Renewable Energy 2020

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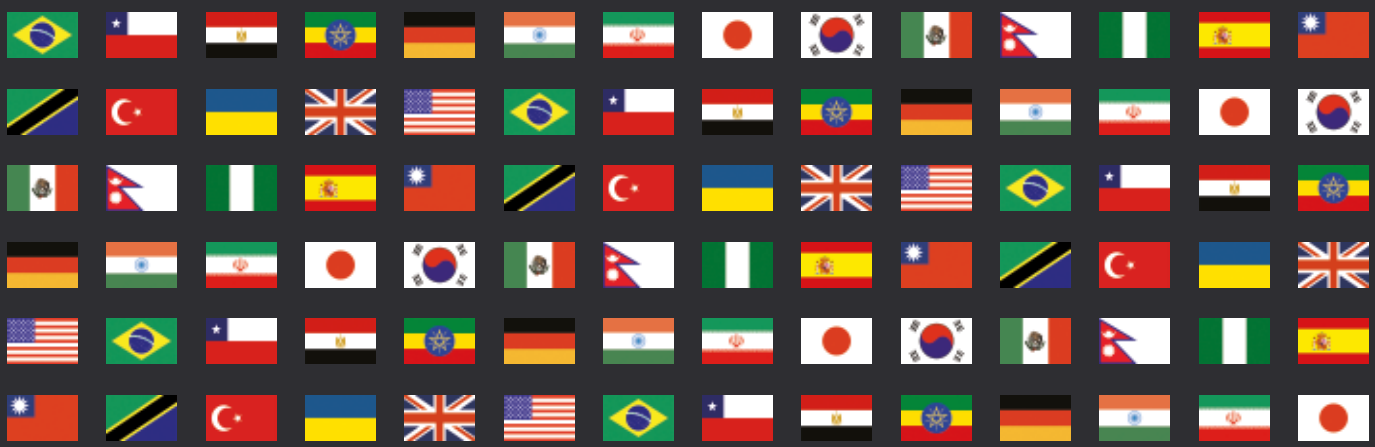

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Lexology Getting The Deal Through is delighted to publish the third edition of *Renewable Energy*, which is available in print and online at www.lexology.com/gtdt.

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.

Lexology Getting The Deal Through titles are published annually in print. Please ensure you are referring to the latest edition or to the online version at www.lexology.com/gtdt.

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.

LEXOLOGY
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Contents

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.

Ethiopia

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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

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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?

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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Real Estate M&A
Renewable Energy
Restructuring & Insolvency
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