent of the total installed capacity of energy facilities in Ukraine; small hydro power stations make up around 3.77 per cent of the total installed capacity of renewable energy facilities. New facilities can potentially be located in any region with small or large rivers. In Ukraine, there are over 22,000 rivers, but only 110 of them are longer than 100km. Therefore, the main hydropower resources are located on small rivers. At the same time, as a result of the hydropower facilities construction large areas of land can be flooded, valuable fish species might get extinct and fertile soils get degraded. Thus, the elimination of environmental risks is a prerequisite for further hydropower development.

Hydropower projects are classified into the following types:

- hydroelectric power plants;
- hydro accumulating electric power plants;
- small hydropower plants – from 1 up to 10MW;
- mini-hydropower plants – 200kW up to 1000kW; and
- micro-hydropower plants – up to 200kW.

Only small, mini- and micro-hydropower plants (ie, with a power output up to 10MW) are eligible to obtain the feed-in tariff.

According to the National Renewable Energy Action Plan (NREAP), owing to existing facilities modernisation, the restoration of old small hydropower plants, the construction and commissioning of new hydropower-generating facilities in Ukraine, it is possible to achieve an increase in the electricity production:

- micro- and mini-hydropower plants – up to 130GWh in 2020 (with the total capacity of 55MW);
- small hydropower plants – up to 210GWh in 2020 (with the total capacity of 95MW);
- large hydropower plants – up to 12,950GWh in 2020 (with the total capacity of 5200MW).

Legal considerations

15 | What legal considerations are relevant for hydroelectric generation in your jurisdiction?

In addition to the general legal aspects of the energy facilities construction environmental and water legislation is of special importance for hydropower generation.

The main disadvantage of the small hydropower plants construction, especially on the mountain rivers, is posing a threat to the natural state of the ecosystem. Therefore, it is always necessary to assess environmental risks associated with such power plants.

Furthermore, during the hydropower facilities construction, it is necessary to comply with the regulations and rules established by the Water Code of Ukraine.

This Code specifies the peculiarities of land allocation, obtaining authorisations and operation of facilities using water resources.

DISTRIBUTED GENERATION

Prevalence

16 | Describe the prevalence of on-site, distributed generation projects.

The Ukrainian law does not specifically define the concepts of 'microgrid', 'distributed generation', 'distributed energy', and 'on-site generation'.

Instead, the households in Ukraine have the opportunity:

- to implement private renewable energy projects (installations up to 50kW that use solar or wind energy); and
- to set up an energy cooperative, a legal entity established for carrying out business activities related to the production, storage or transportation of fuel and energy resources and providing other services in order to meet the needs of its members or territorial community, as well as for the purpose of generating profit, in accordance with the statutory requirements. The feed-in tariff

can be set provided that the installed capacity of the generation projects does not exceed 150kW.

At the same time, the households are not eligible to receive premiums to the feed-in tariff for the use of equipment of Ukrainian origin, and the feed-in tariff is paid for the supplied electricity after deduction of electricity generated for own needs.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

The primary types of distributed generation projects are solar power plants and wind farms.

According to the State Agency for Energy Efficiency and Energy Saving of Ukraine, the increase in solar panels installed by the households is the latest trend in the alternative energy sector of Ukraine. This is attributed to the positive legislative changes made in 2015, allowing private households not only to sustain their electricity needs by means of using renewable energy sources, but also to sell any such excessive energy generated under the feed-in tariff. The trend has been continuously growing for the last two years.

Thus, pursuant to the Law of Ukraine On Electricity Market, private households are entitled to set up electricity-generating facilities with a capacity of up to 50kW and sell electricity produced from solar or wind energy under the feed-in tariff to the electricity distribution company the amount exceeding the monthly consumption of electricity by such private households.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

Law of Ukraine On Alternative Energy Sources No. 2712-VIII dated 25 April 2019 introduced the concept of an 'energy cooperative'.

Consumers' micro-installations were divided into two categories:

- solar and wind energy facilities with a capacity up to 50kW; and
- other types of renewables, including energy cooperatives – with a capacity up to 150kW.

In this case, solar energy facilities must be on roofs or facades of buildings.

Furthermore, installations with a capacity up to 30 kW for which the feed-in tariff was set previously shall keep the feed-in tariff until the end of 2019. From 1 January 2020, such installations should switch to the 'up to 50kW' tariff. In this case, solar energy facilities must be also placed (if necessary, replaced) on roofs or facades of buildings.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

The basic legal framework is laid down in the Law of Ukraine On Alternative Energy Sources. Additional legal considerations related to energy cooperatives are set forth in the Laws of Ukraine On Cooperation and On Consumer Cooperation.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

The legislation on the renewable energy facilities does not establish any specific rules for the storage technologies use. Therefore, such facilities are subject to national regulations in relation to occupational safety and health, in particular to a number of national standards (DEST) adopted by the Interstate Council for Standardization, Metrology and Certification and technical regulations.

The application of certain technical regulations and DEST depends on the types of storage technologies, conditions of their use and the installation location.

At the same time, given the rapid development of the Ukrainian energy sector and the need for balancing in the electricity market, the development of regulatory framework applicable to storage technologies may be expected in the medium term.

Development

21 Are there any significant hurdles to the development of energy storage projects?

Since energy storage projects are currently not widely implemented in Ukraine, the lack of regulatory framework is the most significant hurdle to their development.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

Foreign investors may invest in renewable energy projects. There are no legislative restrictions on foreign ownership relevant to renewable energy projects.

Restrictions may include the prohibition for non-residents to acquire land. There are no such restrictions, however, on the land lease. What is more, it is usually cheaper and easier to lease land. Hence, most owners of renewable energy facilities, both Ukrainian and foreign ones, lease the land plots on which they then construct electricity-generating facilities.

In addition, renewable energy projects may be subject to national and international restrictions on currency control, anti-money laundering and crime control.

Moreover, international treaties, in particular the provisions of the Financial Action Task Force, shall, in addition to the national legislation, be applicable during financial monitoring.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

Regarding the equipment, general safety and tax restrictions are currently in place. There are no special restrictions with respect to renewable energy equipment.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Government authorisations to be obtained differ depending on the capacity and method of acquiring a renewable energy project. The main authorisations and permits include:

- an approval of the Anti-Monopoly Committee if the assets value threshold or the market share held by owners of energy facilities is exceeded;
- a licence for carrying out power generation business activities (an application for such a licence may be filed along with the application for the feed-in tariff);
- setting the feed-in tariff, which shall be granted by the NEURC based on the producer's application (see question 27);
- commissioning the newly constructed renewable energy facility; and
- technical conditions for connection to the electrical grid.

For economic entities that will construct renewable energy facilities with the intention of receiving state support after 1 January 2020, where the installed capacity is more than 5 MW for wind energy facilities and more than 1MW for solar energy facilities, the participation in the auctions shall be mandatory. For more details regarding the conditions of participation in the auctions, see question 6.

The legislation does not contain any other special requirements in relation to renewable energy projects.

It should be noted that, apart from the aforesaid documents, there are also national requirements for business registration, land lease and construction.

Offtake arrangements

25 What type of offtake arrangements are available and typically used for utility-scale renewables projects?

The laws provide for special operation conditions for producers for which the feed-in tariff is set.

Hence, the balancing group of feed-in tariff electricity producers is a balancing group where the guaranteed buyer is the party responsible for settling imbalances within such a balancing group.

At the same time, while for 'non-green' electricity generation the role of the party responsible for balancing is performed by a market participant who is obliged to report and fulfill its hourly electricity schedules (or those of the balancing group) based on the volumes of purchased or sold electricity and is financially liable to the transmission system operator for its imbalances (or imbalances of the balancing group); conversely, for 'green' electricity generation, it is determined in advance that the guaranteed buyer should perform the role of such a party.

The guaranteed electricity buyer is a business entity that must, in accordance with the law, buy the electricity from the producers, for which the feed-in tariff was set, as well as from the auction winners and perform other functions provided for by the law.

This means that the state guarantees (must guarantee) the purchase of electricity from the producers, for which the feed-in tariff was set, as well as from the business entities, which received support based on the auction results.

The guaranteed buyer is obliged to buy all the electricity generated by the energy facilities from renewable energy sources from the business entities, for which the feed-in tariff was set, or from the auction winners at the feed-in tariff or auction prices, taking into account the premium paid on top of the feed-in tariff, during the entire term of the feed-in tariff or the duration of the agreement entered into based on the auction results, if such business entities belong to the balancing group of feed-in tariff producers. At the same time, the output volume of electricity generated from renewable energy sources shall, in each accounting period (month), be determined by deducting the volume of electricity consumed for own needs based on the metering data of electricity consumption for own needs.

