Bird & Bird

Corporate PPAs – *An international perspective*

2022

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Introduction

Large corporations are continuing to set the agenda for the growth of renewable energy across the globe. In 2021, more than 130 corporations in 32 different countries purchased 31.1GW of clean power directly from generators under a Corporate Renewable Power Purchase Agreement (Corporate PPA), up nearly 24% from the previous year.[1] As we see new structures such as the 24/7 model arising, the appetite for Corporate PPAs is to further grow as corporations look to take advantage of a range of sustainability, economic and reputational benefits.

Bird & Bird's lawyers advised on some of the earliest Corporate PPAs (in 2007 in the Netherlands and in 2009 in the UK). We have become an experienced advisor on these structures globally.

This paper looks at the main drivers behind the growth of Corporate PPAs and addresses several innovative structures and comments on the market for them in key jurisdictions across Western and Eastern Europe, the Nordics, Asia-Pacific and the USA.

[1] BloombergNEF (2022, January 31). Corporate Clean Energy Buying Tops 30GW Mark in Record Year. https://about.bnef.com/blog/corporate-clean-energy-buying-tops-30gw-mark-in-record-year/

The Global Corporate PPA Market

What is a Corporate PPA?

A Corporate PPA allows corporate energy consumers to purchase power on a long-term basis directly from renewable energy generators without being co-located. This is an alternative to the traditional model where a utility purchases power from lots of energy generators, transports it on the electricity grid and then on-supplies power to the corporates. Corporate PPAs are long term agreements (typically between 10-20 years) and provide price certainty for both the corporate and the generator by using fixed or floor pricing structures. Please see pages 11-12 of this paper for further information on structures. For the purposes of this paper we have excluded discussion about on-site PPAs.

The Global Market

As stated in our introduction, we saw continued, major growth in the Corporate PPA market in 2021. Although appetite for PPAs in the US slowed in 2020 as a result of the COVID-19 pandemic, the American market appears to have bounced back, with the US counting for 65% of the 31.1GW purchased in 2021.[2] Europe saw a record 8.7GW of Corporate PPA deals in 2021.[3] The ongoing energy crisis; rising natural gas prices; a rise in global energy demands as lockdowns eased; and the uncertainty of supply of gas from Russia due to the invasion of Ukraine, have all contributed to increased long-term interest in the stability of long-term Corporate PPAs. Whilst the macro trends mean that the longer-term outlook for Corporate PPAs looks strong, we suspect that the current extreme volatility in year-ahead pricing may mean that we see a short term decline in deal activity until this volatility settles down.

Activity remains particularly strong in the Nordics, where companies are attracted to plentiful wind resources and the Nordpool power market, facilitating the cross-border sale of power between Sweden and Norway. Sweden remains a strong market, in particular, for wind PPAs, as a result of its plentiful natural resources and large expanses of open land. Markets in Spain, Italy, Poland and Germany are picking up. Spain, in particular, presents a strong Corporate PPA offering, with price per MWh for solar the cheapest across Europe (€37/MWh).[4]

Elsewhere, Australia is an exciting market particularly for synthetic and behind the meter PPAs, driven by relatively expensive wholesale power prices and strong renewable resources.

Global corporates continue to be increasingly conscious about managing their energy needs and acting sustainably by procuring electricity directly from renewable sources remains a strategic priority for many. Major players in

[2] Ibid.
[3] Ibid.
[4] BloombergNEF (2022, April 28). Wind and Solar Corporate PPA Prices Rise Up To 16.7% Across Europe. https://about.bnef.com/blog/wind-and-solar-corporate-ppa-prices-rise-up-to-16-7-across-europe/

the global Corporate PPA market remain tech companies and data centre owners such as Google, Apple, Amazon and Microsoft. In 2021, Amazon was the biggest buyer globally, announcing 44 offsite PPAs in 9 countries, totalling 6.2GW and bringing its total clean energy PPA capacity to 13.9GW.[5] Companies from the heavy industries also continue to drive corporate demand, including oil & gas companies (e.g. Occidental Petroleum, Chevron and Energy Transition Partners) and chemical companies (e.g. Covestro and Borealis).

Over 370 companies are now members of RE100, a group of companies who have pledged to work towards meeting 100% of their energy requirements from renewable sources, and the numbers are continuously increasing. Their membership base is also diversifying with 62% of new members coming from the Asia- Pacific region.

Newest Models

New structures such as the proxy generation PPAs and volume firming agreements are being explored (see further information on page 15).

Also, new club structures are enabling smaller corporates to benefit from Corporate PPAs, and this is a concept that continues to be developed further (see further information on page 14). Blockchain PPAs offers transformational technology that could hugely help aggregate corporate demand and match it with renewable energy generation in an automated way (see further on page 16). The '24/7 model', being led by Google, is using new technology and operating models to use sustainable energy on a truly 24/7 basis (see further on page 16).

EU Regulatory Update

Further cause for optimism can be seen through the series of legislative instruments adopted / proposed by the EU. In December 2018, the EU adopted the recast Renewable Energy Directive (RED II). RED II included ambitious drivers for the uptake of Corporate PPAs in Europe including a binding EU-wide 32% renewables target for 2030 and an enabling framework for the uptake of Corporate PPAs. In July 2021, the EU Commission's 'Fit for 55' package was published, which contained a number of proposed amendments to RED II (i.e. RED III) to enable the EU to deliver a 55% reduction in GHG by 2030, including bumping up the 2030 renewables target to 40% and additional measures to facilitate Corporate PPAs. These proposals included more comprehensive reporting requirements, taking steps to remove regulatory barriers to PPAs and reducing the financial risks of PPAs by encouraging Member States to offer credit guarantees. Then, in May 2022, in reaction to the invasion of Ukraine, the European Commission presented the REPowerEU Plan. The main objective was to set out a roadmap for phasing out EU dependence on Russian fossil fuels and, once again, proposed raising the renewables target, this time to 45%.

The deadline for transposition of RED II was 30 June 2021, so all Member States have now successfully transposed the directive. RED II requires Member States to assess the regulatory and administrative barriers to Corporate PPAs and to remove unjustified barriers to, and facilitate the uptake of, Corporate PPAs. This will be monitored through the integrated national energy and climate plans which Member States must submit pursuant to the directive. In addition to this, RED II:

[5] BloombergNEF, op. cit., p.3

1. requires Member States to recognise Guarantees of Origin (GOs) issued by other Member States in accordance with RED II; and
2. clarifies that Member States may allow the issue and transfer of GOs directly to corporate offtakers pursuant to a Corporate PPA from renewable generators that already receive financial support from a support scheme (e.g. feed in tariffs).

The latter point is important as it reverses a previous proposal by the European Commission that would have required Member States to ensure that GOs from renewable generators that already receive financial support from a support scheme are placed into a central auction, as opposed to allowing them to be transferred directly to offtakers under a Corporate PPA. This would have had a negative effect on Corporate PPAs given that one of the key drivers to a corporate entering into a Corporate PPA is being able to demonstrate through GOs that it has procured power from renewable sources. However, Member States can (still) opt not to allow the issue of GOs in this way for renewable generators that already receive financial support from a support scheme.

While certain aspects depend on how each Member State transposed the requirements of RED II into national law, the creation of an enabling framework to facilitate the transfer of GOs across borders and to encourage the conclusion of Corporate PPAs can only help to drive growth in this exciting market. Adoption of Fit for 55 is expected to take place by the end of 2022, and discussions are ongoing in respect of the REPowerEU Plan. Both initiatives will drive renewables projects and, consequently, potential interest in Corporate PPAs.

Regulatory Issues - Financial Services

With synthetic Corporate PPAs, in parallel to the conventional contracts between the parties, the Generator and the Corporate will enter into a contract for difference or other financial derivative contract where they agree a fixed strike price for the renewable electricity provided by the Generator (Virtual PPA or VPPA). The Generator and the Corporate settle the difference between the fixed strike price and the variable market price at which the Generator sells the renewable electricity it produces to the utility supplier. This serves as a financial hedge to the electricity price at which the Corporate purchases under its standard electricity supply contract with the utility.

The Generator and the Corporate will each need to consider whether they are carrying out a regulated activity under financial services laws because a VPPA (as a contract for difference) may constitute a regulated financial instrument. In addition to authorisation requirements, the Generator and the Corporate will also need to consider reporting requirements under MiFID II and obligations under European Market Infrastructure Regulation (EMIR) which may include reporting, margin, risk mitigation and recordkeeping obligations. Legal advice needs to be sought to consider whether any of these requirements apply to the Generator or Corporate when entering into the VPPA.

By 2030, 100% of the power used in Borealis' Polyolefins and Hydrocarbons operations shall be of renewable origin, derived from wind, solar and other renewable power assets. PPAs play a major role in reaching this target, and consequent reduction of Scope 2 emissions. The advice of Bird & Bird's international renewables team on the negotiations of various PPAs across Europe supports Borealis to reach its ambitious renewable power targets."

Ouafik El Kasmioui

BOREALIS
Keep Discovering

Opportunities and threats

Corporate Consumer

Opportunities

- Fix/floor/cap power price - hedge against rising or fluctuating energy prices in the wholesale markets.
- Achieve sustainability targets and objective to buy 100% of power demand from renewable sources. This has become as important, if not more important, than economic drivers.
- Smaller corporates can club together to share risk and enhance bargaining power.
- Blockchain PPAs as an easier way to aggregate demand with other corporates and enter the market.
- New technology emerging to enable 24/7 purchase of renewable power (e.g. Google).

Threats

- Board appetite for the deal – economic benefits only stack up if the board trusts the power price forecasts. Board often unwilling to pay more in short-term for lower prices in long term. This is a particular risk this year given current extremely high year-ahead pricing.
- Complexity/costs in negotiating the contracts. Power purchase is not core business. Hurdle for small and medium sized enterprises.
- A utility will still be required to provide power when the generating station is not generating (renewable power is intermittent). Allocation of volume and shaping risk is a key issue – it can affect the level of price certainty that is achieved and means the corporate is buying power at a profile/volume that doesn't match its demand.
- If a project finance lender has financed a project it may require further security from the corporate: e.g. direct agreement or parent company guarantees.
- Change in law risks affecting the commercial balance of the deal and triggering re-negotiation.

Generators

Opportunities

- Generator can achieve a stable price over the long- term as the corporate often has more appetite to hedge against rising/fluctuating power prices. This is particularly attractive for projects financed by investment funds and project finance.
- The corporate is sometimes willing to pay higher than wholesale prices in the short term (on the expectation that this will pay off in the long-term when prices rise and corporate still has the benefit of the fix).
- The phasing out of renewable subsidies means that Corporate PPAs offer a new route to market for generators.
- Blockchain PPAs as an easier route to match generation with corporate demand and to access higher tariffs.

Threats

- Price – the price the corporate is willing to pay / set the floor at may not be sufficient to bank the project.
- Creditworthiness/bankability of offtaker – a bigger issue for unsubsidised projects as the Corporate PPA will represent almost 100% of total project revenues.
- Power offtake not core business for the corporate: if wholesale power prices decline will the corporate default in order to buy their way out of a bad bargain?
- Inconsistencies between regulatory regimes in different member states making it difficult to achieve scale across jurisdictions with one offtaker.
- The deal will need to be bankable. More complex to get a Corporate PPA approved by banks/investors?
- Optimisation structures and energy storage

The global availability of green power at competitive prices is a key success factor in Covestro's sustainability journey and a prerequisite for becoming fully circular. Covestro pursues the long-term goal of operating all production facilities with 100% renewable energies. To this end, we are building a comprehensive portfolio of corporate power purchase agreements (PPA) in countries where this contract model is available. Creating a direct link between an asset and us as an offtaker through the long-term commitment of a PPA not only supports the construction of new renewable energy capacities through long-term financing, but also allows us the effective steering of our emission balance and provides us with a widely accepted tool to achieve our net zero objective.

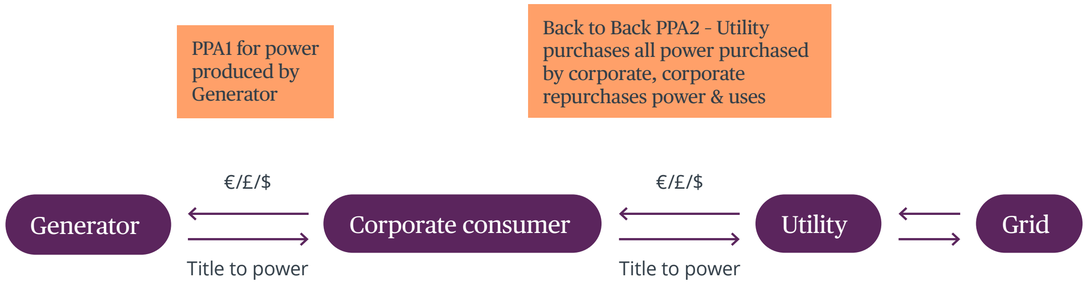
Sylvia Baumheier
VP Site Infrastructure NRW

covestro

Corporate PPA contract structures

The two leading models for Corporate PPAs are (a) the “Sleeved” Corporate PPA; and (b) the “Synthetic” Corporate PPA. The Sleeved Corporate PPA is the contract structure that has mainly been adopted in Europe, whereas the Synthetic Corporate PPA has been the preferred contract structure in the USA. We are now seeing more appetite for the Synthetic Corporate PPA structure in Europe, primarily because it is seen as a simpler contract to execute.

A) “Sleeved” Corporate PPA



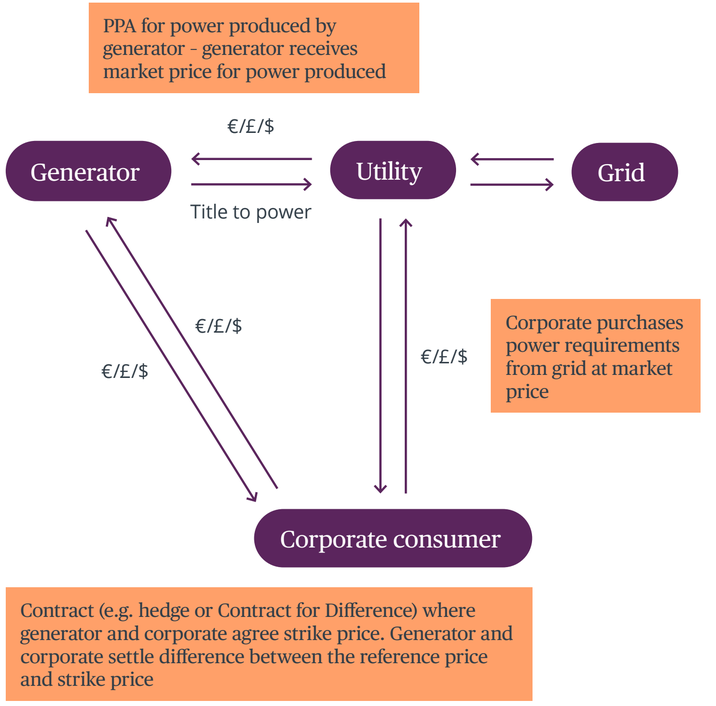
Key features

Generator sells power directly to the corporate and the utility then sleeves the power through the grid and supplies it to the corporate’s site (together with top up power as necessary):

1. Generator sells power at the meter point to corporate consumer under PPA1.
2. Corporate consumer immediately on-sells power at the meter point to the utility under PPA2. The utility then “sleeves” the power through the grid and sells power to the corporate consumer at its site. The utility will perform a balancing service under this PPA2 (renewable energy is intermittent) by topping up the renewable electricity with extra if needed (for example when the generator is not generating).
3. Renewable benefits can be sold either from generator to utility or from generator to corporate consumer.
4. Regulatory regimes usually require a licensed utility to be involved to put electricity onto the grid (i.e. transport the power from the generator’s site to the corporate consumer’s site).
5. The generator can be entirely independent or sometimes the corporate consumer may make an investment into the generator itself to support the project (and open a new revenue stream in potential dividends).
6. Depending on the regulatory regime, the licensed utility and balancing party may be the same entity (as in the UK) or separate entities (as in the Netherlands).

