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RENEWABLE INCENTIVES GUIDE:
TOWARDS A SUBSIDY-FREE WORLD?
6TH EDITION

FOREWORD

As we launch this 6th edition of the guide, it is clear that the renewable energy sector continues to show strong growth. This is particularly true in electricity generation, where the IAE forecasts 70% of global growth in generation from 2017 to 2023 will come from renewable projects. Renewable incentives still have a significant role in that growth, although we are increasingly seeing the incentives being reduced and even removed as the costs of generation from renewable technologies continue to fall, and more instances of renewable projects proving competitive without subsidy.

Many of the changes we have reported on in past editions have focused on regulatory change and developing technologies. Equally important in the last few years has been the diversification of investment opportunities in the sector. Changing investor goals and sustainability regulation are leading to the emergence of new funding models for investment in green infrastructure. Corporate power purchase agreements for renewable electricity are taking off in a big way in a number of jurisdictions around the world as larger corporates seek ways of fulfilling their CSR commitments and we are seeing the emergence of a new market for green finance products. In the introduction to this guide, we take a look at some of these developments and how renewable incentives fit into this broader commercial picture.

This edition of the guide now covers renewable incentives in 21 major countries.

We hope you find the guide useful.

Nigel Howorth
Partner
Global Renewables Group
November 2018

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FINANCING RENEWABLES: BEYOND SUBSIDIES

Recent Developments

Our last Renewable Incentives Guide in October 2016 was published less than a year after the December 2015 Paris Climate Agreement. In our covering article, we noted that the Paris Agreement might act as a catalyst for further investment both in renewable energy generation and in emerging technologies such as energy storage, seen as essential for integrating solar and wind energy onto electricity grids.

Since then, we have seen an impressive 183 parties ratify the Paris Agreement (195 parties signed the agreement), arguably creating the widest global consensus achieved so far on the need to tackle and mitigate the effects of climate change.

Action on climate change in the two years following the Paris Agreement has resulted in the installation of over 330 GW[1] of renewable energy capacity. This represents a growth of almost 18% between 2015-2017 and is the equivalent of the combined total installed power capacity of the UK, Germany and Romania[2]. These investments have taken place despite the US Government's notification to withdraw from the Paris Agreement in June 2017. In fact, renewable energy investment in the USA has also continued to grow which is testament to the sector's evolution into a mainstream group of technologies.

Technology development

In 2016, we noted the rise of energy storage technologies to assist with the integration of intermittent renewable generation, labelling these technologies "a crucial piece in the new technology jigsaw". Since then, the growth of energy storage, and especially battery storage, has been exponential (from an admittedly small base), and mostly without the use of subsidies. Storage technologies are now beginning to play a material role in markets around the world, with a focus on providing vital ancillary services for system operators.

Falling costs are playing a major part in this development: Bloomberg New Energy Finance's 2017 survey found that lithium-ion battery packs were 24% cheaper in 2017 than in 2016, and 80% cheaper than in 2010. Further drops in technology and installation costs are predicted as the market for battery energy storage continues to grow. This trend is reinforced by the concurrent consumer and policy push for more electric vehicles, and the development of several "gigafactories" such as the Tesla factory in Nevada, which are now able to manufacture large-scale and mass-produced batteries for both energy storage and electric vehicles.

"Already across the globe, we are witnessing subsidy-free or near subsidy-free renewable energy projects in operation or under construction."

Alternative Finance for Green Projects

Looking forward, it is widely expected that the role of subsidies in incentivising the development of renewable generation will continue to reduce, disappearing altogether in some jurisdictions except for new technologies. Already across the globe, we are witnessing subsidy-free or near subsidy-free renewable energy projects in operation or under construction. The first subsidy-free renewables project in the UK (a 10 MW Solar PV park developed by Anesco) became operational in September 2017, and subsidy-free wind farms are currently being developed in countries such as Spain and Sweden. Separately, recent offshore wind auctions in the Netherlands and Germany have resulted in near-subsidy-free renewables projects, with the only "subsidy" being the cost of grid connection.

1 IRENA (2018), Renewable capacity statistics 2018, International Renewable Energy Agency (IRENA), Abu Dhabi

2 https://www.eia.gov/beta/international/

The anticipated phasing out of renewable energy subsidies, in combination with the need to engage in economy-wide decarbonisation, is driving two interesting trends in financing green energy projects.

The first trend relates to large companies contracting directly with renewable energy generators to procure clean energy. Many businesses globally are exploring opportunities to sign corporate power purchase agreements (PPAs). For some, this is a result of their ambitious Corporate Social Responsibility targets. However, the real impetus behind the growth of corporate PPAs is the potential for corporates who are able to make long term commitments to secure below market price power costs for their business.

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The second trend is the development of "green finance" (used by both governments and corporates) which has seen massive growth in the last 10 years. Green finance can be understood as any financial instrument or investment issued to a firm or government in exchange for the delivery of projects where there are positive environmental gains in addition to the core business proposition of the project.

Green finance products offer both companies and governments alternative routes to raising funds to invest in projects such as clean energy generation, wastewater management and sustainable agriculture and fisheries. What makes green finance unique, and different from ordinary financing methods, is that it must be carried out under strict environmental parameters. Borrowers will be penalised or rewarded for their adherence to environmental or green covenants signed with lenders.

More generally, following the Paris Agreement, the focus for carbon reduction efforts attention has also started to shift away from the power and heat sectors which ultimately only account for approximately 25% of global GHG emissions. If we are going to meet the targets under the Paris Agreement (or even get close) the rest of the economy, such as the transport and agricultural sectors need to be heavily decarbonised.

The remainder of this article considers the development of Corporate PPAs and green finance in more detail.

Corporate PPAS

Drivers

Renewable energy PPAs have been widely used for many years in electricity markets. Typically, the power purchaser has been a state, municipal or private electricity supply company with a large customer base. They have been willing to commit to purchase intermittent renewable power for a fixed price, or with a price floor to support project financing, over a term which is often 10 or 15 years. In return for buying power and taking the risks associated with intermittent power production, the power purchaser typically receives, or purchases at a discount, the green certificates associated with the generation which they can use to offset against their own regulatory targets. The ability of power purchasers to pass on power prices to consumers has led to a relatively competitive renewable PPA market in countries like the UK.

More recently, and in certain jurisdictions – the USA being the leading example – we have seen the growth of corporate PPAs for renewable energy supplementing more traditional PPAs. Under a corporate PPA, a corporate directly contracts with an energy

"Green finance products offer both companies and governments alternative routes to raising funds to invest in projects such as clean energy generation, wastewater management and sustainable agriculture and fisheries."

generator for the purchase of energy to meet their energy demands, by-passing the supply companies. Large tech companies, such as Apple and Google with high energy consumption in their data centres, are prime examples of those signing up to corporate PPAs. At the other end of the spectrum, we are also seeing off-grid applications, such as direct supply PPAs between energy-intensive mining companies in Australia, South Africa and Chile and a neighbouring renewable generator by-passing the power grid and avoiding grid charges.

Voluntarily, or because of increasing investor pressure, most corporates now embrace environmental and sustainability goals. Energy efficiency and energy sourcing have become an important part of this, particularly for energy intensive industries. Increasingly, large companies have internal targets for reducing energy consumption, *greening* their supply chains and buying more renewable power. For example, the member companies of the RE100 movement are committed to procuring 100% renewable power. In the past this has been driven perhaps more by investor and customer demands than clear economic logic. However, with the dramatic reduction in the cost of producing renewable power, renewable corporate PPAs can now present an opportunity both to meet environmental targets and to drive down power costs below market price for those willing to make long term purchase commitments. This is a critical change and one that promises a growing market for renewable corporate PPAs as industries become more familiar with their structure and the opportunity they may present.

Beyond a desire to meet environmental targets, corporates increasingly want more certainty as to their electricity bills (often a large and volatile operational expense). A long-term corporate PPA with a favourable pricing structure provides a useful hedge and creates price certainty in the context of volatile power markets. As electricity costs often make up a significant portion of their operational expenses, companies can make large savings on their energy bills through corporate PPAs. In the off-grid context mentioned above, long term PPAs with renewable generators (and even battery storage) are now often cheaper than the alternative diesel generators largely used in mining.

Types of Corporate PPA

Corporate PPAs can be generally split into two categories: physical and virtual/synthetic PPAs. How the PPA is structured also influences the risk that off-takers are subject to.

Physical or direct wire PPAs are bilateral agreements between generators and electricity customers in which the power produced by the generator is physically delivered to the customer. This would involve a private wire being installed between the generator and customer. The generator in such a scenario could be connected to a single customer (or network of customers) or could also be connected to the public network. The aim is to avoid use of system charges by direct supply. However, without effective storage, an intermittent technology still leaves the corporate needing a back-up supply or grid connection.

From a *bankability* perspective, as the generator may be "locked" into an agreement with a single customer for a period of up to 15 years, the generator will need to ensure the creditworthiness of the offtaker. This explains why corporate PPAs have so far been signed predominantly with larger corporates who have signed up to a fixed block of power, typically leaving the generator to deal with at least some of the intermittency risk.

Synthetic or virtual PPAs on the other hand do not involve a direct physical connection between the generator and customer. Instead, in a market such as that in the UK, the parties enter into the corporate PPA, but both parties' physical connection is with the system grid and their primary liability for imbalances of supply and demand is to the grid operator. Such PPAs can have pricing structures that vary from fixed price,

Corporate PPAs in practice

We are also seeing a growing interest in Corporate PPAs from our clients. In January this year, Clifford Chance advised renewable energy developer Maoneng on its entry into a PPA with the University of New South Wales (**UNSW**) in Australia. Maoneng is currently constructing a 200MW solar farm in New South Wales which, upon completion, will be one of the largest in the world. The project's route to market will be through 15-year corporate PPAs with the UNSW and AGL Energy.

discount to market, to contracts for difference. Synthetic or virtual PPAs provide more flexibility to both parties in case of the default of the counterparty, as they can each return to the wholesale market to find alternative buyers or suppliers and the only contractual question is who is liable if power costs increase as a result, and how to deal with any loss of green certificates.

There are still issues to iron out when it comes to using corporate PPAs more widely in energy markets. These include energy management responsibilities (such as balancing risk) for buyers who are not primarily in the energy business, and the bankability issues referred to above. However, it is clear that their popularity is growing as an alternative to traditional means of procuring energy and even potentially as an alternative financial tool to subsidies for developers and financiers. As Bloomberg New Energy Finance noted in a recent report, by August 2018 corporations had already purchased 7.2GW of clean energy globally in 2018, surpassing the previous record of 5.4GW for the whole of 2017.

Green Finance as a tool to meet climate change commitments

A market increasing in size and diversity

2017 was a record year for green bonds, with Moody's recording an issuance volume of USD155bn. While 2018 has seen a slowdown in growth (issuance is roughly in line with the previous year), the growth of the green bond market over the past 10 years remains a remarkable story. The green bond market is also diversifying – we have now seen green bonds issued by many different types of issuer (including a notable number of sovereigns) and combined with a wider range of products. It is no longer a novelty to see corporate hybrids, capital instruments and high yield bonds come to market with a "green" use of proceeds.

Market participants are also exploring new ways to link finance to green and sustainable themes. Earlier this year, the Seychelles government announced the launch of the world's first sovereign blue bond, which will be used to help finance the island nation's transition to sustainable fisheries and the protection of marine areas. 2018 also saw the launch of the Loan Market Association (LMA) green loan principles with the aim of fostering growth in a similar vein to the ICMA green bond principles. Notably, innovative green financing structures have developed in the green loan market. For example, loans where the interest margin is tied to green covenants. If the green covenants are met, the borrower benefits from a better margin – a "green margin"– but if they are not met, the borrower is financially penalised and has to pay a higher "brown margin".

Green Finance in practice

Clifford Chance has advised both borrowers and lenders in relation to green finance products. In October 2018, we advised Inter-American Development Bank and the Inter-American Investment Corporation on the issuance of a Reais-denominated guaranty of Brazilian infrastructure bonds. The bonds will be used by EDF Energy and Canadian Solar to develop renewable energy projects in the State of Minas Gerais, Brazil. In November 2018, we also advised German utility EnBW on the issue of their first green bond, to be used to develop wind and solar energy and electric mobility infrastructure.

A new focus for regulation and policy

As we explored in our November 2017 briefing on "*Greening the Financial System*", green and sustainable finance is receiving increased focus from regulators and policy makers.

The EU is at the forefront of this trend. Climate change and sustainable development are key priorities for the EU. Many of the Commission's objectives for 2014 to 2020 centre around its energy and climate policy and, ultimately, fulfilling commitments to the UN 2030 Agenda for Sustainable Development and the Paris Agreement. The Commission also recognises that there is a significant funding deficit if it is to meet these targets. It is estimated that an additional EUR177 billion a year of investment is required to achieve the EU's climate and energy goals by 2030.

Earlier this year, the European Commission recently unveiled its strategy for reforming the EU financial system to support its climate and sustainable development agenda. Announced on 8 March, *"Action Plan: Financing Sustainable Growth"* builds on many

of the recommendations of the EU High-Level Expert Group on Sustainable Finance published earlier this year.

Notable features of the Action Plan include the establishment of a new EU classification system for sustainable activities, mandating sustainability considerations into the fiduciary duties of institutional investors and asset managers, and measures to improve corporate disclosure of non-financial and climate related information.

The Action Plan represents a significant step in the EU's effort to embed sustainability considerations into the financial system and contains a wide range of legislative and non-legislative measures. Certain recommendations are for imminent implementation in 2018 whilst more controversial proposals, such as potential amendments to capital requirements in the EU, are likely to be subject to fierce debate.

Others are following suit – the UK Green Finance Task Force produced its own report in 2018 with a set of recommendations to accelerate the growth of green finance in the UK and beyond. More recently, the PRA and FCA each produced reports on climate change and financial risk.

It has also been interesting to see how existing policy initiatives such as the Task Force on Climate related Financial Disclosures (TCFD) have developed. The TCFD was established by the Financial Stability Board in 2015 and went on to produce voluntary recommendations in 2017 on climate-related information that companies should disclose to help investors, lenders and others make sound financial decisions. The recommendations focussed on enhancing disclosure on governance, risk management and strategy as well as including specific metrics and targets to help create more consistent, comparable and reliable disclosure.

This year, the TCFD released its first status report, which is the first real analysis of how the TCFD's recommendations have fared since publication. There are many positive take-aways, including the fact that over 500 firms representing almost USD8 trillion in market capitalisation are now supporting the TCFD recommendations. On the other hand, disclosures vary widely, and many financial companies do not report on their climate-related metrics and targets.

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Climate-related data is increasingly cited by investors as lacking when they are making investment decisions. As such, the level of uptake is encouraging, particularly as the recommendations are still relatively new.

The challenge for those producing the information will be to ensure the information produced is "decision useful". This is not easy, particularly when the risks that are being highlighted are often relevant across much wider time horizons than "standard" corporate disclosure.

Clifford Chance's Global Renewables group offers depth in resource, local expertise and a long-term presence in, and commitment to, the key markets across the globe. Our market-leading team comprises acknowledged industry experts across all legal disciplines, providing top-tier renewables capability. If you would like to know more about the subjects covered in this guide, or about our Global Renewables Group, please contact any of the lawyers below or ask your usual Clifford Chance contact.