The sale and purchase of such power at the feed-in tariff prices or based on the auction results shall be carried out on the basis of a bilateral agreement between the producer, for whom the feed-in tariff is set, or the auction winner and the guaranteed buyer.

The power purchase agreement with the feed-in tariff between the guaranteed buyer and the business entity generating electricity from renewable energy sources shall last for the full term of the feed-in tariff or for the duration of the agreement entered into based on the auction results (20 years).

To be able to sell power at the feed-in tariff prices, the producer must:

- become a market participant in the manner prescribed by the law;
- enter into a bilateral agreement with the guaranteed buyer and join the special balancing group of feed-in tariff electricity producers based on that agreement; and
- on a daily basis, provide the guaranteed buyer with its daily power output charts for the next 24 hours in the manner and form provided for in the bilateral agreement with the guaranteed buyer.

The guaranteed buyer must, at the request of the business entities intending to generate electricity from renewable energy sources, enter into a power purchase agreement at any time before the construction commences or the respective facilities are commissioned to generate power from renewable energy sources and before the regulator sets the feed-in tariff.

If the energy facility for which the power purchase agreement was concluded under the feed-in tariff is not commissioned within three years from the date of registration of the respective declaration of construction works commencement or receipt of the permit for the construction works performance the concluded agreement shall become invalid.

In order to be able to sell power based on the auction results, the producer must:

- become an auction participant;
- win the auction;
- become a market participant in the manner prescribed by the law;
- enter into a bilateral agreement with the guaranteed buyer; and
- on a daily basis, provide the guaranteed buyer with its daily power output charts for the next 24 hours in the manner and form provided for in the bilateral agreement with the guaranteed buyer.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

Agreements on the supply of electricity generated from renewable energy sources may be concluded both directly with consumers, and with Energorynok (a guaranteed buyer).

The conclusion of long-term agreements with the guaranteed buyer is provided for by the Law On the Electricity Market and by Resolution of the NEURC No. 641 dated 26 April 2019, approving the model agreements with producers generating electricity from renewable energy sources.

The guaranteed buyer must, at the request of the business entities that will generate electricity from renewable sources, enter into a power purchase agreement at any time before the construction commences or the respective facilities are commissioned and before the regulator sets the feed-in tariff.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

To be able to operate a renewable energy project and obtain the feed-in tariff, the following is required:

- a calculation of the cost of production of electricity generated by the renewable energy facility;
- an itemisation of the costs of production of electricity generated by the renewable energy facility (copies of contracts for the purchase of goods, works and services, a statement on the number of employees, a certificate on the book value of fixed assets with a breakdown by groups as at the date of filing the application for the feed-in tariff);
- a registered declaration of construction works commencement or a permit for the construction works performance;
- technical conditions for connection of renewable energy facilities to the electrical grid;
- a registered declaration of the facility (or launch complex) readiness for operation or an equivalent certificate; and
- the project documentation estimates for the renewable energy facility construction.

Moreover, renewable energy producers must obtain a licence to carry out power generation business activities (an application for such a licence may be filed along with the application for the feed-in tariff).

It is also desirable to obtain a guarantee of the origin of electricity, a document issued by the state authority at the request of the electricity producer, confirming that a portion or a certain volume of electricity is generated from renewable energy sources.

Once the feed-in tariff is set or the auction is won, the producer must connect to the electrical grid to supply electricity and enter into an agreement with Energorynok.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

Currently, the legislation does not provide for such requirements and opportunities.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

The primary structures for financing the construction of renewable energy projects do not differ essentially from the structures for financing other similar projects in European countries.

At the same time, it should be noted that it is possible to conclude a preliminary agreement with Energorynok for the supply of electricity generated from renewable energy sources, which facilitates obtaining financing from various financial institutions, in particular, the international ones (see question 10).

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Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

The primary structures for financing the renewable energy projects operation do not differ from those used in other countries.

Activities in the renewable energy sector are financed both with funds originating from wholesale electricity tariffs as a result of introducing a special statutory target premium to the tariff rates; funds from companies, institutions, and organizations; funds out of the national and local budgets; voluntary contributions and other funds not prohibited by the law.

At the same time, it should be taken into account that when using the project funding from financial institutions, such loans should, as a rule, be paid back first. The renewable energy facilities may be used as a pledge for such loans, leading to restrictions on their free sale until the loan is repaid.

UPDATE & TRENDS

Market trends

31 Describe any market trends with respect to development, financing or operation in the renewables sector or other pertinent matters.

Currently, energy saving technologies and renewable energy development are announced by the state to be the main development focus of the energy sector.

To stimulate interest in the renewables development, the Energy Efficiency Agency is planning to launch 'green' bonds in Ukraine. It is planning to develop a package of primary and secondary draft laws in relation to guidelines for 'green' bonds, reducing investment barriers and encouraging 'green' investments in Ukraine.

Legislative proposals

32 | Describe any notable pending or anticipated legislative proposals.

Within the framework of the energy efficiency development plan, in December 2017, the legislator abolished the Value Added Tax and the Excise Tax on the import of electric vehicles.

In addition, it should be noted that the energy services companies (ESCO) legislation, developed jointly with the Energy Efficiency Agency, has proven its effectiveness in the budgetary sphere.

Moreover, in connection with implementing a new model of the electricity market in Ukraine, further improvement of primary legislation and the development and implementation of secondary legislation in the energy field are still underway.

United Kingdom

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

Ministerial departments

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).

Independent bodies

BEIS works closely with and is supported by other agencies and public bodies, including:

GEMA and Ofgem

The Gas and Electricity Markets Authority (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 such 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 is independent and has very limited stakeholder participation (such as the Secretary of State's ability to remove members on the grounds of misbehaviour, determine the remuneration of members and give guidance).

GEMA delegates its functions to the Office of Gas and Electricity Markets (Ofgem) and provides Ofgem 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 feed-in tariff (FIT), Contracts for Difference (CfD), the Renewables Obligation, Domestic RHI, Non-Domestic RHI, the Climate Change Levy, the Renewable Energy Guarantees of Origin scheme and the Offtaker of Last Resort (OLR) scheme. See question 6 for more details.

Competition and Markets Authority (CMA)

The CMA was established in April 2014 under the Enterprise and Regulatory Reform Act 2013. It is an independent non-ministerial department which brought together the existing competition and certain consumer protection functions of the Office of Fair Trading and the responsibilities of the Competition Commission to promote competition for the benefit of consumers within and outside the UK.

The Environment Agency

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.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

Generation

Following privatisation of the generation industry during the 1990s, there has been an increasing number of generating companies in Great Britain. These are made up of what are known as the 'Big Six' – British Gas, e.on, EDF, npower, Scottish Power and SSE – and an ever increasing number of smaller suppliers (approximately 60 as of June 2017). Renewable energy makes up more than 20 per cent of the UK's electricity and under the current EU targets this is likely to increase to 30 per cent by 2020; it is not yet known whether the Brexit process and withdrawal from the EU will result in a change in this target.

Transmission

National Grid Electricity Transmission (NGET) is the licensed national electricity transmission system operator for Great Britain. Ownership of the transmission assets is divided as follows:

- NGET owns the transmission network in England and Wales;
- Scottish Hydro Electric Transmission owns northern Scottish transmission assets;
- Scottish Power Transmission (Southern Scotland) owns central and southern Scotland transmission assets; and
- Northern Ireland Electricity owns the transmission network in Northern Ireland where the System Operator Northern Ireland (SONI) is licensed as the transmission system operator.

As the UK is well placed to take advantage of wind power, Ofgem together with DECC identified both onshore and offshore wind farms as an important part of UK renewable energy. To this end, the UK has invested significantly in offshore wind, and as part of this process DECC (now BEIS) and Ofgem have established a regulatory regime for offshore transmission networks with a view to ensuring that offshore renewable generation projects are economically and efficiently connected to the British electricity grid. A key part of this regime is the granting of offshore transmission licences on the basis of a competitive tender process; Ofgem is responsible for running this process. There have so far been five rounds of tendering for the granting of 21 offshore transmission licences.

Definition of 'renewable energy'

3 | Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 (the Renewable Energy Directive) on the promotion of the use of energy from renewable sources defines 'energy from renewable sources' as energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases, each of which are then defined separately within the Renewable Energy Directive. Although not clearly excluded from the scope of renewable energy by national legislation, for the purpose of this questionnaire, we have not considered nuclear energy as a renewable energy source.