Corporate PPA contract structures

B) "Synthetic" Corporate PPA



Key features

Generator "virtually" sells the power that it produces to the corporate for a strike price.

1. Generator sells renewable electricity to a utility under a standard power purchase agreement at a market price.
2. Utility continues to sell power to the corporate consumer under a standard electricity supply agreement at a market price.
3. In parallel to these conventional contracts the generator and the corporate consumer enter into a contract for difference, option or other financial hedge where they agree a strike price for the renewable electricity produced by the generator (Derivative Contract/VPPA).
4. Generator and corporate consumer settle the difference between the strike price and the variable reference price. This reference price is usually based on a wholesale price index. The contract for difference therefore provides a hedge between the strike price and the reference price.

What is particularly exciting about the European corporate PPA market is that it provides a positive story in the face of our ongoing energy crisis. The long-term, typically fixed, nature of PPA contracts makes them less susceptible to short-term price increases and volatility, so these are not passed on proportionately to the buyer. This strengthens their appeal in a climate of rising prices, which was reflected in the record deal volumes seen in 2021 in Europe, reaching 8.8GW. In the medium-term, the prolonged high power prices we see across the region should further increase buyer demand, as an expanding pool of large power users (regardless of their sustainability agenda) seek a wider variety of hedging solutions."

Helen Dewhurst
Senior Associate, Corporate Sustainability Team
Bloomberg

Which model to choose?

Sleeved

Direct contract to purchase power from the generator – easier to show power used is procured from renewable sources.

Corporate and generator must be on the same aggregated grid system (so a sleeved model would not work across e.g., US states or EU Member States).

Synthetic

Power can be sold “virtually” across separate energy markets (e.g. across US states or in theory across EU Member States). This has been a strong driver for use of synthetic PPAs in the USA (the USA energy market is disaggregated).

Arguably a simpler structure – it is a contract for difference/financial hedge, rather than two back to back contracts for sale of power.

This structure requires the Generator and Corporate to enter into a contract for difference which may be a regulated financial instrument and so there is a need to consider whether this involves carrying out a regulated activity requiring financial services authorisation (for example under MiFID II) or compliance with reporting or margin obligations (such as under European Market Infrastructure Regulation (EMIR)).

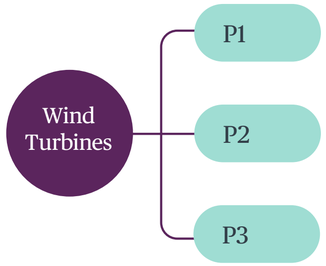
Note: when deciding which model to choose, the corporate’s preferred accounting treatment for the Corporate PPA should be considered.

Optimisation of structures

Aggregation models

As the volume under a single Corporate PPA is often large with long term commitments, the traditional Corporate PPA structures are predominantly used by large energy consumers such as tech companies and the chemical industry. There is an increased interest from smaller corporates looking to move to renewable energy consumption, however often smaller corporates will find themselves with projects which are too big for their offtake requirements. In that case, one of the following aggregation models might be a solution.[6]

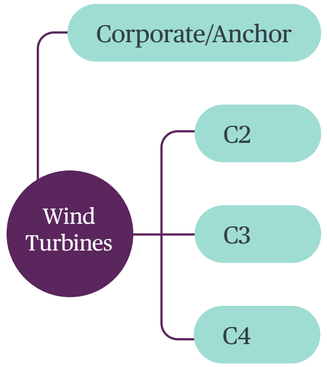
Club



Under the club structure, large corporates club together to aggregate their energy offtake. A great example of the club structure is the Dutch wind consortium formed by Google, AkzoNobel, DSM and Philips. The corporates joined forces to optimise the Corporate PPAs they entered into for the offtake of energy produced by two wind farms. The corporates each committed to one quarter of the energy offtake of each project, all on similar terms and conditions. The search for the "ideal partners" and the formation of the club takes a considerable amount of time, however, once clubbed together the corporates can benefit from the economies of scale and power of negotiation.

Also, the model can be re-used several times. This club was the first in Europe. In the US, the structure is more commonly used.

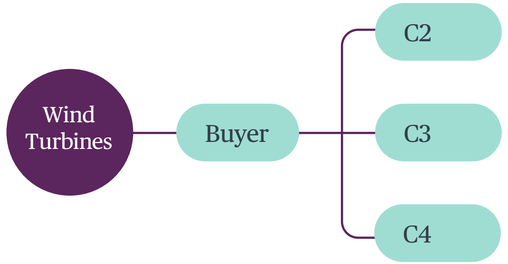
Anchor tenant



Under this structure, a large offtaker commits to the offtake of a large portion of a project, securing the repayment of the debt by the generator. Smaller corporates can tag along to the project and may secure a Corporate PPA for a smaller part of the project and for a shorter term, either with the large offtaker or with the generator itself. However, some generators may be reluctant to be flexible on the contract terms as the smaller corporates are not material in obtaining financing.

Reselling

This structure is less common as the benefits are limited. Here a large corporate purchases 100% of the offtake of a project and then resells it in predetermined tranches to smaller corporates. There is little to no flexibility for a smaller corporate to negotiate the terms of the contract. This reduces the upside compared to buying on the market.



[6] Source: Joining the club: Collaborative Offsite PPA Structures for Renewable Energy Buyers, a joint paper written by Schneider Electric and Bird & Bird LLP.

Proxy Generation PPA & Volume Firming Agreements

Price risk

As there are plenty of hedging and other financial instruments available in the market, price risk (taking on the risk of a fixed/floor/capped price) often sits well with the corporate as its main reason for entering into Corporate PPA is price predictability. Also, this may provide the flexibility a corporate needs from an accounting point of view to avoid the Corporate PPA being classified as a derivative.

Operational & weather risks

Often the negotiations of a Corporate PPA evolve around an appropriate risk allocation for operational and weather risks. Both of these risks can cause the plant to produce less than forecast, producing an imbalance on the electricity trading system (and associated charges).

As corporates may not have the in-depth knowledge of the project specifics (as it is not their core business) or the ability to control the operation of the project, it can be argued that the risk associated with the operation of the plant should not sit with the corporates, and should remain with the generator. The generator is the party that selected the turbines or panels, ancillary equipment and arranged the (terms of the) relevant contracts (including performance, maintenance and curtailment clauses), all determining the actual performance or output of a project.

Whereas the traditional PPA is calculated against the actual output of a project (i.e. pay as produced), a 'proxy generation PPA' is calculated against the expected output based on the projects specifics and its power curve, shifting such operational risk back to the project. Upon agreeing the terms of a proxy generation PPA, the parties agree on a number which reflects the expected operational performance of that project. If the project performs better than the agreed number, then any upside is for the generator, however if the project lags behind the agreed expectations, the generator may suffer. A calculation service agreement with an independent calculation agent is required to assess the expected output of a project which could make arranging this structure costly. Microsoft has been very active in developing solutions for the allocation of operational risk.

As well as operational risks, renewable energy projects are also unique in that the output from them will be variable throughout any day, due to intermittency of the weather. Weather patterns can be predicted to a certain extent but never with 100% certainty or far ahead of time. Microsoft has also developed, together with its partners, the 'volume firming agreement' protecting corporate buyers against the intermittency and weather risk that comes with renewable projects. These agreements shift the 'shaping' risk relating to the intermittency of a project away from the corporate buyers by offering them a 'baseload' or fixed amount of electricity throughout the day. The generators taking on such weather risk will resort to storage and balancing solutions, or may seek to back off the risk with insurers who are comfortable dealing with such risks.

24/7 Model

One of the newest models is the 24/7 model developed by Google. Through its 24/7 Carbon-Free, Energy Compact with Sustainable Energy for All, Google strives to operate its data centers and offices worldwide on sustainable energy, around the clock. This is a bold statement knowing that the renewable energy production is never continuous, however they are convinced that the new renewable technologies are so advanced these days that they already can support a continuous flow and we no longer need grey energy to create a baseload, Google's strategy towards this 24/7 carbon free goal is to develop new contract structures, support innovative technologies and to develop new smart solutions to manage their energy consumption. Their ultimate goal is to match their electricity consumption with clean energy every hour of every day, everywhere.

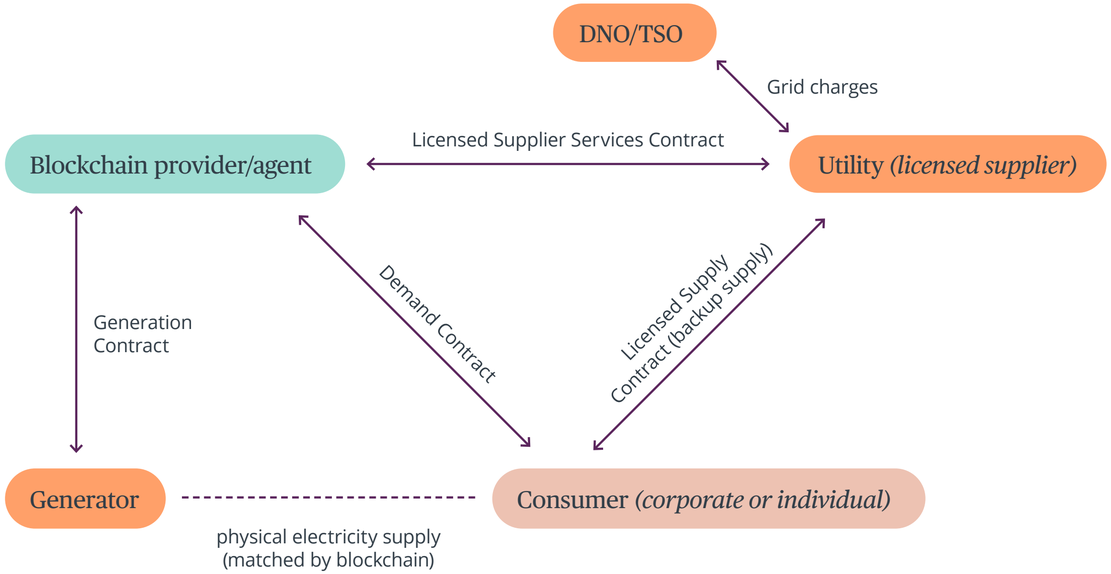
Blockchain PPAs

In 2020 we saw increased used of blockchain in the energy sector, including in the PPA space. Blockchain can be used to create local energy markets (via virtual power plants) by aggregating and matching generator supply and consumer demand in an automated way. Both generators and energy consumers can enter into a contract with a blockchain platform provider. The blockchain provider then agrees to provide a 'matching' service where the renewable energy generation is automatically matched with the consumer's demand (and is therefore not trading on the usual electricity trading market). The contract that the corporate enters into with the blockchain provider is simpler than a corporate PPA entered into directly with a generator would be (particularly if the corporate was aggregating demand with others under a club corporate PPA). Blockchain PPAs therefore offer up a real opportunity to open up a route to market for a broader range and volume of corporate energy consumers.

This structure is not without its challenges, which we very much hope can be overcome, particularly:

- Even with blockchain, the licensable activities within the electricity market still exist – generation, distribution and supply. Whilst blockchain PPAs match renewable generation and demand, this is only done virtually, there is still a physical regulated supply between generator and consumer. Parties therefore need to be clear which party is responsible for performing each of these regulated functions and paying necessary grid charges to transport the power.
- As both generator and corporate contract with the blockchain provider (rather than with each other) the generator may not know who the corporate is when it enters into the contract, and there may not be any guarantee or security provided by the blockchain provider for the corporate's obligations.
- As the technology is so new, generally we are seeing Blockchain PPAs only for a short term trial basis (so around a year) so at the moment Blockchain PPAs are not sufficient to 'bank' a project. We expect this to change in the coming year as the technology becomes more established and regulatory hurdles overcome.

Blockchain PPAs - Example Contract Structure



International PPA markets have always been complex, yet the shift from a buyer's to seller's market has added further complexity for aspiring PPA buyers. With this change, PPA buyers will need a clear yet flexible global renewable electricity procurement strategy to take advantage of the opportunities as they arise. This will also require an ability to align internal stakeholders and adapt to these opportunities and changes in the global markets in order not to miss out."

Alexander Quarles van Ufford

Schneider Electric

International Case Studies

Australia

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The Corporate PPA market in Australia is maturing with a good number of deals transacted. A disrupted energy market forecast for years to come presents significant opportunity for corporate buyers.

Investment in Australia's renewable and storage industry boomed in the latter half of the 2010s to a high in 2018, largely driven by the Renewable Energy Target ("RET"). The RET was the Commonwealth Government scheme to increase the proportion of electricity generated from renewable sources and reduce greenhouse gas emissions from electricity generation, which legislated for large-scale generation of 33,000 GWh by 2020. It incentivised participants, particularly retailers, to enter into PPAs to receive green benefits known as LGCs (or large-scale generation certificates).

Although the RET has been fully subscribed and has not been extended by the Commonwealth Government, State governments have been active in setting increased targets for renewable energy generation to drive investment in the sector, drive down power costs and achieve a greater reduction of emissions. The market is also hopeful that a recent change in Commonwealth Government in mid-2022 will bring new support for clean and renewable energy as an asset class together with a new framework for Australia's energy transition.

Market participants in the energy sector will need to remain cognisant of the transformation taking place in relation to the way in which Australia generates and distributes energy. With the number of renewable energy assets increasing to more than one-fifth of Australia's total energy output (and growing), together with the proposed closure of a significant number of coal fired power stations, the natural consequence is a move towards a decentralised market with energy production and consumption being accessed on a local level rather than from large utilities. This shift, together with increasing shareholder activism and focus on sustainability, may encourage corporate energy consumers to procure energy directly from local renewable energy assets through the mechanism of a Corporate PPA.

In Australia, there are compelling reasons for corporates to consider procuring energy from clean and renewable energy assets. The first and most persuasive being the falling cost of energy production from renewable energy assets when compared to the cost of energy procured from more customary sources, a gap that is projected to increase in Australia due to Australia's ageing

coal-power infrastructure. From a corporate energy consumer perspective, Corporate PPAs allow for price certainty, management of price fluctuations, reduced energy bills and emissions, and have corporate social responsibility and public relations benefits.