Lori Ann Bean
Partner, Banking & Finance
Washington
T: +1 202 912 5014
M: +1 2023527685
E: lori.bean@cliffordchance.com

Mathias Elspaß
Partner, Corporate Energy
Düsseldorf
T: +49 211 4355 5260
M: +49 1702266872
E: mathias.elspass@cliffordchance.com

Nigel Howorth
Partner, Real Estate
London
T: +44 20 7006 4076
M: +44 7900 167424
E: nigel.howorth@cliffordchance.com

Fabricio Longhin
Partner, Banking & Finance
Washington
T: +1 202 912 5015
M: +1 2023788388
E: fabricio.longhin@cliffordchance.com

Florian Mahler
Partner, Banking & Finance
Düsseldorf
T: +49 211 4355 5232
M: +49 15115143983
E: florian.mahler@cliffordchance.com

James Pay
Partner, Banking & Finance
London
T: +44 20 7006 2625
M: +44 7904 803419
E: james.pay@cliffordchance.com

Philip Sealey
Director, Banking & Finance Group
Perth
T: +61 8 9262 5542
M: +61 419944180
E: philip.sealey@cliffordchance.com

Nicholas Wong
Partner, Banking & Finance
Singapore
T: +65 6410 2218
M: +65 82189825
E: nicholas.wong@cliffordchance.com

Clare Burgess
Partner, Capital Markets
London
T: +44 20 7006 1727
M: +44 7904907575
E: clare.burgess@cliffordchance.com

Delphine Siino Courtin
Partner, Banking & Finance
Paris
T: +33 1 4405 5236
M: +33 688882921
E: delphine.siinocourtin@cliffordchance.com

Sarah Jones
Partner, Corporate
New York
T: +1 212 878 3321
M: +1 9174959136
E: sarah.jones@cliffordchance.com

Titus Edjua
Director (Africa group), Banking & Finance
London
T: +44 20 7006 3052
M: +44 7506 847942
E: titus.edjua@cliffordchance.com

Liesbeth Buiter
Counsel, Corporate
Amsterdam
T: +31 20 711 9326
M: +31 629001858
E: liesbeth.buiter@cliffordchance.com

James Shepherd
Senior Associate, Real Estate
London
T: +44 20 7006 4582
M: +44 7904 872984
E: james.shepherd@cliffordchance.com

Felicity Ward
Senior Associate, Banking & Finance
London
T: +44 20 7006 4504
M: +44 7956 278303
E: felicity.ward@cliffordchance.com

Michael Coxall
Senior Professional Support Lawyer, Real Estate
London
T: +44 20 7006 4315
M: +44 7900 167273
E: michael.coxall@cliffordchance.com

GLOBAL EXCELLENCE IN RENEWABLES

Asia Pacific:

Star Energy consortium's geothermal assets acquisition, South East Asia

- **Asia Pacific Renewables Deal of the Year 2017**
  PFI Awards
- **Asia Pacific M&A Deal of the Year 2017**
  IJ Global Awards

Lakeland Solar and Storage Project, Australia

- **Asia Pacific Solar Deal of the Year 2016**
  IJ Global Awards

Republic of Indonesia's Dual-Tranche Sukuk Wakalah (world's first-ever sovereign green sukuk), South East Asia

- **Islamic Finance Deal of the Year 2018**
  ALB SE Asia Law Awards

Germany:

Merkur Offshore Wind Project

- **Renewables Deal of the Year 2016**
  PFI Awards
- **European Offshore Deal of the Year 2016**
  IJ Global Awards

Gode Wind 1

- **European Renewables Deal of the Year 2015**
  PFI Awards
- **European Project Bond Deal of the Year 2015**
  IJ Global Awards

Latin America:

Brazil

Pirapora solar project

- **Multisource Financing Deal of the Year 2017**
  IJ Global Awards

Chile

Cerro Dominador PV and CSP project

- **Best Renewable Energy Financing 2018 and Best Infrastructure Financing – Andes 2018**
  Latin Finance Awards

AELA wind portfolio financing

- **Onshore Wind Deal of the Year**
  IJ Global Awards
- **LatAm Renewable Deal of the Year**
  PFI Awards

Middle East & Africa:

DEWA Solar

- **Renewables Deal of the Year 2018**
  PFI Awards

Scatec Solar

- **MENA Solar Deal of the Year 2017**
  IFN Awards

EBRD and IFC Egypt Solar Projects

- **Global Multilateral Deal of the Year 2017**
  PFI Awards

Hakan Peat-fired, Rwanda

- **African Power Deal of the Year 2017**
  IJ Global Awards

UK:

Walney Extension

- **European Renewables Deal of the Year 2017**
  Europe, PFI Awards

Calvin Capital Acquisition

- **European Power Deal of the Year 2017**
  IJ Global Awards

Rankings:

Ranked Tier 1 for Power (including electricity, nuclear and renewables)
Legal 500 2018

Ranked Tier 1 for Energy & Natural Resources (Power)
Ranked Tier 1 for Construction (Purchaser)
Chambers UK 2019

Contacts

Philip Sealey
Director, Banking & Finance Group
Perth
T: +61 8 9262 5542
M: +61 419944180
E: philip.sealey@cliffordchance.com

Nadia Kalic
Counsel, Corporate
Sydney
T: +61 2 8922 8095
M: +61 401450025
E: nadia.kalic@cliffordchance.com

Richard Graham
Partner, Corporate
Tokyo
T: +81 3 6632 6621
M: +81 8013859799
E: richard.graham@cliffordchance.com

Gemma Chenik
Senior Associate, Corporate
Perth
T: +61 8 9262 5516
M: +61 412460800
E: gemma.chenik@cliffordchance.com

Jessica Davies
Counsel, Corporate
Perth
T: +61 8 9262 5594
M: +61 488033346
E: jessica.davies@cliffordchance.com

AUSTRALIA

National Renewables Targets?	The renewable energy target (RET) for Australia at the Federal level is 33,000 GWh by 2020, which is expected to result in 23.5% renewable electricity in 2020. The Federal Government proposed the National Electricity Guarantee (NEG) in October 2017 which consisted of reliability and emissions components and entailed a 26% emissions reduction in the electricity sector by 2030. However, the NEG was abandoned in September 2018 following a change in Prime Minister. The Federal Government announced that they will not extend the current RET when it is reached in 2020. Nonetheless, the States continue to work on the reliability component of the NEG and the Federal opposition party may take the NEG to the next Federal election. By contrast, almost all the States and Territories have set their own targets as follows: • Australian Capital Territory – 100% renewable energy by 2020; net zero emissions by 2050 • New South Wales – no RET; net zero emissions by 2050 • Northern Territory – 50% renewable energy by 2030; no net zero emissions target • Queensland – 50% renewable energy by 2030; net zero emissions by 2050 • Tasmania – 100% self-sufficient in renewable energy 2022; net zero emissions by 2050 • South Australia – 50% by 2025; net zero emissions by 2050, but new Liberal government's policy is unclear • Victoria – 25% renewable energy by 2020 and 40% by 2025; net zero emissions by 2050 target • Western Australia – no RET; no net zero emissions target
Main Renewable Sources	Hydro, onshore wind, solar photovoltaic (PV), biomass and solar thermal (under development).
Green Certificates?	Yes. The Australian Government has been supporting the deployment of renewable energy in Australia's electricity supply through the RET scheme which guaranteed a market for additional renewable energy generation using a mechanism of tradable Renewable Energy Certificates (RECs) that are akin to the Green Certificate systems used throughout many European countries. From 2001 to the end of 2010, RECs were the commodity in the market, but from 1 January 2011 RECs were reclassified into: • Large-scale generation certificates (LGCs) that fall under the large-scale renewable energy target (LRET) scheme; and • Small-scale technology certificates (STCs) that fall under the small-scale renewable energy scheme (SRES). The LRET creates a financial incentive for the establishment and growth of accredited renewable energy power stations by legislating demand for LGCs until 2030. There are currently more than 15 different types of renewable energy sources being used in accredited renewable energy power stations in Australia. LGCs are created based on the amount of eligible renewable electricity produced by the renewable energy power stations, with one LGC being equivalent to 1 MWh of eligible renewable electricity generated above the power station's baseline. LGCs must be correctly created and validated in the REC Registry before they can be made available for purchase and surrender. Once created and validated, LGCs can be sold or traded to RET liable entities such as electricity retailers. In addition, renewable energy power stations can also sell generated electricity to the grid. RET-liable entities have a legal obligation to buy LGCs and surrender them to the Clean Energy Regulator on an annual basis. The number of LGCs that must be obtained and surrendered is determined through a mathematical formula that considers a number of factors. The SRES creates a financial incentive for owners to install eligible small-scale installations such as solar water heaters, heat pumps, solar panel systems, small-scale wind systems, or small-scale hydro systems. It does this by legislating demand for STCs. The SRES has no legislated end date. STCs are created for these installations according to the amount of electricity they produce or displace, with one STC being equivalent to 1 MWh of: • Renewable electricity generated by the solar panel, small-scale wind or small-scale hydro system; or • Electricity displaced by the installation of a solar water heater or heat pump. STCs are credited by owners directly in the online REC Registry but must be correctly created and validated in the REC Registry before they can be made available for purchase and surrender by RET-liable entities. RET-liable entities have a legal requirement to buy STCs and surrender them to the Clean Energy Regulator on a quarterly basis. The number of STCs that must be obtained and surrendered is determined through a mathematical formula that considers a number of factors.
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	Australia has no national FIT programme, and each Australian State and Territory runs schemes that vary between jurisdictions. Most jurisdictions set a minimum FIT amount that electricity retailers are required to pay residents with rooftop solar PV for electricity exported to the grid. These schemes drove the uptake of residential rooftop solar PV. The applicable FITs were reduced due to the falling cost of solar PV and the strong consumer demand. However, some of the eastern states have recently increased FITs on account of increases in wholesale and retail electricity prices in the national electricity market.
Other Incentives	Further to the State-based targets, many States have also run renewable energy tenders auctioning long-term, fixed price power purchase agreements. ACT completed four renewable energy reverse auctions between 2012 and 2016 securing 40 MW of solar capacity and 600 MW of wind capacity. Queensland started a similar initiative in 2017 conducting a reverse auction for up to 400 MW of renewable energy capacity including 100 MW of energy storage. Victoria also established a reverse auction scheme in 2017, which included a request for bids for up to 550 MW of large scale technology neutral renewable energy, and up to 100 MW of large scale solar-specific renewable energy. The Australian Renewable Energy Agency (ARENA) was established on 1 July 2012 as a commercially oriented agency aimed at improving the competitiveness of renewable energy technologies and increasing the supply of renewable energy in Australia by 2022, with intent to provide competitive energy solutions up to 2030–2040. ARENA has A$ 2 billion in funding that extends until 2022, which is legislated to assist activities that are expected to advance renewable energy technologies towards commercial readiness, improve business models or reduce overall industry costs. In March 2016, the Australian Government expanded ARENA's renewables mandate to include energy efficiency and low emissions technology and made changes to its funding as well as the types of projects in which the agency will invest as part of a new A$ 1 billion Clean Energy Innovation Fund jointly administered with the Clean Energy Finance Corporation.
Additional Comments	Australia's emissions trading scheme was dismantled in 2014. The current emissions reduction policy is based on encouraging the direct sequestration or reduction of emissions using approved methodologies. Australia's Clean Energy Regulator holds periodic reverse auctions to purchase accredited emissions reductions through a Federal Emissions Reductions Fund. To ensure that emissions reductions are not displaced by emissions rises in other sectors of the economy, a separate safeguard mechanism commenced on 1 July 2016 to ensure that large businesses and emitters keep their emissions to baseline levels.

Contacts

Xavier Remy
Partner, Corporate
Brussels
T: +32 2 533 5902
M: +32 475374386
E: xavier.remy@cliffordchance.com

Alexander Verstraete
Associate Banking & Finance
Brussels
T: +32 2 533 5042
M: +32 478914314
E: alexander.verstraete@cliffordchance.com

Patrice Viaene
Associate, Corporate
Brussels
T: +32 2 533 5925
M: +32 485123105
E: patrice.viaene@cliffordchance.com

BELGIUM

National Renewables Targets?	The renewable energy target for Belgium is 13% by 2020. To achieve the 2020 target further significant investments will be required in the coming years. Belgium is expected to adopt its 2030 renewable energy target by the end of 2019.
Main Renewable Sources	Hydro, onshore and offshore wind, solar photovoltaic (PV), geothermal and biomass.
Green Certificates?	Yes. Since early 2000, there has been a Green Certificate system with a quota obligation in each of the three Belgian regions. In addition, the Belgian Federal Government has organised a Green Certificate scheme for offshore wind power production in the North Sea. The four systems are comparable, but there is variation in the procedures for obtaining the certificates, the conditions under which these are granted, minimum prices and fines for suppliers that do not meet the quota obligations. All support schemes have two key elements. On the one hand, producers of electricity based on renewable energy sources receive Green Certificates, which they can sell to energy suppliers or the network operators. On the other hand, energy suppliers have to submit a specific number of Green Certificates to the authorities. This number is equal to a percentage of the energy supplied to end customers. Recent reforms of the Green Certificate system aim to create a link between on the one hand the support granted and, on the other, the costs of renewable energy production, evolution in technology and electricity prices: • *Flemish Region*: since 2013, the price of the Green Certificates is controlled by means of a banding system. This means that the amount of certificates granted varies across technologies and is based on a technology-specific banding factor calculated on the basis of a "funding gap" formula. Banding factors are updated each year. Currently no more support is being given for small-scale PV installations (up to 10 kW) commissioned as from 14 June 2015. • *Walloon Region*: New PV installations with power of up to 10 kW commissioned since 1 March 2014 are no longer eligible for Green Certificates and have been subject to a premium scheme called Qualiwatt. The Qualiwatt regime itself has been abolished for new projects as from 1 July 2018. In the future, no more support will be given for these small-scale PV installations. For other types of installations, the existing Green Certificate scheme still applies. The Walloon Government is steadily increasing Green Certificate quotas for suppliers in order to increase the market price. • *Brussels Capital Region*: in the Brussels Capital Region, a Green Certificate scheme for residential PV installations still exists. However, the number of Green Certificates for PV installations has gradually decreased over the last few years. Green Certificates are also granted to the owners of co-generation installations and wind farms. • *Federal Government*: offshore windfarms with financial close prior to 2 May 2014 may sell their Green Certificates to the electricity Transmission System Operator Elia for a guaranteed minimum price per certificate which is not directly linked to the electricity price. However, for offshore windfarms with financial close after 1 May 2014, the minimum price is calculated on an levelised cost of energy (LCOE) based formula whereby the amount of support is linked to the market price for electricity. This support mechanism has been, and will be, further reformed, and as a result, the level of support has been cut back. The LCOE for the two offshore windfarms with financial close in 2016 was set at, respectively, 129.80 EUR/MWh and 124 EUR/MWh. This regime was approved for state aid purposes by the European Commission in a Phase I decision. For offshore windfarms with financial close after 31 December 2016, the government intends to further reduce the LCOE to 79 EUR/MWh and a draft ministerial decree to give effect to this has recently been notified for state aid purposes to the European Commission. For offshore windfarms with financial close after 31 December 2016, the government has further reduced the LCOE to EUR 79/MWh and a ministerial decree to give effect to this has recently been adopted and approved for state aid purposes by the European Commission. Green Certificates are freely transferable within the region in which they were issued but they are not recognised by other regions. The only exception is that Green Certificates issued in Wallonia may, under certain conditions, be used in Brussels.
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	No, but there is a guaranteed minimum price for the purchase of Green Certificates (see above).
Other Incentives	While there may be a shift towards reducing green subsidies, incentives for energy saving investments are on the rise: • **Investment tax deductions** – increased investment tax deductions are applied to certain qualifying energy-saving investments. The increased investment deduction is a non-recurring tax deduction applied to the investment value of the asset. For example, for investments made during the financial year ending 31 December 2017, the deduction amounts to 13.5%. Alternatively, and provided certain conditions are complied with, Belgian companies can apply the recurrent investment deduction, which means that the investment deduction is calculated each year as a percentage of the annual depreciations (and not on the investment value) on the assets concerned. The recurrent investment deduction is determined on the basis of the basic investment deduction and is increased by 17%. As such, for the financial year ending 31 December 2017, the recurrent investment deduction amounts to 20.5%. The recurrent investment deduction is only applicable with regard to (i) assets which are used to promote the research and development of new products and future-oriented technologies, and (ii) environmentally friendly investments. • **Ecological premiums** – subsidies are granted for energy efficient renovations of buildings. The amount of the applicable subsidy as well as the procedure depends on the region (Flanders, Brussels or Wallonia). In addition, in Flanders a five year deduction of up to 50% or 100% of the real estate tax may be granted upon carrying out a substantial energy efficient renovation of an existing building or for the construction of new energy-efficient buildings. • **Demand side flexibility** – the federal legislator has adopted two mechanisms to facilitate the creation of a market for demand side flexibility in the course of 2017. Under the first mechanism, each consumer has the right to monetise his flexibility by selling it to a flexibility service provider, who can afterwards commercialise it on the energy supply market for a profit depending on the availability and price of electricity. The federal energy regulator (CREG) acts as supervisor of the scheme. Under a second mechanism, providers of electricity storage facilities are released from the obligation to pay the "federal contribution" (which forms part of the transmission grid fee) as from 1 January 2018. • **CCGT plants** – Legislation provides that nuclear will be gradually phased-out by 2025. There is still political debate within the government as to whether this is feasible. In the meantime, the federal government has approved in a first reading a subsidy scheme for CCGT plants to ensure security of supply after 2025. Draft legislation has not yet been published.