The National Renewable Energy Action Plan adopted by the United Kingdom in accordance with article 4 of the Renewable Energy Directive additionally states that Ofgem, on behalf of DECC (now BEIS), administers schemes designed to promote the increased take-up of renewable generation (such as the Renewables Obligation scheme, the Renewable Energy Guarantees of Origin scheme and the FIT scheme). Each such scheme includes different eligibility criteria to determine whether the electricity generated is renewable, with Ofgem responsible for the accreditation of renewable generators in relation to such schemes. If Ofgem assesses that a station meets all the eligibility criteria under a particular scheme it can award accreditation. This accreditation allows renewable generators to claim support in the form of certificates that are sold to and used by suppliers for a variety of different purposes.

Framework

4 | What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

Broadly speaking, the Energy Act 2013 (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 (approximately US$140 billion) of capital investment required by 2020 to ensure reliable and diverse supply of low-carbon electricity. This is the applicable regulatory framework for the developing, financing, operating and selling power and environmental attributes from renewable projects. Certain key aspects of the Energy Act 2013 are:

- CfD: the Energy Act 2013 provides a legal framework for the CfD regime, setting out statutory obligations on suppliers and generators;
- ROCs: the Energy Act 2013 introduced new sections to the Electricity Act 1989 to provide for the Secretary of State to make an order that imposes an obligation on Ofgem, the Secretary of State or a CfD counterparty to purchase the replacement for the renewables obligation certificates (ROCs) called 'certificate purchase obligations' in Great Britain; and
- capacity market: the Energy Act 2013 empowered the Secretary of State to introduce a capacity market based on the government's forecast of future electricity demand together with an analysis of existing security of supply.

Stripping attributes

5 | Can environmental attributes be stripped and sold separately?

The Renewables Obligation scheme (RO) 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 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 auction price for a January 2019 e-ROC auction was £54 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.

Government incentives

6 | Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

Ofgem E-Serve administers environmental schemes and consumer and social programmes on behalf of the government, including schemes related to renewable energy, such as:

- FIT: the 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.
- Contracts for Difference: 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). This means that 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. The first CfD auction result published in February 2015 was a success, with a competitive allocation process, with the cost £105 million less than the original strike prices published for the same technologies. Last year, BEIS awarded 11 CfDs to a number of renewables projects across the UK, including Moray Offshore Wind Farm and Grangemouth Renewable Energy Plant. The second allocation round ran from March to September 2017 and culminated in three successful offshore windfarms (Hornsea Two, Moray East and Triton Knoll) and the results of the second allocation saw the cost of offshore wind energy drop by almost 50 per cent compared with the previous round, meaning offshore wind was cheaper than the levelised cost of gas and significantly cheaper than new nuclear. The third allocation round was opened in May 2019 with an overall budget of £65 million aimed at securing 6GW of electricity generation. The results of the third auction are not yet known.

- The RO scheme: the 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, 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 Domestic RHI scheme: the Domestic Renewable Heat Incentive (RHI) is a government financial scheme to promote the use of renewable heat. BEIS has undertaken a consultation process with respect to the existing Domestic RHI scheme and it is expected that, subject to parliamentary approval, the changes announced in the consultation response will come into effect during 2017.
- The Non-Domestic RHI scheme: the Non-Domestic RHI is a government environmental programme that provides financial incentives to increase the uptake of renewable heat by businesses, the public sector and non-profit organisations. Eligible installations receive quarterly payments over 20 years based on the amount of heat generated.
- The Climate Change Levy (CCL) Exemption: the CCL was introduced in April 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. In September 2015, Drax, along with one of the UK's leading generators of renewable power, Infinis, announced that they were to apply for judicial review of the UK government's decision to remove the CCL exemption. Drax and Infinis' challenge was also based on the fact that when the CCL exemption was removed from electricity generated from combined heat and power plants, there was a two-year notice period, whereas in this case the notice period was only 24 days. Judgment was entered against Drax and Infinis on 10 February 2016. The High Court recognised the merits of bringing the case but noted that the government had not made any specific and clear assurances that the exemptions would continue to apply.
- The Offtaker of Last Resort scheme: the 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 Electricity Market Reform.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Renewable energy policies and incentives are established at the national level under the National Renewable Energy Action Plan for the United Kingdom in accordance with the UK's obligations under article 4 of the Renewable Energy Directive.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

We have seen an increasing number of corporate PPAs in the UK since 2015. These are long-term power purchase agreements under which a corporate entity agrees to purchase renewable energy from a renewable energy generator, usually to take all of the energy generated by its plant (or plants).

The PPA will contain provisions for the sale and purchase of electricity and the benefit in any renewable energy subsidies, and all of the provisions governing that sale and purchase. The delivery of renewable energy is notional and not physical in most cases.

In the UK and some other European countries, these provisions will also include obligations on the corporate offtaker to provide or procure certain metering and regulatory activities that can only be undertaken by licensed electricity suppliers.

As such, the corporate offtaker will need to enter into a back-to-back agreement with a licensed supplier under which the licensed supplier commits to undertake these obligations. The licensed supplier will also commit to purchase the electricity and renewable energy benefits from the corporate offtaker on the same terms with some margin built in.

In parallel to this arrangement, in the UK and some other European countries, the corporate offtaker will have an electricity supply agreement with the licensed supplier, under which electricity will be supplied to the meet the corporate offtaker's energy demands from time to time.

The terms of supply under this supply agreement will take into account the electricity purchased under the PPA and passed through to the licensed supplier under the licensed supplier agreement. This ensures that the corporate has the benefit of the fixed pricing for renewable energy under the PPA, but the reliability of a supply agreement with a licensed electricity supplier to meet its day-to-day energy demands.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

In November 2016, the government published its plans 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. This message was perhaps intended to allay fears following the 2015 General Election that there had been a shift in the government policy away from being

'pro-renewables', to what was described by some commentators as being more 'pro-business'.

The second allocation process for CfDs for renewable generators begun 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 which should no longer receive subsidies. The only technologies supported will be offshore wind, certain forms of biomass or waste-fuelled plant (advanced conversion technologies, anaerobic digestion, biomass with CHP) wave, tidal stream and geothermal.

The energy policy outlined above, coupled with the potential impact of upcoming negotiations relating to the withdrawal of the UK from the European Union, are likely to give rise to a legislative overhaul regarding the electricity sector including with respect to renewable energy.

Drivers of change

10 | What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

The UK government's commitments under the Paris Climate Agreement, together with its obligations under 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, coupled in turn with the political and legislative uncertainty resulting from the UK's referendum vote to exit the European Union, are likely to be the biggest drivers of change in the renewable energy markets.

Disputes framework

11 | Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

In relation to disputes that may arise between NGET and participants in the capacity market and CfDs, Ofgem will consider appeals made to it by participants in accordance with the relevant regulations. Such appeals may only be made to Ofgem following an initial appeal to NGET.

Dispute resolution between parties to the contractual arrangements governing the relationships between renewable power market participants are otherwise governed in accordance with the contractual terms agreed within the relevant contracts.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 | Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

The primary types of existing utility-scale renewable energy projects are offshore wind, biomass or waste-fuelled plant, wave and tidal stream, and hydropower. Examples include the London Array Wind Farm at 630MW, the 44MW biomass plant at Steven's Croft, the 398MW MeyGen offshore tidal stream project and the Foyers pumped storage power station with a capacity of 305MW.

The National Infrastructure and Construction Pipeline Analysis paper published by the Infrastructure and Projects Authority states that there are 96 renewable energy projects in the UK pipeline, examples of some of the projects are:

- Hull Energy works: a 28MW waste-to-energy gasification plant in Hull;
- BH Energy Gap Walsall: the waste-to-energy plant was awarded a CfD and when complete, the Walsall project will process up to 300,000 tonnes of mixed waste every year to produce a synthetic gas that will be used to generate up to 26MW of electricity;
- MGT Teesside biomass plant: a 299MW biomass-powered, combined heat and power (CHP) plant proposed by MGT Teesside;
- Hornsea Project Two: an offshore wind farm located in the North Sea off the coast of England, with a planned maximum capacity of 1,800MW; and
- Triton Knoll offshore wind project: to be located off the coast of Lincolnshire, with an expected capacity of 750MW to 900MW.

In June 2018, Ørsted announced that its Race Bank 91 turbine offshore wind farm has opened off the Norfolk and Lincolnshire coast. It is expected that this offshore wind farm will produce 573MW. This new project also features a new state-of-the-art Service Operation Vessel (SOV) used to carry out offshore maintenance.

Development issues

13 | What types of issues restrain the development of utility-scale renewable energy projects?

Throughout Europe we have seen retroactive changes to regulatory support regimes for renewable energy projects in countries such as Spain, Greece, Bulgaria and the Czech Republic; investors in renewable energy are understandably wary of 'change in law' risk in the renewable sector and the damaging effect that such changes can have on a project's economics. The potential impact of such changes is one of the key hurdles faced in the development of utility-scale renewable energy projects in the UK. The inclusion of clear provisions safeguarding the generator or guaranteed beneficiary of any applicable incentives against UK 'change in law' risk could mitigate concerns both investors and lenders may have in this respect.