Corporates should note that the form of PPA in the Australian market has diversified to include smaller retail PPAs and offerings, which may be more accessible to 'mid-scale' buyers.

Secondly, with Australian generators and investors finding it challenging to find medium to long term PPAs from a "retailer" or state government backed reverse auctions or schemes, there is a gap in the market that corporates can help to address. If such corporates enter into Corporate PPAs directly with renewable energy generating projects, it provides these projects with contractual price certainty on the price of both the electricity they intend to export and the value of the associated large scale renewable energy certificates. This will assist projects in meeting bankability requirements, allow them to gain access to different types of senior debt and stimulate further investment in the sector as institutional investors see key project risks around pricing being alleviated.

In addition to price, we have seen more recently the Corporate PPA market being driven significantly by corporates with key sustainability initiatives, particularly in relation to net zero transition and wider ESG strategy.

It is key to acknowledge that the US and European experiences in relation to Corporate PPAs have allowed the Australian market to develop from a rather unique standpoint. Australian corporates can take comfort from such international experience and seek to adopt a best practice approach to selecting which contractual models it will deploy in the market.

With reports in the market estimating over 100 Corporate PPAs executed since 2017, representing over 4 GW of renewable energy generation contracted, the role of Corporate PPAs in Australia's energy transition is becoming greater.

Recent examples of Corporate PPA style transactions being procured in Australia during 2020 - 2021 include:

- CSIRO, Nevertire Solar Farm (NSW), 132 MW;
- BHP 2, Merridin Solar Farm (WA), 100 MW;
- Salesforce, Blue Grass Solar Farm (QLD), 200 MW;
- Amazon 3, Hawkesdale Wind Farm (VIC), 97 MW
- Woolworths Group, Bango Wind Farm (NSW), 244 MW ;
- Telstra 4, Crookwell 3 (NSW), 58 MW;
- BHP 3, Port August Renewable Energy Park (SA), 320 MW.;

The majority of the Corporate PPAs listed above are either behind-the- meter PPAs or "synthetic" PPAs (i.e. financial hedges or contracts for difference).

Croatia

With the recent changes in legislative and regulatory framework, an increase of Corporate PPAs is expected.

Contact us page

Croatia has recently transposed the “EU Winter Package” of energy legislation through adoption of new Electricity Market Act and the RES Act, and has recognized the corporate PPAs. However, the relevant acts do not explicitly regulate corporate PPAs, and seem to recognise them only in as much as they mention a definition of a “renewable energy purchase agreement” being an agreement based on which a natural or legal person has agreed to purchase electricity from renewable sources directly from electricity producer, which does not have a valid PPA concluded with Croatian Energy Market Operator (“HROTE”) based on feed-in tariffs. Currently there are no implementing by-laws that would further regulate corporate PPAs or renewable energy purchase agreements on the market. The respective by-laws are expected to be adopted in Q2 of 2022, and shall hopefully aim to expand the market and provide more opportunities for renewable energy.

Under the current regime, a synthetic PPA would be possible without any particular additional regulatory requirements. However, a direct corporate PPA would need to fulfil additional formalities. This is because the current legislation defines electricity sale purchase agreements between various market stakeholders (i.e. producer – supplier – consumer), which all must have their respective licenses and may act on the market only towards predefined counterparties. Producers may therefore sell their electricity to suppliers or traders, and not directly to end consumers, and vice-versa. Therefore, in order to executive a direct corporate PPA, either the producer or the corporate as the end consumer would need to obtain a supplier’s or trader’s license, in order to fulfil the statutory preconditions. This would also invoke other formalities such as additional reporting obligations, divided accounting etc.

Currently there seem to be no corporate PPAs executed in Croatia between a producer and corporate end consumer. However, according to the publicly available information, there is a case of a commercial PPA being executed between two non-state market participants, Danske Commodities and German based company wpd, through its Croatian subsidiary wpd Adria from December 2021, in the respective roles as registered trader and producer.

Generally, most of the RES electricity production facilities constructed in the past decade still fall under the feed-in tariff RES support system, under which all producers sell all generated electricity to HROTE under a predetermined fixed price.

In early 2020 the incentive system was significantly amended abandoning the feed-in tariffs, and introducing a new market premium model. Contrary to the feed-in tariff model where the entire electricity produced by a production plant is purchased by HROTE at a predefined price, the market premium model represents a shift to market principles, in which the premium tariff is paid by HROTE to RES electricity producers on top of the price they achieve on the energy market.

In December 2021, a new RES Act was adopted and introduced a so-called “negative” market premium (i.e. if the market price is, on a monthly basis, higher than the amount of the reference price determined by the market premium agreement, the production facilities are obliged to pay to HROTE a difference between the market price and the reference price).

Considering the corporate PPAs have been included in the new legislative framework in Croatia, and taking into account the overall interest of producers and (end)consumers on the RES market, we would expect that the legislation appropriately deals with this matter so as to enable the corporate PPAs to become a standard and preferred model of electricity market participation.

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Czech Republic

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Corporate PPAs are an opportunity for existing and new generators in the context of an ever more stringent and less favourable subsidy policy.

The subsidy scheme in the Czech Republic for electricity generators from renewable energy sources is built on two main types of subsidies: (1) the one-off investment subsidy and (2) the operating subsidy.

Operating subsidies can be currently provided either in the form of green bonuses, auction bonuses or as the feed-in tariff which cannot be combined. In the case of green bonuses, the generator collects a fixed green bonus from the market operator (OTE, a.s.) as well as the amount received from on-selling its produced electricity at market price. In the case of the feed-in tariff, the generator earns the feed-in tariff set by the Energy Regulatory Office ("ERO") from the "mandatory" buyer regardless of the current market price. This form of support does not apply to electricity generators brought into operation after 1 January 2022.

On the other hand, a new type of renewables support mechanism has been introduced. As of 1 January 2022, the system of auctions, which represents a market-oriented principle of subsidy, is in place. The main advantage of such a support mechanism is the possibility to set the upper limit of the capacity and to define the available amount of subsidy. Furthermore, given the competitive nature of auctions, this mechanism is considered to be a cost-effective way of promoting renewable energy resources and further eliminates overcompensation. On the other hand, auctions impose certain costs and risks for bidders, which in turn may lead (and will most probably lead) to a lower level of participation in auctions and subsequently may result in more expensive offers.

The Ministry of Industry and Trade may determine the maximum amount of the auction bonus by a decree. In regard to electricity generators brought into operation or modernised after 1 January 2022, the Government is moreover entitled to modify the individual aspects of the regime of green and

auction bonuses by government decrees. Each calendar year, shall the Government stipulate among others the types of the supported renewable energy resources from the 3 calendar years. The regulation for the year 2022 and the following period has not yet been adopted yet and remains the subject matter of further governmental negotiations.

In the context of adopted changes to the system of subsidies, Corporate PPAs represent new business opportunities for both existing and new energy generators.

At present, there is no explicit regulation implementing the rules on the PPAs stipulated in the Directive No. 2018/2001 on the promotion of the use of energy from renewable sources. The lack of the regulation, however, does not prevent the players on the electricity market to conclude the PPAs in the regime of the Civil Code. In this respect, the provisions on the substantive content of the contract for supply of electricity will apply similarly.

The very first Corporate PPA in the Czech Republic was concluded between a small brewery and an investor Atlantis Management. The investor has agreed to build and operate a solar power plant with an output of 35 kWp on the rooftop of the Jarošov brewery. The brewery will rent the solar power plant and purchase electricity produced by the power plant for a price stipulated in the PPA. The project was completed about 2 months ago and the PPA shall terminate after 20 years.

A more important and larger Corporate PPA in its scope and volume was concluded in the automotive sector in July 2021. Company ŠKO-ENERGO (as purchaser), supplying energy to ŠKODA AUTO, has entered into the PPA with Ambient Energy (as supplier). ŠKO-ENERGO has agreed to purchase electricity from 4 wind power plants in a total volume of 26.280 MWh per year. The construction of the power plant for the purpose of the PPA will be carried out by the Micronix Group, the operator of a wind park that will be expanded due to the construction.

A contract for more than CZK 1 billion was concluded for 20 years with long-term cost fixation and minimization of price fluctuations. The first supplies of energy to the Czech automotive leader ŠKODA AUTO should take place at the beginning of 2023.

Despite the presence of relevant market stakeholders on energy market who may clearly benefit from the scheme, Corporate PPAs have not yet been widely used in the Czech Republic. However, as clearly seen on the given examples and in light of the extremely volatile spot markets, it is expected that more and more market stakeholders will be encouraged to negotiate Corporate PPAs in the Czech Republic.

Denmark

There is a great interest in Corporate PPAs in Denmark and the number of officially announced PPAs has increased in recent years.

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Corporate PPAs are known in Denmark and due to its open economy and the international outlook of Danish businesses many of the Corporate PPAs entered into by Danish parties are related to activities outside Denmark. As a result, some of the biggest and publicly advertised PPAs are physically placed outside of Denmark but with Danish developers or sponsors. Others are foreign data centre owners wanting to operate their data centres with green electricity. However we also see a number of local off-takers entering into Corporate PPAs.

The number of officially announced PPAs for renewable energy has increased in recent years.

For example: in January 2021, Lundbeck entered into a 7-year PPA with the company Better Energy to ensure a 100 percent renewable electricity consumption. As a result of the agreement, Better Energy will build a new sola park and bring more renewable electricity into the Danish grid. In September 2021, Clever A/S announced it had signed a ten-year PPA with European Energy. The PPA also creates the construction of a new solar farm in Tryggevælde which will have an energy capacity of 42 MW.

While there is a lot of interest in Corporate PPAs in Denmark, there are some fundamental issues making the use of them difficult. There are a number of legal issues which are not clarified and hence it is still difficult for financial institutions to provide financing in respect of a Corporate PPA. Work is going on to eliminate or solve these obstructions and it is expected that these uncertainties will be resolved in the near future. That said, the Danish FSA has not yet issued any guidelines when a Corporate PPA may be subject to financial regulation.

Further the energy policy regarding renewables has changed considerably in recent years.

Notable the Danish government has recently stated the ambition that Denmark will be independent of the fossil fuels – coal, oil and gas – by 2050. These are long-term goals for Danish energy policy, however, it means that in 2050 Denmark must be able to cover the total Danish energy consumption.

Nevertheless there has never been a stable, long term legislative framework. Instead there have have been a number of changes in fundamental and basic factors affecting the investment into renewable assets.

Indeed, the Government has recently announced that it will be introducing new legislation. If such legislation follows recommendations from the Energy Commission, we can expect the new legislative framework to be technology neutral and only offer very limited if any subsidies. Despite this, there is a general consensus amongst politicians in Denmark that the amount of renewable energy sources shall continue to grow in the coming years and the climate challenge was a key topic in the 2019 elections and is expected to be a key topic in the 2022 elections.

Wind has dominated the renewable energy generation in Denmark for many years (energy derived from wind accounts for 47% of the total gross electricity consumption in Denmark and is expected to reach around 92% by 2040) but solar projects are increasingly being completed. Biomass has been, and is still, popular.

It is certain that solar projects may the most suitable vehicle for Corporate PPAs and there are a number of major companies who are interested in procuring electricity directly from solar plants under a Corporate PPA either for financial reasons or in order to raise their green profile (or both). There is growing pressure on corporates to act sustainably meaning that companies will consider these solutions even though they may not financially be their best investment case.

Finland

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The use of Corporate PPAs has increased since the release of the first PPA contracts in 2018 and generators have progressively started to utilise PPAs in order to hedge against volatile prices.

Corporate PPAs in the context of the Finnish electricity market

PPAs are mostly utilised by large technology- and industrial companies. It seems that medium-sized electricity consumers are also interested in purchasing electricity through PPAs, and the PPA market is expected to keep growing – currently being at highest level in the Finnish energy sector's history. In solar power, PPAs are already being utilised in smaller projects than in wind. There are also significant offshore wind projects under development that will accelerate new energy production. PPAs are seen as critical for the green energy transition.

Finland is part of the Nordic wholesale electricity market (Nord Pool), which includes the Nordic countries as well as the Baltic countries. The Finnish system is interconnected with the system of Sweden, Norway and Estonia. Recent market developments have significantly increased the volatility of the power market prices, and especially the resourcing the supply of the Russian imports has had an impact on the market. Supply of power from Russia was disconnected on 14 May 2022. In this respect, contracting parties located in different Nordic price areas, or in different countries for that matter, does not act as a restriction to enter into PPAs.

Sanctions imposed on Russia because of the war in Ukraine establish restrictions and prohibitions on the export of equipment, technology, and services in the Russian energy industry. Sanctions on Russia have been extended and amended multiple times recently and the situation is likely to vary.

The number of PPAs for renewable energy has increased during the recent years. According to a report by the Ministry of Economic Affairs and Employment of Finland, most wind power projects have utilised PPAs since 2019. According to the Finnish Wind Power Association (FWPA), during 2018, production of wind power was at 5,857 TWh, as compared to 2021, where production of wind power was at 8,061 TWh. In 2021, wind power covered 11,7 percent of electricity production (FWPA). The objective of the wind power industry is to achieve at least 30 TWh of annual wind power production in Finland in 2030, which corresponds to approximately 30

per cent of Finland's electricity consumption at that time.

According to FWPA's spring 2021 updated project list, there are more than 21,300 megawatts of wind power projects under development. Not all projects are likely to be implemented, however, almost 7,000 MW of projects already have a land use plan or a land use plan and a building permit.

Finnish key regulations and requirements

In Finland, no license or permit is required for wind power itself. However, a building permit, granted by the Municipal Building Control Services, is always required when planning a new wind power system.

Usually, wind farms do not require environmental permit in Finland (Environmental Impact Assessment is required). No permits under Water Act are typically required either unless the planned wind farm concerns offshore wind power. All the wind farms defined as industrial in size require a permit from the Finnish Defence Forces.

The Finnish Energy Authority must be notified about a decision to construct a power plant with an expected capacity of over 1 MVA.

Connections to the transmission grid is based on the principle of open and non-discriminatory network access. In accordance with the Finnish Electricity Market Act (588/2013, as amended), a network operator is obliged to connect all generation facilities that fulfil the technical requirements and pay the relevant grid fees. Fingrid Oyj as a Transmission System Operator (TSO) has a responsibility to develop the Finnish electricity power system and an obligation to connect regional and distribution networks and power plants to its main grid. On request and against reasonable compensation, the system operator is obliged to provide access to the main grid for electricity consumption sites and power generating installations with technically approved connection solution.

In order to become an electricity supplier in Finland, a generator must acquire a party code and enter into an agreement with a company to act as a balancing party. Alternatively, a generator could perform the balancing function itself or enter into agreement with another electricity retailer who has an agreement with a balancing party (the so called "chain of open delivery"). In the context of PPAs, the national regulator allows for both direct and sleeved PPAs as well as financial PPAs. These may be entered into directly between the producer of electricity and the buyer, or electricity may be transported via TPIs.