Contacts

Kelly Gregory
Partner, Corporate
Shangai
T: +86 21 2320 7234
M: +86 13910850849
E: kelly.gregory@cliffordchance.com

Jay Liang
Senior Associate, Corporate M&A
Shangai
T: +86 21 2320 7324
M: +86 13910849892
E: jay.liang@cliffordchance.com

CHINA

National Renewables Targets?	The renewable energy targets for China are: 15% by 2020 and 20% by 2030.
Main Renewable Sources	Hydro, onshore and offshore wind, solar photovoltaic (PV), biomass, geothermal and marine energy.
Green Certificates?	Yes. However, unlike the internationally understood form of Green Certificate mechanism, China's Green Certificates are not supported by an obligation upon energy suppliers to obtain them from renewable energy generators. As such they are more akin to the European Guarantees of Origin which guarantee renewable energy production and can be traded. The Green Certificate system was introduced at the beginning of 2017, and it is only applicable to onshore wind projects and PV power stations (excluding distributed PV power projects). Green Certificates are issued on a monthly basis, with one certificate issued for each megawatt hour (MWh) of power generated to generators of these projects. Once issued, the Green Certificates can be traded on a state-sanctioned online trading platform by way of an online bidding process or one-on-one negotiation; however, they can only be traded and transferred once (i.e. the purchaser of the Green Certificates cannot resell them to any other person). The trading price cannot be higher than the FIT for that renewable energy source (see more details on the FIT below). Power generators are not entitled to FIT payments on their Green Certificates if they are sold. Since the launch of the Green Certificate system, more than 17.6 million Green Certificates have been issued while only 27,000 have been sold, which accounts for 0.15% of the total number issued.
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	Yes. **Hydro, wind and solar (excluding distributed solar PV power generation)**: In general, all power generated is purchased by grid companies on the basis of tariff rates mentioned below. However, in a number of areas of China, renewable electricity generation is often subject to curtailment (i.e. power output reduction) requirements imposed by grid companies, for practical reasons such as failure to comply with priority dispatch policy for renewable energy generation, or problems with lack of grid capacity or power supply quality. In areas subject to curtailment, sales of power generated by these technologies to grid companies are divided into two parts. One part is purchased on the basis of tariff rates mentioned below (the volume purchased is determined by the National Development and Reform Commission (NDRC) and the National Energy Administration). The other part is sold on the basis of market competition. **Biomass, geothermal, marine power and distributed solar PV**: All power generated is purchased in full by grid companies on the basis of tariff rates, since use of these technologies and resources is not yet fully developed in China. **Tariff rates** In general, the tariff rates paid by grid companies for power generated from renewable sources are determined by the NDRC depending on the type of the renewable technology and the conditions of different areas. The rates are adjusted by the NDRC periodically. For renewable energy power generation projects approved by the government via a bidding process, the tariff rate should be the rate determined in the bidding process, provided that such rate cannot be higher than the NDRC-determined rate applicable to similar renewable energy power generation projects. More specifically, the rates are as follows: • Hydro: for hydropower stations delivering power within one province, the rates are set as described above; for hydropower stations delivering power to more than one district or province, the tariff rate is the price applicable to the district/province receiving the power (which should be determined by the power generator and grid company through negotiation) minus the power transmission price (governmental fixed price). • Wind – Onshore wind: there are different tariff rates for four different wind resource areas (with the districts/provinces included in each wind resource area determined by the NDRC in accordance with local wind resources and construction conditions). These range from 0.40 CNY/kWh to 0.57 CNY/kWh depending on the relevant wind resource area. – Offshore wind: 0.85 CNY/kWh for offshore wind farms (put into operation before 2017), and 0.75 CNY/kWh for intertidal zone wind farms • Solar – PV power stations: there are different tariff rates for three different solar resource areas (with the districts/provinces included in each solar resource area determined by the NDRC in accordance with local solar resources and constructions costs and conditions) being 0.50 CNY/kWh, 0.60 CNY/kWh and 0.70 CNY/kWh respectively. – Distributed PV power generation: a tariff rate of 0.32 CNY/kWh for all the power generated from this source. – Each of the abovementioned tariff rates is effective as from 31 May 2018, (and each rate is 0.05 CNY/kWh lower than the previously applicable rate). • Biomass – Agricultural and forest biomass: 0.75 CNY/kWh. – Non-agricultural and forest biomass: tariff varies from one province to another.
Other Incentives	A renewable energy development fund (REDF) has been set up, whose sources include special funds allocated by the national public financial budget and the extra charges in relation to renewable energy power imposed on power users. The REDF can be used for (ii) compensating grid companies for the cost of purchasing the power generated by renewable energies over and above the comparable cost of power generated from conventional energy resources; (ii) compensating grid companies for their reasonable on-grid expenses or other reasonable expenses incurred for purchasing power generated by renewable energies, which cannot be covered by their sale of electricity to users; (iii) scientific and technical research on development and utilisation of renewable energy, formulation of standards and demonstration projects; and (iv) renewable energy utilisation projects in relation to the day-to-day energy needs of communities in rural and pastoral areas. Since 1999, subsidised loan finance has been granted to renewable energy power generation projects. Banks may prioritise loans for construction of these projects. Large-sized and medium-sized projects that meet certain statutory requirements (e.g., the ratio of project capital to total investment should be 35% or more) with a scale of over 3,000 kW can enjoy a subsidised loan with subsidised interest rate of 2%.

Contacts

Emil Holub
Partner, Real Estate
Prague
T: +420 222 55 5230
M: +420 602367661
E: emil.holub@cliffordchance.com

Ludvík Růžička
Associate, Corporate
Prague
T: +420 222 55 5255
M: +420 731471444
E: ludvik.ruzicka@cliffordchance.com

Zuzana Moravkova
Junior Lawyer, Corporate
Prague
T: +420 222 55 5282
E: zuzana.moravkova@cliffordchance.com

CZECH REPUBLIC

National Renewables Targets?	The renewable energy target for the Czech Republic is 13% by 2020 and 26% by 2030. The 2005 baseline is 6.1%.
Main Renewable Sources	Hydro, solar photovoltaic (PV), onshore wind, geothermal, biogas and biomass.
Green Certificates?	No, although a green bonus is available (discussed below) which is similar. It does not, however, place an obligation on any party to acquire a specific number of certificates.
Feed-In Tariff (FIT) / Feed-In-Premium (FIP)?	Yes. A fixed FIT payable by certain electricity traders (subsidiaries of the three main distribution system operators) is available to currently operating renewable electricity generators. As of 1 January 2013, FITs are only available for new hydro power plants with a maximum output up to 10MW and for other newly commissioned facilities with an output not exceeding 100 kW. Other facilities commissioned in 2013 are entitled to a green bonus only. No incentives (whether FIT or green bonus) are available to plants commissioned after 31 December 2013, save for new hydropower plants with output not exceeding 10MW and hydro, wind, geothermal and biomass plants which were under construction as of 31 December 2013 and which were commissioned before the end of 2015. Once a generator has obtained the FIT applicable in the year of commissioning of its plant, it is entitled to benefit from such FIT for the entire expected lifetime of the plant (15 to 30 years). The duration of the entitlement to the FIT and the amount of the FIT depends on the source of renewable energy used. The FIT is increased annually by up to 2% through application of an indexation formula. The applicable FITs/green bonuses are: • Hydroelectricity (maximum output 10MW): depending on the type of plant, FIT ranges from EUR 88.90/MWh to EUR 110.07/MWh and green bonus ranges from EUR 58.98/MWh to EUR 80.15/MWh for plants commissioned in 2017; • Biomass: Subsidies on electricity generation from biomass substantially differ according to the type and category of biomass. There are five categories of biomass; three for dedicated biomass which generally receives the highest support and two others for by-product biomass. Each category is subdivided into individual types of biomass depending on the material it is produced from, with corresponding FITs ranging from EUR 35.83/MWh to EUR 153.54/MWh and green bonuses ranging from EUR 4.74/MWh to EUR 122.44/MWh; • Onshore wind: FIT of EUR 77.52/MWh or green bonus EUR 54.29/MWh for plants commissioned in 2017; • Solar: – Highest subsidies are for plants commissioned between 2006 and 2010. Depending on the installed output and time of commission, FITs range from EUR 316.06/MWh to EUR 663.30/MWh and green bonus ranges from EUR 287.72/MWh to EUR 634.96/MWh; – The subsidies fell to half for plants commissioned in the year 2011, and, as of 2012, only plants with maximum output up to 30 kW are entitled to subsidies, although in a substantially limited amount; – As mentioned above, no incentives are available for the plants commissioned after 31 December 2013.
Other Incentives	Green bonuses are subsidies paid on top of the market price which are only payable if the generated electricity, heat or bio-methane is either (i) actually sold on the market for the market price, or (ii) consumed by the producer itself. Generators of electricity from renewable sources have a priority right to connect their facilities to the electricity distribution or transmission grid, and a priority right to supply electricity to the grid. In practice, this means that, where a generator opted for the FIT, it is now able to sell all the electricity it generates to the relevant electricity trader for the price set by the relevant FIT.
Additional Comments	The solar boom which lasted until the end of 2010, saw particularly generous support provided to PV plant operators (around €0.50/kWh), irrespective of the size and location of the plant. This led to an increase in the total installed capacity of PV plants in the Czech Republic from 65MW on 1 January 2009 to almost 2,000MW by the end of 2011. On 1 January 2011, the subsidies for newly commissioned PV plants were reduced to approximately €0.23/kWh, and since 1 March 2011, subsidies have only been available to PV plants with an output of less than 30 kW and only if such plants are located on the roofs or facades of buildings. Moreover, a special 26% tax has been introduced (decreased as of 1 January 2014 to 10%), reducing the revenues from electricity sales generated by PV plant operators. This tax applies to all PV plants commissioned between 1 January 2010 and 31 December 2010 with an output exceeding 30 kW. Due to these changes, no new large PV plants are currently being commissioned or likely to be commissioned until 2020. Nonetheless, the currently operating PV plants connected under the generous 2009 and 2010 FITs, combined with the priority to connect and supply, are increasingly being targeted by foreign investors. There was around 309.1MW of installed wind power capacity as at 31 December 2017. Operational wind power plants, as well as new wind facilities are also increasingly targeted by domestic and foreign investors. The European Commission has been notified of several Czech support schemes for promoting electricity production from renewable energy sources as State Aid. The European Commission declared that the following schemes are in line with the EU State Aid rules: (i) the support scheme for promoting electricity production from renewable energy sources; (ii) two schemes to support electricity and heat production from hydropower and biogas and (iii) the support scheme for electricity generation from high-efficiency combined heat and power plants. Moreover, there are currently at least three other notified past or existing support schemes by the Czech Republic which the EU Commission is currently reviewing. This creates uncertainty as to the legality of the schemes as well as potential overcompensation issues. It seems likely that the Czech energy regulator will not review overcompensation based on the EU State Aid rules until it receives express statutory powers under Czech law to do so.

Contacts

Gauthier Martin
Counsel, Litigation & Dispute Resolution
Paris
T: +33 1 4405 5181
M: +33 632219398
E: gauthier.martin@cliffordchance.com

Laurent Schoenstein
Partner, Corporate
Paris
T: +33 1 4405 5467
M: +33 684651228
E: laurent.schoenstein@cliffordchance.com

Benjamin de Blégiers
Partner, Corporate
Paris
T: +33 1 4405 5206
M: +33 673196407
E: benjamin.deblegiers@cliffordchance.com

Delphine Siino Courtin
Partner, Banking & Finance
Paris
T: +33 1 4405 5236
M: +433 688882921
E: delphine.siinocourtin@cliffordchance.com

Daphné Celet
Associate, Litigation & Dispute Resolution
Paris
T: +33 1 4405 5924
M: +33 78335924
E: daphne.celet@cliffordchance.com

FRANCE

National Renewables Targets?	The renewable energy target for France is 23% by 2020 and 32% by 2030. By the end of 2016, renewable energy production represented around 15.7% of the final energy consumption in France.
Main Renewable Sources	Hydroelectricity, onshore wind, solar photovoltaic (PV) and bio-energies.
Green Certificates?	No.
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	Yes. There is a FIT and a FIP. A FIT and FIP can be granted either: (i) after a competitive tender process for a period determined in the call for tender; or (ii) under the "open window" scheme (i.e. on demand to the producers if they fulfil the conditions set out by applicable laws and regulations) for a period determined by ministerial orders for each type of renewable (15 or 20 years in general). With respect to the "open window" scheme, laws and regulations set out which installations are eligible and whether they can benefit from a FIT or FIP. The tariff rates are determined by ministerial decrees for each type of renewable, taking into account a "reasonable" rate of return on capital for the producers. **FIT** Since 2000, EDF and other local non-nationalised operators have been obliged to purchase the electricity produced by renewable generators through Purchase Obligation Contracts (POCs). A limited number of new installations can now still benefit from FITs, mainly smaller installations (below 500kW). Under the "open window" scheme, installations eligible for FITs include inter alia hydro plants up to 500 kW and solar installations fixed to buildings up to 100 kW, as well as projects selected via tenders based on "non-mature" technologies such as wave or floating wind energy. Please note that, except in areas deemed at high risk of storms, onshore wind producers can no longer benefit from FITs under the "open window" process. Applicable tariffs for a given installation depend on several factors such as location, type, size and commissioning date; the base tariffs that are in force include: Hydroelectricity: between EUR 58/MWh and EUR 182/MWh; Solar: between approximately EUR 110/MWh and EUR 240/MWh for built-in installations; Onshore wind in areas deemed at high risk of storms: EUR 230/MWh for the first ten years of operation. **FIP** A new FIP support mechanism introduced by the Energy Transition Act of 17 August 2015 is now the main support mechanism. for larger installations. Under this mechanism, producers sell their output on the market and enter into a contract with EDF to be paid premiums. These premiums are calculated as the difference between, on the one hand, a "reference tariff" (set out either by ministerial decrees under the "open window" scheme or by the producer in its bid in competition processes), and, on the other hand, the "market reference price" (based on electricity market prices). If the market reference price goes above the reference tariff, the producer must pay back the difference to EDF. A fee to cover the producers' management costs is added to the premium. In case of "market failure", producers can sell their output to an "offtaker of last resort" (to be designated on a competitive basis by the Ministry of Energy) and will receive up to 80% of their normal level of remuneration. Under the "open window" scheme, applicable reference tariffs determined by ministerial orders include for instance: approximately EUR 73/MWh for onshore wind farms comprising up to 6 aerogenerators with no more than 3 MW nominal power per aerogenerator (reduced to EUR 40/MWh for any output above a certain threshold); between approximately EUR 66/MWh and EUR 132/MWh in principle for hydroelectric plants up to 1 MW; between approximately EUR 70.9/MWh and EUR 175.4/MWh for plants using biogas generated from waste water treatment. **Allocation of FITs and FIPs under competitive tender** Pursuant to national regulation, the French Government has the power to launch calls for tenders in order to reach the targets set in the multiannual electricity generation programme established by the Energy Transition Act. According to the EC Guidelines on State Aid for environmental protection and energy 2014-2020, tender processes must be adopted for installations with an installed electricity capacity of more than 1 MW.Tenders can take the form of either a classic tender process or a "competitive dialogue" procedure consisting of successive phases of dialogue between the State and the bidders. Applicable tariffs are then determined by the bids of the selected generators through the tender process. Tender processes launched by the French State will in most cases cover larger installations as specified by the tender specifications, and generators will therefore be entitled to a FIP. Generators can, however, still benefit from a FIT if they are smaller installations (below 500kW) in accordance with the tender specifications. Following a continuous trend, FIP and competitive tender processes are becoming the norm for renewables in France. FIT and allocation by way of the "open window" scheme are becoming increasingly rare.
Other Incentives	The French Government supports research and innovation in the renewable energy sector through specific investment programmes and calls for projects conducted by ADEME (a national agency dedicated to environment and energy control management). To date, calls for projects have been launched most notably in relation to floating wind and tidal turbines, biomass and biogas energy.
Additional Comments	In 2017, renewable energy capacity amounted to: 1,797 MW in the wind sector (+15.3% compared to 2016), 887 MW in the solar sector (+13.1% compared to 2016), and 48 MW in the hydro sector (+0.2% compared to 2016). Tendering procedures are currently in progress for the following renewable technologies: onshore and offshore wind energy, solar energy and hydroelectricity. Regarding offshore wind energy, six projects (for a combined capacity of 3,000 MW) have already been awarded after two calls for tenders in 2012 and 2014. An ongoing tender relates to a project to be located off the coast of Dunkirk. As for onshore wind, the Government launched the first call for tenders for this technology in 2017, which resulted in awards in February 2018 (the tender procedure comprises 6 periods spread over 3 years for a total capacity of 3GW).