HYDROPOWER

Primary types of project

14 | Describe the primary types of hydropower projects that are prevalent.

There are three main types of hydroelectric schemes in use in the UK:

- run-of-river schemes, using the natural flow of a river, where a weir can enhance the continuity of the flow. Both storage and run-of-river schemes can be diversion schemes, where water is channelled from a river, lake or dammed reservoir to a remote powerhouse containing the turbine and generator;
- storage schemes, where a dam impounds water in a reservoir that feeds the turbine and generator that are usually located within the dam itself; and
- pumped storage, incorporating two reservoirs. At times of low demand, generally at night, electricity is used to pump water from the lower to the upper basin. This water is then released to create power at a time when demand, and therefore price, is high. However, it should be noted that pumped storage is not considered a renewable energy (because of its reliance on electricity).

In addition to the above, tidal hydro systems are being developed, with one of the two tidal hydro projects in Europe being the 1.2MW SeaGen tidal turbine at Strangford Lough in Northern Ireland. On 25 June 2018, the UK government rejected the planned development of the 320MW Swansea Bay tidal lagoon. At the time of writing, it remains unclear whether this project will be revised on new, more favourable terms.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

Because of the nature of hydroelectric generation, often the barriers to successful projects can be high. Part of the reason behind this is the sheer number of authorities that need to be consulted on any given project: the Environment Agency, the local relevant planning authority, fisheries bodies, statutory environmental bodies such as Natural England and landowners, to name a few. This can be difficult in both a legal and practical sense (ie, time and cost). Furthermore, although hydropower has been embraced in Scotland, in England and Wales the review of FITs at the end of 2015 preceded diminishing support for hydro schemes, with the tariffs available being reduced significantly in the 100–500kW band. While wind and solar projects continue to benefit from legislative and regulatory support, the same is not true for hydroelectric generation, and it does not appear that this will change, at least for the foreseeable future.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

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. Those that operate and maintain such distributed generation projects as ultimate end users, regardless of size, have been doing so in increasing numbers for the benefit of the environment and for long-term cost savings.

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

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, they 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.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

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 (FPP) initiative, introduced in 2012. This three-year project delivered cheaper and faster distributed generation connections, as well as enabling such distribution schemes to become active which were thought to be unfeasible. The clean energy company Powerhouse Energy has recently announced its successful connection to a microgrid, enabling it to get a step closer to a commercial roll-out of its waste-to-clean electrical energy solution. We anticipate there will be more similar announcements this year and into the next, as more clean energy companies invest in technologies that make it easier to connect to microgrids.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

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 electricity generated (eg, gaining FIT payments and ROCs). 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 such uncertainty has a particular impact on distributed generation, an area partially regulated by the European Union.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

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.

Recent developments include:

- battery storage and demand-side response won more than 500MW of contracts in the T-1 Capacity Market auction in February 2018;
- GE has announced plans for a 41MW project, to be located in the UK, amounting to its largest grid scale battery energy storage system to date; and
- Battery Energy Storage Solutions (BESS) has raised more than US$100 million to invest in energy storage projects in the UK totalling 100MW.

Electricity storage is treated as a form of electricity generation and, as such, the applicable legal framework for electricity storage is currently the same as that applicable to electricity generation.

Development

21 | Are there any significant hurdles to the development of energy storage projects?

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 on such 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 double-charged 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).

Recent regulatory developments include:

- in July 2017, Ofgem and the UK government released their preliminary response to the November 2016 consultation, 'A smart, flexible energy system: call for evidence', in which it addressed potential commercial and regulatory issues that are inhibiting energy storage developments, such as the classification of 'storage';
- in December 2017, Ofgem released draft guidance seeking to clarify existing guidance on the requirements that generators must satisfy under the RO and FIT schemes if storage is colocated with generation accredited under these schemes; and
- in January 2019, BEIS launched the 'Storage at Scale' competition that will make up to £20 million (€22.87 million) available for up to three projects offering alternative storage solutions for either a minimum output of 30MW or minimum capacity of 50MWh. Successful projects will be built and tested by December 2021. A statement by BEIS said: 'Projects should be at a technology readiness level of six or above, which could result in lower capital or operating costs to the traditional storage technologies, or improved capacity, sustainability and response rates at a comparable cost'.

FOREIGN INVESTMENT

Ownership restrictions

22 | May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

There are no particular restrictions on foreign investment of UK renewable energy projects. However, Ofgem, currently together with the European Commission (subject to any Brexit-related developments), additionally undertakes an assessment as to whether the foreign ownership or control of a renewable power project poses a security of supply risk (Electricity and Gas (Internal Markets) Regulations 2011).

Equipment restrictions

23 | What restrictions are in place with respect to the import of foreign manufactured equipment?

As the EU is a customs union, UK companies can currently 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.

PROJECTS

General government authorisation

24 | What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

The Planning Act 2008 sets out the regime for planning authorisations for energy infrastructure projects in England and Wales which fall within the category of 'nationally significant infrastructure projects'. Such projects require the issuance of Development Consent Orders (DCO). The applicable thresholds to determine whether a renewable project is a nationally significant infrastructure project is more than 50MW onshore and more than 100MW offshore. Applications for DCO are made to and publicly examined by the Planning Inspectorate, which then makes a recommendation to the Secretary of State for BEIS. On a successful application, the DCO is awarded by BEIS.

In addition, consent under section 36 of the Electricity Act 1989 is needed for offshore generating stations with a generating capacity of more than 1MW, but less than or equal to 100MW (section 36, Electricity Act 1989). Projects with a generating capacity of 50MW and less in England and Wales are consented under the Town and Country Planning Act 1990.

Depending on the type of plant, further authorisations such as relating to health and safety, environmental or nuclear specific matters may also be required from the appropriate regulator.

Offtake arrangements

25 | What type of offtake arrangements are available and typically used for utility-scale renewables projects?

We have already mentioned the three main types of offtake arrangements used for utility-scale renewables projects and the offtake counterparties: licensed suppliers (utility companies) under negotiated power purchase agreements; the LCCC within the scope of the CfD arrangements; and commercial power purchase arrangements with corporate entities. In addition to those arrangements, the government has introduced the OLR scheme, which aims to promote the availability of power purchase agreements. It is intended as a last resort to help renewable generators who cannot get a power purchase agreement through the usual commercial means and is part of the government's wider programme on Electricity Market Reform, which we have discussed above. The OLR scheme is only available to eligible CfD generators and provides an alternative route to markets for them by facilitating a backstop power purchase agreement between the generator and a licensed supplier under which the licensed supplier will buy the electricity purchased under the backstop power purchase agreement at a specified discount below the market reference price. In February 2019, Ofgem published the levelisation schedule for the year running from April 2019 to March 2020.

Procurement of offtaker agreements

26 How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

The approach taken by UK offtakers and suppliers alike varies on the circumstances, depending on the nature of the project, the market generally or a range of other factors. Often offtakers choose to tender competitively, approaching multiple suppliers, allowing themselves optionality. Alternatively, and commonly used in the UK where a large number of applicants is expected, a 'restricted procedure' is used, a two-stage bidding process whereby suppliers respond to a notice in the Official Journal of the European Union, where large-scale public contracts are published. Bidders through this process will go through a pre-qualification stage initially, before being shortlisted and then selected following a second stage (if successful). For more complex long-term PPAs, a competitive dialogue or negotiation procedure may be used. With this type of procurement, a supplier will respond to an invitation to tender (or other call to competition), with selected bidders invited to further negotiate elements of their bid. Following these subsequent negotiations, bidders will then submit a revised tender, tailoring their bid to the purchaser once they have better visibility on their requirements.

Behind the dynamic between supplier and offtaker is the interplay between generator and supplier, and in particular, the OLR scheme, alongside the CfD regime, as discussed in question 6. For generators who may otherwise struggle to get a PPA, the OLR scheme is available to eligible investment contract CfD generators. The Ofgem scheme allows for a backstop power purchase agreement between the generator and a licensed supplier, achieved through a competitive auction process. The benefit for the purchaser is that they will be able to purchase at a specified discount below the market reference price, while the benefit for the generator is that they have a route to market, a genuine 'last resort'.

Operational authorisation

27 What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

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.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

Sections 105 to 114 of the Energy Act 2004 introduced a decommissioning scheme for offshore wind and marine energy installations. Under the terms of the Act, the Secretary of State may require a person who is responsible for one of these installations to submit (and eventually carry out) a decommissioning programme for the installation.