Previous bidding system for renewable energy

The feed-in tariff-based support scheme closed for new wind power plants on 1 November 2017.

Currently, there are no subsidy schemes for renewable energy projects in Finland to apply for. The ongoing tariff-based support scheme has been full booked for some time. The government had set the maximum amount of generation capacity to be awarded premiums at 2 TWh, which was awarded from 2018-2020, and due to the relatively small amount of 2 TWh, this quota was used up rapidly.

France

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2021 has seen a strong increase of demand for Corporate PPAs. Decreasing tender prices as well as the reform of the guarantees of origin, projects leaving the support scheme and the need for companies to green their energy mix make the French market mature.

In 2021, connections of new renewable installations to the electricity grid in metropolitan France reached a record level. In particular, the development of solar power has increased significantly, with nearly 2.7 GW new installed capacity (three times the average rate observed in recent years).

Indeed, 2021 was a banner year for Corporate PPA in France, each quarter of the year seeing significant and increasing large volumes announced (+700 GWh of PPA volumes in 2021 i.e. +100% versus the total at the end of 2020).

Moreover, despite the introduction of a “tariff shield” announced by the French government in September 2021 to cope with the increase in energy prices, its outburst is likely to continue and could further increase in the years to come due to the energy dependency with no guarantee that energy price supporting will be maintained.

In this context of price uncertainty in the energy market, a Corporate PPA allows the energy buyer to have a long-term vision of its energy costs, and therefore to secure its operations. In addition, there are four major reasons driving the Corporate PPA market forward in France: Projects leaving the support mechanisms (1), decreasing tender prices (2), growing commitment to green power procurement supported by the development of new contractual forms (3) and the modification of the French regulation of guarantees of origin (4) contribute to the widening appetite of companies and producers for Corporate PPAs.

- Generation of electricity from renewable energy sources has initially been promoted since 2000 through a legal “Feed-in Tariff” (FIT) mechanism. According to this mechanism, French Energy Supplier EDF had the obligation to offtake the entire electricity produced by renewable energy projects falling within the scope of the support mechanism for a fixed (and then indexed) price and for a duration of 15 years. This support system has been modified for the respective energy sources during recent years to introduce a direct marketing scheme with Contracts for Difference (for up to 20 years for smaller projects falling under the 2017 support mechanism).

Since 1st January 2021, 1.000 photovoltaic parks came out of the original FIT support mechanism (also 1GW/year of wind turbine installations from 2023). More then 215 GWh of electricity generated in 2021 from Corporate PPA result from installations exiting FIT (+154% versus total at end 2020).

As repowering is not easily feasible for all projects and as lifetime span for the installations is increasing, producers are interested to value of their production by signing short term Corporate PPA's. In such short term Corporate PPA's the buyer does not have to undertake any long-term commitment with respect to energy prices and can carry out an experimental phase. French retailer Auchan voted for such short term PPA's.

- More and more producers voluntary do not apply for support mechanism and enter instead a Corporate PPA: either by avoiding a tender procedure and/or by assuming falling tender prices.

  For example, the French energy regulatory body (Commission de regulation de l'Energie - CRE) has observed in May 2021 that the average price of the bids selected in the 8th wave of the 2017 onshore – wind tender decreased by 10% between the start and end of the tender period.

  As said, Corporate PPAs protect the subscribed volume from market volatility and provide project owners with a long-term price stability. To obtain project financing at the best price, the PPA should ideally cover the financing period. Thus, long durations for those contracts are becoming more common, such as the 20-years Corporate PPA signed between French Telecom Orange and Total through its subsidiarity Total Quadran in March 2021 for the development of a dozen new solar power plants by 2024, with a combined capacity of 80 MWp (and an expected production of 100 GWh/an (one of the largest PPAs in France).

  The ambitious renewable energy procurement strategy via Corporate PPAs has now reached all French major actors, in accordance with the CRE recommendation dated July 2021 which encourages the actors of the wind and solar sectors to grow beyond the support mechanisms.

- The increasing demand for renewable energies is a visible trend in France, particularly regarding green hydrogen deployment. Corporate PPA announcements multiplied in 2021, especially between January and July 2021: Various new Corporate PPAs have been contracted by professional from different sectors (SNCF Energie, IBM France, Bouygues Telecom, Auchan, Eureden, Amazon, Fnac, Darty, Orange, RATP) with several producers/ suppliers, for a total of 533 GWh (known volumes only) and concern both existing and new assets.

  But it is also interesting to note that the year 2021 has seen the emergence of new contract models. For example, the 1st multi-buyer Corporate PPA in France was launched, designed by the producer Voltalia and 11 other

companies for a 20-years period. It will allow the construction of a 56 MWh photovoltaic facility in Occitania. This scheme helps pool needs and leads to economies of scale, allowing competitive offer prices to companies with smaller energy needs to access the market.

In November 2021, Engie announced a Corporate PPA “for all”: the Fanjeux solar photovoltaic park is the first green Corporate PPA supplying local authorities and industrial customers in France, regardless of their size, consumption volume and duration.

Engie will also supply BASF with up to 20.7 TWh of renewable electricity from January 2022 through a 25-year Corporate PPA for a fixed-price. In addition to its particularly extended duration, another specificity of this Corporate PPA results from Engie’s commitment to deliver a “fixed band” of green electricity for 25 years (the intermittencies will be erased by Engie) knowing that BASF will also have the possibility of choosing each year which of its European sites should be supplied with this volume of electricity.

- From 1st January 2021, the consumption of electricity from renewable sources must be verified on a monthly basis. This means that the Guarantees of Origin (GO) that will certify the origin of the electricity produced must correspond to the month of consumption. This has led to a sudden rise in prices: the average price at the end of 2021 has been multiplied by 5.7. Indeed, sales of GO have been particularly favourable for the second semester of the year (no more unsold volumes on the wholesale market) demonstrating that demand has exceeded supply.

If Corporate PPAs have been less used in France than in other countries, in particular because of the cost of electricity, this is no longer the case. More than ever, it is clear that they are now a pillar in power purchasing strategies of industrial energy consumers in France. However, these are in particular the bigger actors who are currently on the driver’s seat, being able to procure more easily financial guarantees with respect to offtake or procurement risks especially with respect to project finance requirements, although this trend is beginning to change.

Germany

Having started late, Corporate PPAs are now not only established in the Germany market. German government even plans a Corporate PPA category of offshore wind auctions.

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Corporate PPAs have gained a quite reasonable momentum in Germany. Since the first Corporate PPAs having been concluded in mid- 2018, Corporate PPAs are now fully accepted by market participants. However, it must be noted that the core PPA markets are Solar PV and offshore wind.

Onshore wind may catch up with wind farms of 20 years plus which are no longer eligible to receive the EEG market premium; however, such PPAs relating to aged assets usually have tenors of 1 to 5 years.

Most importantly, after the election in September 2021, a new German government has been established. The speeding-up of the energy transition and the further growth of renewable energies are amongst the most important focuses of the new government.

Amongst others, the new German government has defined the following new goals on renewables:

1. share of renewable energies: 80% by 2030 (share in 2021: 42%);
2. offshore wind targets: 2030: 30 GW; 2035: 40 GW; 2045: 70 GW (status 2020: 7.8 GW); solar PV target: 2030: approx. 200 GW (status 2020: 54 GW).
3. To support these targets, the energy and climate ministry (BMWi) plans to bundle several measures in an “Easter package”, which is currently in the legislation process, followed by a second “summer package”. Part of the reforms shall be a Corporate PPA category of offshore wind auctions.

Both packages may lead to the deepest reform of German energy law and regulation of the last decades. Parliament decisions are planned for Q3/Q4 2022. The new laws shall become effective as of 1 January 2023.

The fact that Corporate PPAs have not been on the rise in Germany earlier can be attributed to the attractive support scheme for renewable energy that has been in place for a number of years. This sport scheme used to pay a so-called “market premium” which was based on a statutory reference price for a 20-year subsidy period.

Under this regime, it was financially more attractive for generators to make use of the German support scheme, since it granted a guaranteed price above market prices compared to entering into PPAs with corporates as off-takers. On the other hand, corporates have generally chosen to enter into traditional

("brown") electricity supply agreements that include certificates of origin of other renewable sources (e.g. Norwegian hydro). Using this, corporates have been able to buy "green energy" for a fixed price. In addition, German energy regulation does not allow to issue and sell certificates of origin for renewables benefitting from the support-scheme. Consequently, to enter into PPAs with such supported projects has not been an option for corporates when sourcing green energy.

However, the scene is now rapidly changing. Amendments to the Federal Renewable Energy Act in 2017 triggered a shift away from the statutory reference prices to reference prices that are set by competitive auctions for wind and solar generators. As in other countries, the auctions have resulted in lower reference prices being awarded. Furthermore, the auctions have put pressure on the supply chain, leading to a major reduction of the LCOE.

On the other hand, market prices are expected to rise within the next years, independently from the current crisis situations. All of this will make long-term Corporate PPAs with a fixed price a far more attractive option for generators as well as for corporates, mostly due to price certainty for both parties and potential cost savings for the corporates.

There are a number of scenarios for how Corporate PPAs can be implemented into the German market:

1. renewable generators that currently receive the statutory or auction-based "market premium" enter into a Corporate PPA;
2. renewable generators that are no longer eligible to benefit from the German support scheme (e.g. after the expiry of the 20-year subsidy period) enter into a Corporate PPA; and
3. renewable generators voluntarily waive their right to participate in the German support scheme and conclude a Corporate PPA instead.

Scenarios (1) and (2) apply to operational projects only, whereas scenario (3) is relevant to both operational and newly built projects.

In scenario (1), the renewable generator would not be allowed to sell any certificates of origin that are associated with the renewable power to the corporate because it is not able to do this and claim the market premium in respect of the same electricity. However, it should be clarified that scenario (1) is, in all other aspects, legally permissible. Nonetheless, for most corporates, the lack of certificates of origin may eliminate the reputational benefit of entering into a Corporate PPA. However, a Corporate PPA could still be attractive for corporates that want to hedge their power price risks. Scenario (1) is only an option for off-site sleeved and synthetic Corporate PPAs, but not for on-site Corporate PPAs, as to receive the market premium, the electricity generated must be exported to the grid.

In scenarios (2) and (3), it is possible for renewable generators to enter into a Corporate PPA and to also sell certificates of origin that are associated with the renewable power to the corporate. As set out above, in light of the reductions in the reference prices awarded to renewable generators at auction and the reduction to the LCOE, the conclusion of a Corporate PPA is expected to become a more attractive option for renewable generators financially. In addition, newly built projects in scenario (3) may be more attractive due to the fact that they would be subject to fewer legal hurdles by not taking part in the auction process and not being bound by the statutory annual maximum capacity volumes.

Hungary

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With a late start in 2022, Corporate PPAs are expected to stay and if regulatory and tax challenges are handled right, likely to thrive in the near future.

The conclusion of Corporate PPAs has not been as widely used practice in Hungary. The first Corporate PPA was concluded in 2022, but we are convinced that there will be many more to follow.

The main reason for such a late start is on the one hand that electricity generators from renewable sources had to sell all of the electricity they generated to the Hungarian TSO, MAVIR, in order to benefit from the feed-in-tariff based state subsidy system, KÁT. On the other hand, companies in Hungary had and still have the option to purchase certificates of origin (whether from the generator or from an electricity trader) which attest that the electricity purchased was generated from renewable sources. Companies with an agenda for sustainability and environmental responsibility therefore had the opportunity to purchase certificates of origin without necessarily having to directly conclude a PPA with the renewable generator.

As of the beginning of January 2017, the state subsidy of new renewable generation capacity of over 0.5 MW was introduced (generally referred to in Hungary as the “METÁR system”). In the METÁR system, the RES generators receive the subsidy as a paid premium over the market reference price, the latter being based on specific day-ahead prices of the Hungarian Electricity Exchange, HUPX. The only exception is RES power plants below 0.5 MW, which had the option to receive a feed-in-tariff, but applications for this subsidy were closed on 27 April 2018. Therefore, with the introduction of the METÁR system, the renewable generators have to go out to the market and conclude PPAs with customers (or traders) that may give rise to a growing number of Corporate PPAs.

Corporate PPAs may also be a way to go for those renewable generators whose eligibility to benefit from the KAT system expires. These generators will have to make a dire shift in their business model and handle the risk of price volatility, for which a long-term Corporate PPA may very well be an attractive solution.

Further, for projects that do not or would not want to qualify for state subsidies, Corporate PPAs can be an important factor in the bankability of the project for financiers.

Currently, sustainability conscious corporates often meet their self-imposed sustainability targets by purchasing certificates of origin rather than entering into Corporate PPAs. Renewable generators eligible for either the KÁT or the METÁR system are not precluded from at the same time registering and selling certificates of origin, which thus far seems to have discouraged the conclusion of Corporate PPAs.

Sleeved PPAs may be difficult to implement in Hungary, because in this model the corporate would need an electricity trading license, which might prove to be too burdensome. Virtual or synthetic power purchase agreements ("VPPAs") may therefore be the contractual structure of choice in Hungary. Given the lack of specific regulation and practice, however, some regulatory challenges remain also in the case of VPPAs.

It will have to be carefully considered whether VPPAs (often being in principle contracts for difference), may qualify as financial instruments and, therefore, concluding VPPAs may be considered as investment services which would require the authorisation of the National Bank of Hungary ("NBH"). Project companies that conclude VPPAs to sell the electricity generated by them may actually be dealing on own account with financial instruments, and, if it is performed as a regular economic activity, it constitutes an investment service activity which require an investment services license from the NBH.

However, under certain conditions, the conclusion of VPPAs may still be exempt from the NBH's authorization. It is therefore important to carefully assess such conditions and implement the VPPA structure in a way that the exemption will apply.

From a business perspective, probably the greatest challenge for merchant PPAs of any type is the so-called Robin Hood Tax, i.e., the income tax on energy suppliers under Act LXVII of 2008, which is at 31% of the tax base of an electricity generator (with the exception of generators below 50MW having KAT or METÁR subsidy).

The interest of the stakeholders and the conclusion of the first Corporate PPA in Hungary proves the market viability of Corporate PPAs and if the remaining challenges are handled right, might well thrive in Hungary in the near future.

Ireland

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The Irish Corporate PPA sector has been the subject of significant interest from both public and private actors in the Irish market.

The vast majority of renewable energy projects in Ireland have, to date, opted to benefit from government supports – from the Alternative Energy Requirement (AER), to the Renewable Energy Feed-in Tariff (REFIT) to the current support which is the Renewable Electricity Support Scheme (RESS).

However, Corporate PPAs in Ireland have seen a steady growth since the first Corporate PPA was announced in April 2019. This Corporate PPA market was between Amazon and an independent renewable developer for a proposed 91MW wind farm in County Donegal. This was closely followed by an announcement by Amazon in early August 2019 that it had entered into a further unsubsidised Corporate PPA for a proposed 23MW wind farm in County Cork.

Since then, other corporates (eg, Facebook) have announced further Corporate PPAs and we are aware of a relatively significant number of Corporate PPAs (comprising capacities in the hundreds of MWs) which have signed but which remain to be publicly announced.