Contacts

Mathias Elspaß
Partner, Corporate Energy
Düsseldorf
T: +49 211 4355 5260
M: +449 1702266872
E: mathias.elspass@cliffordchance.com

Björn C. Heinlein
Partner, Corporate Energy
Düsseldorf
T: +49 211 4355 5099
M: +49 16090659857
E: bjoern.heinlein@cliffordchance.com

Florian Mahler
Partner, Banking & Finance
Düsseldorf
T: +49 211 4355 5232
M: +49 15115143983
E: florian.mahler@cliffordchance.com

Martin Weitenberg
Counsel, Corporate Energy
Düsseldorf
T: +49 211 4355 5110
M: +449 15142456407
E: martin.weitenberg@cliffordchance.com

Mira Wilcock
Senior Associate,
Corporate Energy
Düsseldorf
T: +49 211 4355 5104
M: +49 1711155235
E: mira.wilcock@cliffordchance.com

GERMANY

National Renewables Targets?	The renewable energy targets for Germany are: 40-45% by 2025, 55-60% in 2035 and at least 80% by 2050.
Main Renewable Sources	Onshore and offshore wind, solar photovoltaic (PV), biomass, hydro and geothermal energy.
Green Certificates?	No.
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	Since 1990, a basic FIT system with a fixed FIT has been in place and still applies to many existing installations. In 2012, the legal framework was modified to implement an optional FIP system generally applicable to plants which were commissioned between 1 January 2012 and 31 July 2014. In 2014, a generally mandatory FIP system for new installations commissioned from 1 August 2014 onwards was introduced. Under this system, known as the direct marketing system that is also available to existing installations, generators sell electricity directly onto the market. In practice they sell it to specialised off-takers called "direct marketers". In addition to the sales price paid by the direct marketer, which usually reflects the monthly average exchange prices, the generators are entitled to receive a market premium from the grid operator to "top up" the sales income. The market premium is calculated by subtracting the monthly average exchange price from a fixed amount, which varies depending on the type of renewable energy (e.g. onshore wind, offshore wind, PV etc.) by law (the fixed amount being the "applicable value"). The applicable value regime takes into account the higher costs of electricity generation from renewable energies. It also comprises a lump-sum compensation for direct marketing costs amounting to 0.4 ct/kWh for electricity from wind and PV plants, and 0.2 ct/kWh for electricity from other renewable energy resources. Until 2017, the applicable value was set by the German legislator. In 2017, the FIP system was replaced for new installations. From that date, the applicable values for new installations are no longer set by the legislator but are determined via a market-based auction scheme. This new auction scheme is the core of the most recent legislative changes set out in the 2017 Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz, "*EEG 2017*") as well as the Wind Energy at Sea Act (*Windenergie-auf-See-Gesetz, "WindSeeG"*), which entered into force on 1 January 2017. Auctions (with specific rules depending on the relevant technology) are now held for installations using: • Onshore wind energy; • Offshore wind energy; • Biomass; and • PV installations Each year, the Federal Network Agency (*Bundesnetzagentur*) organises several auctions for capacities determined by law designed to identify the lowest possible applicable values for (parts of) the respective auctioned capacity. Capacities are mostly auctioned in different "technology baskets" (e.g. onshore wind, offshore wind, PV etc.). Bidders with the lowest bids are granted corresponding applicable values ("pay-as-bid"). Average quantity-weighted results of recent auctions (numbered below) for installations using onshore wind energy and PV installations in ct/kWh are as follows: • PV – 2/2017: 6,58; 6/2017: 5,66; 10/2017: 4,91; 2/2018: 4,33; 6/2018: 4,59; 10/2018: 4,69. • Onshore wind – 5/2017: 5,71; 8/2017: 4,28; 11/2017: 3,82; 2/2018: 4,73; 5/2018: 5,73; 8/2018: 6,16; 10/2018: 6,26. • Offshore wind – 4/2017: 0,44; 4/2018: 4,66. Separate transitional rules apply for offshore wind installations which are granted an unconditional grid connection prior to 2017; for these installations the auctioning scheme will only apply for wind installations commissioned from 2021 onwards. Renewable energy installations with a capacity of 750 KW or less, as well as onshore wind installations which have been permitted until the end of 2016 and commissioned by the end of 2018, are excluded from the auctioning scheme and are thus subject to applicable values defined by law. Furthermore, after a successful pilot project with Denmark, 5% of the annual newly installed generating capacity benefitting from the FIP under the EEG 2017 can comprise installations that are located in other EU Member States, provided that the following conditions are met for such installations: • Germany and the relevant EU Member State in which the installations are located must conclude a cooperation agreement; • the relevant EU Member State must open its renewable incentive scheme to installations located in Germany; and • electricity generated in the installations in the relevant EU Member State must be physically imported to Germany or have a comparable effect on the German electricity market.
Other Incentives	The German Reconstruction Credit Institute (*Kreditanstalt für Wiederaufbau, "KfW"*) offers several types of credits to promote generation of electricity from renewable energy, especially project financing for offshore wind farms in the German North Sea and Baltic Sea.
Additional Comments	The aims of the EEG 2017 are to better predict the development of renewable energy and introduce more competition between generators: the auction scheme is intended to effectively regulate future development of renewable energy generation, and so the auctioned capacities are capped as stipulated in the EEG 2017. Furthermore, with the new auction scheme, electricity from renewable energy will only be compensated up to the amount which is necessary for efficient operation of the installations. Currently, approximately 33% of the electricity generated in Germany derives from renewable energy.

Contacts

Umberto Penco Salvi
Partner, Corporate Administrative Law
Milan
T: +39 02 8063 4241
M: +39 3356500454
E: umberto.pencosalvi@cliffordchance.com

Aristide Police
Partner, Administrative Law
Rome
T: +39 064229 1358
M: +39 3470709960
E: aristide.police@cliffordchance.com

Chiara Commis
Senior Associate, Banking & Finance
Milan
T: +39 02 8063 4388
M: +39 3409276120
E: chiara.commis@cliffordchance.com

Filippo Degni
Counsel, Corporate
Rome
T: +39 064229 1314
M: +39 3407747115
E: filippo.degni@cliffordchance.com

Francesca Cuzzocrea
Counsel, Banking & Finance
Milan
T: +39 02 8063 4537
M: +39 3478671777
E: francesca.cuzzocrea@cliffordchance.com

ITALY

National Renewables Targets?	The renewable energy target for Italy is 17% by 2020, and the target had already been met by 2014. On 10 November 2017, the Italian National Energy Strategy approved a target of 28% by 2030.
Main Renewable Sources	Onshore wind, hydro, solar photovoltaic (PV) and biomass.
Green Certificates?	No. From 1 January 2016, renewable energy plants (other than PV plants) which were eligible to benefit from the green certificates incentive system, now receive a FIT equivalent to the price of the green certificates until the end of the applicable incentive period (which varies depending on the type of power source and on the date the plant commenced operations).
Feed-In Tariff (FIT)?	**Renewable energy plants (other than PV plants)** Currently, there are no FIT schemes available for new renewable energy plants (or refitting of existing plants) in Italy. The last decree which provided incentives to renewable power plants was the Decree of the Minister of Economic Development of 23 June 2016 (the RES Decree) which closed to new applicants on 31 December 2016. However, the existing FIT payments under the RES Decree made by the state-run *Gestore dei Servizi Elettrici S.p.A.* (GSE) for biomass, biogas and sustainable bio-liquids (but excluding PV) have been extended until 2021 by a 2018 Italian budget law. The RES Decree classified plants by source and power class, and provided the following allocation procedures: • Micro plants (i.e. capacity equal to or lower than 60 kW), which have direct access to an all-inclusive incentive tariff system; • Small-medium plants (i.e. capacity of over 60 kW to 5MW), which must first be enrolled in a dedicated register; and • Large plants (i.e. capacity of more than 5MW), which must go through a reverse auction process to access the incentive system and are subject to an annual cap on capacity. Pursuant to the RES Decree, the electricity produced by eligible renewable plants with capacity of up to 500 kW is purchased by the GSE, upon request of the relevant plant operator, while plants with a capacity of more than 500 kW sell the electricity produced on the electricity stock exchange or by contract. In September 2018, the Italian Minister of Economic Development published a second draft of a new RES Decree (the first draft issued in March 2018) for the incentive schemes throughout the period between 2019 and 2021 (the Draft Decree), which is still open to industry stakeholder consultation as at the date of publication of this guide. The current version of the Draft Decree provides the following two allocation procedures: • plants with a power of less than 1 MW must submit a request to the GSE to be enrolled in a dedicated register in order to be eligible to receive incentive; whereas • plants with a power equal to or over 1 MW must go through a reverse auction process to access the incentive system. Both categories of plants have access to the incentive system provided that construction works start after the auction process is completed. In particular, the plant operators are auctioning long-term agreements which regulate the payment of incentives via FIT. The duration of a standard agreement is between 20-25 years. The Draft Decree also sets out indicative terms and timing of the allocation procedures. The Draft Decree provides for seven registration procedures to be run by the GSE from 1 January 2019 until 31 January 2021 for plants with capacity lower than 1 MW. Similarly, seven auction processes run by the GSE from 1 January 2019 until 31 January 2021 are envisaged. **PV plants** An incentive system known as "*Conto Energia*" has been available for PV plants in Italy since 2005, consisting of the payment by the GSE of a FIT for twenty years starting from the date the plant commenced operations. The amount of incentive varies depending on the relevant *Conto Energia* programme, the commissioning date, the installed capacity and other features of the plants. No incentive system is currently available in Italy for new PV plants that have started operations following the expiration on 6 July 2013 of the Fifth *Conto Energia* (which was the latest incentive scheme available with respect to the PV sector). The Draft Decree, in contrast to the RES Decree and other past decrees, would provide incentives to all types of renewable energy plants including PV plants, with more significant benefits for those plants whose photovoltaic modules are installed in place of asbestos building roofs.
Other Incentives	Electricity produced from renewable energy sources has priority access to the grid system, and the transmission grid operator has to give dispatch priority accordingly. Italian legislation grants the option to sell the electricity produced under the mandatory purchase regime (*ritiro dedicato*), rather than on the market, to producers of electricity from (i) intermittent renewable sources of energy (including, therefore, electricity from solar and wind plants), or (ii) other sources (in this case for up to a nominal power of 10MW). In other words, it is a mechanism that allows operators of small plants to have access to a preferential sale process directly with the GSE, and remuneration provided to operators is equal to the "hourly zone price". The *ritiro dedicato* and the FIT remuneration schemes are different and incompatible. Under the mandatory purchase regime, the GSE must draw and purchase all the energy produced by a plant, net of any energy used for in-plant consumption, paying to the producer the "hourly zone price". Under the net metering service (*scambio sul posto*), producers/users at small power plants (up to 200 kW) may either, from time to time, consume the electricity generated, or feed any electricity generated, and not immediately consumed, into the grid. The current Draft Decree, however, no longer provides the option to choose any of the *ritiro dedicato* or the *scambio sul posto*. A reduced VAT to 10% applies for the acquisition and construction of renewable plants and subsidies – and benefits are available in connection with the sale or purchase of the land on which renewable plants are installed. On 2 March 2018, the Italian Minister of Economic Development approved the Ministerial Decree No. 65 promoting the use of bio-methane and advanced biofuels in the transport sector, which is now attracting increasing interest from operators. The GSE's implementation procedures for this decree were published on 12 June 2018, thus completing the legal and technical framework for this new incentive scheme.
Additional Comments	The most successful renewables sector in Italy has been the PV sector (with an overall installed capacity of more than 19.223 MW), mainly due to the generous FITs granted to producers and the relatively limited construction costs of PV plants (compared to those regarding hydroelectric or wind plants). As a result of the Paris agreement, the Italian Parliament on 10 November 2017 approved the new national energy strategy. This sets out the objectives and proposed developments in the energy sector in Italy. It specifically targets an increase in the development of renewable power plants in Italy. The first long-term (i.e. five years) power purchase agreement (PPA) in Italy was executed in February 2018 for the sale of electricity produced by renewable plants. Before that time, PPAs in Italy had a maximum 1-year duration. If the trend of long-term PPAs continues, there will be more stability and certainty for renewable energy producers and investors.

Contacts

Yusuke Abe
Partner, Banking & Finance
Tokyo
T: +81 3 6632 6332
M: +81 8013859800
E: yusuke.abe@cliffordchance.com

Hans Menski
Partner, Banking & Finance
Tokyo
T: +81 3 6632 6669
M: +81 8025903051
E: hans.menski@cliffordchance.com

JAPAN

National Renewables Targets?	The renewable energy target for Japan is 22-24% by 2030.
Main Renewable Sources	Solar, onshore and offshore wind, geothermal, hydro and biomass.
Green Certificates?	Yes. There are green certificates available in Japan although they have been practically and commercially superseded by the Japanese FIT (as explained below).
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	Yes. The Renewable Energy Act introduced a FIT in Japan as from 1 July 2012. The operator of a renewable power plant is entitled to sell all of the electricity generated by that plant to a utility company during a fixed period at a fixed price, which is determined by the Ministry of Economy, Trade and Industry of Japan (METI), in accordance with permits granted in each fiscal year in Japan (i.e. 1 April to 31 March). The current qualifying generating capacities and corresponding prices (per kWh) for particular years are set out below: • Solar Power (10-2,000kW): JPY 18 per kWh (in 2018). The FIT period is 20 years. • Onshore Wind Power: JPY 20 per kWh (in 2018), JPY 19 per kWh (in 2019) and JPY 18 per kWh (in 2020) for 20 years. • Offshore Wind Power: JPY 36 per kWh (from 2018 to 2020) for 20 years. • Hydro Power (5,000-30,000kW): JPY 20 per kWh (from 2018 to 2020) for 20 years. • Geothermal Power (more than 15,000kW): JPY 26 per kWh (from 2018 to 2020) for 15 years. • Biomass Power (for example general wood biomass (less than 10,000kW)): JPY 24 per kWh (in 2018) for 20 years. Investment in existing solar power plants accredited in previous fiscal years is more popular than investment in new power plants as the prices were higher in previous years (between JPY 21 and JPY 40). However, such investors should note that old permits may have expired, as discussed below. **Requirements for operators under the Japanese FIT**: In order to benefit from the Japanese FIT, the operator must have (i) applied to a utility company for permanent approval of a grid connection before the plant commenced electricity generation and (ii) obtained approval from METI ("METI Approval") for the construction of the power plant. **New regime under the Japanese FIT amendment in 2017**: There was a major amendment to the Japanese FIT in April 2017 (before the April 2017 amendment the "Former FIT" and after the amendment the "Current FIT"). Under the Current FIT, the project site and feasibility of the project are considered when granting METI Approval (in addition to the power generation facility, which was the only consideration under the Former FIT). Operators who have the capacity to generate more than 10kW and have received METI Approval under the Current FIT need to commence operations within three years of the date of the approval or the fixed sales period will be shortened as a penalty (the "Three Years Rule"). **Certain METI Approvals under the former system have expired**: In principle, if power generation facilities did not conclude a grid connection agreement with a utility company by 1 April 2017, their METI Approval under the Former FIT expired. However, where facilities received METI Approval under the Former FIT on or after 1 July 2016, there was a 9-month grace period from the approval date for the conclusion of a grid connection agreement. For facilities that have now already obtained METI Approval under the Former FIT, have the capacity to produce more than 10kW and have concluded the grid connection agreement on or after 1 August 2016, the Three Years Rule will apply and the fixed sales period under the FIT will be shortened if they have not commenced operations by 31 March 2020. **Curtailment**: The applicable curtailment rule will differ by utility company as offtaker, and based also on the timing of the application for a grid connection. In broad terms, for power generation facilities producing more than 500kW, the following rules apply: (a) An operator who applied for a grid connection on or before 25 January 2015 (30 September 2014 for solar power operations in Tohoku) and whose curtailment exceeds 30 days/year for solar power and wind power, its loss for the period exceeding the above thresholds will be indemnified by the offtaker. However, where the offtaker is located in Kyushu, a solar power operator will need to have actually concluded the grid connection agreement by 25 January 2015 for this curtailment rule to apply. (b) For operators who applied for a grid connection (concluded the grid connection agreement for the solar operation in Kyushu) on or after 26 January 2015 (1 October 2014 for solar power operation in Tohoku): (i) where grid connection capacity has not yet exceeded its limits when application for grid connection is made: If curtailment by the utility company exceeds 360 hrs/year for solar power and 720 hrs/year for wind power, the loss for the period exceeding the above thresholds will be indemnified by the offtaker; or (ii) where grid connection capacity has already exceeded its limits when application for grid connection is made: The operator will not be indemnified for any curtailment by the utility company. Grid connection capacity has already exceeded its limits in Hokkaido, Hokuriku, Chugoku, Shikoku, Kyushu and Okinawa for solar; and Hokkaido, Tohoku, Hokuriku, Chugoku and Kyushu for wind power. Tohoku exceeded its limit for solar by 30 September 2014. **Auction**: Under the Current FIT, a new bidding rule was introduced for utility solar power generation (more than 2,000kW). The first bid was held in 2017, where the highest was 21 JPY/kWh and the lowest was 17.20 JPY/kWh. The fixed period for the winning bidder is 20 years. The Three Years Rule and curtailment provisions described above apply.
Other Incentives	Not applicable
Additional Comments	In the 2018 fiscal year, bidding for the solar power FIT (more than 2,000kW) will be conducted twice, once in each of the first half and the second half of the fiscal year. Also, for the first time, bidding for biomass power FIT (more than 10,000kW general wood biomass and biomass liquid fuel) will be conducted once in the second half of 2018. The fixed period will be 20 years.