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DECC stated that it believed that by imposing a legal obligation on businesses to prepare and carry out a decommissioning programme – and potentially requiring them to provide financial security – it had reduced the risk of businesses defaulting on their decommissioning liabilities, while maintaining a fine balance so as not to hinder the development of offshore renewable energy installations.

Sections 69 to 71 of the Energy Act 2008 introduced three new provisions into the offshore renewables decommissioning regime. These provisions did not change the overriding policy governing the decommissioning of offshore renewable energy installations, but were intended to help provide greater clarity to developers, and greater protection to taxpayers. In summary, the Energy Act 2008 introduced the following changes:

- Information requirements: the Secretary of State was given greater powers to request information from developers when taking a decision on whether or not to approve a decommissioning programme. The requested information could be operational or financial.
- Parent and associate companies: the Energy Act 2008 introduced provisions seeking to ensure a clearer legal framework for the rights and obligations of those companies associated with a developer of an offshore renewable energy installation. The provisions clarified that where a developer of an offshore renewable energy installation is directly controlled by another company, such as a parent or associate company, the Secretary of State has the discretionary power to issue them with a decommissioning notice.
- Insolvency protection: provisions were introduced to measure ring-fencing of amounts set aside for decommissioning purposes with a view to ensuring that such funds are insolvency remote.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

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, in UK renewables projects, the Green Investment Bank; the scope of the Green Investment Bank's activities are to be seen following its recent acquisition by Macquarie.

We have also seen private equity funds taking construction risk and providing 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 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, (no further funds will be available for this programme and any unspent EU NER300 have been directed to the new Innovation Fund), direct grants from the government and, in Scotland, the Energy Investment Fund administered by the Scottish Investment Bank.

Operational financing

30 | What are the primary structures for financing operating renewable energy projects in your jurisdiction?

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.

United States

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MARKET FRAMEWORK

Government electricity participants

1 Who are the principal government participants in the electricity sector? What roles do they perform in relation to renewable energy?

Under the Commerce Clause (article I, section 8, clause 3) and Tenth Amendment to the US Constitution, the United States federal government regulates interstate commerce, while individual states regulate intrastate commerce. As a general matter (with many exceptions), that centuries-old framework has resulted in a system where a state government oversees the siting, development and operation of energy facilities, as well as the transmission, distribution and sale of electricity at retail, or that occurs exclusively within the state, while the federal government possesses jurisdiction when a facility and its generation implicate interstate concerns.

Traditionally, most participants in the electric sector have been regulated monopolies, and government regulators were initially established in order to regulate the rates of those participants, and oversee the quality of their service. The first government regulators of this type were state utility commissions, established to regulate rates, terms and conditions of service provided to retail customers. In the late 1920s, the Supreme Court ruled that state regulatory commissions had no authority to regulate wholesale transactions in interstate commerce, so Congress passed the Federal Power Act giving the Federal Power Commission (FPC) (succeeded in 1978 by the Federal Energy Regulatory Commission or FERC) the authority to regulate rates, terms and conditions of wholesale transactions in interstate commerce.

The core responsibilities originally vested in the FPC (now FERC) and the state regulatory commissions – to ensure just, reasonable and not unduly discriminatory rates, terms, and conditions of service – remain in place today. However, the manner in which these regulators discharge those obligations has changed substantially. While some aspects of electric service, most notably transmission, remains a monopoly, and thus subject to cost-of-service regulation, both FERC and many of the states have come to rely on competition, rather than rate regulation, as the primary mechanism for ensuring just, reasonable, and non-discriminatory pricing for both wholesale and retail sales of electricity and capacity. Thus, much of the role of FERC and the state commissions in today's electricity sector involves market oversight, watching in particular for the possession and exercise of market power.

State commissions also are usually responsible for implementation of the state's siting authority where applicable. Other regulatory agencies in charge of permitting various aspects of a renewable energy project can include, depending on the circumstances, the US Environmental Protection Agency, the US Department of the Interior and state environmental agencies.

Private electricity participants

2 Who are the principal private participants in the electricity sector? What roles do they serve in relation to renewable energy?

Municipal utilities (utilities that are an instrumentality of a state or local government) and cooperative utilities (utilities owned directly by the customers that they serve) have traditionally been vertically-integrated, owning generation, transmission, and distribution facilities in order to serve their customers. However, in recent years, they have been making substantial purchases of renewable energy from private owners or developers. In many jurisdictions, these private owners or developers may also enter into arrangements to sell power directly to individual or corporate end users of electricity.

With respect to transmission, there are seven Regional Transmission Organizations (RTOs) in the continental United States: one in New England (ISO-New England), one in New York (New York Independent System Operator), one in the mid-Atlantic and part of the Midwest (PJM Interconnection), two in the Midwest (Midcontinent Independent System Operator and Southwest Power Pool), one in California (California Independent System Operator), and one in Texas (Electric Reliability Council of Texas). These RTOs operate in approximately two-thirds of the geographic area of the continental United States, while the transmission system in the remaining approximately one-third of the country is operated directly by the utilities (on an individual basis) that own that part of the system. RTOs are not governmental entities; most of them are not-for-profit corporations. When a project is developed in an RTO region, the project must take interconnection service from the RTO, and the RTO's rules on market and transmission operation will directly impact the ability of the project to move its power to market, and the revenues that the project receives for its power.

Definition of 'renewable energy'

3 Is there any legal definition of what constitutes 'renewable energy' or 'clean power' (or their equivalents) in your jurisdiction?

Each jurisdiction's renewable energy programme defines what types of technology and energy qualify for particular incentives. The same jurisdiction could also treat the same type of resource differently for different incentives. For instance, a state might define 'renewable energy' to include nuclear resources for its tradable clean energy standard, but exclude nuclear from state investment tax credit eligibility. In a clean energy standard or renewable portfolio standard (RPS), such definitions typically indicate with some precision what resources qualify to generate renewable energy certificates (RECs), which the state's electric utilities are often required to procure to demonstrate compliance with their RPS obligations.

Framework

4 What is the legal and regulatory framework applicable to developing, financing, operating and selling power and 'environmental attributes' from renewable energy projects?

As a general matter, a developer of a renewable energy project will need to procure a siting permit or zoning authorisation, a construction permit, and necessary environmental permits in order to start construction of the project. During the construction phase of a renewable energy project, FERC has oversight over interconnection arrangements (in Texas, Hawaii or Alaska, oversight of interconnection will fall to the applicable state regulatory entity – the Public Utility Commission of Texas, the Hawaii Public Utilities Commission or the Regulatory Commission of Alaska). Typically, the interconnecting transmission provider will have a pro forma interconnection agreement on file at FERC, and that pro forma agreement will serve as the template for negotiations.

At the early stages of project development, financing arrangements are governed primarily through market practices and contractual arrangements. However, once construction is completed and the project is ready to produce power, financing arrangements involve more direct regulatory oversight. For projects located in areas of the United States outside of Texas, Hawaii and Alaska, FERC is the primary regulatory agency to exercise oversight over financing arrangements. Once the project generates test power or files a rate schedule with FERC, it becomes a 'public utility' under the Federal Power Act, and thus subject to FERC regulatory requirements.

The operation of a renewable energy project is governed by many of the same siting and environmental permits outlined above. Operation of a renewable energy project in the continental United States also is subject to mandatory reliability rules promulgated by North American Electric Reliability Corporation (NERC) and approved by FERC. The owner or developer of the project generally will be required to register with NERC, and to comply with a series of reliability rules applicable to generation of power from renewable projects.

The sale of energy and capacity from the project is generally overseen by the applicable regulatory agency. For wholesale sales of electricity and capacity in areas of the continental United States outside of Texas, the owner or developer must have on file at FERC a rate schedule to govern such sales. For most sellers, that rate schedule is a market-based rate (MBR) tariff, which allows the owner or developer to sell power on wholesale markets at prices set by the market and will be granted by FERC if the seller can demonstrate that it lacks horizontal or vertical market power in the relevant market. Sellers of electric energy and capacity under an MBR tariff are subject to the requirement to periodically report to FERC the transactions executed under the tariff, and to submit periodic market power updates if they own more than 500MW in the relevant market. For wholesale sales in Texas, Hawaii, and Alaska, and for retail sales of energy everywhere, the seller is subject to the requirements of the applicable state regulatory authority.

With respect to environmental attributes, while the federal government in theory could establish a national renewable energy attribute system, states have occupied the field of US renewable energy attribute programmes to date. The US Congress has considered several bills over the past decade to establish a federal RPS, and the US Environmental Protection Agency's Clean Power Plan, promulgated in October 2015 but now likely to be repealed, possessed some features similar to an RPS.