The Matheson team has advised on all publicly announced Corporate PPAs in the Irish market to date, bar one.

Many Corporate PPAs in Ireland have adopted the "supplier-lite" model (successfully used in Ireland for over ten years). This model involves a corporate setting up a licensed supply company. Under a supplier-lite Corporate PPA, the generator sells the power (and transfers the renewable accreditations – GOOs) to the corporate supply company who in turn sells it to the end-user corporate under an electricity supply agreement. In this structure, the corporate is likely to outsource the balancing, forecasting, market integration and trading functions to a third party service provider.

Other common structures include:

- "Sleeved PPA structures where power is sold by the generator to the corporate consumer via PPAs entered into by both parties with a third party "utility"; and

- "Synthetic or Virtual PPA" structures where the generator and corporate enter into a contract for difference (CfD) under which the parties lock in the fixed strike price for the sale/purchase of power

VPPAs have been a structure of particular interest recently for Irish corporates (in particular those without their own licensed supply company) as they represent the most straightforward Corporate PPA from a regulatory perspective.

We previously noted that the availability of RESS might cause challenges for future Corporate PPAs in Ireland, if developers decide that RESS is a more attractive option for them. For example, the average 'strike price' in the recent second RESS auction (RESS 2) was almost €98/MWh and this has resulted in pricing pressure on Corporate PPAs.

At the same time, neither RESS 1 nor RESS 2 are index-linked and recent inflationary movements could threaten the delivery of RESS 1 and RESS 2 projects. Indeed, it has been reported that a number of RESS 1 projects have 'fallen away' and that certain of these have pivoted to a Corporate PPA – possibly on the basis that these Corporate PPAs might have offered a more attractive price and/or index-linked pricing.

From a policy perspective, the Irish government has a target of 15% of electricity demand being delivered by Corporate PPAs by 2030.

It published a Corporate PPA Roadmap on 31 March 2022, setting out (among other things) various principles that should apply in respect of Corporate PPAs. However, we are still awaiting specific legislative or regulatory reforms to facilitate Corporate PPAs.

Matheson

Italy

In Italy we are entering a new era where generators and off-takers will soon be able to take advantage of new developments in the PPA legislative and regulatory framework.

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Towards the end of the last decade, the Italian renewables market entered into a period of rapid growth and transformation. This was due not only to the country's favourable climate but also, and mainly, to a legal framework known as "Conto Energia" which provided economic support to the renewable energy sector through the "feed-in-tariffs" scheme. This scheme provides a guaranteed payment for electricity generated and exported by PV plants to the grid. Italian legislation grants generators the option to sell electricity, either through a mandatory purchase regime (ritiro dedicato), through bilateral agreements (PPAs) or on the electricity exchange market.

Since 2008, generators have opted more often for the mandatory purchase regime (ritiro dedicato) than for PPAs. The mandatory purchase regime is a simplified purchase and resale arrangement, entered between the generator and Gestore Servizi Energetici (GSE), the Italian national grid operator, whereby GSE purchases and resells the electricity to be exported to the grid (at a zonal price or a minimum guaranteed price) and, on behalf of the generator, transfers the fees for the use of the grid (dispatch and transmission fees) to distributors and to transmission system operators (TSO). However, since the beginning of 2013, the GSE has been charging generators of renewable energy who benefit from the mandatory purchase regime further costs, such as imbalance costs ("costi di sbilanciamento"), costs originating from the participation of the GSE in the intra-day market ("mercato infragiornaliero") and other relevant administrative costs for the services it supplies for the mandatory purchase regime. This trend, along with a significant drop in the electricity demand and a sharp decrease in prices, pushed many generators (usually electricity generators on large scale) to explore how to increase their revenues by selling electricity power generated by their plants.

Therefore, short term PPAs are hence a valid alternative for generators to the mandatory purchase regime.

PPAs in Italy are bilateral contracts executed "over- the- counter" at a purchase price directly negotiated with energy traders/wholesalers, which in turn negotiate with the TSO the price deriving from energy generation.

In a limited number of occurrences, where a generator and a corporate can be physically connected through a private network, generators may find it convenient to enter into a Corporate PPA to sell directly to a customer who has a stable need for large volumes of energy.

Although no regulatory provisions prevent parties from entering into long-term Corporate PPAs, in the last three years Corporate PPA structures have started to be used also in Italy, both in the form of physical and synthetic Corporate PPAs.

This positive trend may be referred to several reasons: in the first instance, the effects of the crisis of raw materials, and especially the stable increase of the market price of natural gas - ultimately referrable to the Ukrainian war - have rapidly overcome the drop in energy demands caused by the Covid-19 pandemics' outbreak, causing a sharp rise of the electricity price to the maximum price peak ever achieved by the Italian electricity market in the last decades. In the second place, regulatory changes allowing multiple consumers to share supply contracts (through "energy communities") and simplifying the use of PPAs for non-professional actors are a promising factor. Finally, corporations' and industries' are demonstrating a growing interest and sensibility in sustainability and CSR aspects in the wake of the Green New Deal EU policies, which, on the other hand, can provide a direct economic benefit in the background – for instance in terms of access to green bond financing.

In this respect, thanks to the ESG procedure to be enacted by corporates, we have noted in recent months an increase in Corporate PPAs requests, resulting in 2 different auctions launched by 2 TMT corporations to secure the energy needed for maintaining its assets in Italy.

In recent times, the COVID-19 outbreak – which had originated a "stop and go" to the energy transition's acceleration started in early 2019, due to the drop in energy demands and to the electricity price curve forecasts until 2024 – has been completely overcome by a sharp spike of the electricity price. Notwithstanding that investment in renewables are considered on a long-term return basis, risks associated with merchant price off-taker default are not helping in creating a healthy environment for foreign investors looking at the green Italian peninsula.

We are currently entering a new era where generators generators and off-takers will soon be able to take advantage of new developments in the legislative and regulatory framework that governs Corporate PPAs which were introduced in August 2019 and are expected to be further supplemented in 2022/23.

Despite this, there have been also regulatory actions from the Italian government (not very well organized and from a certain extent contradictory over the time) in order to balance the revenues exceedance for producers in 2022 as deriving from the rise in electricity price. This is of course provoking a turmoil in the market since the investors need to have long term forecast plans and there is no visibility that such situation shall be limited only to the current year. We expect the Italian Government may take a more precise position to stabilize the electricity price in the market on the next 10 years through a new procedure which may be led by the GSE as in the past. However, there are not yet clear reforms aiming at that and the current unclear geo-politic events are not facilitating such decisions.

Poland

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Current high wholesale prices is driving demand for Corporate PPAs in Poland, most notably from the largest offtakers.

The levels of wholesale electricity prices in Poland increased beyond any rational forecasts. In December 2021, Day-Ahead Market prices have exceeded the psychological barrier of PLN 1000/MWh (ca. EUR 215/MWh) and consequently the prices offered widely by the largest electricity sellers to industrial off-takers increased even by 100-150%. The current level of wholesale prices is one of the drivers of growing demand for Corporate PPAs among the largest off-takers in Poland, which seems to be the most important. Need to defend the projected economic results against the extreme volatility of electricity prices by energy-intensive recipients may be seen as second most important factor. Participation of large corporates in sustainability initiatives and the growing expectations of contractors in supply chains that their business partners will meet the environmental standards can be understood as additional drivers of the demand for Corporate PPAs, which we as advisors observe in growing number of projects concerning conclusion of these type of agreements. As the supply of renewable energy projects is limited due to legislative and technical obstacles, the market for Corporate PPAs shall grow steadily, but in its own pace, benefitting the most creditworthy corporate off-takers, willing to accept long tenor of such agreements.

Bankable Corporate PPAs, concluded with credible corporate off-takers are also attractive to owners of renewable power projects. Corporate PPAs ensure stable electricity price over long- term tenors and let the investors secure the return from the investments (ROI). Considering the significant deterioration of the state aid schemes for renewable power sources, especially the auctioning system makes the investors even more interested in Corporate PPAs & Virtual PPAs, which may constitute a very good alternative to subsidies, providing a predictable revenue stream in long-term perspective, adequate for repayment of long-term debt financing.

Theoretically, such an ideal symmetry of needs of investors and recipients should guarantee a dynamic and development of the market for such agreements, counted by geometrically increasing number of new contracts. In our view, the increase shall be expected, but its scale will be moderated, due to the limited supply of

eligible renewable power projects available on the market.

The main reasons underlying the limited number and capacity of available projects are either of:

- legislative character, including e.g.:

- the so-called 10H rule introduced by the Act of May 20, 2016, prohibiting construction of onshore wind power plants in a distance shorter than ten times the hight of such plant (measured from ground level to the highest point of the structure) from the nearest residential buildings, which effectively blocked the possibility to develop such renewable power sources on almost the whole territory of Poland or
- façade character of implementation of provisions of the EU concerning the direct line (from the date of the first implementation of the provisions to Polish law in 2005 until today, the President of the Energy Regulatory Office has not granted a single consent for the construction of a direct line; in fact the provisions containing the conditions for granting such consent have been formulated in such a way as to prevent their lawful application by this authority), - technical character including very limited system flexibility and scarce connection capacities, resulting in an increasing frequency of refusals to issue conditions for connecting new RES installations to the grid (approx. 30% of applications submitted in 2021 alone; the statistic is expected to be even worse for 2022).

The draft acts providing for liberalization of 10H rule and effective implementation of direct line are subject to legislative procedure and are planned for adoption in the second half of 2022. It is expected that the currently proceeded liberalization of the 10 H rule shall translate to ca. 3-4 GW of additional wind capacities operational by 2025.

Elimination of the technical obstacles requires more sublime solutions, as opening of a market for system flexibility services, providing beneficial solutions for electricity storage which are not developed yet and immense investments in grid expansion, which may take years.

For the above reasons, the market of direct sales of electricity from renewable power sources currently belongs to the seller. In our view, only the most credible corporate off-takers, ready to accept the risks associated with long tenor of such agreements will be privileged to hedge their energy costs by concluding Corporate PPAs. As our most fresh experience from last 2-3 months shows, creditworthy, large off-takers can still count on obtaining beneficial proposals, secure at least part of their annual consumption at a price that is acceptable in terms of their long-term financial planning, meet their sustainability targets and address requirements of financial institutions, shareholders and business partners especially with regard to structures where, in addition to the electricity producer and the off-taker, there is another entity (most commonly an energy trading company) responsible for offering a sleeved product. This entity is responsible for commercial balancing between the commercial and acts as technical operator for both - the generating unit and the energy consumer participating in such a structure.

An additional reason for the popularity of sleeved products is that Polish regulatory environment lacks effective implementation of transparent criteria for approval of the private-wire, what makes the conclusion of direct off-site Corporate PPAs (performed outside of a distribution network) virtually infeasible. This situation, however, should change after the anticipated implementation of the RED II Directive to the Polish legal system.

Portugal

Due to its benefits, Corporate PPA's are gaining more prominence in the Iberian space, supporting the expansion of renewable capacity. There are, however, a number of barriers to still overcome.

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Portuguese Renewable Energy Legal Framework

Portugal has been consistently supportive of renewable energy generation, especially through encouraging legal regimes that have guaranteed and protected investment and the acquisition, by the supplier of last resort, of the electricity generated.

In fact, one of the national goals for the 2030 horizon is the reinforcement of the bet in renewable energies and the reduction of the energy dependency. The recent approval of the National Energy and Climate Plan 2021-2030 (PNEC 2030, in its Portuguese acronym) and the National Strategy for Hydrogen have reaffirmed Portugal's commitment in promoting the reduction of greenhouse gas emissions, the incorporation of energy from renewable sources and energy efficiency, the decarbonization of society and the promotion of the gradual introduction of hydrogen.

According to PNEC 2030, Portugal is the third country of the European Union with the highest level of renewable incorporation. This is the result of abundant natural resources but also of the overall legislative and regulatory stability over the last decades and of public policies that have fostered renewable energy projects since the 90's. Such policies have relied mainly on the approval of public remuneration schemes that guaranteed stability and long-term predictability of return to private investors.

In particular, electricity production in renewable energy plants registered in Portugal until 7th November 2012 is promoted through a feed-in tariff. Since that year, no guaranteed remuneration scheme has been approved for new projects in Portugal, other than for small-scale, self-consumption or renewable cogeneration projects and therefore, renewable projects in Portugal:

- Either benefit from a feed-in tariff granted prior to 2012, selling energy, through a power purchase agreement (PPA), to the supplier of last resort, which is legally obliged to acquire such energy, paying special regime generators the feed-in tariff that corresponds to their generation technology and the date of licensing; or

- were licensed after 2012 and thus, operate under a market regime, selling energy under organised markets or through bilateral agreements.

Nonetheless, in this new world of sophisticated technologies, the reasons for supporting renewable energy generation have not diminished, but only grown bigger, given that a few years ago, a rampant interest in the deployment of solar energy in Portugal emerged. In fact, most renewable investment in Portugal has traditionally focused on the wind and hydro sectors, leaving solar energy overlooked. However, Portugal has recently witnessed a significant increase in capacity licensing requests for solar energy projects, which has resulted in a shortage of grid capacity.

For that reason, on 6 June 2019, the Portuguese Government launched an auction to grant grid capacity in which each participant submitted proposals either to benefit from a guaranteed remuneration (feed-in tariff) or to trade electricity under market conditions, against the payment of a contribution to the National Electricity System (SEN), both remuneration schemes being in place for a period of 15 years. Largely due to the success of such auction, photovoltaic production has exceeded, for the first time, the annual mark, with 1,400MW allocated and a world record of 14.80€ per MWh reached. The 2020 solar auction proved also a success with Portugal breaking a new world record with the lowest price of solar energy recorded. The auction was awarded 670 megawatts (MW), of which around 75% in storage mode (483 MW), a third bidding modality that was newly introduced. Following the success of these two auctions, the Portuguese Government decided to launch a new initiative in 2022, which consisted of a floating solar auction aimed at attributing reserve capacity to be leveraged by power plants to be installed in Portuguese dams. In this auction held on April 5, 183 MW were attributed, with two lots achieving the lowest tariffs in the world: 41.03 €/MWh and – 4.13 €/MWh (equivalent to a 110% discount to the reference tariff initially set). It is worth highlighting that this tariff is about 137% lower than the lowest tariff obtained in the previously mentioned 2020 solar auction, considered, at the time, to be the lowest in the world.

More recently, in January 2022, the legal regime applicable to SEN has undergone a profound transformation, with the approval of Decree of Law no. 15/2022, which now applies to a wide range of activities, such as the production and storage of electricity, the production of electricity for self-consumption and the issue of guarantees of origin.

Currently, the strategy for the Portuguese energy sector relies heavily on the installed capacity of renewable energy generation projects while the country prepares the decommissioning of the coal power plants and boosts private investment in renewable energy projects by launching competitive bidding procedures that bring support schemes closer to market prices and invests in the expansion of grid capacity to allow the connection of said projects.