Contacts

Hyun Suk Kim
Partner, Capital Markets
Seoul
T: +82 2 6902 8008
M: +82 1027959841
E: hyun.kim@
cliffordchance.com

Yumin Kim
Counsel, Litigation and
Dispute Resolution
Seoul
T: +82 2 6902 8007
E: yumin.kimi@
cliffordchance.com

KOREA

National Renewables Targets?	The renewable energy target for Korea is 11% by 2035.
Main Renewable Sources	Solar thermal, solar photovoltaic (PV), onshore and offshore wind, bioenergy, hydro, geothermal, marine and energy from waste.
Green Certificates?	Yes. In 2012, FITs were replaced by the Renewable Portfolio Standard (RPS) programme. Under the RPS programme, power generation companies with a capacity of 500MW or greater are required to generate a certain amount of their total power supply from renewable sources. As of 2018, 21 power generation companies currently receive subsidies under this programme. Renewable Energy Certificates (RECs) are issued as part of the RPS programme which was introduced in 2012 under the Act on the Promotion of Development, Use, and Dissemination of New and Renewable Energy ("Renewable Energy Act"). In order for generators to qualify to trade RECs, they must apply for certification to the Korean New and Renewable Energy Centre (KNRE). Generators can meet their RPS targets by either investing in renewable energy installations themselves, or purchasing RECs on the market. Generators can pass on the cost of buying RECs in the sale price of the electricity they supply to Korea Electric Power Corporation (KEPCO). Certificates are issued to qualifying generators on a weighted basis, based on electricity generated from renewable sources (REC = MWh x weighted points). Licensed electricity distributors are KEPCO and Korea Power Exchange. The RECs are weighted as follows: • PV Energy: four weighted points (0.7,1.0,1.2,1.5) – the allocation of points takes into account (i) whether the facility uses an Energy Storage System (ESS), (ii) whether it is installed on existing buildings or structures, (iii) the location of the land on which the facility is located and (iv) the capacity range; and • Other energy sources: eight weighted points (0.25, 0.5, 1.0, 1.5, 2.0, 4.5, 5.0, 5.5) – for example, the lowest point of 0.25 is assigned to IGCC or offshore gas, the point range of 1.0-2.5 is assigned to offshore wind, geothermal or open water tidal power and the highest point range of 4.5-5.5 is assigned to the use of ESS connected to wind power. Application for REC issuance must be made within 90 days after the end of a month during which the generator supplied electricity generated from renewable energy. The fee for issuing a REC is KRW 55 per REC. RECs are valid for three years from the issuance date. As of March 2016, the REC market for PV energy, which had been subject to a separate obligation to supply, has been combined with the non-PV obligations. The average price of a REC has increased following the combination of the two markets, from an average price of KRW 85,000 in 2015 to KRW 100,000 in 2016. There are now 21 publicly-owned and privately-owned power generation companies who have obligations under the RPS programme. The obligatory supply amount of New and Renewable Energy (NRE) for 2017 is 17,043MWh, an increase from 15,081MWh in 2016.
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	The Korean FIT scheme ended as of 2012 and now only applies to existing recipients. The standard prices for NRE were formulated in 2002: for example wind farms with a capacity of over 10kW have a fixed standard price of KRW107.29/kWh which is reduced annually by 2%; and PV has a standard price of KRW484.52/kWh for installations under 30 kW and KRW462.69/kWh for installations over 30kW with changes to the price announced every year. After the FIT scheme was announced, PV installed capacity increased dramatically from 200kW in 2004 to 498MW in 2011. Before the RPS scheme was introduced, FITs guaranteed 15 to 20 years of support for all NRE electricity facilities. As a result of RPS replacing FIT, the NRE output increased approximately tenfold in the first three years of operation of RPS.
Other Incentives	The government supports a loan and tax incentive programme which provides long-term, low-interest loan terms with a five-year grace period and 10-year repayment period. It is intended for customers and power generation companies of the NRE scheme. Installation loans are provided for customers that install NRE systems, and operation loans are provided for power generation companies with NRE facilities. Loans can be made for up to 90% of the total cost and up to 50% for large corporations. As an additional incentive, customers and power generation companies under the NRE scheme can deduct up to 10% of the total cost of system installation from their income tax/corporate income tax.
Additional Comments	**Government Subsidy programmes** A home subsidy programme was introduced in 2004 to facilitate installation of NRE facilities in residential areas such as private houses, multi-family houses and public rental houses. The programme supports a certain portion of the total installation cost of the facilities and focuses on a variety of resources such as PV, solar thermal, geothermal, small wind power and fuel cell. Moreover, there is a building subsidy programme and regional deployment subsidy programme to accelerate NRE deployment of the NRE facility users by providing financial support in the form of subsidies covering up to 80% of installation costs. In August 2017, the new administration released the following further renewable energy initiatives: • Harmonisation of RPS with the FIT by providing a FIT of more limited scope to small-scale power suppliers in order to promote renewable energy generation among small-scale power suppliers (mostly solar); and • Strengthening the RPS target by adjusting the mandatory RPS ratio to 28% by 2031 (current target is 10% by 2023).

Contacts

Mustapha Mourahib
Managing Partner, Banking and Finance
Casablanca
T: +212 52264 4310
M: +212 645099320
E: mustapha.mourahib@cliffordchance.com

Ouns Lemseffer
Counsel, Banking and Finance
Casablanca
T: +212 52264 4307
M: +212 660114754
E: ouns.lemseffer@cliffordchance.com

MOROCCO

National Renewables Targets?	The renewable energy targets for Morocco are: • Total solar capacity of 2000MW by 2020, which will increase the role of solar energy in total electricity capacity by 14% under the "Moroccan Project of Solar Energy". • Total wind capacity of 2000MW by 2020, which will increase the share of wind power in the national energy balance to 14% under the "Moroccan Integrated Wind Energy Project". • Total hydro power capacity of 2000MW by 2020. Taken together, these three targets would result in a total share of 42% of installed power capacity from renewable energy in 2020. There is also a new national target to increase the contribution of renewable energy to 52% of the production of electricity by 2030.
Main Renewable Sources	Onshore wind, solar and hydro power.
Green Certificates?	No.
Feed-In Tariff (FIT) / Feed-In-Premium (FIP)?	No.
Other Incentives	There are no specific financial incentives. Historically, the *Office National de l'Electricité et de l'Eau Potable* (ONEE), which is the state-owned utility in charge of the production, transport and distribution of electricity in Morocco, had a monopoly over access to the electricity market. Law 13-09 in relation to renewable energy now permits electricity from renewable sources to be produced, sold and exported by private operators to public and private consumers, subject to a preliminary statement/authorisation regime, depending on the capacity of the installation. As a result, private generators now have the potential to enter this market, where they have the ability to negotiate the price with their customers. This law also provides for the right for any power producer to be connected to the low, medium, high and very high voltage national electricity grid. Wind farms and solar plant projects above 2MW must be developed on designated areas determined by the local government entity. Since a recent amendment, the law now clearly provides for the possibility to sell the surplus electricity to ONEE, within the limit of 20% of the annual production. The conditions of such sale to ONEE will be set out by regulations, which are yet to be adopted. There were some crucial first steps in the energy market liberalisation process, including the laws below and a number of other provisions: • In 2015, new legislation have been adopted to open up access to low- and medium-voltage networks. • The enactment of law 48-15 in July 2016 was another important step in the liberalisation of the energy sector. It creates a national regulatory authority (ANRE) responsible for establishing the tariffs and charges that new generators must pay to access and use the medium- and high-voltage networks. The legislation is now being implemented and will enable ANRE to manage any conflicts that may arise between operators and network users. ONEE's high-voltage network will be managed separately from energy generation to ensure equitable access for new producers. Most energy experts agree, however, that further liberalisation is required, particularly in terms of increased access to the low-voltage network, for the Moroccan market to become more attractive, especially to small- and medium-sized enterprises, which are largely excluded from large-scale projects.
Additional Comments	The Moroccan energy authorities were restructured in the summer of 2016. The Moroccan Agency for Solar Energy (MASEN), responsible for implementing the Moroccan solar power plan until the restructuring, had its mandate extended to include all renewable energy sources and became the Moroccan Agency for Sustainable Energy. The *Agence Nationale pour le Développement des Energies Renouvelables* (ADEREE) was renamed Agence *Marocaine pour l'Efficacité Énergétique* (AMEE) and now regulates matters relating to energy efficiency. Law 47-09 on energy efficiency, dated 29 September 2011, sets clear objectives which are to: • Increase the efficiency of energy resource consumption; • Reduce energy costs on the national economy; and • Contribute to sustainable development. Law 47-09 requires energy audits to be conducted for companies and institutions in the production, transmission and distribution of energy, as well as for the performance of an energy impact study for new construction and urban projects. The Moroccan Government has set an objective of achieving a 12% improvement in energy efficiency by 2020 and 15% by 2030.

Contacts

Hein Tonnaer
Partner, Banking & Finance
Amsterdam
T: +31 20 711 9528
M: +31 652331075
E: hein.tonnaer@cliffordchance.com

Nanette Rutgers
Counsel, Banking and Finance
Amsterdam
T: +31 20 711 9162
M: +31 655798949
E: nanette.rutgers@cliffordchance.com

Liesbeth Buiter
Counsel, Corporate
Amsterdam
T: +31 30 711 9326
M: +31 629001858
E: liesbeth.buiter@cliffordchance.com

Thomas Heijerman
Associate, Banking & Finance
Amsterdam
T: +31 20 7119 000
E: thomas.heijerman@cliffordchance.com

Lotte de Bruin
Associate, Corporate
Amsterdam
T: +31 20 711 9668
M: +31 612584547
E: lotte.debruin@cliffordchance.com

THE NETHERLANDS

National Renewables Targets?	A number of parties, including government industry bodies, trade unions and nature/environmental organisations, reached an energy agreement for renewable growth in September 2013 (*Energieakkoord voor duurzame groei*) ("Energy Agreement"). Pursuant to this agreement, the renewable energy target for The Netherlands is 14% by 2020 and 16% by 2023. The Netherlands is also bound by European Union energy targets. Under these targets, by 2020, CO2 emissions must be reduced by 20% compared to 1990 levels and 20% of energy consumption must be produced from renewable energy sources. By 2030, CO2 emissions should be reduced to 40% with 27% of energy consumption being produced from renewable sources. In 2050 energy production should be almost entirely renewable with an 80-95% CO2 emissions reduction. In the 2017 coalition agreement, the 2030 CO2 reduction target was set at 49% percent, compared to the 40% EU target.
Main Renewable Sources	Onshore and offshore wind, biomass, solar and geothermal, with a smaller role foreseen for residual heat and tidal wave energy.
Green Certificates?	No.
Feed-In Tariff (FIT)?	Strictly speaking, the Dutch system is a subsidy system, rather than a FIT. However, the commercial effect is quite similar to a FIT.
Other Incentives	The SDE+ (*Stimulering Duurzame Energieproductie/Encouraging Sustainable Energy Production*) is a generation subsidy. Producers receive financial compensation for the renewable energy they generate. SDE+ is based on the Regulation Encouraging Sustainable Energy Production (*Besluit Stimulering Duurzame Energieproductie*). It compensates producers for the unprofitable component (i.e. difference in the cost price of producing renewable energy as against the costs of conventional energy generation). The SDE+ is available for the production of: • renewable electricity; • renewable gas; and • renewable heat or a combination of renewable heat and electricity (CHP), by making use of: (a) biomass; (b) geothermal; (c) water; (d) wind; and (e) solar energy. The primary target groups for SDE+ are companies, institutions and non-profit organisations. The national government is excluded from participation. Other local or national incentive regulations sometimes apply. The project must be realised in The Netherlands. The SDE+ subsidy is granted on a bi-annual basis. The budget for the subsidy round for spring 2018 was EUR 6 billion and another EUR 6 billion is expected for the autumn 2018 round. Subsidies are granted on a first-come-first-served basis and for a fixed number of years (6, 12 or 15 depending on the technology used). Once a project has been granted a subsidy, it will continue to receive it at the same level during the term of the grant. A project receives 80% of the SDE+ subsidy in advance each year as of the date renewable energy is being produced. The final determination will be made at the end of the subsidy period. In broad terms, the SDE+ subsidy is determined by multiplying the electricity produced in the relevant year by the difference between the average electricity price (subject to an applicable minimum floor price) and the tender amount referred to above. If the average electricity price in a certain year is less than the floor price included in the SDE+ regulations, which is a fixed price for each project (e.g. EUR 0.026/MWh for onshore wind projects in 2017), only the difference between the tender amount and the floor price will be compensated. The SDE+ subsidy is furthermore capped with a maximum annual number of full load hours which are eligible for SDE+ subsidy. If, in a certain year, there are periods of more than six consecutive hours where the electricity price is negative, electricity produced during these periods will not receive a subsidy and the final SDE+ contribution will be reduced accordingly. On top of the general SDE+ budget, a SDE+ subsidy was made available for offshore wind. The SDE+ subsidy for offshore wind is covered by the Offshore Wind Energy Act (*Wet windenergie op zee*) and underlying regulations. The SDE+ subsidy as well as a permit to construct and operate the wind farm is granted through a tender procedure. Tender participants have to demonstrate that the bid is technically and financially feasible and that the project is able to produce electricity at the lowest costs (determined on the basis of the "tender amount" in EUR per kWh included in its bid). Notably, in March 2018 the Hollandse Kust Zuid I & II tender (700MW) was awarded without an SDE+ subsidy, although the construction of the grid connection and the soil surveys will be paid by the Dutch Government. The first non-subsidised offshore wind tender signals a significant reduction in costs associated with building offshore wind projects. Whereas in 2013, the costs associated with SDE+ subsidy for offshore wind were estimated at 18 billion for 15 years, this figure was reduced to 6 billion in 2017 after the tenders for Borsselle I and II and Borsselle III and IV.
Additional Comments	Although there is widespread support to realise the targets in the Energy Agreement (14% renewable energy in 2020 and 16% for 2023), The Netherlands still has a lot of progress to make. In the National Energy Survey published on 19 October 2017 (*Nationale Energieverkenning 2017*), three Dutch research institutes estimated that only 12.4% of total Dutch electricity production will come from renewable sources in 2020. The estimate for 2023 is more favourable at 16.7% of Dutch energy production. The Dutch Government is focusing primarily on offshore wind development to increase the level of renewable energy in the coming years. Based on the Energy Agreement, The Netherlands aims to increase the capacity in offshore wind energy from the currently installed capacity of 957 MW to 4500MW in 2023. Since 2016, the SDE+ subsidy has been awarded to Borssele I & II (752MW) and Borssele III & IV (731.5MW). In 2018, the first non-subsidised tender was awarded in relation to Hollandse Kust Zuid I and II (700 MW). Other tenders are expected in 2018 (Hollandse Kust Zuid III & IV, 700MW), 2019 (Hollandse Kust Noord, 700 MW), 2021 (Hollandse Kust West, 1400 MW), 2022 (Ten Noorden van de Waddeneilanden., 700 MW) and between 2023 and 2026 (Ijmuiden Ver, 400 MW).

Contacts

Pawel Puacz
Counsel, Corporate Energy
Warsaw
T: +48 22429 9532
E: pawel.puacz@cliffordchance.com

Weronika Miszewska
Advocate Trainee, Corporate
Warsaw
T: +48 22429 9490
E: weronika.miszewska@cliffordchance.com

POLAND

National Renewables Targets?	There is no overall national renewables target adopted for Poland (other than the 15% by 2020 target under the EU Renewable Energy Directive (2009/28/EC)). Poland's annual renewable energy target generated under Green Certificates has been fixed at the level of 20% from 2017 (with separate sub-targets of 0.65 % for biogas, and 19.35% for all other renewable energy sources (RES) installations. This target (together with sub-targets) may be amended on an annual basis by secondary legislation. Installations operating outside the Green Certificates scheme are not counted towards this target.
Main Renewable Sources	Onshore wind and biomass (clean and co-fired with fossil fuels).
Green Certificates?	Yes. However, the system was closed to new installations producing energy for the first time after 1 July 2016. These new installations no longer qualify for Green Certificates. Installations brought into operation before that date will continue to receive Green Certificates until the expiry of the applicable 15-year support period, calculated individually for each installation, unless they migrate earlier to a new auction-based support system (described below). Businesses which generate or trade in electricity and sell to a final off-taker as well as, in certain circumstances, so-called "industrial off-takers", final off-takers and brokerage houses trading in energy at the commodity exchange, are required to acquire Green Certificates (or otherwise, pay compensation). They must then present a certain number of certificates on an annual basis, to the energy regulatory authority for redemption. The required number is calculated as a percentage (equal to the annual renewable energy target mentioned above) of the total annual sales to end users or, in the case of an industrial off-taker, by reference to the volumes of electricity bought for its own needs. Green Certificates are issued by the Polish energy regulatory authority to RES generators (with respect to RES installations brought into operation before 1 July 2016) to confirm that they have produced a certain amount of renewable energy over a certain period of time. As from 1 January 2016, Green Certificates are no longer issued to large hydroelectric power plants over 5MW. Certain biomass co-incineration plants are subject to limitations regarding the volume of energy for which Green Certificates may be issued and they are also subject to corrective coefficients decreasing the value of Green Certificates issued for the renewable energy portion of the energy generated by such plants. As from 1 July 2016, a separate category of certificates has been established for biogas plants (which are subject to a separate sub-target and a separate redemption obligation). Obligated entities that fail to present certificates for redemption in the required number or pay compensation are subject to a financial penalty imposed by the energy regulatory authority.
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	An auction-based FIP support system was introduced in July 2016, under which RES support in the form of a quasi-contract for difference model is granted to those projects which are successful in a competitive auction. The energy regulatory authority organises auctions at least once a year, separately for new installations and "old" installations (covered by the Green Certificates scheme which have the possibility to migrate to the auction system provided they win the auction). In the auctions, investors compete for the volumes of electricity put to auction, with the lowest prices offered winning the auction (until the volume auctioned is exhausted). The electricity prices offered in the auction cannot exceed the maximum prices set by the regulator on an annual basis, separately for each technology. Auction winners are free to sell the electricity on the market (based on bilateral power purchase agreements or via the commodity exchange), with the difference between market energy price, as published by the power exchange, and the price from the winning bid being paid by the nominated state entity. Support granted through auctions is available for each installation for up to 15 years (the actual support period applicable to auctions in a given year is determined through secondary legislation). Separate technological auction baskets are provided to allow regulation of the increase of capacities between different renewable technologies. If the market price exceeds the reference price, the generator must pay the difference back to the State. A separate FIT scheme is available only to biogas and hydroelectric installations of less than 500kW without auction. Also, biogas and hydroelectric installations between 500kW to 1MW are eligible for separate FIP support without the need to participate in auctions. The total capacity of installations eligible to the FIT and FIP support may be capped on an annual basis through secondary legislation.
Other Incentives	The operator of the electricity system is obliged to ensure that electricity generated from RES has priority of transmission. Also, electricity generated from RES is exempt from excise duty. RES installations of less than 500kW that were brought into operation before 1 July 2016 also benefit from a guaranteed off-take regime. "Obliged suppliers" (energy traders with the biggest number of customers within a given territory) are obliged to purchase electricity generated from such installations which is offered to them. These purchases are made at the average price on the competitive market for the preceding calendar quarter determined by the energy regulatory authority. The energy regulatory authority is obliged to announce the average price by the end of the following quarter. Any entity not meeting its obligation to purchase electricity from renewable energy sources is subject to a financial penalty.
Additional Comments	Following the European Commission's decision approving the auction-based FIP and FIT support schemes in December 2017, the Act on Renewable Energy Sources (setting out the rules for support of RES) was amended in July 2018 to bring the scheme in line with the European Commission's decision. This paved the way for new auctions for electricity from RES which are expected from 2018 to 2021. This recent amendment also eliminated, effective as from 1 January 2018, the discriminatory property tax regulations applicable to onshore wind as from 2017. During the first years when the Green Certificates scheme was in place, a rapid development of onshore wind and co-fired biomass projects has been observed, which contributed most to the overall progress in meeting the targets in Poland. However, as the supply of Green Certificates was not matched with the demand, this has caused significant oversupply of Green Certificates. The oversupply, together with some unfavourable regulatory changes, caused a collapse of prices of Green Certificates on the market. This has adversely impacted the liquidity of operating installations.