Stripping attributes

5 Can environmental attributes be stripped and sold separately?

About 30 US states have established some form of RPS, a regulatory programme that generally requires entities that sell or distribute electricity to end users (typically electric utilities) to procure a certain percentage of their state-wide sales in MWh from renewable sources. These programmes vary widely in the details, including what type of energy is considered 'renewable' or 'clean'. The majority provide that electric utilities demonstrate compliance with their renewable procurement obligation by submitting RECs, which are 'unbundled' from the associated electricity that was generated at a renewable energy facility. The REC is a separate, tradable commodity that represents the environmental attributes of one MWh of renewable electricity.

In almost all cases, these commodities are tradable as a matter of private contract law, and may be sold to different buyers at different prices and subject to different contractual terms. While there have been efforts to standardise REC purchase and sale agreements, none has succeeded, and tradable RECs almost always are subject to negotiated bilateral agreements. Long-term primary REC deals (10 to 20 years) are typically broker-matched. However, in a state with a relatively new RPS that has volatile pricing, commodity traders and hedge funds may play an active and valuable role by assuming risks to structure and aggregate supply for end users.

Government incentives

6 Does the government offer incentives to promote the development of renewable energy projects? In addition, has the government established policies that also promote renewable energy?

At the federal level, the primary incentives are the investment tax credit (ITC) and the production tax credit (PTC).

Subject to certain federal income tax requirements, owners of solar projects (and other qualified projects) may claim an ITC based on the owner's tax basis in eligible property. For projects that commence construction by the end of 2019, the credit is 30 per cent of the tax basis of the owner in eligible property. The amount of the credit steps down beginning with projects that commence construction in 2020. The ITC is subject to recapture if, within the first five years after the project is placed in service, the project is taken out of service or sold to a new owner.

Owners of wind projects (and other qualified projects) may claim a PTC over time equal to 2.4-cent per kilowatt-hour (kWh) for the first 10 years of a project's operations. Projects that commenced construction by the end of 2016 may receive the full amount of the PTC. The PTC is phased out thereafter: projects that commence construction in 2017 may receive 80 per cent of the PTC, projects that commence construction in 2018 may receive 60 per cent of the PTC, and projects that commence construction in 2019 may receive 40 per cent of the PTC.

All but a handful of US states have established some type of financial incentive to encourage the development of renewable energy. Aside from RPS programmes, net metering is one of the primary state-level incentives for the solar market. Net metering allows a building owner to sell excess production generated by a rooftop solar system to the utility and receive a billing credit on the owner's electricity bill. 'Virtual net metering' (also called 'remote net metering') means that a customer is entitled to this same type of credit when the project is not located on the customer's property. Community solar is a further extension of virtual net metering, with multiple customers participating in a virtual net metering pool and receiving some of the benefits of an off-site solar project. Other state level incentives include state investment or property tax credits or deductions, sales tax credits, rebate programmes, performance-based incentives, favourable loan programmes, leasing programmes, feed-in tariffs, minimum purchase obligations and tradable REC programmes. State-based incentives can generally be used in addition to federal incentives like tax credits.

Establishing policies and incentives

7 Are renewable energy policies and incentives generally established at the national level, or are they established by states or other political subdivisions?

Renewable energy incentives and policies can exist either at the federal or state level and take many forms. The primary incentives on the federal level are the ITC and the PTC. Depending on the state, renewable incentives may also be created by localities. In addition, some electric utilities have established incentive programmes to encourage retail customers to purchase or host renewable energy systems on their properties.

Purchasing mechanisms

8 What mechanisms are available to facilitate the purchase of renewable power by private companies?

Over the past few years (and even months), corporate interest in the renewable energy and related transactions market has exploded in the United States. More than 175 of the country's largest corporations have pledged to source 100 per cent of their electricity from renewable energy under the 'RE100' initiative. Carrying out these policies, corporate entities, including retailers, manufacturers and technology companies, are either entering the renewable energy arena for the first time or significantly bolstering their current positions. At one end of the spectrum, there is an active market in the US for voluntary RECs, which allow corporates to offset their use of conventional power sources through a contractual instrument, without directly purchasing power from renewable energy projects. At the other end of the spectrum, corporate entities have the ability to host renewable energy projects. Such inside-the-fence projects are generally permitted in the US and, at a high level, have the benefit of less third-party regulation and allow corporate entities to directly obtain the benefits of the renewable energy (environmental, publicity, tax credits, etc). There are many other structures in the market, including bilateral power purchase agreements (where corporate entities in deregulated markets are able to purchase directly from renewable energy project owners) and green tariff programmes (where corporate entities can purchase renewable energy and related attributes directly from their local electric utility). In each instance, the business objectives of the corporate entities, along with the laws and regulations of local energy markets and state laws, dictate the options available for a particular private company. A growing list of brokers are available to help these corporate entities participate in such transactions, including matching corporations with project developers.

Legislative proposals

9 Describe any notable pending or anticipated legislative proposals regarding renewable energy in your jurisdiction.

The US Environmental Protection Agency promulgated the Clean Power Plan in October 2015. That regulation created a programme somewhat similar to an RPS in terms of mandating that existing fossil fuel-fired electric generating sources purchase zero-emission 'emission rate credits' to balance out their higher emission-intensity generation. The emission rate credits would be similar to RECs in that they would represent the equivalent of 1MWh of electricity generated by new, zero-emission solar, wind, geothermal or hydro energy. The new administration is in the midst of a rulemaking to replace the Clean Power Plan with a different type of rule to regulate carbon dioxide emissions from existing power plants. The Clean Power Plan never took effect due to the imposition of an unprecedented stay by the US Supreme Court during judicial review.

On 1 June 2017, President Trump announced that he plans to withdraw the United States from the Paris Agreement. At this time, the US Congress is not considering any notable legislation that would boost renewable energy.

Drivers of change

10 What are the biggest drivers of change in the renewable energy markets in your jurisdiction?

As in other parts of the world, one of the biggest drivers of change, aside from the federal and state incentives, has been advances in renewable energy technology and the reduction in cost of renewable energy, particularly the cost of solar panels. Such advances have significantly reduced the levelised cost of electricity (LCOE), which is the aggregate cost to construct and operate a renewable energy project, divided by the aggregate amount of electricity that the project will generate over its useful life (in $/kWh). In some parts of the United States, the LCOE of a solar or wind project is less than the LCOE of a conventional baseload generation project, without accounting for the value of tax credits and other incentives that may be available for solar and wind projects. The point at which the LCOE of a renewable energy project is equal to the LCOE of a conventional baseload generation project is known as 'grid parity'; adoption of solar and wind energy could accelerate once grid parity is reached.

Disputes framework

11 Describe the legal framework applicable to disputes between renewable power market participants, related to pricing or otherwise.

Relationships between renewable power market participants generally are governed by contracts that are overseen by either FERC or a state regulatory commission (depending on whether the contract is for the sale of wholesale or retail power, and the location of the seller). Most of these agreements require that the parties resort to informal mediation before seeking to have their disputes resolved in an adversarial proceeding. In circumstances where mediation fails to resolve a contractual dispute, and the parties seek resolution outside of arbitration, the available avenues for addressing the dispute are to file a complaint at the applicable regulatory agency, or to file a complaint in state or federal court (federal courts usually have to rely on diversity jurisdiction in order to be able to hear such disputes). The administrative law doctrine of primary jurisdiction gives the regulatory agency primacy in determining whether the dispute should be resolved at the agency, or whether it should be resolved in court.

UTILITY-SCALE RENEWABLE PROJECTS

Project types and sizes

12 Describe the primary types and sizes of existing and planned utility-scale renewable energy projects in your jurisdiction.

For each of the past five years, over 50 per cent of new utility-scale capacity has been from wind and solar projects, with new natural gas projects accounting for about 33 per cent of new utility-scale capacity. The remaining new utility-scale capacity is from other types of projects, including biomass, hydropower and fuel cell projects. As older coal, natural gas and hydropower plants are retired, wind and solar projects are expected to continue to account for a large portion of new utility-scale capacity in the United States. Planning for the deployment of utility-scale wind and solar projects is heavily based on qualification for federal tax credits and related deadlines for the commencement of construction.

Development issues

13 What types of issues restrain the development of utility-scale renewable energy projects?

Given a general decline in power prices under utility-scale power purchase agreements, the most significant issue with respect to the financial viability of many wind and solar projects is the availability of federal tax credits, which account for a large portion of the capital costs of projects.