The above mentioned new legal regime contains several solutions aimed at accelerating the energy transition, namely trough the to the creation and densification of the legal framework of innovative realities, such as storage, over-equipment, re-equipment, hybrids and hybridisation, which until now have been

unregulated and are expected to allow a better and more efficient use of the capacity of the existing power plants.

Recent Corporate PPA's in Portugal

The new reality of operating without a feed-in tariff is challenging, given that all projects in Portugal are being licenced under a subsidy-free scheme and renewable energy generators are now faced with energy trading under organised markets.

However, stakeholders are exploring alternatives in Portugal. Portugal's regulatory and legal framework allows the use of different mechanisms for the active purchase of electricity by the consumer, the main ones being Renewable Energy Certificates, PPA's, production for self-consumption and Renewable Energy Communities, which are now being widely developed.

In fact, several players are venturing into the new world of the so-called 'virtual PPAs', as a way to mitigate the price volatility risk of spot-market sales and increase cash-flow stability. A virtual PPA is a power-purchase agreement with no physical delivery of electricity to the off-taker, under which the electricity is sold in the spot market and the floating revenue is exchanged by the generator against fixed payments from a corporate off-taker.

Due to its benefits, Corporate PPA's are beginning to gain prominence in the Iberian space, supporting the expansion of renewable capacity. In Portugal, some examples are: Sakthi, which has awarded an 18-year contract for the supply of renewable energy by EDP, being the largest ever PPA signed in Portugal by the EDP group; Exus and Blackrock with Axpo (fixed prices of 8 years for the energy produced in the Solar Power Plant located in Salvaterra de Magos (24MW)); Allianz Capital Partners and WeLink (a 20 year agreement regarding the Ourika solar power station); the Vale do Moura Photovoltaic Plant (28,8MW) also signed by Axpo and Hyperion Renewables with a 10 year marketing guarantee, being the first bank-financed photovoltaic plant in the whole Iberian Peninsula which will not receive any type of public subsidy. More recently, Aquila Capital and Axpo have signed a PPA through which Axpo Iberia undertakes to provide representation services for Portuguese power plants and the purchase of 100% renewable energy from Aquila Capital, through the four assets in its portfolio.

Corporate PPA's guarantee new installed renewable capacity and allow the financing and, therefore, the installation of more renewable photovoltaic and wind power plants without any kind of influence of the electricity tariff on the price.

There are, however, a number of barriers still to overcome. On the one hand, REN, the grid operator, faces a huge challenge in accommodating so many new solar generators – with regions such as Evora and Estremoz already seeing bottlenecks. So much so, that, in 2018, the government has put in place a lottery scheme (sorteio) to award future permits for areas where grid lacks capacity. The high number of photovoltaic plants without a subsidised tariff already approved by the government plus pending licence applications exceeded, in some network areas and on a large scale, the reception capacity in the national electricity distribution and transmission network. It is, however, expected that the new legal regime will change this situation, by simplifying the licensing procedures foreseen therein.

Additionally to this difficulty of access to the network, the main barriers in the current PPA market in Portugal are related to a lack of liquidity of such market and also the regulatory framework (the clawback issue), which makes decision-making difficult and hinders long-term investment. Naturally, the volatility of energy prices has also not contributed to an increase in confidence in these instruments, with companies becoming less and less favourable to closing prices in early stages of investments. Finally, consumers appetite for long-term solutions is still emerging with the consumers starting (just now) to look for long-term solutions with very competitive prices while trying to meet their sustainability goals.

However, some say that we are at a unique moment regarding the difference between the price of energy in the consumer country and the price in the generator country, with everything pointing out to the reduction of such difference. Therefore, this is an opportunity to generate more electricity and develop projects, which consumers are a priori prepared to absorb.

Serbia

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In Serbia, the boom of Corporate PPAs is expected.

Implementation of Corporate PPAs would require fulfilment of several regulatory requirements. Among others, Corporate PPAs would work: (i) in the structure where both the producer and the customer located in Serbia are connected to the grid; or (ii) if the RES producer also holds the licence for supply of electricity (and provided that it also complies with the supply-related obligations set under the applicable regulations). Although Corporate PPAs are explicitly envisaged under the Law on Use of Renewable Energy Sources, there are still no Corporate PPAs implemented in practice. There are several reasons for this.

Most importantly, for years, until the energy crisis that struck the market in spring 2021, the corporates in Serbia have not been driven to look in the direction of Corporate PPAs. The reason for this is that the prices for electricity coming from electricity suppliers – predominantly from state incumbent Elektroprivreda Srbije (EPS), were still moderately low and non-volatile.

In addition to this, the RES market is still relatively underdeveloped. Although Serbia introduced a FIT system in 2009, the system needed a number of reforms in order to meet bankability and other criteria to allow implementation of large-scale renewables.

However, in April 2021, the Law on Use of Renewable Energy Sources was adopted. This law introduced, among others: (i) market-based incentives for RES in the form of market premiums (tailored as contract for difference), awarded through the auctions; and (ii) possibility of the RES producers to execute the Corporate PPAs with the end buyers on market terms.

As for the first auctions, the Government has set quota for subsidizing new wind power plants at 400 MW and the Energy Agency of Serbia has set the maximum (ceiling) price for these auctions 55.7 EUR/MWh. Although it was expected that all eligible wind farm projects would opt for the auctions, given the low maximum price for the auctions, and the trend of increasing electricity prices, the stakeholders do not seem willing to participate in the auctions.

As a result, the interest in the Corporate PPAs is expanding. It seems that the stakeholders are seriously considering Corporate PPAs as an alternative to the subsidies for securing the income from production of electricity. Accordingly, unless the Energy Agency sets a higher maximum price both for wind and other RES auctions, the Corporate PPAs are expected to boom in the upcoming period.

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Singapore

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Singapore Green Plan 2030 charts ambitious and concrete targets to advance Singapore's national agenda on sustainable development.

Singapore has declared its 2030 target to increase solar energy deployment by five-fold to at least 2 GWp, which can meet around 3% of Singapore's 2030 projected electricity demand. This has triggered a healthy demand for Corporate PPAs in Singapore involving solar energy.

The corporates in Singapore favour precise contracting frameworks for green energy, driven by financial, regulatory and sustainability objectives. There are mainly two types of corporate PPAs in the market : onsite PPA and offsite PPA.

Onsite PPA

Onsite PPAs involve the installation of solar PV systems by a power producer on the consumer's premises (mostly rooftops in land-scarce Singapore). The consumer is only required to pay for the solar energy generated by the onsite PV and consumed at a fixed price or a variable rate based on a fixed discount to prevailing electricity prices. Solar PPAs typically last for a period ranging from 20 to 25 years. The onsite PPA is an attractive proposition for a consumer with space for PV installation. There is no upfront investment cost, and the consumer enjoys a fixed tariff which does typically translate into long term savings. The operation and maintenance of the PV system is also undertaken by the power producer.

The onsite PPA is currently the most prevalent contracting model in Singapore. Smaller projects are sometimes referred to as "behind the meter" PPAs as the solar energy is produced and consumed onsite in a private distribution agreement separate from the national grid without going through a meter. In terms of the documentation, the major areas of contention typically centre on the termination rights and termination payments, curtailment scenarios, and in some cases, the ownership of the green attributes (including renewable energy certificates or RECs).

There are also options for excess power to be sold to the national grid. The energy regulator (EMA) has helpfully simplified the regulations for a consumer to sell excess solar generated electricity back to the national grid.

Offsite PPA

A consumer with a mandate to purchase green power but which is unable or unwilling to install a PV system on its premises may opt to enter into an offsite PPA. In this case, the consumer undertakes to purchase all or an agreed proportion of the solar power generated by the power producer's portfolio of solar farms or a specific solar plant constructed by the power producer for the consumer. The power is injected remotely into a transmission or distribution network and the consumer also needs a connection agreement with the network operator for the offtake of the power (notional offtake, as electrons are fungible). The consumer typically also purchases green attributes (such as RECs) from the power producer and a bundled price is given for the green power and the green attributes.

The offsite PPA could be somewhat more complex as there are no standard contracting terms and many of the commercial arrangements are variable and designed to suit the consumer's specific needs. The offsite PPA is sometimes referred to as a virtual PPA (rather confusing as vPPAs are also used for demand management curtailment) or used interchangeably with corporate PPA. The negotiations for an offsite PPA usually centre around the stability of the green power supply and the consequences of any shortfall in supply as well as the need for valid creation, registration and transfer of green attributes to the consumer. Obviously, in this case, metering is also key as the consumer pays based on metered offtake and many consumers require audits and contractual mechanisms to deal with metering inaccuracies. Termination rights and termination payments are also highly negotiated in most offsite PPAs.

The power of the sun

Singapore is one of the most solar-dense cities in the world. As of end-2020 (based the last report from EMA), the total solar capacity installed was 427.6 megawatt-peak (MWp). The government intends to deploy 1.5 gigawatt-peak (GWp) of solar capacity by 2025 and at least 2 GWp by 2030. This is enough to meet the annual power needs of around 260,000 and 350,000 households respectively.

The government is also pursuing creative ways to maximise solar energy and make every space count. Besides setting up solar photovoltaic systems on the rooftops of public housing (HDB) blocks and industrial buildings with smart metering systems for demand management, the government is also exploring the innovative use of offshore spaces, reservoirs, walkways and even temporary vacant land. There is also a whole of government approach to systematically aggregate the renewable energy needs of all public agencies and to regularly put this out to the market on PPA tender.

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Slovakia

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Market liberalisation and general support of more free market mechanisms have been declared to be a clear path for renewable energy sources in Slovakia.

Since 2009, the electricity from renewable energy sources (RES) in Slovakia has been promoted to RES producers through a system of feed-in tariff ("FIT") state subsidy. The FIT consisted of two parts: (1) fixed tariff for electricity and (2) surcharge. The fixed tariff for electricity has been stipulated on an annual basis by the Slovak Regulatory Office and the level of surcharge has been stipulated by means of Price decision for the each specific RES producer according to a Decree of Slovak Regulatory Office.

For several years, Slovak RES producers have been selling the electricity to the distribution system operator, and the option of direct sell to the specific electricity buyer using a Corporate PPA has not been widely used in practice. However, new legislative changes are expected in future. Significant legislative changes to the Act on RES happened as of January 2019.

This did not cover Corporate PPAs specifically, but has been considered a positive change to the strictly regulated RES environment in Slovakia aiming to make it more free-market oriented.

Electricity Market Operator - OKTE, a.s. in the course of providing the FIT to RES producers, the major advance of the amendment for larger renewable sources is the change of sale of electricity from the system of feed-in tariff (FIT) to a feed-in premium (FIP) upon a success in an auction. This way, the state would principally provide the FIP subsidy to those RES producers which were chosen in the new auction system, i.e. these producers would receive a premium on top of the market price of their electricity production. The smaller RES producers under 500kw would be still receiving subsidy under the previous system of FIT.

Additionally, the amendment to the RES Act has established a new option for businesses to operate their own "local RES" under 500kw for their own use, which would be free of (often demanding) fees, e.g. fee for the grid connection, etc.

As of January 2020, a new amendment to the Act on RES came into force. Beside other changes, the amendment has made important change to regulation of guarantees of origin of electricity.

The guarantee of origin is a document proving that the produced electricity originates from renewable energy sources and serve also as proof for the final consumers. The guarantee of origin issued to the RES producer may also be traded, i.e. transferred from one RES producer to another market participant in return for payment.

The amendment to RES Act has changed the authority carrying out activities related to guarantees of origin. These competencies will be transferred from the Slovak Regulatory Office to the Short-Term Electricity Market Organizer (OKTE).

However, more important change is the change in the conditions for issuing guarantees of origin, which shall be stricter. This change relates especially to the cases when the RES producer has already applied for subsidy by means of a supplement or surcharge. In this case the guarantee will be issued, but will not be kept in the RES producer's account (name), but in a separate OKTE account and offered on the auctions. According to OKTE, the profit obtained from such activities should be used to reduce the tariff for the operation of the RES system.

One of the important conditions for participation in the auction and purchasing guarantees is to conclude a respective Agreement with OKTE on activities related to the issuance and use of guarantees. Nonetheless, the system of non-subsidy RES projects and the Corporate PPA option itself is not a widely discussed topic in Slovakia at the moment. However, liberalisation and general support of more free market mechanisms have been declared to be a clear path for the RES in Slovakia. Therefore, we are of the view that Corporate PPAs will be very likely supported and legally implemented in the next couple of years.

Spain

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Recent market conditions affecting PPAs

Since Q3 2021, electricity prices at the Spanish wholesale market have experienced an unprecedented increase with day-ahead prices exceeding €540/MWh (representing interannual increases over 400% as compared to previous year), namely due to:

- Scarcity of natural gas supplies in international markets;
- Diplomatic disputes among the Kingdom of Morocco and the Republic of Algeria, resulting in the close-out of the EMPL natural gas pipeline supplying gas from Algeria to Spain;
- Certain coal power plants in Spain being dismantled and newly built renewable energy power plants being unable to cover power demand (which has been constantly recovering after COVID pandemic); and
- Renewable energy projects being hugely delayed in the administrative authorisation due to high volume of projects under development.

Market conditions have even worsened after Ukraine invasion because of EU sanctions and restrictions affecting the supply of oil and gas from Russian companies.

Government Response to market conditions

In order to mitigate the effects of the increase of power prices, Spanish Government has adopted a significant number of new regulations and/or amendments to existing regulations, including (among others):

- Royal Decree-Law 17/2021, of 14 September 2021 (as subsequently amended), which imposed renewable energy generators an obligation to return to the Spanish Power System the portion of the wholesale price received which was attributable to the gas-based technologies (i.e. excess remuneration). Said new obligation was subject to certain exclusions for generators having entered into long-term PPAs for a fixed or hedged price, provided that PPA (1) was entered for a term longer than 1 year; and (2) fixed or hedged price does not exceed €67/MWh.
- Royal Decree 29/2021, of 21 December 2021 (amending Royal Decree Law 23/2020) which intended to extend by nine (9) months the deadlines for obtaining the environmental permits and administrative authorisations in order to ensure that renewable projects were not discarded or abandoned due to the public authorities' delay in the granting of permits;
- Royal Decree 6/2022, of 29 March 2022, setting forth an accelerated procedure for obtaining administrative authorisations of renewable projects (as a mean to accelerate the incorporation of renewable power plants to the generation mix and replace gas-fuelled projects). Such accelerated procedure (which implied reduction of deadlines by half) only applied to (1) projects subject to the Spanish State competence (i.e. not regional); (2) located in areas of low and moderate environmental sensitivity; (3) with an installed capacity of 75 MW or less (for wind farms) or 150 MW or less (for PV projects); and (4) without implying the construction of aerial lines longer than 15 km.