Contacts

Daniel Badea
Managing Partner, Banking & Finance
Bucharest
T: +40 216666 101
M: +40 722205607
E: daniel.badea@cliffordchance.com

Nadia Badea
Partner, Corporate
Bucharest
T: +40 216666 102
M: +40 722655837
E: nadia.badea@cliffordchance.com

Andreea Sisman
Counsel, Banking & Finance
Bucharest
T: +40 216666 116
M: +40 756012250
E: andreea.sisman@cliffordchance.com

Mihnea Niculescu
Trainee Lawyer, Corporate
Bucharest
T: +40 216666 105
M: +40 744595732
E: mihnea.niculescu@cliffordchance.com

ROMANIA

National Renewables Targets?	The renewable energy target for Romania is 24% by 2020.
Main Renewable Sources	Hydro, onshore wind, solar photovoltaic (PV), biomass.
Green Certificates?	Yes. Electricity suppliers and, in certain cases, electricity producers, are obliged to acquire a minimum number of Green Certificates based on the quantity of electricity supplied to consumers each year, together with the quantity of energy traded by means of bilateral agreements outside the territory of Romania. The regulatory authority establishes the quota of Green Certificates to be acquired by electricity suppliers, which cannot exceed an average cost to consumers of EUR 12.5/MWh for 2019, EUR 13/MWh for 2020 and 2021, and EUR 14.5/MWh for 2022 and beyond. Suppliers that do not meet this mandatory quota are required to pay a penalty for each Green Certificate that is not acquired. This penalty is set at EUR 70 per Green Certificate starting from 2018. Certain categories of final consumers of energy may be exempted from being charged the purchase cost of a specific percentage of Green Certificates by energy suppliers, or producers as the case may be. In turn, such suppliers and producers are not obliged to purchase the corresponding percentage of Green Certificates for the energy supplied to exempted customers. Large industrial consumers meet the relevant criteria to be considered as exempted customers. Green Certificates are valid until 31 March 2032. Between 2017 and 2032, the value of a Green Certificate is limited between EUR 29.4 and EUR 35 and their value is determined on their trading date. Producers of electricity from renewable sources receive a different number of Green Certificates per MWh of electricity generated, depending on the type of renewable source. Thus, the number of Green Certificates per MWh is between 0.7 and two certificates for certain types of micro hydro power plants (which have an installed power of up to 10MW); 0.25 from 2018 for wind power plants; 2 for biomass and biogas; 1 for gas obtained from fermentation of waste; and 3 for solar energy. For hydro power plants which have an installed power larger than 10MW, one Green Certificate is received for each 2 MWh of electricity generated. The trading of a portion of the Green Certificates given to PV electricity producers is deferred until 31 December 2020 and their reinsertion to trading will take place gradually between 1 January 2021 and 31 December 2030. The trading of the Green Certificates associated with other technologies for which trading had previously been deferred between 1 July 2013 and 31 March 2017 takes place until 31 December 2025. Producers and suppliers of electricity from renewable sources can only trade Green Certificates in an internal centralised market, which is organised and operated by OPCOM. For renewable power plants having an installed capacity exceeding 250MW, the aid will have to be notified individually to the European Commission, in order to be accredited as a renewable project and hence receive Green Certificates.
Feed-In Tariff (FIT) / Feed-In-Premium (FIP)?	Since July 2018, the renewable energy legislation provides that the national regulatory authority, together with the Ministry of Energy, may prepare a state aid scheme for supporting the production of electrical energy using renewable energy sources by means of a FIT for each particular type of technology. Further details as to how the FIT will be calculated have not yet been published for public debate. If the scheme is approved by the European Commission and adopted by the Government, renewable energy producers will have the option to choose between the FIT scheme and the green certificate promotion system.
Other Incentives	Producers of electricity from renewable sources have priority access to the transport/distribution network, subject to the safety of the National Energy System.
Additional Comments	According to the Energy Department of the Ministry of Economy, the national renewables target of 24% set for 2020 has already been achieved. Initially, fixed incremental targets were provided until 2020. However, certain amendments provide that, for the period between 2014 and 2020, ANRE (the national regulator) monitors the fulfilment of such targets on an annual basis and will propose to the Government an actual target for the relevant year. After 2020, the targets will be approved through Government Decision and cannot be lower than the 2020 figure. The consequence of this provision is that, depending on ANRE analysis in a given year, mandatory quotas imposed to meet the targets might actually be lower than the total electricity produced from renewable sources. If that were the case, the aggregated purchase obligations of the electricity traders would not cover all the Green Certificates on the market at that moment. However, the risk associated with the sale of Green Certificates has been mitigated by the extension of their validity until 31 March 2032, as until March 2017 they were only valid for 12 months. Power purchase agreements can only be concluded in the centralised electricity market if they are concluded by renewable energy producers operating renewable energy power plants with an installed capacity of up to 3 MW per producer. Only limited wind energy capacity can currently be connected to the grid due to imbalance risks and poor grid infrastructure. The permitting procedure overseen by local authorities can be lengthy and bureaucratic. According to an ANRE Report for 2017, the total installed capacity of renewable projects was 4,787MW, while the total renewable energy production was 25,695 MWh, of which 9,369 benefiting from the renewable energy support scheme.

Contacts

Arthur Iliev
Partner, Corporate
Moscow
T: +7 495 258 5021
M: +7 9857632492
E: arthur.iliev@cliffordchance.com

Ella Omelchenko
Counsel, Corporate
Moscow
T: +7 495 258 5054
M: +7 9856449112
E: ella.omelchenko@cliffordchance.com

RUSSIA

National Renewables Targets?	The renewable energy target for Russia is 4.5% by 2024.
Main Renewable Sources	Solar photovoltaic (PV), onshore wind, hydro, tidal, wave, geothermal, biomass, waste and biogas.
Green Certificates?	No.
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	No. An incentive mechanism analogous to a FIT exists only within the retail energy market (see below).
Other Incentives	The incentive mechanisms for generators of renewable energy in Russia were developed in 2013-2015. The three main mechanisms are described below. **1. Wholesale Energy Market** This regime involves the sale of renewable energy to grid companies under long term energy sale and purchase contracts (ESPC), the terms of which are regulated by the law. It applies to wind, sun and hydro energy facilities (5MW and above), up to a maximum of 25MW for hydro-power plants. Generators participate in a tender process held by the "*Non-profit Partnership Council for Organising Efficient System of Trading at Wholesale and Retail Electricity and Capacity Market*" (the "Market Council") on an annual basis. The winners conclude ESPCs with the Market Council and other counterparties, including the purchasers (grid companies). An ESPC has the following key features: a fixed term of energy supply payable per month for a term of 15 years; a return on investment equal to 14% for projects selected prior to 1 January 2016 and 12% for projects selected after 1 January 2016; and the pricing, CAPEX and OPEX levels are determined by the Russian government. The wholesale energy market regime only applies to "qualified" power plants (i.e. the generator must obtain a qualifying certificate from the Market Council). Key conditions for qualification are: (i) the power plant is constructed, commissioned and connected to the grid; (ii) the power plant capacity meets required minimum levels; (iii) the power plant is included in the list of Renewable Energy Generation Facilities, maintained by the Russian Ministry of Energy; and (iv) the required amount of domestically produced equipment is used. The requirement to use Russian equipment, which varies between technology baskets, is intended to encourage Russian manufacturers to produce more equipment for installation in power projects. Relevant targets of Russian equipment to be used are as follows: • Wind power projects: 55% in 2018; and 65% during the period from 2019 to 2024. • PV projects: 70% during the period from 2016 to 2024. • Hydro power projects: 65% from 2018 to 2024. **2. The Retail Energy Market** This mechanism involves an obligation upon the grid companies (which sell energy directly on the retail market to end-users, e.g. individuals or entities) to purchase renewable energy from generators under regulated tariffs for a fixed term. The retail market supporting mechanism has the following key features: (i) it is applicable to PV, wind, hydro, biomass, biogas and landfill gas energy and (ii) the power plant must be included in a so-called electrical energy development scheme approved by the relevant regional authority of the Russian Federation. The key features of the scheme are: (i) generators participate in a tender organised by local authorities, and (ii) the volume of the purchased renewable energy from the generator may not exceed 5% of the estimated electrical energy network losses incurred by the grid companies (i.e. losses of electrical energy which occur in transmission and distribution networks; usually the losses are calculated as the difference between the electrical energy supplied to the network and the net electrical consumption). The regulated tariff is payable for 15 years, and is set to represent a return on investment equal to 14% for projects selected prior to 1 January 2017 and 12% for projects selected after 1 January 2017. The regime only applies to "qualified" power plant (i.e. the generator must obtain a qualifying certificate from the Market Council). The qualifying requirements are similar to the Wholesale Energy Market, which means the wholesale market conditions referred to above also apply including similar local sourcing of equipment requirements. **3. Compensation of costs** This mechanism works by compensating the generator for the direct costs of connecting renewable energy power plants to power grids (whether within the retail or wholesale energy market schemes), and was introduced in 2010 and 2013. It provides for the following key features: • It applies to power plants with a maximum power threshold of 25MW; • Compensation (subsidies) from the federal budget will amount to a maximum of 50% of costs properly incurred by the generator for the connection of a single renewable energy power plant to power grids, but in any case may not be more than RUB 30,000,000 (approx. USD 481,000); and • The power plant must have the status of "qualified plant" (qualifying requirements are similar to the Wholesale Energy Market, (see above); • The holder of a power plant must not be (i) a foreign legal entity or (ii) a Russian subsidiary of offshore registered companies where such companies jointly hold 50% of the charter capital (equivalent to shares in a company) of the subsidiary.
Additional Comments	The impact of incentive mechanisms on the development of renewables in Russia is controversial. One of the main drawbacks is the local sourcing of equipment requirement, given that currently Russia lacks ''local" technologies and sufficient equipment to meet the relevant requirements. According to the deputy head of the Ministry of Energy of the Russian Federation, the share of energy generation from renewable sources as compared with total electricity production in Russia in 2017 (over 1,072.7 billion kWh) was less than 0.1%.

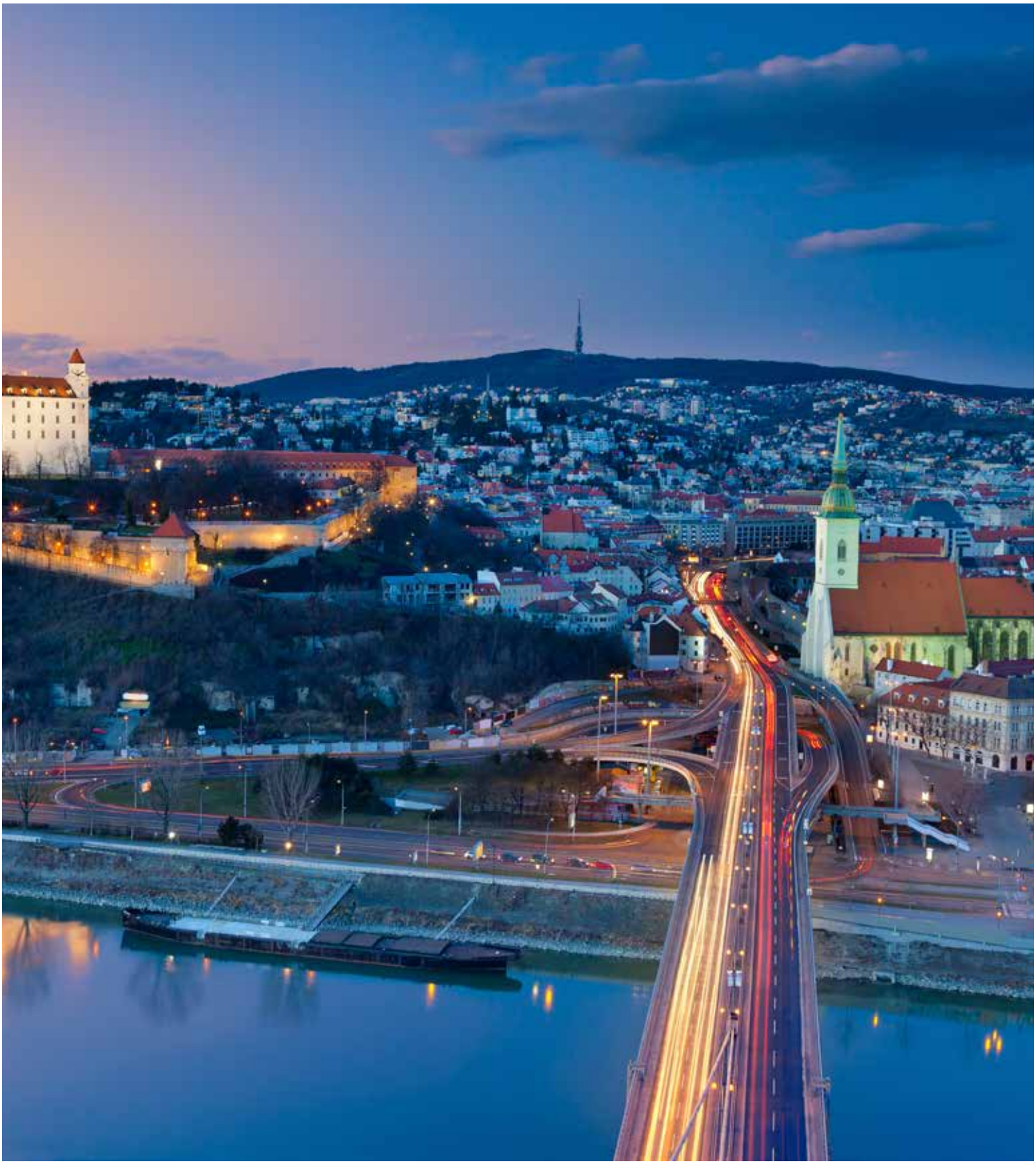
Contacts

Mohamed Hamra-Krouha
Partner, Banking & Finance
Abu Dhabi
T: +971 2 613 2370
E: mohamed.hamra-krouha@cliffordchance.com

Richard Parris
Partner, Banking & Finance
Abu Dhabi
T: +971 2 613 2374
M: +971 505596084
E: richard.parris@cliffordchance.com

SAUDI ARABIA

National Renewables Targets?	The renewable energy target for Saudi Arabia is to achieve a capacity of 3.45GW by 2020 under the National Transformation Program 2020 (NTP) and a capacity of 9.5GW by 2023 under the Vision 2030 plan.
Main Renewable Sources	Primarily solar photovoltaic (PV) and onshore wind.
Green Certificates?	No.
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	No. The Saudi government has, however, studied FIT schemes.
Other Incentives	No.
Additional Comments	In April 2016, the Vision 2030 plan was launched by the Saudi government. It sets out: • An "initial target" of generating 9.5GW of renewable energy by a certain date (later clarified to be 2023); • A goal that a significant portion of the renewable energy value chain, including research, development and manufacturing, will be based in Saudi Arabia by 2030; • An announcement of the forthcoming launch of a new initiative called the King Salman Renewable Energy Initiative; • A plan to review the existing legal and regulatory landscape with the aim of encouraging private sector investment in the power sector, including through public-private partnerships; and • A determination gradually to liberalise the Saudi fuel market so as to guarantee the competitiveness of renewable energy. In June 2016, the NTP was launched. It sets out strategic objectives to be met by various governmental entities by 2020. Over the last few years, strategic objectives were set for a new sustainability framework for Saudi Arabia called KA Care, including the launch of the King Salman Renewable Energy Initiative and the preparation of legislation for the renewables sector. This indicated that the Saudi government saw KA Care, earmarked in the NTP to receive a budget of over SAR5 billion for the role, as being an important part of its renewable energy plan. Although the renewable energy plan has not yet in published in full, it is expected that additional details will be released in due course in order to outline (i) the timeline of the proposed renewable projects and (ii) the technology/ energy type mix (in particular, the share of nuclear energy) that the Kingdom will look to achieve. Saudi Arabia's renewable energy targets form part of the Saudi National Renewable Energy Program (NREP), which is managed by the Ministry of Energy, Industry and Mineral Resources (MEIM) acting primarily through the Renewable Energy Project Development Office (REPDO), an office of MEIM. MEIM brings together various organisations that are active in the renewable energy field, including King Abdallah City for Atomic and Renewable Energy (KACARE) (a scientific entity established for, among other things, the purpose of driving research to contribute to the development of renewable energy), the Electricity and Cogeneration Regulatory Authority (ECRA) (the electricity regulator), Saudi Aramco (the state-owned petroleum extraction company) and the Saudi Electricity Company (SEC) (the state-controlled electricity distributor). The delivery of the NREP has been divided into a number of rounds of tendering. The first round involved the tendering of a long-term power purchase agreement by REDPO and the MEIM in 2017 for a 300 MW PV project in Sakaka and a 400MW wind power project in Dumat Al Jandal. The Sakaka project was awarded in the early part of 2018 and it is understood to target financial close before the end of 2018. The award process for the Dumat Al Jandal project is still underway. SEC is also continuing to develop two integrated solar combined cycle (ISCC) power plants (Waad Al Shamal with a capacity of 1,390 MW and Duba with a capacity of 1 605MW) combining CSP technology and gas turbines. In March 2018, it was announced that the SoftBank Vision Fund and the Saudi Public Investment Fund had signed a memorandum of understanding to create the world's largest PV project, with a capacity of 200GW. The projected cost is up to USD200 billion and the projected timeframe for completion is 2030. It is anticipated that tenders for two solar parks, which will form the first phase of the project, will be issued by early 2019. The project currently appears to sit outside the NREP managed by REPDO.