HYDROPOWER

Primary types of project

14 Describe the primary types of hydropower projects that are prevalent.

Most hydroelectric facilities in the United States are run-of-river (with or without pondage to regulate hydrology) or pumped storage facilities. Hydroelectric generation represents only approximately 7 per cent of installed US capacity, and within this small sub-set of generation asset class, there exist even smaller and nascent alternative hydroelectric technologies such as tidal turbines. Depending on the state where the hydroelectric facility is located, such facility may be owned by an independent power producer, investor-owned electric utility or Federal administrator or corporation, such as Bonneville Power Administration and the Tennessee Valley Authority.

Legal considerations

15 What legal considerations are relevant for hydroelectric generation in your jurisdiction?

As with most electric generating facilities, most hydroelectric facilities in the United States are regulated by FERC. FERC is the exclusive regulatory agency for the commissioning and licensing of hydroelectric facilities. One issue that is unique to hydroelectric facilities is 'head-water benefits' under section 10(f) of the Federal Power Act, which comprise energy production gains realised by the owner of a downstream hydropower project as a result of the regulation of river flows by the owner of an upstream storage reservoir or other headwater improvement (such as a dam). The Federal Power Act imposes obligations on downstream hydropower project owners to reimburse upstream headwater project owners for certain costs related to an equitable part of those energy production gains. The Federal Power Act mandates that FERC determine headwater benefits received by downstream hydropower project owners. Another legal concern relating to hydroelectric facilities relates to the protection and preservation of endangered species such as salmon, eel and other aquatic species.

DISTRIBUTED GENERATION

Prevalence

16 Describe the prevalence of on-site, distributed generation projects.

In the solar market, approximately half of new capacity is from on-site distributed generation projects. The prevalence of on-site, distributed generation projects varies significantly based on the state-level regulations and renewable energy programmes. Factors that promote a strong distributed generation market include: favourable weather conditions, availability of net metering programmes and state regulations that allow third-party investors to own the assets of the project (and thus claim the tax credits).

Types

17 Describe the primary types of distributed generation projects that are common in your jurisdiction.

In the residential market, the vast majority of distributed generation projects are rooftop solar projects. In the commercial market, distribution generation projects include solar projects, wind projects and fuel cell projects. In both the residential and commercial distributed generation markets, the state regulatory framework controls whether the assets of the projects may be owned by entities other than the user of the electricity, thereby allowing third-party investors to claim the tax credits associated with the assets.

Regulation

18 Have any legislative or regulatory efforts been undertaken to promote the development of microgrids? What are the most significant legal obstacles to the development of microgrids?

In the United States, microgrids are rarely, if ever, completely disconnected from the larger bulk electric system. Rather, microgrids are considered to be a variation on 'behind-the-meter' resources that are used primarily to serve the needs of a highly localised site, but that retain a grid interconnection in order to both sell excess power, and to receive power from other grid resources when the behind-the-meter generation is unavailable.

Over the past several years, as renewable energy resources have achieved a higher proportion of the overall generating mix in the United States, as the desire to address climate change has become more pronounced among both policymakers and businesses, and as policymakers have begun to place increased emphasis on grid 'resilience' in the face of severe weather events like hurricanes and polar vortexes, many policymakers, particularly at the state level, have begun to articulate a desire to encourage the development of a 'distributed electric system'. The primary characteristics of such a distributed system would be less reliance on large, central station power plants, and more reliance on renewable energy resources distributed across different locations on the bulk electric system. In these policy discussions, microgrids – at not only industrial and commercial sites, but in residential areas as well – are often cited as an essential part of the desired end state of a functional distributed electric system.

The resulting efforts to promote the development of microgrids have occurred primarily at the state level, and have tended to focus less on direct financial incentives, and more on changes to the existing regulatory framework that need to be made in order to facilitate the establishment of microgrids. The thorniest issues have involved questions about the role of incumbent load-serving utilities in backing up microgrid operations, the costs that microgrids should pay in order to maintain the larger bulk electric system, and the financial impact that microgrids are likely to have on incumbent load-serving utilities. These utilities have faced slow or stagnant load and revenue growth for nearly a decade, and have expressed some degree of concern about the prospect of losing additional revenue as a result of customers leaving the system in order to form microgrids. At the same time, policymakers and consumer advocates have expressed concern that a proliferation of microgrids will leave traditional utilities with a more unstable, less financially sound customer base that will have to pay more for basic electric service.

Other considerations

19 What additional legal considerations are relevant for distributed generation?

With rapid growth in distributed generation, one of the key issues facing state regulators is how to deal with customers that switch to on-site solar and therefore purchase less power from the grid but still use the distribution grid to meet a portion of their electricity needs. The result is that the utility receives less revenue from the sale of power, while the utility's fixed costs for maintaining and operating the distribution grid do not change. In response, certain state regulators have either:

- reconsidered the compensation structure for net metering programmes (meaning that, rather than a customer receiving a credit for excess power sold back to the grid that is equal to the full retail rate of electricity, the customer receives a lower credit that takes into account a utility's transmission costs); or
- placed caps on the aggregate capacity of projects that are eligible for net metering.

ENERGY STORAGE

Framework

20 What storage technologies are used and what legal framework is generally applicable to them?

Various versions of lithium-ion storage comprise the dominant technology today, and the use of lithium-ion in applications outside of grid-connected and behind-the-meter electric power (such as in electric vehicles) means that the technology should continue to benefit from significant research and development investment. Other technologies include flow batteries, lead acid batteries, pumped hydro storage, compressed air storage, flywheels and energy storage that does not deliver electricity as its product, such as ice-based cooling systems that are 'charged' using grid electricity. To date, implementation has been primarily in front-of-the-meter installations, including at gas-fired generation facilities to assist with ramping up of production, rather than in behind-the-meter installations.

Energy storage is capable of providing energy, capacity and certain ancillary services products, and its consistent availability makes it particularly effective at providing frequency regulation. Among the services for which energy storage facilities are particularly well suited are frequency regulation, backup power, peak shaving, black start and energy arbitrage. In addition, energy storage at times represents load rather than generation. In early 2018, FERC issued a final rule requiring that RTOs under its jurisdiction adopt rules designed to integrate energy storage resources into their markets. Among the requirements imposed by FERC are mandates that market rules accommodate all products that energy resources are capable of providing, that energy storage resources be allowed to set the applicable market clearing price (both as buyers and as sellers), and that market bidding rules recognise the unique parameters presented by energy storage facilities.

Different states are also attempting to modernise markets or more straightforwardly incentivise deployment of storage resources. Two leading states include New York, which is implementing its Reforming the Energy Vision process to reconsider the structure of electric utilities and their markets, and California, which has begun to require its utilities to procure a significant amount of energy storage, in part to address market disruptions caused by a recent significant gas storage leak at Aliso Canyon.

Development

21 Are there any significant hurdles to the development of energy storage projects?

The biggest hurdles to the development of energy storage are the cost of the facilities, the lack of operating history of the technology and the need for new market structures in order to determine how the facilities should be compensated.

FOREIGN INVESTMENT

Ownership restrictions

22 May foreign investors invest in renewable energy projects? Are there restrictions on foreign ownership relevant to renewable energy projects?

There are few restrictions to foreign ownership of renewable energy projects in the US, other than potential issues relating to the Committee on Foreign Investment in the United States (CFIUS). CFIUS in its current form allows the President of the United States to review mergers and acquisitions by foreign persons that result in foreign control over a US company or US assets that may impair national security. Because power generation facilities, including renewable ones, can be considered 'critical infrastructure', it is advisable for any 'foreign person' under CFIUS rules to make a voluntary filing with CFIUS prior to closing on any acquisition of a US-based renewable generation facility, particularly a larger project.

Equipment restrictions

23 What restrictions are in place with respect to the import of foreign manufactured equipment?

Effective in February 2018, in response to a petition from two US solar firms (Suniva and Solarworld), the Trump administration levied a 30 per cent import tariff on crystalline-silicon photovoltaic (CSPV) cells and modules. Thin film solar modules are excluded from the tariff. The tariff decreases by 5 per cent each year and expires in 2021. In anticipation of the tariff, many project developers imported panels in the second half of 2017 in advance of the tariff, particularly for solar projects that are expected to be constructed in 2018. There have also been calls for 'buy American' rules to be implemented federally in the US or by individual states to assist US manufacturers of wind turbines and other capital-intensive renewable energy equipment. These rules have not yet been implemented, but also have political appeal in many jurisdictions in the US where these workers live and work.

PROJECTS

General government authorisation

24 What government authorisations must investors or owners obtain prior to constructing or directly or indirectly transferring or acquiring a renewable energy project?

Although there are some federal statutes that can have a direct impact on the development of a renewable energy facility – for example, the Clean Water Act (CWA) and the Endangered Species Act – the primary permits applicable to the construction of such a facility are issued by state and local governments.