- Royal Decree 10/2022, of 13 May 2022, which established a mechanism for the adjustment of the wholesale price by imposing a cap on the price offered by installations using natural gas. According to such mechanism prices for those power plants using gas will be capped at an average of €48.8/MWh during the duration of the measure (during the first six months of the application of the mechanism, the actual price cap will be set at €40/MWh, being such cap increased in €5/MWh/month until the twelfth month). Any deficit (based on the gas prices) generated by the application of the cap shall be compensated to the power generator by the Spanish Energy System. Through this mechanism, the Government ensures that the only installations using gas – representing less than 20% of the overall power volume consumed- receive a compensation for the gas price increase and the remaining power generators (representing 80% of the power offered) to not unfairly benefit from an increase in gas prices (totally unlinked to the cost of generation of their power). This mechanism has been further developed by Ministerial Order TED/517/2022, of 8 June 2022 and has been validated on 8 June 2022 by the EU Commission under the EU State aid rules, approving a €8.4 billion Spanish and Portuguese measure. The measure will apply from 14 June 2022 until 31 May 2023

Impact on PPAs

Considering that many of the new enacted regulations do specifically exclude bilateral PPAs (either physically delivered or virtual PPAs), there is an increasing interest in corporates and companies in entering into power purchase agreements. As a result, there is an increasing competition on the buyer side, particularly increased due to the fact that there are just a limited number of projects which have obtained or are likely to obtain in a short period of time the relevant permits and licences (to the extent the authorities are still delayed in the authorisation procedures).

As to the price structures, PPAs are being commonly entered into for fixed prices or market following with a floor fixed price.

Notwithstanding the foregoing, although the mechanisms recently implemented by the Spanish Government are intended to be temporary, their application shall probably result in a reduction of the wholesale prices, which can inevitably affect PPAs (with high floor prices) entered into prior to the implementation of these new measures.

Market expected trends

Spain is still attracting a significant number of sellers and buyers, with a total volume of 4GW contracted in 2021 (out of 11GW overall EU contracted capacity). This figure has grown in recent months due to the increased interest in this type of agreements in Spain. Utilities and developers such as Iberdrola, Acciona, EDP, Enel, Capital Energy, BayWa – just to name a few - are very active in the market with significant transactions being completed recently.

Additionally, we will see new structures and procedures for organising the execution of bilateral PPAs, with heavy industry companies in Spain being encouraged by the Spanish Government to enter into bilateral PPAs to reduce their participation in the wholesale market and, therefore, reduce volatility of power prices.

Therefore, it is expected that corporate PPAs will continue to grow in Spain during 2022 at similar levels than the preceding years.

Sweden

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In Sweden, Corporate PPAs have been used for some time and are continuously growing further advancing an appealing market.

Wind power investments in Sweden have been built at record pace in recent years, and according to the Swedish Wind Energy Association's (SWEA), the electricity certificate system has already reached the 2030 target of 46,4 TWh, almost 10 years in advance. Wind energy production has production has risen from 25 TWh to 46.4 TWh within the past three years, meaning that it corresponds to approximately 25% of the electricity use. Sweden has a target to achieve 100 % renewable energy production by 2040 and net zero emissions by 2045. Although production and installed capacity is to double in the coming years, the number of installed turbines will remain around 5,000 and is expected to peak in 2027. SWEA explains that the complicated and uncertain permitting process is a serious obstacle to the development of new wind power.

The joint Swedish and Norwegian support scheme for renewable energy, the Swedish-Norwegian electricity certificate system, is a market-based system, and does not guarantee the owner of the renewable installation a specific price for the power generated. As the power generator takes a price risk related to the sale of the electricity from the renewable installation, and as there may be a continued surplus of power production, many financers, such as banks, require that the price risk is hedged. One way to hedge the price risk is to sign a long term Corporate PPA with an off-taker. The PPA may be the enabler of the project and provides a "green" profile to the corporate buyer. While they are interested in having a predictable price for their energy over a longer time period, many corporates also want to show that they are acting sustainably and are contributing to put additional renewable capacity onto the electricity system. However, there are corporates that claim that recent contracts are driven purely by economic considerations.

Furthermore, a recent study found that Sweden has the cheapest average onshore wind PPA prices in Europe. As the support scheme is market based, and as offshore wind is more expensive, so far mainly onshore wind has been developed in Sweden. However, there is now a discussion to enhance the development of offshore wind in Sweden through scrapping the cost for grid connection.

The integrated Nordic whole-sale energy market, Nord Pool, facilitates price visibility and cross-border sale of power between Sweden and the other Nordic countries, and Sweden has had PPAs in place for many years. However, more recently large corporates are entering into Corporate PPAs buying directly from the renewable generator.

In recent years we have seen more long term Corporate PPAs being entered into in the Swedish market. Large corporates such as IKEA, Google, Facebook, Norwegian aluminium corporates Alcoa and Norsk Hydro, Amazon, and Swedish mining corporate Boliden have all signed Corporate PPAs, and the trend is increasing. Norsk Hydro, which has long been an active off-taker, signed a ground-breaking 29-year PPA including 1.65 TWh wind power per year with Green Investment Group, one of the world's longest and largest corporate wind PPAs in 2018. In late 2019, Amazon and BP announced that they will power Amazon Web Services data centres with 122 MW of onshore wind power based in Västernorrland, starting in 2022. Microsoft has signed a corporate PPA with energy firm NTR for wind energy in Sweden. The Redmond company will draw energy from the 86MW Norra Vedbo wind project owned by NTR and Reichmuth Infrastructure, which is expected to go into operations in Q4 2022. The long-term PPA assists Microsoft in its plans to offset its Sweden datacentre region energy consumption with 100% carbon-free energy. The Norra Vedbo project consists of 20 Vestas V150 turbines, each with an installed capacity of 4.3 MW and once operational, it is estimated that the project will produce enough clean power to serve the annual consumption of c. 44,000 households.

However, the wind projects are arousing strong local opposition. As wind power grows in Sweden, so does resistance from citizens who are opposing wind farms on the grounds of habitat disruption and spoiled views.

Furthermore, we are currently witnessing an increase of solar PPAs on the Swedish market. In June 2019, Swedbank announced that it will enter into a Corporate PPA with Alight, and be the sole off-taker of what will become Sweden's largest solar PV plant to date. Since July 2020, Swedbank's 12 MW solar park in Linköping churns out power and provides 30% of Swedbank's electricity across all offices in Sweden.

At Nordic Choice Hotel's Japanese-themed hotel and bathhouse Yasuragi, Alight has rolled out a rooftop solar PPA that clearly showcases how a hotel can proactively stem climate change. The solar installation at Yasuragi delivers 119 MWh of electricity a year.

The Netherlands

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Corporate PPAs are the enabler for the massive goal of 21GW of offshore wind parks by 2030 in the Netherlands.

Dutch regulatory environment

The EU has set targets for renewable energy generation, the reduction of CO2 emissions and measures to halt global warming for its member states. The climate goal targets for the Netherlands are extremely ambitious and until now the Netherlands is struggling to meet the goals. To reach its goals for 2020, it had to strike a deal with the Danish government as it failed to reach its (inter)national goals for renewable energy production.

The Dutch government has implemented a variety of measures and regulations to support investment in renewable energy projects such as an updated SDE++ (Stimulation of Sustainable Energy Production) regulation and the EIA (Energy Investment Tax- reduction). From 1 January 2020, the new SDE++ is in force replacing the earlier SDE+ system. Subsidies under the SDE++ system are calculated against reduced emissions rather than as per the SDE+ system, per generated kWh electricity. In addition to the SDE++, companies investing in renewable energy and energy-efficient technology may also be entitled to the EIA, which allows companies to deduct 55% of the investment costs from the fiscal profits, on top of any permitted depreciation. Despite these regulatory changes and a favourable investment climate, the Netherlands is still lagging behind in achieving its climate targets. However, change might be on its way as large quantities of PV panels are being installed in dedicated ground-mounted solar parks as well as on rooftops, both onshore and offshore wind parks and significant investments in hydrogen facilities are underway.

Mandatory unbundling

The Netherlands has implemented EU unbundling requirements in the most restrictive way possible, prohibiting electricity and gas network operators from being part of a corporate group that includes companies generating, supplying or trading in energy in the Netherlands (the “group prohibition”). The group prohibition has adversely affected the credit worthiness of the traditional offtakers, i.e. utilities, stripping the grids of their balance sheet taking away security for financing. Long-term Corporate PPAs with corporate offtakers with a high(er) credit rating provide an alternative way for generators in attracting cheaper finance and meeting their bankability requirements.

PPAs cornerstone in project finance

Increasing the deployment of renewable generation assets is capital intensive and, as with any project finance structure, large amounts of funds need to be committed before any revenue is generated by the project company. As is typical for project finance structures, the security for the lenders sits in the long-term projected cash flows of the project, rather than the company's assets or balance sheet. A solid (Corporate) PPA is crucial to ascertain this and it helps making a project "bankable".

Well-structured Corporate PPAs certainly help to fill this void. A long term PPA with a credit worthy corporate counterparty that has a stable pre-agreed price formula, ideally containing cap and floor mechanisms to mitigate the volatility of the electricity prices, could secure a steady revenue for the project to repay its debt and be the difference between the project being "bankable" or not.

Corporate PPA structures in the Netherlands

Mandatory unbundling requirements in the Netherlands mean it is possible for a generator and a corporate consumer to enter into a Corporate PPA without needing a utility to enter into a "back-to-back" PPA with the cororate consumer. This is because the "sleeving" of the Energy is done by the grid operator, rather than by the utility. Rather than entering into a "back-to-back" PPA with a utility, the corporate consumer can transfer its program responsibility to a trading or balancing party, thereby reducing costs of its energy consumption.

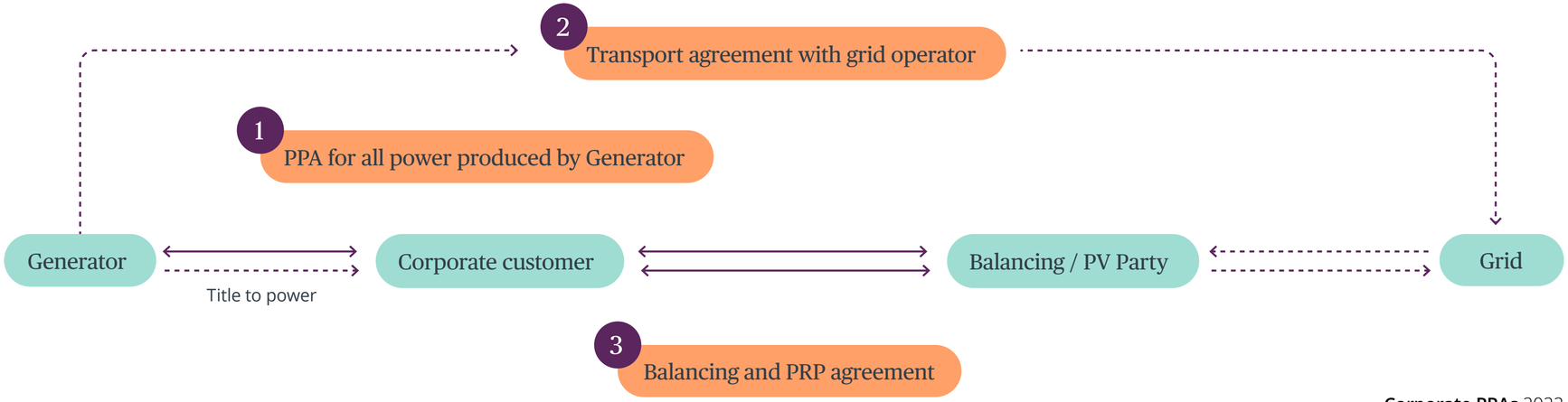
An increasing number of Corporate PPAs are being concluded in the Netherlands. On the one hand they provide corporate consumers with the ability to accurately forecast their cost of energy over a long term and increase their sustainability profiles, while on the other hand, unlocking lower financing costs for renewable generators. In addition to this, utilities such as Eneco are becoming increasingly active in the renewable market. They co-invest in renewable energy projects and/or contract large quantities of renewable electricity and on sell this to their customers. These structures provide the utilities with the economic certainty to keep re-investing in new renewable energy projects.

Offshore windparks

As already announced in our previous report, corporate PPAs are now also becoming the enabler for the subsidy free offshore wind industry.

The tenders for the Dutch offshore wind farms have been very successful and are now sunsidy free projects. With the previous round, the winning bids of were all backed with long term (corporate) PPAs securing the financing of the projects.

With the current round we already see that several bids contain Corporate PPAs as the route to market, where one bidder already has a pool of corporates which signed a term sheet to offtake 20% of the electricity and thereby become a part of the bidding formula. The upside of the pool of corporates is that they can adapt their energy consumption to the variable produciton of the wind farm(s).



United Kingdom

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An established contractual model and safe regulatory environment has made the UK an attractive, albeit comparatively expensive market, for Corporate PPAs.

Corporate PPA Market in the UK

The UK Government has made a series of commitments to renewables in recent years. This has included the Ten Point Plan for a Green Industrial Revolution (November 2020), the Energy White Paper (December 2020), the UK Government's Net Zero Strategy (October 2021) and, most recently, the British Energy Security Strategy (April 2022). Onshore wind and solar are described as being key building blocks of the future generation mix, along with offshore wind which has received particular attention in the British Energy Security Strategy.

Corporate PPAs have been around in the UK for some time. However, it is only in more recent years that they have become more prominent. The availability of fiscal incentives, such as FiTs and ROCs, meant there was little commercial imperative to explore alternative arrangements. Generators would most often enter into shorter term utility PPAs with a licensed supplier, often on standard forms, for the offtake of all of their power as the support payments were sufficient to demonstrate the long term fixed/floor income stream to lenders.

The closure of the ROC scheme to new participants from 31 March 2017 meant that utility scale generators have been seeking alternative routes to market. This, combined with the rise of wind and solar in the UK and the convergence of a number of market conditions, created the perfect environment for the growth of Corporate PPAs.

A long term PPA with a credit-worthy corporate offtaker could be the difference between a bankable and non-bankable project. In addition, the ever-decreasing cost of generating renewable energy means that a project can be viable without subsidy. In 2019 we saw that Corporate PPA prices were in some cases beating wholesale electricity prices, and indeed, Corporate PPA prices for wind and solar have risen up to 16.7% across Europe in 2021.[7] As the market continues to re-stabilize following COVID-19, we would expect that from a corporate perspective, Corporate PPAs will continue to be an attractive prospect to companies who increasingly want to be seen to be acting sustainably and who wants to protect against highly volatile electricity prices. This has been drawn into sharp focus with

[7] Source - Bloomberg op. cit., p.4

the energy crisis resulting form the invasion of Ukraine, which has caused major volatility and uncertainty in the UK energy market.

Major corporates playing in the UK Corporate PPA market now include Shell, BT, M&S, EE, Vodafone, Unilever and others. Many more corporates with operations in the UK (including companies such as Unilever, Tesco and Sky) are also members of RE 100; the group of companies who have pledged to work towards meeting 100% of their energy requirements from renewable sources.