Contacts

Emil Holub
Partner, Real Estate
Prague
T: +420 222 55 5230
M: +420 602367661
E: emil.holub@cliffordchance.com

Stanislav Holec
Senior Lawyer, Corporate
Prague
T: +420 222 55 5251
M: +420 731471443
E: stanislav.holec@cliffordchance.com

SLOVAKIA

National Renewables Targets?	The renewable energy target for Slovakia is 14% by 2020.
Main Renewable Sources	Solar photovoltaic (PV), hydro, onshore wind, geothermal, biomass, biogas and biomethane (including gas emissions from metallurgical production as of 1 January 2014), hydrothermal, aerothermal.
Green Certificates?	No, although a "green bonus" is available (discussed below).
Feed-In Tariff (FIT) / Feed-In-Premium (FIP)?	A fixed FIT payable by electricity distribution system operators (DSO) is available to renewable electricity generators. Once a generator obtains the FIT applicable in the year of commissioning of its plant, it is entitled to receive such FIT for 15 years from the date the facility was put into operation. The amount of the FIT depends on the type of renewable energy source used. The FIT rates available to PV plants have been continually reduced. As from 1 July 2013, the support was limited to PV plants with an output of less than 30 kW, located on the roofs or facades of buildings. For the period between 1 January 2012 and 30 June 2012, the FIT rate was EUR 194.54/MWh for PV plants. The FIT rate was further decreased to EUR 119.11/MWh from 1 July 2012 until 31 December 2013. From 1 January 2014 to 31 December 2015, the FIT rate was decreased to EUR 98.94/MWh for PV plants with an output of less than 30 kW. In January 2015, the FIT rate was decreased to EUR 88.89/MWh, and this rate was also applicable for the 2016 calendar year. The latest reduction of the FIT rate for PV plants occurred in January 2017 where the FIT rate was decreased to EUR 84.98/MWh, and this rate is also applicable for the 2018 calendar year. While no special tax has been introduced yet, discussions were held in 2013 within the Slovak Ministry of Finance regarding the taxation of PV energy. However, none of these discussions resulted in a bill being submitted for legislative proceedings. The FIT available for plants commissioned before 1 February 2011 can only be reduced by a maximum of 10% in 2012 as compared to the FIT available to them in 2011. As of 1 February 2011, this rule no longer applies to new wind and PV plants, which means the FIT may be reduced for subsequent years without limitation. Renewable energy resources in Slovakia are experiencing a period of development. The Slovak parliament has passed a long-awaited amendment to the Renewable Energy Act 2009 which introduces a new system that should be more cost-effective and have minimal impact on end-price electricity prices. The amendment introduces limitations to subsidies available for plants which are newly connected to the network. The subsidy in the form of a FIT is limited to the new plants with an output up to and including 500kW, which generate electricity from hydropower, geothermal energy, biogas, landfill gas or sewage treatment plant gas and CHP plants with an output up to and including 1 MW that meet certain statutory criteria. According to the amendment, new plants with an output higher than 10 kW and up to 50 MW are able to receive subsidies in the form of a FIP if they succeed in a tender conducted by the Ministry of Economy. The FIP is guaranteed for 15 years from the date the facility is put into operation and its amount is calculated as the difference between the price proposed by the tenderer and the price of the electricity to be purchased by a selected purchaser. The amendment will enter into force on 1 January 2019.
Other Incentives	**Green bonus** Although the green bonus regime is not formally established under Slovak law, a generator of renewable electricity can opt for a "green bonus" (instead of, or along with, the FIT) if it consumes all or the majority of the electricity produced. The green bonus is slightly lower than the FIT. Priority to connect and supply: generators of electricity from renewable sources have a priority right to connect their facilities to the electricity distribution or transmission grid, and a priority right to distribute and supply electricity to the grid. In practice, this means that if a generator opts for the FIT only, it will be able to sell all of the electricity it generates to the DSO for the price set by the relevant FIT. Indexation: the FIT is indexed by a formula reflecting core inflation (i.e. a price level increase based on a trimmed consumer basket) as announced by the Slovak Statistics Office. Please note that use of the indexation is at the discretion of the Slovak Regulatory Office for Network Industries.
Additional Comments	The current FIT scheme has been particularly successful in relation to PV plants. The relatively high FIT, together with falling technology prices, caused a boom in the PV sector in 2010. As a result, the total installed capacity of PV plants in Slovakia increased from 31MW in 1 January 2010 to approximately 492MW in November 2011. This boom caused concerns about; (i) electricity prices for end customers; and (ii) the stability and safety of the entire electricity grid. As a result, the above-mentioned reduction of PV support was introduced. On the other hand, there are no comparable significant restrictions relating to other renewable energy sources. There is an ongoing investigation of Slovakia by the European Commission with regards to the possible violation of EU law. The investigation began following the annual evaluation of Slovakia and its inclusion in the EU "Pilot" system (the official EU scheme designed to resolve compliance problems without having to resort to infringement proceedings). The investigation relates to the following three areas: (i) the introduction of G-component (a fee which the energy producers must pay to the regional distribution system operators); (ii) the withdrawal of support to energy producers; and (iii) non-transparent regulation, in particular the prohibition of the connection of new generation sources into the distribution system.

Contacts

José Guardo
Partner, Banking & Finance
Madrid
T: +34 91 590 7595
M: +34 609266394
E: jose.guardo@cliffordchance.com

Jaime Almenar
Partner, Corporate Administrative Law
Madrid
T: +34 91 590 4148
M: +34 680602966
E: jaime.almenar@cliffordchance.com

Clara Alcaraz
Associate, Corporate Administrative Law
Madrid
T: +34 91 590 9498
M: +34 649123244
E: clara.alcaraz@cliffordchance.com

Octavio Canseco
Associate, Corporate Administrative Law
Madrid
T: +34 91 590 9416
M: +34 660046069
E: octavio.canseco@cliffordchance.com

SPAIN

National Renewables Targets?	The target for 2020 is 20%, according to the Renewable Energies Plan 2011-2020.
Main Renewable Sources	Onshore and offshore wind, solar photovoltaic (PV), hydroelectric, thermosolar, biomass.
Green Certificates?	No
Feed-In Tariff (FIT) / Feed-In Premium (FIP)?	The remuneration system for renewable energy installations has undergone extensive reform which started in 2013 and was completed in 2014. The remuneration system is applicable to all renewable energy generation facilities. It involves the payment of additional amounts on top of their operational revenue from the sale of power on the competitive wholesale markets to owners of renewable energy facilities. These payments are intended to cover the higher investment and/or operating costs of renewable energy producers compared with non-renewable energy producers, which are unlikely to be fully recovered on the competitive Spanish wholesale power market. This additional regulated remuneration is paid by the Spanish Power System through the CNMC (*Comisión Nacional de los Mercados y la Competencia*), the Spanish regulatory body for markets and antitrust matters. The basis for calculation of the payments is to provide relevant producers an operating revenue that is equal to their investment and operating costs (which are standardised for each type of installation) plus a reasonable rate of return. Standard parameters are set to enable calculation of the payment including the reasonable rate of return by the Government for successive 6-year "regulatory periods" (the current one expiring on 31 December 2019). Certain parameters (for example those related to the evolution of the market, such as the estimated electricity price) may be revised every three years (in so-called "semi-regulatory periods", the current one having been approved on 1 January 2017). On the basis of the above, the remuneration system operates differently for (i) installations that were already entitled to the privileged remuneration scheme prior to the entry into force of the reform (existing installations); and (ii) new installations accredited after the remuneration system entered into force on 14 July 2013. For existing installations, the reasonable rate of return in the first regulatory period was determined as equal to the average yield on Spanish government 10-year bonds on the secondary market in the 10 years preceding 14 July 2013 plus 300 basis points (i.e. 7.398%). New installations will only be entitled to receive remuneration via a tender process (each tender being for a maximum of MW capacity). The Government has confirmed that it will only call for tenders for the purposes of complying with EU law, or in order to reduce the cost of electricity or reduce the dependency on foreign electricity sources. The relevant parameters for remuneration are set by the Government at the time of each tender call.
Other Incentives	For non-mainland installations (i.e., those located in the Canary and Balearic Islands, Ceuta and Melilla), the remuneration can also include an incentive for investment and completion within a given period where the installation entails a significant reduction in costs of energy production.
Additional Comments	The new legislation on renewable energy installations, particularly the new remuneration scheme, has accomplished its main objective of removing the so-called "tariff deficit". The deficit first arose in the early 2000s due, among other factors, to political decisions to leave increasing the regulated revenues of the renewable energy electricity system (largely deriving from access tariffs paid by consumers and producers) so as to cover all the costs that regulations specify must be addressed by the system (including renewable subsidies, and remuneration for distribution and transmission activities). The renewable energy progress report by the Spanish Government to the European Commission in 2018 stated that the total renewable energy share for Spain in 2017 stood at 17.26%, having increased from 16.17% in 2016. According to the Renewables 2018 Global Status Report, issued by the Renewable Energy Policy Network for the 21st Century, current renewable capacity in Spain amounts to approximately 33.9 GW (without taking into consideration the capacity of hydropower installations).

Contacts

Mete Yegin
Partner, Banking & Finance
Istanbul
T: +90 212339 0 012
M: +90 5304123500
E: mete.yegin@cliffordchance.com

İrem Su Karasalih
Senior Associate,
Banking & Finance
Istanbul
T: +90 212339 0 008
M: +90 5304123508
E: irem.su@cliffordchance.com

Aslı Pabuççuoğlu
Associate, Banking & Finance
Istanbul
T: +90 212339 0 073
M: +90 5309672673
E: asli.pabuccuoglu@cliffordchance.com

TURKEY

National Renewables Targets?	The renewable energy target for Turkey is a minimum of 30% by 2023. Specific targets include the commissioning of installed capacity of 20,000MW wind, 34,000 MW hydro, and 1,000 MW geothermal by 2023.
Main Renewable Sources	Hydro, onshore wind, solar photovoltaic (PV), geothermal and biomass.
Green Certificates?	No. However, a "renewable energy resource certificate" can be issued by the regulatory authority upon request of the generation licence holder in order to identify and monitor the renewable source in terms of sale and purchase of electricity energy in domestic and international markets and emissions trading, and to benefit from the renewable energy support mechanism (as explained below). A generation licence based on a renewable energy resource can also be used as the renewable energy resource certificate. Renewable energy resource certificates can help generators seeking to benefit from various incentives to prove the source of the electricity. A legal framework which would provide for tradable Green Certificates is expected to be enacted; however, no firm timetable for implementation has been published.
Feed-In Tariff (FIT)/ Feed-In Premium (FIP)?	Electricity suppliers are required to purchase a certain amount of electricity from renewable energy generators who have signed up to the renewable energy support mechanism (RES Mechanism) to receive FITs. Following amendments to the legislation in May 2016, generators are now allowed to sell electricity freely in the market through bilateral arrangements whilst still benefitting from the FITs. The current FIT system guarantees that generators participating in the RES Mechanism will receive the relevant amounts set administratively under the applicable legislation for their power output (as set out below). If the reference price (the price calculated by multiplying the market set-off price determined in the day-ahead market with the figure as set by the Energy Market Regulatory Authority varying from 0.98 to 1 depending on the source of energy) is lower than the guaranteed amount under the FITs, the generator receives a top-up payment from the market operator equal to the difference between the guaranteed amount and the reference price. However, if the reference price is higher than the guaranteed amount then the generator pays the surplus to the market operator. To be eligible to benefit from the RES Mechanism in a given year, generators must: (i) hold a renewable energy resource certificate; (ii) have commenced/will commence their operations within the period from 18 May 2005 to 31 December 2020; and (iii) apply to the regulatory authority by the end of October of the year preceding their participation in the RES Mechanism. Generators can only benefit from the purchase guarantee under the RES Mechanism and the FITs for ten years from the relevant facility's commercial operation date. There is also a domestic equipment incentive which allows generators to benefit from higher FITs for five years following a facility's commercial operation date. These FITs payable are as follows: • Hydro: US$ 0.073/kWh (commercial incentive), with a maximum additional incentive of US$ 0.023/kWh for domestic equipment; • Wind: US$ 0.073/kWh (commercial incentive), with a maximum additional incentive of US$ 0.037/kWh for domestic equipment; • Geothermal: US$ 0.105/kWh (commercial incentive), with a maximum additional incentive of US$ 0.027/kWh for domestic equipment; • Biomass: US$ 0.133/kWh (commercial incentive), with a maximum additional incentive of US$ 0.056/kWh for domestic equipment; and • Solar energy (PV): US$ 0.133/kWh (commercial incentive), with a maximum additional incentive of US$ 0.067/kWh for domestic equipment and solar energy (condensed): US$ 0.133/kWh (commercial incentive), with a maximum additional incentive of US$ 0.092/kWh for domestic equipment.
Other Incentives	Other incentives include: (i) priority in connecting to the national grid, and discounts in applicable licence application fees and exemption from annual licence fees for eight years following the commencement of commercial operations; (ii) facilitation in use of state-owned lands (including in protected regions such as national parks) and discounts or exemptions from payment of applicable charges; (iii) incentives that may be granted by the President for investments in renewable generation facilities, procurement of domestically-manufactured electro-mechanical systems to be used in renewable generation facilities, research and development and manufacturing investments on solar batteries and concentrated collectors, and investments in research and development facilities for generation of electricity or fuel by utilising biomass resources; and (iv) generation of electricity for self-consumption without a generation licence by, among others, renewable energy generation facilities with an installed capacity of up to 1MW (which can be increased by the President) and ability to sell the excess electricity to authorised supply companies via the FITs.
Additional Comments	By the end of 2017, the number of participants to the RES Mechanism reached 647 (an increase of 10% compared to 2016), with an installed capacity of 17,399.97 MW. Hydro remains the leading renewable resource, although wind, geothermal and solar have increased their market share, with solar being more active on the unlicensed generation side. However, such activity may be curbed to a degree due to the restrictions on unlicensed generation introduced in March 2016 to ensure that it is used mainly for self-consumption and not to circumvent the license requirement. Limited grid capacity is another important barrier to increasing wind and solar capacity, and network expansions are necessary to integrate more wind and solar resources into the market. The investment model of Renewable Energy Resource Areas (RERA) is expected to promote an increase in renewable energy investments. RERAs refer to large scaled lands determined by scientific and technical studies as having a significant potential to contribute to regional or countrywide demand through the operation of power plants with high installed power capacity. There are certain advantages offered by RERAs which include an accelerated expropriation process for privately owned lands within RERAs. Turkey is preparing to launch the tender for its first off-shore wind power plant, with 1,200 MW installed capacity, subject to the RERA system. Additionally, in an effort to enhance renewable energy generation investments, Turkey has introduced an exemption to the restriction on Turkish residents from using foreign exchange loans for the loans to be utilised for financing renewable energy investments benefitting from FITs. Although Turkey signed the Paris Agreement and confirmed that it is aiming to reduce gas emissions by 21% by 2030, the Turkish parliament has not yet ratified the Paris Agreement and accordingly, no local legislation has been enacted to implement the requirements of the Paris Agreement yet. This step may not be straightforward for Turkey since some of these requirements conflict with the existing energy policies adopted by the Turkish government, such as increasing electricity generation from local coal sources.