The primary state-level permit needed to construct a new renewable energy project is a siting permit. These are required in many, although not all, states, and have a series of different names, depending on the state. The most common name for these types of permits is Certificate of Public Convenience and Necessity (CPCN), although they

also are referred to by other names (eg, in Connecticut, these permits are referred to as Certificates of Environmental Compatibility and Public Need). To obtain a siting permit, an applicant generally is required to make a showing regarding the need for the prospective generator, as well as its financial and its environmental impacts upon the state where it will be located. In states where a siting permit is required, there is variation in the types of generation to which the requirement applies. For example, in the state of California, any generator with a capacity of 50MW or higher, including any renewable generator, must obtain a certification from the California Energy Commission.

In most states, whether a CPCN is required or not, a developer of a renewable energy facility likely will be required to obtain a local building permit (in cases where no CPCN is required, the developer also may have to address local zoning issues), as well as state-issued environmental permits. Such environmental permits can include permits under section 401 of the CWA (enforcement of which is largely delegated to the states), as well as permits required under state environmental laws. In some of the states where CPCNs are required, the site permitting process serves as a 'one-stop shop' in which other state-level permits, particularly environmental permits, also are addressed. In other CPCN jurisdictions, the CPCN process is divorced from the other state and local permitting processes, and a developer is required to procure all such permits separately.

At the federal level, the primary permits required are those involving environmental issues and, where applicable, use of federal lands. Many renewable energy projects will implicate the CWA's section 402 requirements, addressing pollutant discharge (especially through rainwater run-off), and section 404 requirements, addressing discharge of dredged or fill materials. If these provisions are implicated, a developer will need to obtain a permit from the Environmental Protection Agency, for section 402 issues, the US Army Corps of Engineers, for section 404 issues, or both. If a renewable energy facility is proposed to be sited on federally-owned land, it also will need a site permit from the federal agency responsible for managing that land.

Once FERC's jurisdiction over the owner or developer of a renewable energy project is triggered – either by filing an MBR Tariff or other rate schedule at FERC, or by generating power for injection onto the interstate transmission system – any sale or transfer of the facility also (and with very limited exceptions that often are not applicable to such owners or developers) will be subject to prior review and approval by FERC. The FERC review of such facility transfers will focus primarily on whether the new owner will have market power in the market where the facility is located.

Offtake arrangements

25 | What type of offtake arrangements are available and typically used for utility-scale renewables projects?

A financeable project typically requires a long-term (20-year) power purchase agreement (PPA) under which a creditworthy buyer, such as a utility company or, more recently, a corporate buyer, agrees to buy the electricity for a fixed price.

As an alternative to a PPA or the physical sale of power to the offtaker, in certain deregulated markets, such as Texas, a developer may enter into a long-term hedge agreement (or a synthetic PPA) with a financial institution or other creditworthy party. Such hedges or synthetic PPAs are often structured as a 'contract for differences', where the project owner sells electricity in the merchant market at the floating market price. Then, the project owner pays the floating price to the counterparty, and the counterparty pays the project owner a fixed price for the electricity (or one party pays the other the net settlement amount).

Procurement of offtaker agreements

26 | How are long-term power purchase agreements procured by the offtakers in your jurisdiction? Are they the subject of feed-in tariffs, the subject of multi-project competitive tenders, or are they typically developed through the submission of unsolicited tenders?

Utility companies and state agencies generally secure long-term power purchase agreements through a competitive request for proposal process. Long-term power purchase agreements between corporations and developers are often secured through less formal processes.

Operational authorisation

27 | What government authorisations are required to operate a renewable energy project and sell electricity from renewable energy projects?

The operation of a renewable energy project and the sale of electricity generally are distinct activities under US law, and are governed by separate, although overlapping, legal requirements. The operation of a renewable energy project generally requires the authorisations outlined above – a CPCN or equivalent local zoning permit, applicable CWA and other environmental permits, and federal land permits (where the facility is on federal land). In circumstances where the renewable energy project is injecting power onto the interstate transmission system, the owner or developer will have to have a rate schedule on file at FERC to govern that activity. Usually, the rate schedules that such owners or developers have on file at FERC are MBR tariffs. Finally, most renewable energy projects that are 75MW and above, and that are used to produce power for sale in the continental United States (including Texas), are subject to mandatory reliability regulation administered by FERC.

The sale of electricity from a renewable energy project requires different regulatory authorisations, depending upon whether the sale is at wholesale or retail, and upon where the project is located. Wholesale sales of electricity from projects located in the continental United States outside of Texas are regulated by FERC, and require that the owner or developer have a rate schedule on file to govern those sales. As noted above, most such owners or developers file an MBR tariff, which allows the owner or developer to sell power at wholesale at rates set by the market. The filing of an MBR tariff requires that a seller demonstrate to FERC that it lacks market power in the relevant market, a showing that generally must be repeated every few years by entities that own or control more than 500MW in that market.

Retail sales of electricity, and wholesale sales of electricity in Texas, Hawaii, and Alaska, are governed by state law, and overseen generally by the public utility commissions in those states (ie, the Public Utility Commission of Texas, the Hawaii Public Utilities Commission, and the Regulatory Commission of Alaska). Regulation of wholesale sales by those state entities generally follows the FERC's focus on market power. Regulation of retail sales is governed by state law in all jurisdictions of the United States, and is highly variable. In some states, retail sales by non-incumbent utilities are permitted, while in other states, retail sales may be made only by the incumbent utility, usually at cost-of-service rates.

As a final matter, it should be noted that renewable energy projects in the United States (including Texas) that do not exceed 80MW are entitled to certify as qualifying facilities (QFs) under the Public Utility Regulatory Policies Act of 1978 (PURPA). In certain parts of the United States, these QFs are entitled to require that load-serving electric utilities purchase their power at an 'avoided cost' rate – that is, the rate that the utility otherwise would have to pay for power if it did not purchase from the QF. Although PURPA is a federal statute, the determination of avoided cost rates is made, in the first instance, by state utility commissions.

Decommissioning

28 Are there legal requirements for the decommissioning of renewable energy projects? Must these requirements be funded by a sinking fund or through other credit enhancements during the operational phase of a renewable energy project?

Legal requirements applicable to the decommissioning of renewable energy projects in the United States are established, if at all, primarily through contractual obligation rather than regulatory mandate. For projects that are sited on federal or state-owned land, the agency granting the permit might include, as a condition, a requirement to provide for facility decommissioning through a sinking fund or credit enhancement. However, in most instances, there are no applicable regulatory requirements mandating that a project owner or developer provide financially for decommissioning costs. In these instances, any legal obligation to provide for decommissioning cost would arise in the context of projects that are developed on land that is leased from an owner that is separate from the owner or developer of the project. In this context, it is not unusual for the lessor to ask for financial commitments from the lessee to provide for decommissioning when the useful life of the project has ended. In addition, once a project has been decommissioned, a project company will often submit at FERC a cancellation of its MBR tariff.

TRANSACTION STRUCTURES

Construction financing

29 What are the primary structures for financing the construction of renewable energy projects in your jurisdiction?

Construction of privately owned renewable energy projects is typically financed through a combination of sponsor equity and non-recourse or limited recourse debt. For debt-financing purposes, a special purpose entity (a project company) typically owns the project and obtains loans or bonds, which are secured by the assets of the project and the equity interests of the project company. In the event that the project company fails to repay the debt, the lenders' or bondholders' recourse is generally limited to the assets of the project.

Operational financing

30 What are the primary structures for financing operating renewable energy projects in your jurisdiction?

If the original owner of a project company (the sponsor) is not able to benefit from the tax credits and other benefits itself, the sponsor typically monetises the tax credits and other benefits through one of the following transactions:

- a direct sale, where the sponsor sells 100 per cent of the interests of the project company to one or more passive investors that seek to claim the benefits of the ITC or PTC (the equity investor);
- a sale leaseback, where the sponsor sells the project to an equity investor and then leases the project back;
- an inverted lease or lease pass-through, where the project is leased to a separate entity or partnership that is entitled to the tax credits; or
- a partnership-flip transaction, which has been the most popular tax equity transaction in recent years.

Under a partnership-flip transaction, the sponsor and the equity investor form a special purpose holding company to own the project company. Under the partnership agreement, the equity investor receives a fixed percentage of project cash flows (which may be subject to a step-up if the project underperforms) and generally 99 per cent of tax benefits until the equity investor has received a return equal to a specified target return. Then, the cash distributions and allocations of tax items 'flip', and the sponsor receives the majority of project cash flows and generally 95 per cent of tax items. Following the 'flip date', the sponsor member has a right to buy out the equity investor's remaining interest in the holding company.

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