Despite the UK's established and attractive market for PPAs, 2019 and 2020 saw a somewhat slower rate of deals being signed. We would attribute this to an uncertain UK investment environment due to Brexit, the market shock caused by COVID-19 and the fact that PPA pricing in the UK is expensive when compared with other countries (meaning corporates prioritise other markets). However, the market is picking back up as corporates continue to focus on green energy. For example, in January 2022, Octopus Renewables signed three new offtake agreements covering more than 3,000 GWh of wind power to three corporate clients. And, in April 2022, Vodafone and Centrica agreed a 10-year PPA for solar energy from farms across the Midlands. This Vodafone/Centrica deal is a good example of the trend we are seeing for utilities (such as Centrica) becoming front and centre of Corporate PPA deals and entering into tripartite arrangements.

In February 2022, the UK Government announced a move to annual CfD auctions from March 2023 (up from once every two years). The intention is to encourage uptake of renewables and to support emerging technologies (such as tidal stream and floating offshore wind). With the UK Government acting as offtaker, project capital costs can be reduced and cheap rates can be locked in, making CfDs a highly attractive option for sourcing renewable energy. The 4th CfD auction in 2022 was the biggest ever, with onshore wind and solar being able to participate for the first time since 2015. The biggest winner was offshore wind with a strike price of £43.37/MWh (at today's prices). This could see a squeeze on the PPA market, as prices may be forced downward to compete with those in the now more plentiful CfDs. However, given the energy crisis and massively increased focus on transitioning to renewables, we expect the UK PPA market to remain strong and to continue to grow throughout 2022 and beyond.

Corporate PPA Structures in the UK

The aggregated nature of the electricity grid and the regulatory framework has meant that the large majority of Corporate PPAs in the United Kingdom have been concluded using the "sleeved" structure. While Marks & Spencer was an early pioneer of the "synthetic" model using a contract for difference type structure across 20 sites, this structure has only become more popular in recent years, with corporates attracted to its comparative simplicity to the sleeved model.

We are also seeing a number of new models emerging within the market, or at least being discussed.

These include:

- The "mini-utility" or "supply-lite" model where a corporate sets up an affiliated mini-supply company and becomes the balancing party itself. The generator sells output to the mini-supply company who then sells it to the affiliated corporate under an electricity supply agreement. This model is commonly used

in Ireland and is discussed in more detail in the Irish section of this paper (see page 37). This requires significant investment by the corporate consumer in setting up a licensed supply company and gaining the expertise required to manage its own energy supply or outsource this function.

However, the benefit to the corporate is to disrupt the energy supply chain, reducing the number of parties needed to negotiate an energy supply deal and take control of its energy procurement strategy for the long term.

- Building on the “mini-utility” model, Octopus Investments, the UKs largest investor in solar farms, set up its own arms-length licensed supply company, Octopus Energy, offering a range of 100% renewable tariffs to business and domestic customers. Octopus Energy may well be able to procure the power from its own generating assets, disrupting the role of the utilities. This will enable asset owners to offer a simple integrated service to corporate customers.
- The “club” or “consortium” model where small or medium sized companies may begin to take advantage of Corporate PPAs by grouping together to share the risks and enhance bargaining power. This approach has been successfully used in the Netherlands. We think this will be attractive for larger deals such as offshore wind projects. Please see further information on this structure on page 14.
- Blockchain PPAs - please see further on page 16-17. Blockchain platform providers such as UrbanChain are offering services in the UK.
- The “utility led” model where the utility, generator and corporate enter into tripartite arrangements rather than the utility solely contracting with the corporate in a back to back sleeved arrangement.

USA

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The record commitments to renewable generation seen in 2018 and 2019 continued in 2020 and 2021. However, investigations regarding tariff avoidance, supply chain issues and importation questions slowed the execution of PPAs in early 2022. Nonetheless corporate purchasers remain major drivers in U.S. renewable markets.

Any overview of the U.S. market would be lacking if it did not first address the regulatory and market structure of the U.S. market.

U.S. energy markets are split between retail (i.e., direct sales to the end-user) and wholesale (i.e., sales for resale) markets. Retail markets are strictly governed by state law and are subject to state regulatory commissions. There are fifty states in the U.S. and thus, in a sense, fifty separate retail markets.

Wholesale sales outside of the state of Texas are regulated by the Federal Energy Regulatory Commission (“FERC”). While a small portion of the wholesale sales in Texas are regulated by FERC, the substantially larger portion of wholesale sales are subject to the rules, regulations and market practices of the Electric Reliability Council of Texas (“ERCOT”) and the Public Utility Commission of Texas.

Broadly speaking, FERC regulates wholesale markets through its review of the tariffs, business practices and policies of the numerous public and private bodies that control the transmission systems serving customers within their respective control areas.

These wholesale markets fall into two basic categories: (1) “Organized Markets” controlled by independent system operators, such as the California Independent System Operator (“CAISO”) and New York Independent System Operator (“NYISO”), and regional transmission organizations, such as the PJM Interconnection and Midcontinent Independent System Operator, Inc. (“MISO”) and (2) “Bilateral Markets” such as those in the Western Electricity Coordinating Council (“WECC”) and SERC Reliability Council (“SERC”). While not regulated by FERC, ERCOT falls into the Organized Market category.

This web of markets and regulations means that corporate off-take arrangements take a variety of different forms. For the sake convenience, we’ll refer to them as:

- “Direct Sale” PPAs
- “Community Solar PPAs”
- “Sleeved” Corporate PPAs
- “Behind the Meter” PPAs

“Direct Sale PPAs” In states that allow a customer to choose its retail electricity supplier, such as Texas, California, Illinois, Massachusetts,

Michigan, Ohio, Pennsylvania, New Jersey and New York, a retail energy supplier can contract directly with the customer to provide renewable energy. Direct Sale PPAs are subject to various state regulatory policies and limitations that include customer size limits, and in California, a market limit only allows Direct Sales up to an overall historical maximum load amount set for each regulated utility. Direct Sale providers are generally required to register with the state regulatory commission, although regulation of retail providers that service larger commercial and industrial loads is light.

Community Solar PPAs

Community Solar PPAs are found in states in which state law and regulation permit "community solar projects". Community solar programs differ from state-to-state, but generally involve two separate agreements. First, the project owner enters into a contract with the participating utility, pursuant to which the owner sells, and the utility purchases, energy and RECs from the community solar project. Second, the project owner enters into a contract with a customer (the "Subscriber") pursuant to which the project owner passes through "billing credits" to the Subscriber that are generated under the program and the Subscriber pays the project owner a fee.

The programs generally limit concentration (i.e., the project's offtake has to be made available to "community" of offtakers). For example, Minnesota's community solar program requires that no single Subscriber be entitled to more than 40% of the offtake from any one project. Subscriber contracts generally impose some limitations on the Subscriber's flexibility to materially modify its load, assign the contract, or otherwise change the basic structure of the supply relationship embedded in the Subscription contract. These limits are imposed as the project owner has to maintain a certain level of commitment from Subscribers or risk losing the right to serve its Subscribers (and the associated economic benefit of receiving payments from the Subscribers).

"Sleeved" PPAs

This form of offtake agreement is found in those states in which a direct sale to retail customers is either prohibited by state law or allowed only in limited, expressly approved circumstances. Cooperative and municipal utilities will at times agree to sleeve a sale to a large customer. Investor-owned utilities may also agree to sleeve power from a renewable generator – although this is the exception, rather than the rule, and at all times requires some level of approval by the state regulatory commission. One example of an approved sleeve, is Rocky Mountain Power's Schedule 34, which is applicable to the utility's Utah customers. Under Schedule 34, Rocky Mountain Power executes a PPA with its retail customer and a second back-to-back PPA with the renewable generator. The PPA with the renewable generator terminates at Rocky Mountain Power's election if the retail customer defaults or terminates its contract with the utility.

Behind the Meter PPAs

"Behind the Meter" PPAs are also found at the retail level. The "Behind the Meter" nomenclature refers to generation that directly serves a retail customer, by directly offsetting the electricity load otherwise served by a utility. Behind the Meter PPAs are subject to state regulation and are generally limited to relatively small renewable generators and combined heat and power applications. State regulation will often limit the total amount of electricity load served by behind the meter generators.

If a corporate offtaker cannot receive service at the retail level through one of the structures identified above, the corporate offtaker will look to the "Synthetic" Corporate PPA (or in the parlance of the U.S., a "Virtual PPA" or "VPPA").

While retail sales, and independent renewable credit sales still occur, it is safe to say that the VPPA is now the predominant model for sales from renewable generation.

For the most part, the covenants found in a VPPA match those found in a traditional wholesale PPA with a utility. However, VPPAs differ from utility PPAs in certain key areas.

Given the general restrictions and limitations placed on direct retail sales, the VPPA will expressly disclaim any physical sale or delivery of energy. Instead, the VPPA will follows the form of a contract for differences. The VPPA includes a "Fixed Price" (which is set in the VPPA and, ironically, can be either fixed or escalating) and a "Floating Price" based on the market price (usually the locational marginal price, "LMP") at a market "hub"). If the Floating Price exceeds the Fixed Price, the renewable generator pays the corporate offtaker the difference between the Floating Price and Fixed Price. If the Fixed Price exceeds the Floating Price, the corporate offtaker pays the renewable generator the difference between the Fixed Price and the Floating Price. The VPPA contemplates, and may expressly require, the sale of physical energy by the renewable generator in the real-time or day-ahead LMP at the renewable generator's point of interconnection.

VPPAs raises a number of issues, the first of which is credit support. Corporate offtakers may or may not have adequate credit to cover the market exposure faced by the renewable generator. (The renewable generator will also be subject to credit requirements.) In contrast to utilities, that are thought to have relatively stable credit ratings, corporate credit ratings can be volatile.

The second issue that arises from VPPAs is the pricing structure. Neither the corporate offtaker nor the renewable generator will want the Floating Price (or the price at the point of interconnection) to be easily manipulated or subject to large, unpredictable, price swings. Thus, VPPAs are generally associated with renewable generation located in liquid Organized Markets such as ERCOT, SPP and PJM.

A third, related, issue, is basis differential. Both Parties will want to minimize the difference between the Floating Price to which it is subject in the VPPA and the price at which the sponsor sells its physical electrons. Depending on the market, and more importantly the LMP at the project's physical location, this means that the Parties will want to negotiate whether the Floating Price is to be set at the market hub or the physical point of the project's interconnection (the "node").

Fourth, price floors will often be a subject of negotiation. The corporate offtaker may not want to be exposed to a Floating Price below zero. In contrast, the renewable generator (if it is a wind project) will want to keep generating in order to get the benefit of the production tax credit ("PTC"). The PTC is the primary incentive for wind generation development in the U.S. In contrast, solar generation receives the investment tax credit, a benefit not tied to capital investment and not production.

While the pricing structure shares features with a pure financial hedge from a bank or other hedge provider, the VPPA differs from a financial hedge in a few key respects. In contrast to many financial hedges, the energy quantity in a corporate VPPA is not fixed.

Energy deliveries under a VPPA are generally on an "as-available" basis – subject to the availability or performance guaranty mentioned below. Second, the VPPA will always involve a commitment of the renewable credits ("RECs" or "Green Tags", in the parlance of VPPAs) and other

attributes produced by the renewable generator.

The REC requirements in VPPAs have evolved. While in the past, VPPAs may not have required delivery of RECs produced by the specific generator built and operated by the VPPA counterparty, current VPPAs tend to include a commitment of RECs from the renewable generator's facility. Corporate offtakers want to tie the RECs to a specific renewable generator's facility.

Another unique feature of the VPPA is the importance of reputation, confidentiality and publicity to the corporate offtaker. Corporate offtakers may want the specifics of the VPPA held strictly confidential and will want strict controls over publicity around the VPPA and the facility. Many corporate offtakers will insist upon naming rights to the facility and control over signage.

Two other elements of VPPAs that distinguish these agreements from other PPAs require mention. Given the pricing structure, the reporting requirements of the Dodd-Frank statute must be considered. In almost all cases, the corporate offtaker will place the reporting obligation under the Dodd-Frank Act on the renewable generator. The timing and content of the reporting obligations should be considered and understood by the renewable generator.

While corporate offtakers may commit to large amounts of capacity, they are often seeking a commitment that will be less than the ideal size of a renewable generator. Thus, the corporate offtakers often commit to a prorated fraction of the total energy generation and REC production of a renewable generator. This factor requires that consideration be given to how multiple corporate VPPAs work together in terms of the commitments to commercial operation, curtailment and dispatch, liquidated damages and events of default.

As noted above, many of the provisions in a VPPA raise the same commercial considerations present in a traditional wholesale PPA. Thus, a VPPA will include: (a) requirements for establishing commercial operation and liquidated damages if commercial operation is delayed; (b) provisions requiring operation and maintenance consistent with prudent industry practices; (c) guaranties of mechanical availability and, at times, performance; (d) termination and damages provisions for default; and (e) provisions addressing force majeure events. (With respect to force majeure events, we note that COVID-19 and its effects are a key topic of discussion in all PPAs and VPPAs).

An entire article could be dedicated to the disruption in markets mentioned earlier in this discussion. In summary, there have been three major causes for the disruption of markets in the U.S. in 2022. First, are the trade investigations on tariff circumvention (the negative pricing effects of which have been suspended as of this writing by President Biden). Second, are rulemakings relating to U.S. statutes that prohibit the use of forced labor – a potential issue for Chinese photovoltaic module suppliers. Third, are the various supply chain disruptions arising from, and related to, the COVID-19 pandemic. While we expect the market disruptions to normalize over the remainder of 2022, we suggest that that uncertainty with respect to both pricing and supply will remain in the markets for some time.

Each of these issues raises commercial and legal issues that should be carefully considered.

SheppardMullin

Our Energy & Utilities Group

Bird & Bird LLP is an international law firm. We combine exceptional legal expertise with deep industry knowledge and refreshingly creative thinking. We have over 1400 lawyers in 31 countries across Europe, the Middle East and Asia-Pac, as well as close ties with firms in other parts of the world.

Our Energy and Utilities team of over 150 lawyers spread across our network advise on energy and utilities matters across all of our practice areas. As an international team, our sector approach is not broken down by offices but into sub-groups that focus around particular aspects of the Energy and Utilities sector.

A key focus area for us is renewable energy, covering solar, wind, biomass, anaerobic digestion, energy from waste and energy efficiency.

We have been at the forefront of legal advice in the renewable energy industry for over a decade.

Our lawyers have advised developers, landowners, EPC contractors, off-takers, regulators, banks and investors across a number of jurisdictions.

We believe we have one of the leading international renewable energy practices in the world, and have been ranked number 1 globally in the 'Top 20 Legal Advisers by Number of M&A Deals' in the 'Clean Energy Legal League Tables 2022'.

The league tables produced by Clean Energy Pipeline, a sister publication of The Lawyer Magazine, relate to 2021.

We are a cohesive and expert team who understand how to work together to complete renewables projects to international investor standards.

This industry experience has meant we have closely tracked the emergence of Corporate PPAs, where global multinational corporations are buying electricity directly from wind and solar generators. This completely revolutionises the market for renewable power from subsidy and utility driven to market demand driven.

We consider we are at the forefront of this market, having developed and negotiated innovative contract and business PPA structures, from physical PPAs to synthetic/ virtual PPAs and most recently blockchain PPAs.

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