Contacts

Robin Abraham
Managing Partner, Banking & Finance
Dubai
T: +971 4503 2609
M: +971 505598306
E: robin.abraham@cliffordchance.com

Mohamed Hamra-Krouha
Partner, Banking & Finance
Abu Dhabi
T: +971 2 613 2370
E: mohamed.hamra-krouha@cliffordchance.com

Richard Parris
Partner, Banking & Finance
Abu Dhabi
T: +971 2 613 2374
M: +971 505596084
E: richard.parris@cliffordchance.com

Inaamul Laher
Head of Construction, MENA, Banking & Finance
Abu Dhabi
T: +971 2 613 2433
M: +971 566762447
E: inaamul.laher@cliffordchance.com

Caireen Mccluskey
Associate, Banking & Finance
Abu Dhabi
T: +971 2 613 2326
M: +971 566804746
E: caireen.mccluskey@cliffordchance.com

UNITED ARAB EMIRATES

National Renewables Targets?	The renewable energy targets for the UAE are 30% by 2030 and 44% by 2050. The Dubai Clean Energy Strategy 2050 also targets achieving 7% of Dubai's total power output to originate from clean energy by 2020, 25% by 2030 and 75% by 2050.
Main Renewable Sources	Solar photovoltaic (PV) and concentrated solar power (CSP) are the dominant sources of renewable energy in the UAE, while onshore wind, sustainable urban development and waste-to-energy also feature. Geothermal sources (which are not actively used as a source of energy) are currently being assessed as part of feasibility studies, particularly in respect of water desalination plants. Plans to pilot multiple 1MW battery PV plants were also announced in Dubai in June 2018.
Green Certificates?	No.
Feed-In Tariff (FIT)/ Feed-In-Premium (FIP)?	No. For utility-scale projects, the implementation of a fixed FIT will require amendment of existing UAE energy legislation. As far as solar PV is concerned, the utility of a FIT is highly questionable given the recent success of competitive bidding in the sector.
Other Incentives	Generally, in the UAE, no plans have yet been made for subsidy and incentive schemes. In Abu Dhabi, however, a one-time subsidy can be granted on a discretionary basis by the Abu Dhabi Government for individual renewable energy projects in the Emirate. The Abu Dhabi Ministry of Finance compensated the Abu Dhabi Water and Electricity Company for the difference between the average domestic power generation cost and the generation cost for the Shams 1 project (see below). This may be suitable for certain technologies (such as onshore wind or solar CSP) but it is not currently needed for solar PV (which is the dominant renewable source) as this source has achieved generation cost-parity with natural gas. The use of subsidies is also constrained by domestic legislation that requires grid operators to purchase power for the lowest price available from generators. This means that it is not feasible in the UAE to adopt the European model of funding renewables subsidies by passing on the cost to end consumers.
Additional Comments	The UAE Government has taken a number of steps in recent years to diversify the economy and actively encourage investment in renewable energy. Despite the absence of formal subsidies, factors such as improvements in technology, a reduction in generation costs (particularly the drop in PV module and inverter prices), the removal of fossil fuel subsidies for power generation, a political commitment to diversify the energy mix and reduce emissions/landfill waste and a highly competitive IPP-bidding environment, have significantly improved the business case for renewable projects in the UAE. In the past five years, the UAE has seen three of the four world record figures for low levelized cost of energy (LCOE) for solar PV projects and has also achieved the lowest LCOE for CSP projects. The landmark operational or projects under development in the UAE are as follows: • Shams 1: 100MW CSP plant in Abu Dhabi co-developed by Masdar, Total and Abengoa. This was the UAE's first large-scale solar power project and the largest CSP plant in the world at the time of its inauguration in 2013. • Sweihan Solar PV IPP: 1177MW solar PV plant under development by the Marubeni and Jinko Solar consortium in Abu Dhabi. Prior to the Sakaka IPP in Saudi Arabia being awarded to ACWA Power, Noor Abu Dhabi achieved a world record LCOE of 2.42 US$ cents per kWh. When completed, it will be the world's largest independent solar power plant. • Mohamed bin Rashid Al Maktoum Solar Park: 1000MW solar park in Dubai. The 13MW Phase 1 of the project was completed in 2013, and Phase II (200MW) became operational in 2017. The 800MW third phase is currently under development by the Masdar and EDF Energies Nouvelles consortium. Phase II achieved a world record LCOE of 5.84 US$ cents per kWh, and Phase III achieved a world record LCOE of 2.99 US$ cents per kWh. • DEWA CSP: 700MW CSP project in Dubai, setting a number of records. As well as being the largest single site CSP project in the world, the project was awarded at a record CSP LCOE of US$7.3 and will feature the world's tallest solar tower, measuring 260 metres. The project is under development by the ACWA Power and Shanghai Electric consortium. • Sir Bani Yas: this 30MW onshore wind farm, valued at US$80 million, is a joint initiative between Masdar and the Tourism Development and Investment Company. • Solar Rooftop Programmes (SRP): In Abu Dhabi, Masdar and ADDC will initiate the set-up of a SRP, which aims to encourage residents and owners of commercial buildings and government buildings (collectively "Investors") to install PV panels on their roofs to generate green electricity. The SRP is a government-sponsored financial incentive programme designed to make the use of solar PV on rooftops more affordable to consumers. The SRP is based on a financial incentive scheme consisting of: (i) a rebate payment of approximately 35-40% payable to Investors at the time of installation; and (ii) a premium FIT paid per kWh produced and fed into the grid over 20 years (approximately US$0.25-0.28 per kWh). Likewise, in Dubai, DEWA has established a similar rooftop adoption programme known as Shams Dubai which operates on a net metering basis, allowing commercial and residential users to offset energy taken from the grid with energy produced by rooftop PV panels. • Sharjah Waste-to-Energy Plant: this US$505 million waste-to-energy plant to be constructed in the Emirate of Sharjah is forecast to achieve 100% diversion from the landfill and convert 400,000 tonnes of waste per year into 80MW of electricity, contributing to the UAE Government's Vision 2021 which aims to divert 75% of all waste generated from landfills. It is also worth noting the trend towards outbound investment in solar and wind projects, demonstrating the maturity of the renewable sector in the UAE. Masdar, the UAE's flagship renewable energy company (and a wholly owned Mubadala subsidiary), has a number of interests in Jordan, Mauritania, Egypt, Morocco, the UK, Serbia and Spain, including the London Array and Dudgeon offshore wind farms.

Contacts

Nigel Howorth
Partner, Real Estate
London
T: +44 20 7006 4076
M: +44 7900 167424
E: nigel.howorth@cliffordchance.com

James Shepherd
Senior Associate, Real Estate
London
T: +44 20 7006 4582
M: +44 7904 872984
E: james.shepherd@cliffordchance.com

James Pay
Partner, Banking & Finance
London
T: +44 20 7006 2625
M: +44 7904 803419
E: james.pay@cliffordchance.com

Kirsty Souter
Senior Associate, Real Estate
London
T: +44 20 7006 4178
M: +44 7773 066419
E: kirsty.souter@cliffordchance.com

UNITED KINGDOM

National Renewables Targets?	The renewable energy target for the UK is 15% by 2020.
Main Renewable Sources	Bioenergy (biomass and landfill gas), wind (both onshore and offshore), solar photovoltaic (PV) and hydro.
Green Certificates?	Yes. The Renewables Obligation (RO) was introduced in 2002, and provides support for most renewable technologies, although it is closed to new accreditations, subject to certain grace periods. The RO requires electricity suppliers to source a certain proportion of the electricity they supply from renewable sources. Electricity suppliers meet this obligation by purchasing Renewables Obligation Certificates (ROCs) from generators of qualifying renewable electricity and presenting them to the regulator (Ofgem) or by paying money into a "buyout" fund (or a combination of these). The buyout price is £47.22 per ROC for the period 1 April 2018 to 31 March 2019. Money paid into the buyout fund is distributed on a pro-rata basis to electricity suppliers that have presented ROCs to Ofgem. For the period from 1 April 2018 to 31 March 2019, electricity suppliers in England, Wales and Scotland must present to Ofgem 0.468 (0.185 for Northern Ireland) ROCs per MWh of electricity supplied (or make equivalent payments to the buyout fund). ROCs are awarded by Ofgem to accredited projects on a banded basis for a period of 20 years subject to a hard stop in 2037. For the final qualification period from 1 April 2016 to 31 March 2017, the bands ranged from 0.2 ROCs/MWh for closed landfill gas to 1.8 ROCs/MWh for offshore wind.
Feed-In Tariff (FIT)/ Feed-In Premium (FIP)?	Yes. There are two types of FIT, one for small scale renewable electricity generation (5MW and below) known as the "FIT scheme" and one for large scale renewable electricity generation (over 5MW) known as the Contracts for Difference (CfD) scheme. Both of these schemes are open to most forms of renewable technology. The CfD scheme works as follows: a renewable generator will typically enter into a contract with an electricity supplier for the sale of the electricity generated (known as a power purchase agreement (PPA)), and will be paid for that electricity according to the commercial deal that it negotiates. In addition to this revenue, the CfD, which takes the form of a bilateral contract between the generator and a Government-owned counterparty, allows the generator to receive additional payments for a period of 15 years. If the CfD "market reference price" for energy is lower than the "strike price", the generator receives a top-up payment under the CfD equal to the difference between the strike price and the market reference price. If the market reference price is higher than the strike price then the generator pays the difference to the CfD counterparty. The strike price is intended to reflect the higher costs of investing in renewable technologies. CfDs for most established technologies (e.g offshore wind) are allocated to generators in auction rounds run by the Government which determine the applicable strike prices for each technology; the next auction is expected to take place in spring 2019. Strike prices at auction are generally reducing. By way of example, the second round CfD auction which concluded in September 2017 resulted in a strike price of £74.75/MWh for an offshore wind project (for project delivery in 2021/2022) and £57.50/MWh for an offshore wind project (for project delivery in 2022/2023). Other strike prices for less established technologies (e.g. large tidal) are negotiated directly with the Government. The FIT scheme works as follows: accredited generators that have entered into "FIT terms" with an electricity supplier are paid a set tariff for the electricity generated (the "generation tariff") and a set tariff for electricity exported to the grid (the "export tariff"). The generation tariff and the export tariff are paid for a period of 20 years. The tariffs for new projects decrease over time in accordance with the Government's policy of "degression". The export tariff is currently £0.0524/kWh, while the generation tariff depends on the size of the generating station and the technology. Examples of the generation tariffs from 1 January 2019 to 31 March 2019 are as follows: depending on total installed capacity, the tariff for solar photovoltaic (PV) ranges from £0.07/kWh to £4.03/kWh and the tariff for wind ranges from £0.64/kWh to £8.24/kWh.
Other Incentives	A carbon price floor was introduced on 1 April 2013. It is designed to complement the European Union Emissions Trading System by preventing the price of carbon in the UK falling below target levels. It is achieved through the Climate Change Levy and the fuel duty regime. In November 2011, the Renewable Heat Incentive ("RHI") was launched. Initially, it only related to non-domestic buildings but has since been extended to domestic buildings. It is similar to the FIT scheme in that it involves payments for the use of renewable technologies, although the payments are made by Ofgem rather than an electricity supplier.
Additional Comments	For the most part, once a project is eligible for any of these incentive schemes, that project receives the same level of support for the relevant period (i.e it is "grandfathered"). However, there has been a gradual decrease in the level of support to new projects over the last few years. The RO has been phased out for new capacity in favour of the CfD scheme. It has been closed to new accreditations on 1 April 2017 subject to grace periods and particular rules for certain technologies. To ensure that there is ongoing demand for ROCs between the closure of the RO to new capacity in 2017 and the end of the scheme in 2037, the Government intends that, from 2027, ROCs will be replaced with fixed price certificates (to be purchased by a Government purchasing body rather than electricity suppliers), with certain projects being eligible for grace periods. These factors, together with doubt as to the timing of CfD auction rounds and the availability of funding for those auctions, have created uncertainty for investors. In 2017, renewable energy represented only 10.2% of the UK's total energy mix (far below the target of 15% by 2020). The UK's vote to leave the EU means that there is some uncertainty about future climate change and renewables policy. So far, the UK has continued reconfirm its strict carbon reduction targets and policy support for renewable energy, including in its October 2017 Clean Growth Strategy. However, this strategy suggests that future policy support is likely to be more focused on offshore wind than on newer technologies. Also, the Government would like to see more new solar generation come forward without public subsidy. Depending on the model of "Brexit" the UK adopts, the UK may have more flexibility to alter its targets or implementing policies and this may have a significant impact on renewable incentives in the future.

CONTACTS

David Evans
Senior Counsel, Banking & Finance
Washington
T: +1 202 912 5062
M: +1 202 256 7625
E: david.evans@cliffordchance.com

Lori Ann Bean
Partner, Banking & Finance
Washington
T: +1 202 912 5014
M: +1 202 352 7685
E: lori.bean@cliffordchance.com

Peter Hughes
Associate, Banking & Finance
Washington
T: +1 202 912 5135
E: peterc.hughes@cliffordchance.com

Eli Keene
Associate, Banking & Finance
Washington
T: +1 202 912 5972
E: eli.keene@cliffordchance.com

UNITED STATES

National Renewables Targets?	Nationally, the US has no uniform, specific renewables targets. In May 2018, the Trump Administration revoked a 2015 executive order which had set a 30% target for the amount of renewable energy consumed by the federal government by 2025. On a state level, 29 states, the District of Columbia and the territories of Puerto Rico, USVI and CNMI maintain their own renewable portfolio standards (RPS). RPS are generally imposed on utilities and other electricity providers and require them to source a minimum percentage of electricity from renewable resources. Some state RPS include carve-outs requiring a percentage of new generation to come from a specific renewable source (e.g. offshore wind) or multiply the amount credited for preferred types of generation. In addition, seven states and Guam maintain voluntary renewable energy goals. State level renewable energy targets, including target percentages and dates, compliance mechanisms and other terms of the RPS structure, vary from state to state pursuant to each state's RPS programme. Current state-level targets include: • New York: 50% by 2030. • Vermont: 55% by 2017, and 75% by 2032. • Hawaii: 100% by 2045. In September 2018, California adopted amendments to the state's RPS program, raising the state's target to 60% by 2030. Additionally, the amendments provide that all retail electricity sales in the state will be from zero-carbon generation by 2045. Zero-carbon generation includes not only renewables, but also nuclear and carbon capture and sequestration.
Main Renewable Sources	Hydro, wind (onshore), biomass, solar photovoltaic (PV) and geothermal.
Green Certificates?	RPS programmes are generally implemented through a trading scheme of certificates or credits (referred to as renewable energy certificates, renewable energy credits, green certificates, green tags or tradable renewable certificates; together RECs) depending on the environmental attributes of the electricity generated by eligible renewable energy resources. Renewable energy generators may sell their RECs, and the entities subject to RPS mandates may purchase such RECs to meet their RPS requirements. Non-compliance may result in penalty payments or alternative compliance payments (amounts vary from state to state and depend on the type of resource) into the relevant state fund.
Feed-In Tariff (FIT)/ Feed-In Premium (FIP)?	The ability to introduce FITs originated in the US in 1978 with the implementation of the federal Public Utilities Regulatory Policies Act (PURPA). However, the US currently has no national FIT programme. Instead, several states and regional utilities have created mandatory and voluntary FIT programmes that vary substantially. In 2017 a federal district court held that California's Renewable Market Adjusting Tariff (ReMAT) programme — the largest FIT programme in the US — was pre-empted by PURPA (federal law prevails over state law when the laws conflict), due primarily to the program's 750MW overall cap on generation eligible for purchase through the programme. Following the decision, California may not enter into new ReMAT contracts unless the programme is reworked to become PURPA-compliant. Smaller FIT programmes remain active in several states, including Maine, Rhode Island and Vermont.
Other Incentives	The federal tax code provides a 30% solar investment tax credit (ITC) for utilities and commercial and residential investments. The ITC is in place until the end of 2019, after which it will begin to drop until it reaches 10% in 2022. Newly built wind turbines can claim a production tax credit (PTC), which was USD 0.019/kWh for projects that began construction in 2017. The PTC drops each year and will expire in 2020. A 30% geothermal investment tax credit was eliminated by the 2017 tax reform bill, before being reinstated in the February 2018 budget deal, at a rate which diminishes annually until 2021. While the ITC and PTC remain in place after the passage of the 2017 federal tax reform bill, a new federal base erosion anti-abuse tax (BEAT) adds uncertainty for multinational tax equity investors looking to invest in renewables projects. Under the new BEAT provisions, investors that reduce overall tax liability through tax credits may face a minimum tax applied based on a complex end-of-year calculation that ignores the application of those tax credits. An exemption was introduced in the final law allowing 80% of the value of PTC and ITC credits to be used to offset BEAT. The 80% exemption expires in 2025. Many states also have renewable energy incentive programs for individual homeowners, primarily for solar, including tax credits, rebates, net metering and property assessed clean energy (PACE) financing. Several states, however, have cut solar subsidies and net metering programmes in recent years, including Hawaii, Arizona, Connecticut, New York and Nevada (though Nevada largely revived its net metering policy in 2017 after cutting the policy in 2015).
Additional Comments	In March 2017, President Donald Trump issued an executive order directing federal agencies to suspend, revise or rescind regulations that "unduly burden the development of domestic energy resources". The administration has focused on the expanded development and economic resilience of coal and petroleum-derived energy. These actions have included the approval of the Keystone XL oil pipeline, the opening of nearly all federal waters to oil and gas drilling and reopening of federal lands to coal leasing. In January 2018, the administration approved a four-year safeguard tariff, with an initial rate of 30%, on imported solar cells and modules, a move that is projected to raise short-term costs for the domestic solar industry. Following the Supreme Court's decision in *Massachusetts v. Environmental Protection Agency (EPA)* (2007) and the EPA's subsequent greenhouse gas endangerment finding, the EPA is legally required to regulate the emission of greenhouse gases, although it is permitted a great deal of flexibility in how it does so. In August 2015, the EPA announced the implementation of the federal Clean Power Plan (CPP) designed to reduce CO2 emissions from power plants nationwide by 32% from 2005 levels by 2030. After several states and interest groups challenged the validity of the CPP, the Supreme Court stayed its implementation in 2016. In August 2018, the new administration published a proposed rule to replace the CPP which, among other things, eliminates the "beyond the fenceline" aspects of the CPP, which encouraged replacing existing coal-fired power plants with renewable sources. At the state level, interest in offshore wind has grown dramatically. Currently, the only operating offshore wind project in the US is the 30 MW Block Island farm off Rhode Island. In 2017, Massachusetts held an offshore wind RFP, selecting the 800 MW Vineyard Wind project. New York and New Jersey have also established goals of procuring, respectively, 2,400 MW and 3,500 MW of offshore wind generation by 2030. Renewables remain a sector of rapid growth. Of the 25 GW of capacity added in 2017, 49% came from renewable sources.

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